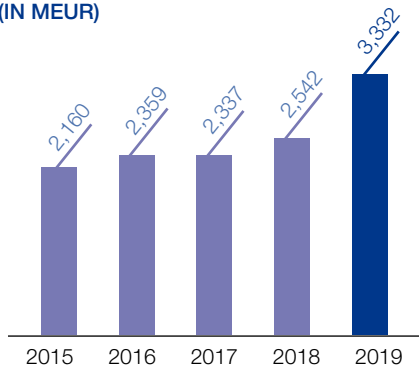




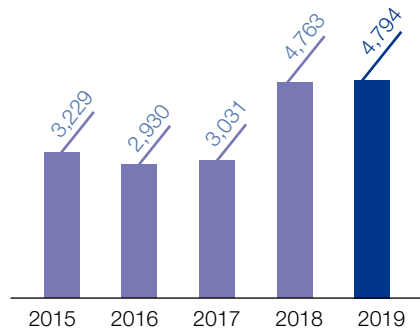
**ACTIVITY
REPORT //**
2019

BESIX in 2019

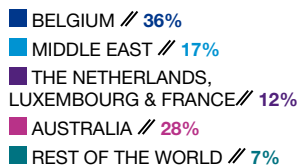
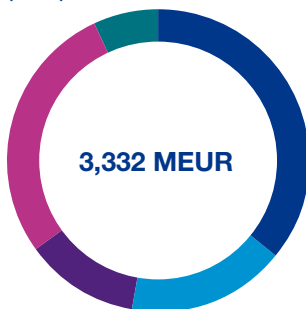
EVOLUTION OF REVENUES
(IN MEUR)



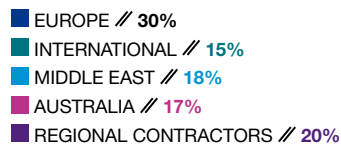
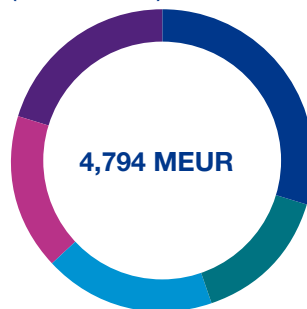
EVOLUTION OF ORDER BOOK
(IN MEUR)



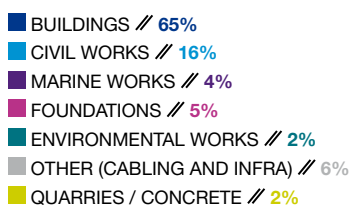
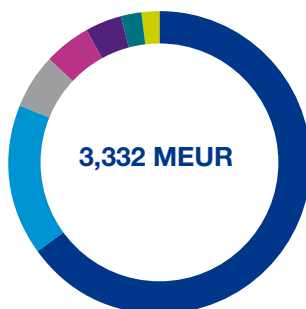
REVENUES BY REGION
(2019)



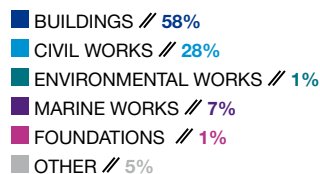
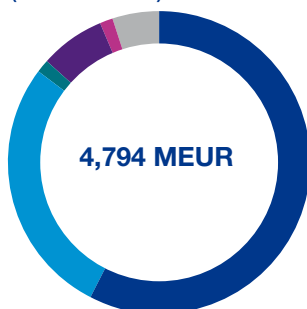
ORDER BOOK BY REGION
(AT 31/12/2019)



REVENUES BY AREA OF EXPERTISE
(2019)



ORDER BOOK BY AREA OF EXPERTISE
(AT 31/12/2019)





Consolidated Key Figures 2019

(in MEUR)	2019	2018	2017	2016	2015
INCOME STATEMENT					
Revenues	3,332.0	2,542.1	2,337.0	2,359.1	2,159.7
EBITDA	97.8	131.4	122.5	168.1	46.1
<i>EBITDA margin (%)</i>	2.9%	5.2	5.2	7.1	2.1
EBIT	22.0	83.7	78.9	117.8	0.4
<i>EBIT margin (%)</i>	0.7%	3.3	3.4	5.0	0.0
Earnings before taxes	48.1	103.2	115.5	135.0	15.4
Consolidated profit	42.2	95.3	102.6	120.8	3.8
<i>Net result on revenues (%)</i>	1.3%	3.7	4.4	5.1	0.2
Cash flow	127.4	149.8	142.1	159.3	79.5
<i>Cash flow margin (%)</i>	3.8%	5.9	6.1	6.8	3.7
BALANCE SHEET					
Equity	698.5	695.1	660.4	653.0	518.3
Net cash position	141.0	135.7	34.1	172.4	26.4
<i>Solvency ratio (%)</i>	24.2%	26	28.1	27.3	24.4
Liquidity ratio	1.31	1.30	1.42	1.42	1.40
<i>Return on equity (%)</i>	6.0%	14.4	15.7	20.6	0.7
ORDER BOOK (AT 31 DECEMBER)	4,794.3	4,763	3,031	2,930	3,229

+31%

2018-2019 EVOLUTION OF REVENUES

1.3%

NET RESULT ON REVENUES

€141 million

NET CASH POSITION

6%

RETURN ON EQUITY

Table of contents

BESIX at a glance	2	INDUSTRY & LOGISTICS	76
COMPANY PROFILE	4	New transshipment building on the Brussels Airport Brucargo site (BEL)	76
GROUP STRUCTURE	6	SPORTS & LEISURE	78
MESSAGE FROM THE CEO OF BESIX GROUP	8	Al Janoub, a sustainable stadium (QAT)	78
MESSAGE FROM THE CHAIRMAN OF BESIX GROUP	10	Watpac presents a world-class stadium to North Queensland (AUS)	80
MILESTONES 2019	12	CONCESSIONS & ASSETS	82
CORPORATE GOVERNANCE	16	A16 Rotterdam: World's first energy-neutral highway (NDL)	82
Creating the highest value for our stakeholders	20	Ajman Sewerage, a textbook example of wastewater management (UAE)	84
BESIX FORWARD STRATEGY	22	Emirates RDF: Turning household waste into a solution (UAE)	86
MAXIMISING EFFECTIVENESS THROUGH VALUE ENGINEERING	26	REAL ESTATE	88
DRIVING INNOVATION AND NEW TECHNOLOGIES	30	Sluishuis (NDL)	88
CITIZENSHIP & SUSTAINABILITY	36	ICÔNE Belval (BEL)	90
Our people	40	Business review	92
PEOPLE	42	CONTRACTING	94
QUALITY, HEALTH, SAFETY AND ENVIRONMENT	46	CONCESSIONS & ASSETS	100
LABOUR STANDARDS	50	REAL ESTATE	104
BESIX FOUNDATION	52	DIVERSIFICATION	108
110 years of global expertise	55	Regional and specialised entities in Europe	112
BUILDINGS	58	COBELBA	114
Smart headquarters in Dordrecht (NLD)	58	JACQUES DELENS	116
Sustainable housing in Masdar City (UAE)	60	LUXTP	118
INFRASTRUCTURE	62	VANHOUT	120
Adding new tracks between Aalter and Beernem (BEL)	62	WUST	122
Underground renovation of the Leopold II tunnel (BEL)	64	BESIX INFRA	124
Improving city traffic flows with the new Shindagha Bridge (UAE)	66	FRANKI FOUNDATIONS	126
MARINE WORKS	68	SOCOGETRA	128
Transforming Duqm into an international hub (OMN)	68	VAN DEN BERG	130
A new quay wall in familiar Port of Zeebrugge (BEL)	70	BESIX finance	132
ENVIRONMENT	72	WORD FROM THE CFO	134
West Africa's largest drinking water treatment plant (CIV)	72	CONSOLIDATED BALANCE SHEET	136
Modernising locks and pumping stations along the canal (BEL)	74	CONSOLIDATED INCOME STATEMENT	137
		CONSOLIDATED CASH FLOW STATEMENT	138
		STATUTORY AUDITOR'S REPORT	139



BESIX AT A GLANCE //



SHINDAGHA BRIDGE, DUBAI, UAE

Company profile

A GLOBAL MULTIDISCIPLINARY PLAYER, WITH OVER A CENTURY OF EXPERIENCE

BESIX Group is a leading Belgian industrial company operating in the **construction, real estate development and concessions sectors**. Founded in 1909, it has grown steadily over the years. A global multi-service group, BESIX is able to take on projects of all sizes and complexity, and draws its strength from its entrepreneurial roots.

NV BESIX SA, its largest subsidiary, offers services in the different stages of construction projects. In addition to NV BESIX SA and its other subsidiaries, BESIX Infra, Cobelba, Jacques Delens, Socogetra, Van den Berg, Vanhout, Wust, Franki Foundations, Lux TP, BESIX RED, in the Benelux and in France, BESIX Group operates in Northern and Eastern Europe, North and Central Africa and the Middle East through its subsidiary Six Construct, as well as in Canada and Australia.

The group takes pride in its **in-house Engineering Department**, a distinctive feature in the industry, which is home to a wide-ranging expertise in geotechnical engineering, concrete technology, methods, planning, BIM, facade expertise and systems engineering, among others. With its “value engineering” capabilities, BESIX is able to optimise the design phase and adapt the implementation processes so as to minimise risks and costs of errors and reduce expenditure and lead times for the customer.

To reduce its risk exposure, BESIX has been diversifying its activities on a geographical and sectoral level, through organic growth, acquisitions or shareholdings. The group’s expansion in the Middle East, where it has built an impressive portfolio over the last 60 years, and more recently in Africa and Australia, illustrates the success of this strategy. Through its many projects and initiatives, BESIX is constantly seeking to consolidate its purpose: **“To excel in creating sustainable solutions for a better world.”**

A DEDICATED PARTNER, FROM CONSTRUCTION TO CONCESSIONS //

Always highly regarded as a valued construction partner, BESIX has become a full-fledged services company that operates on the whole value chain. While construction is still its core business, the group’s Concessions & Assets and Real Estate Development activities have been growing steadily. BESIX can rely on a vast and diversified expertise to take on projects from financing to design and construction to long-term maintenance.



KEY FIGURES 2019 //

BESIX GROUP IS PRESENT IN 25 COUNTRIES ON 5 CONTINENTS



THE GROUP IN 5 KEY DATES //

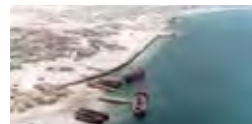
1909 //

Founding of the Société Belge des Bétons, (SBB), which undertakes prestigious construction projects



1966 //

Founding of subsidiary Six Construct to take charge of major projects in the Middle East



2004 //

Management Buy-Out, SBB becomes BESIX Group



2010 //

Inauguration of the Burj Khalifa in Dubai (UAE), the world's tallest tower, built by Six Construct



2018 //

BESIX gains a foothold in Australia with the successful takeover bid for all outstanding shares of the Australian company Watpac Limited.



€3.3 billion

2019 TURNOVER



€42.2 million

2019 NET INCOME



80

NATIONALITIES



Nearly 14,000

PERSONS EMPLOYED

Group Structure

OPERATING ACROSS FIVE CONTINENTS, BESIX ENCOMPASSES MANY BRANCHES AND LEGAL ENTITIES, FULLY OWNED BY THE GROUP. THERE ARE ALSO SOME COMPANIES IN WHICH BESIX OWNS A - MINORITY OR MAJORITY - STAKE.

/// BESIX's branches have been created as the Group has diversified geographically. In most cases, the BESIX name goes in front of the country in which they are established. For example, BESIX Cameroon or BESIX Canada are branches integrated into the "Business Unit (BU) International", just as BESIX Nederland and BESIX France belong to the "BU Europe".

/// Most of the legal entities are companies acquired by BESIX over the last few decades. They are the result of vertical integration and sectoral or geographic diversification. Although they are fully owned by BESIX, many of them have kept their names. For example Watpac (Australia), Lux TP (Luxembourg) or Martello Piling (UK). Besides commercial considerations – vital for companies whose brand embodies their specific expertise – this reflects the policy of controlled autonomy embedded within the Group.

Not all BESIX companies necessarily fall within these two categories.

/// Some companies were created by the Group itself: for example Six Construct, founded in 1966 to develop the Group's activities in the Middle East, or BESIX Real Estate Development established in 1988 to further the Group's real estate development business.

/// Companies in which BESIX owns a stake also retain their identity. This applies to Flamant, for example.



BESIX CONTRACTING

BU EUROPE	BESIX							
BU INTERNATIONAL	BESIX							
BU MIDDLE EAST	Six Construct							
AUSTRALIA	WATPAC							
REGIONAL CONTRACTORS	Jacques Delens	Corebat	Sud Construct					
	Lux TP	Mabilux	Msteel					
	Vanhout	ComTIS Installations	ComTIS Services	Energie-concepten	HBS			
		Isofoam	Vanhout Bilzen	Vanhout Projects				
	Wust	ACMP	Cobelba	SDW	Wust Luxembourg			
SPECIALIZED CONTRACTORS	BESIX Infra	Belasco						
	Franki Foundations	Atlas Foundations	Franki Foundations UK	Franki Foundations Belgium	Able Piling	Franki Grond-technieken	Martello Piling	
	Socogetra	Bagetra	Enrobage Stockem	Vialines	Industries	Quarries		
	Van den Berg	Larabo	Uniconnect					

REAL ESTATE DEVELOPMENT

EUROPE	BESIX RED
--------	-----------

CONCESSIONS & ASSETS

EUROPE	Coen Tunnel	Limmel Lock	Beatrix Lock	A6 Motorway	A16 Motorway	
MIDDLE EAST	ASPCL	ISTP2	Qatra	Safi	RDF UAQ	United Ready Mix
	Moalajah	VEBES O&M	Naqa'a			
HOSPITALITY	Marriott Evere	Sheraton Poznan	H4B Andermatt	Chedi Lustica	BESIX STAY	

DIVERSIFICATION

EUROPE	Flamant	LN 24	Neanex
--------	---------	-------	--------

Disclaimer: not all companies presented in this chart are wholly-owned by BESIX Group. Besides branches and subsidiaries, this chart also presents companies in which BESIX Group owns a substantial stake.

Message from the CEO of BESIX Group

Rik Vandenberghe - CEO BESIX Group



Dear Readers,

In 2019, BESIX Group and its entities began, continued or completed hundreds of construction projects, on five continents. The multiple achievements presented in the pages of this Activity Report are representative examples of them. The Group's 14,000 employees have once again demonstrated their talent, passion and intelligence, showing to our clients and partners the reliability of our group and the excellence which is our main purpose. I would like to congratulate them and thank them with all my heart.

More than ever, BESIX Group will need their qualities and their dedication in the months to come. In March 2020, many worksites were halted or slowed down due to the coronavirus pandemic which has spread around the world. Our first priority has been the health of our employees, their families and their respective communities, as well as actively participating in the various initiatives taken by the states in which we are present.

The second priority is the actions we are taking inside BESIX Group in order to pass through the difficult economic conditions that will follow this pandemic. Inevitably, the financial results for 2020 will suffer.

We are nonetheless confident in our group's ability to overcome the difficulties and challenges that this crisis imposes. In addition to its employees, BESIX Group can rely on its clear strategy, its sense of entrepreneurship, as well as its financial health and operational expertise.

After four consecutive years of growth, BESIX Group closed 2019 with a record turnover of €3.3 billion and an order book of €4.8 billion, also a record. On the other hand, the consolidated net profit, at €42.2 million, is significantly lower than was forecast. Our net cash position is increasing again and our solvency ratio has been above the industry average for many years.



***“OUR FINANCIAL SOLIDITY,
COMBINED WITH THE FIRST-
RATE EXPERTISE WE HAVE
DEVELOPED IN RECENT
YEARS IN FUTURE-ORIENTED
SECTORS, WILL HELP US
TO FACE THE UPCOMING
HEADWINDS.”***

This financial solidity, combined with the first-rate expertise we have developed in recent years in future-oriented sectors, will help us to face the upcoming headwinds.

This forward-looking approach is demonstrated by the cutting-edge infrastructures – road, marine, airport and rail, as well as water and waste treatment – built by BESIX Group in 2019, some of which we also designed and financed, and for which we will provide operations and maintenance for decades.

This year we have also designed, built and developed high-quality buildings of various types, housing and offices in particular, as well as sports and logistics facilities. To these achievements we must also add the many specialist trades in the group's subsidiaries, some of which contributed significantly to our result.

The pages of this activity report give a clear overview of our achievements both in our core business, that is to say construction, and in our two other major activities, real estate development and concessions. Real estate development continues to perform well with record turnover in 2019, while the concessions activity has achieved good results, particularly in the Middle East.

We hope you enjoy discovering them through the following chapters.

Another specificity that makes our group stand out in the sector, is our internal Engineering department. It is also thanks to these in-house experts that we are able, today, to meet the expectations of our clients, offering them unique Value Engineering solutions and undertaking projects of unprecedented scale and complexity.

BESIX Group's investments in innovation are also starting to bear fruit. In 2019, we started our 3D concrete printing activities, experimented with promising new technologies on our sites, and achieved strong performance in terms of sustainability and circularity, especially in the building sector. We have constructed energy-neutral infrastructure and a new generation smart building, to which are added several promising research programmes in which we participate.

Our strong operational skills coupled to our decade-long investment in new knowledge constitute a pledge of the future. Even if it will be difficult, BESIX Group is today equipped to overcome the economic consequences of the coronavirus crisis, and then to continue to grow. We will achieve this by retaining, at the centre of our actions, the values of our group – excellence, passion, unity, co-creation and respect – and by being faithful to our purpose: «Excel in creating sustainable solutions for a better world.»

Thank you for your interest in BESIX Group and in the extraordinary projects that we are carrying out in collaboration with our clients and many partners.

Happy reading,

Rik Vandenberghe
CEO BESIX Group



Message from the Chairman of BESIX Group

Dear Readers,

In 2019, BESIX Group celebrated its 110th anniversary.

During these eleven decades, BESIX and its entities have provided Europe, and in particular the Benelux, with state-of-the-art buildings and infrastructure. Many a time we have stood at the forefront of progress in our business sectors. In the Middle East, through our subsidiary Six Construct, we have been actively contributing to the spectacular development of the Arabian Peninsula, as early as 1965, when only few companies were keen on venturing in this region of the world. From Australia to Africa, we have built the reputation and quality brand of BESIX and its subsidiaries.

We have always been curious to experiment, to dare and to be innovative; often having the courage to do what no one else had ever done before us. The world's tallest skyscraper, harbours or quay walls in hardly-accessible remote locations, a stadium within a limited schedule like never done before. Finally, in all circumstances, we have made sure that our projects are responding to the expectations of our clients. The year 2019 again provides multiple examples, as evidenced in this Activity Report.

Throughout its history, BESIX Group has experienced many crises, economic troubles and wars. The strength of BESIX has always been, not only to overcome them, but above all to transform them into opportunities. For instance, today we are recognised worldwide as one of the most performant companies in the maritime sector. BESIX acquired this expertise immediately after World War I, by committing to rebuild Belgium's ruined canals and locks, to build new ones and carry out the largest infrastructure projects in the country.

The same goes for the period from World War II to the first Gulf War, and from the economic crisis of 1929 to the one of 2008. BESIX Group has always bounced back.

Again, at the start of 2020, we have entered a new time of crisis. Its origin this time is public health-related and it will undoubtedly have deep economic consequences. The coming months will be challenging and for BESIX it will certainly be no exception. However, the Board of Directors and I remain confident. Because if there has been one constant in the history of BESIX Group, it is that of having always employed the most talented, intelligent staff and workers, who are always keen to take up the challenge and explore new paths. It is they who, over the decades, have enabled our group to dare and excel. In 2020, from senior management to workers, BESIX Group can count on the best and I have tremendous confidence in them. Together, we will not only survive this crisis, but will transform it, I am convinced, into new opportunities.

Johan Beerlandt
Chairman of the Board of Directors
BESIX Group



Johan Beerlandt - Chairman of the Board of Directors BESIX Group



“WE HAVE ALWAYS BEEN CURIOUS TO EXPERIMENT, TO DARE AND TO BE INNOVATIVE; OFTEN HAVING THE COURAGE TO DO WHAT NO ONE ELSE HAD EVER DONE BEFORE US.”

Milestones 2019

JANUARY

// BESIX Foundation celebrates its 10th anniversary. The foundation, created on the occasion of BESIX's 100th anniversary, supports associations active in countries where the group operates.

// **READ MORE ON PAGE 52.**

// DMCC awards Uptown Dubai Super Tall Tower Construction Contract to Six Construct. The 339 metre high, 78-storey will provide breath-taking views of Dubai's waterfront and iconic skyline.

// BESIX delivers towing facilities at Port Hedland (Australia). The project includes the installation of mooring pontoons, cyclone moorings, access walkways and services for the new harbour tugs that will service the Capesize vessels shipping iron ore from Port Hedland.



FEBRUARY

// Official opening of the 3rd chamber of the Princess Beatrix lock in Nieuwegein (The Netherlands) by HRH Princess Beatrix.



// BESIX is awarded the construction of the Belgian Pavilion for Expo 2020 Dubai, a reference in the field of eco-design. Under the theme "Smart & Green Belgium 2050", the Pavilion has the shape of a green arch, combining the latest intelligent technologies and technical techniques.



// BESIX Nederland colleagues move into their new 'smart' headquarters in Dordrecht (The Netherlands). Thanks to the interconnection of energy, telecommunication, technology and other systems, this smart building can connect mass of data and draw useful conclusions.

// **READ MORE ON PAGE 58.**



MARCH

// BESIX is awarded the construction of the Zin in N(o)rd building, an example of circular economy in Brussels (Belgium). This major real estate project is a 110,000m² building in the centre of one of Brussels's main business districts.



// BESIX anchors itself in the future with the French pavilion for Expo Dubai 2020. The "Pavillon France" is a 5,100m² futuristic work designed around the theme of light.

APRIL

BESIX's 3D concrete Printing Lab opens in Dubai (UAE).



// The Global Safety Time-out gathers participants from BESIX sites all over the world.



MAY

/// The Refuse Derived Fuel Facility in Umm Al Quwain (UAE) reaches financial close. This plant will treat 1,000 tonnes of municipal waste per day and convert it into RDF.

/// Al Janoub Stadium, formerly known as Al Wakrah Stadium, hosts first football game and welcomes a staggering 40,000 spectators for the Emir Cup Final.

/// **READ MORE ON PAGE 78.**



/// BESIX builds a new logistics platform at Brussels Airport, including warehouses, offices, loading/unloading areas and a covered car park.

/// **READ MORE ON PAGE 76.**

JUNE

/// BESIX is awarded the Rail Baltica Central Station project, including the design and construction of the Riga passenger station, the railway bridge over the Daugava river and the railway embankments.



/// Completion of the Jebel Ali Sewage Treatment Plant in Dubai (UAE), the largest STP project BESIX ever embarked on. It will ensure that all of Dubai's sewage is treated up to international standards and without environmental nuisance.

/// The Berliner Philharmoniker inaugurates the concert hall of the Gotthard Hotel and Residences, which was built by BESIX in Andermatt (Switzerland).



JULY

/// BESIX installs first Clean Air Panels on a pilot project basis along a service road used for the construction of the future N434, a road infrastructure project of the Province of South Holland in The Netherlands.



AUGUST

/// BESIX wins LNG berth marine structure project in Kitimat, British Columbia (Canada). Works include the construction of a 500-meter-long quay wall, an LNG platform and all associated mooring and berthing structures.

/// Launch of LN24, the 24/7 French-speaking news channel in Belgium.

/// **READ MORE ON PAGE 111.**

SEPTEMBER

// Start of the construction of a new 1,071 meter quay wall by the Southern Canal Dock in the inner port of Zeebrugge (Belgium).

// READ MORE ON PAGE 70.



// Over 1,700 employees worldwide roll up their sleeves to clean the public spaces around sites and offices. As many as 774 garbage bags or five tons of litter were collected!



// Inauguration of the Crown Princess Mary's Bridge over the Roskilde Fjord in Denmark, completed three months ahead of schedule.



OCTOBER

// BESIX and NDI GROUP are awarded the contract to build a shipping channel through the Vistula Spit peninsula, in Poland. Works include breakwaters, quays, a channel, lock infrastructure with rotating bridges and sluice gates, buildings and roads, as well as an artificial island.



// Re-opening of the flagship store Flamant Sablon in Brussels (Belgium). The façade features the new Flamant logo and the tagline 'You're Home'.

// READ MORE ON PAGE 108.



// BESIX Nederland is the first company in complex utility construction and one of the first in civil construction in The Netherlands to obtain the step 4 certificate of the Safety Culture Ladder (SCL).



// Six Construct wins the Shindagha Corridor Project in Dubai (UAE). The project is focused on improving various local roadways in the heart of Dubai.



NOVEMBER

/// Six Construct receives two awards from client RTA (Dubai Road Transport Authority) for Best Contractor - Mega Projects 2019 and Best Contractor for HSE performance 2019, for the Shindagha “Infinity” Bridge Project.



/// Official opening of the 100% energy-neutral sewage treatment plant in Tiel (the Netherlands). The plant will produce 3.6 million kWh biogas yearly, enough to make it energy neutral.



/// Official opening of the first A-STAY hotel, located in Antwerp (Belgium).



DECEMBER

/// BESIX RED delivers the new global headquarters of FERRERO International Agribusiness Group, right next to the Grand Duchy of Luxembourg international airport.





Corporate Governance

BESIX Group follows the Belgian recommendations on corporate governance for unlisted companies ('Code Buisse III'). BESIX Group has structures and rules in place to ensure effective corporate governance, risk management and control both in each BESIX Group company and within the organisation as a whole. The group promotes a similar corporate approach within its subsidiaries and entities. The Board of Directors, assisted by advisory committees, plays a leading role in outlining, monitoring and controlling such structures and rules and in securing the day-to-day operational and financial management of the group and its entities by the Chief Executive Officer and the senior management.

The Board includes four external directors, whereby a balanced configuration ensures authority, expertise and independence, and the positions of Chairman and Chief Executive Officer are separated. Decisions are also taken after ample deliberation and consultation and the functioning of the Board is regularly reviewed, also in the light of the prevailing shareholders' arrangements. A number of advisory committees are organised within the Board of Directors to prepare its deliberations and optimise its decision-making process. These committees prepare the topics discussed during the Board meetings, assess the effectiveness of the internal controls in place and formulate opinions and recommendations:

- // The Audit Committee supervises the setup of the statutory and consolidated financial statements, the interim financial reports and the relations with the statutory auditor. It works closely with representatives of the senior management, monitors the internal control and risk management systems and the main risks associated with the activities of the group and its entities, and operates in accordance with its charter;
- // The Remuneration & Nominations Committee evaluates the performance of the senior management, oversees the HR policies of the group and its entities and pays specific attention to succession management;
- // The Executive & Strategic Committee focuses on the vision, mission and strategic objectives of the group and oversees the business activities and performance as well as the risk management and internal control and organisation, as implemented by the Chief Executive Officer and the senior management.

BESIX has published the fourth edition of its BESIX Group Citizenship & Sustainability report (2017-2018). The biennial report aims to inform stakeholders about the group's commitments regarding climate change, workers' rights, safety and well-being for all staff members, sustainable engineering solutions, responsible supply chain and contributions to local communities.

BOARD OF DIRECTORS AND COMMITTEES



Johan Beerlandt



Rik Vandenberghe



Osama Bishai



Jérôme Guiraud



Ihab Mehawed



Paddy Padmanathan



Philippe Quoilin



Baron Jean Stéphenne



Wouter De Geest



Baron Philippe Vlerick

Board of Directors

Name	Position	End of term
Johan Beerlandt ¹	Chairman	2022
Rik Vandenberghe ²	Managing Director, Chief Executive Officer	2020
Philippe Quoilin ³	Director	2022
Osama Bishai	Director	2022
Jérôme Guiraud	Director	2022
Ihab Mehawed	Director	2022
Wouter De Geest	Independent Director	2021
Baron Jean Stéphenne ⁴	Independent Director	2020
Suntharesan Padmanathan	Independent Director	2020
Baron Philippe Vlerick	Independent Director	2022

Ridder Luc Vandewalle

Honorary Director

Remuneration Committee

Johan Beerlandt¹ (Chairman)
 Rik Vandenberghe²
 Baron Jean Stéphenne⁴
 Baron Philippe Vlerick

Audit Committee

Baron Philippe Vlerick (Chairman)
 Wouter De Geest
 Jérôme Guiraud

1. Permanent representative of Bevafin SPRL
 2. Permanent representative of Audymatt SPRL
 3. Permanent representative of Philippe Quoilin SPRL
 4. Permanent representative of Innosté SA

EXECUTIVE AND STRATEGIC COMMITTEE



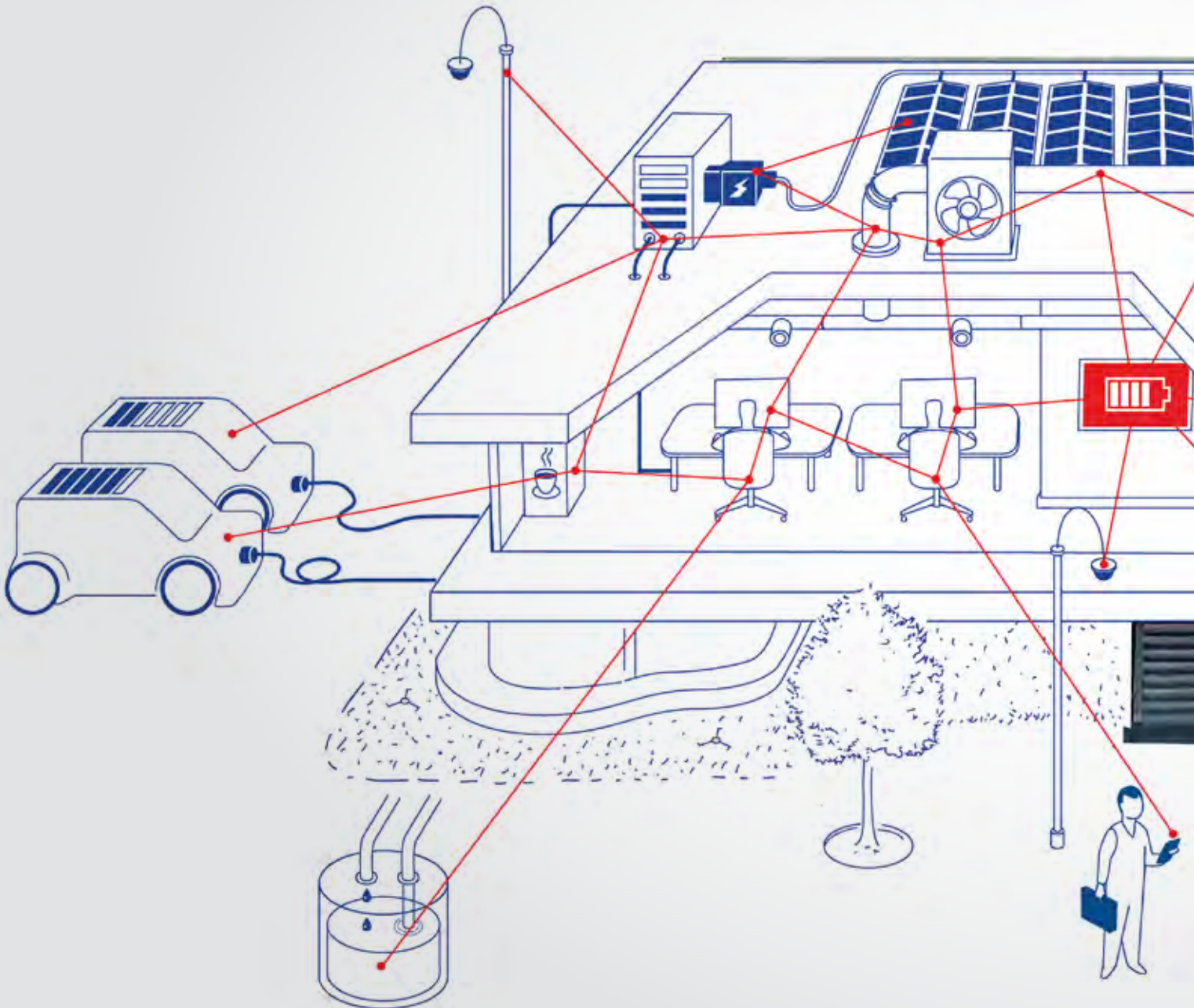


From left to right:

- // **Frédéric de Schrevel**¹
Secretary General - General Counsel
 - // **Gabriel Uzgen**
Managing Director
BESIX Real Estate Development
 - // **Tom Neyrinck**
General Manager
Concessions & Assets
 - // **Rik Vandenberghe**²
Chief Executive Officer
 - // **Pierre Sironval**
Chief Operating Officer
Managing Director Six Construct
 - // **Johan Beerlandt**³
Chairman of the Board of Directors
 - // **Geert Aelbrecht**⁴
Chief People Officer
 - // **Mathieu Dechamps**
General Manager
Business Unit International
 - // **Jean Polet**
General Manager
Key Projects
- Not in this picture:**
- // **Jan Gesquière**⁵
Chief Financial Officer
 - // **Jan Van Steirteghem**
General Manager
Business Unit Europe

1. Permanent representative of Arthepa SPRL
 2. Permanent representative of Audymatt SPRL
 3. Permanent representative of Bevafin SPRL
 4. Permanent representative of Gacco SPRL
 5. Permanent representative of Jabel SPRL

CREATING THE HIGHEST VALUE FOR OUR STAKEHOLDERS //





BESIX Forward: meeting tomorrow's challenges

Changing construction market

The world in which we operate and the construction sector are undergoing profound changes. In response to these changes, BESIX has defined the foundations of its strategy to support its capacity to innovate, maintain a high level of quality, face competition, meet new financial requirements and diversify.

Technological:
artificial intelligence, blockchain, augmented reality, 3D printing...

Environmental:
energy efficiency, energy neutral, new materials...

Competitive:
risk sharing, shrinking margins, talent war...

6 strategic drivers

01//

BEING A LEADER IN OPEN INNOVATION

We are ready to experiment. We are already running our 'Unleash' innovation program, as well as our own Start-Ups Accelerator.

02//

PROMOTING OPENNESS TOWARDS NEW VENTURES

We have been known for decades for our entrepreneurial spirit. We need to continuously explore and to react positively to new opportunities.

03//

DEVELOPING "ONE-STOP-SHOP" SOLUTIONS

Our Group has unique capabilities and a multiservice offer, meaning we can provide solutions throughout the value chain, from "develop" to "operate and maintain".

04//

LEVERAGING ON OUR CUSTOMER CENTRICITY

It is key for our business to really know our clients, understand their needs and satisfy them to achieve the desired results. Doing this better than our competitors will be a major differentiating aspect.

05//

PROMOTING A GREAT PLACE TO WORK

Our ability to provide a great employee experience in an open community of enthusiastic colleagues is a defining factor in our successes of tomorrow.

06//

CREATING SYNERGIES ACROSS THE GROUP

This means 'working light' by simplifying and harmonizing our internal processes. This can include common choices of tools, organizational formats and resource allocation across the Group.

5 values



Excellence

This takes us straight back to our corporate purpose and trademark: to always excel in what we do.



Passion

We are all passionate about our jobs.



Co-creation

We need to demonstrate this every day, by pooling our minds and skills, and advancing forward.



Unity

As the proverb goes: "alone we are smart, together we are brilliant". Despite the size of our company, there is an attitude where colleagues stand up for each other and are ready to lend an extra hand to help others succeed.



Respect

Respect is treating others as you want to be treated. Respect is all about attitude. It is vital to create an atmosphere of comfort and trust for everyone.

Purpose

“Excel in creating sustainable solutions for a better world”.

This mission gives our actions a goal that goes far beyond profit. It is pivotal, inspiring our decisions and actions based on a simple question: what kind of future do we want and how do we make it happen? By encouraging new ideas, assuming our responsibilities in a proactive way and by excelling in all of our initiatives, we believe that we can help bring about positive change - economic, societal and environmental.



WHAT BEGAN 110 YEARS AGO HAS GROWN INTO THE LARGEST CONSTRUCTION COMPANY IN BELGIUM AND A GLOBAL MULTIDISCIPLINARY PLAYER. THROUGHOUT THE DECADES, BESIX HAS BUILT ROADS THAT CONNECT COMMUNITIES, DUG PORTS TO ACCOMMODATE SHIPS COMING FROM ALL OVER THE WORLD, DEVELOPED NEIGHBOURHOODS WHERE PEOPLE LIVE, LEARN, WORK, AND RELAX.

To maintain its relevance for society, BESIX needs to rely on a clear and sensible purpose and a well-conceived strategy that sets it apart from its competitors.

BESIX Forward outlines the strategic direction that BESIX follows since 2018. The aim is to increase shareholder value while working toward a more sustainable future for employees, clients and communities.

The world in which we operate and the construction sector are undergoing profound changes. In response to these changes, BESIX has defined the foundations of its strategy to support its capacity to innovate, maintain a high level of quality, face competition, meet new financial requirements and diversify. BESIX Forward is built around six strategic drivers aimed at meeting these different challenges.

01 // BEING A LEADER IN OPEN INNOVATION

The digitisation of working methods in the construction sector has been a steadily accelerating trend for several years. Internet of Things, artificial intelligence, blockchain, robotics, augmented reality, new materials, 3D printing... These technologies can have a decisive impact on operational performance and sustainability, one more reason for BESIX to make innovation a priority.

BESIX supports the development of internal innovation: from opening a 3D-concrete printing unit in Dubai, to manufacturing panels equipped with vegetable moss, intended to reduce locally the concentration of fine particles and improve air quality, many internal initiatives have been commercialised in 2019

// READ MORE ON PAGE 32.

Next to this, BESIX welcomes start-ups active primarily in smart building, robotics, construction 4.0 and artificial intelligence, provides them support and opportunities for experimentation for free during 12 months. Several of them were able to try out their products and services on construction sites during the year. By experimenting with them, the Group gives itself a chance to adopt them early, thus creating added value for its customers.

// READ MORE ON PAGE 34.

02 // PROMOTING OPENNESS TOWARDS NEW VENTURES

Staying open to all new business opportunities and activities is another driver that lies at the very centre of BESIX's DNA: entrepreneurship. It involves a constant curiosity for new products and services, and boldness in seizing potentially promising opportunities. It is these opportunities and new business activities that allow us to diversify and to take on board new skills. And in this way to differentiate ourselves and to continue to grow.

For instance, since 2018, BESIX and Proximus have been developing new solutions for intelligent buildings. In 2019, BESIX built its first 'Smart Building' in Dordrecht, the Netherlands. This building, which houses the headquarters of BESIX Nederland, is now considered a European reference in the field, particularly in terms of energy management and efficiency. In collaboration with by Nubian, Elia, Fluvius and Proximus, BESIX is also participating in a pilot project focusing on the development of an Internet of Energy that allows buildings to act as vital components in a renewable energy landscape.

// READ MORE ON PAGE 58.





03 //

DEVELOPING “ONE-STOP-SHOP” SOLUTIONS

In a multi-services group like BESIX, the several entities and subsidiaries cover almost every area of construction, from early upstream to far downstream the value chain. Thanks to its wide range of areas of expertise and specializations, BESIX can offer efficient and integrated solutions to its clients. This «One-Stop-Shop» approach allows to optimize planning and execution methods and to reduce costs for the customer.

The railway widening project in Aalter Beernem is such an example of a successful collaboration between BESIX, BESIX Infra and Van den Berg. By favouring an integrated approach, BESIX was able to offer all the disciplines required for the project under one roof and to submit a particularly competitive bid, both in terms of costs and management and execution of the works.

// READ MORE ON PAGE 62.

04 //

LEVERAGING ON OUR CUSTOMER CENTRICITY

Decade after decade, BESIX is concentrating on strengthening its relationships with its customers. This is because a better understanding of their environment and strategy enables BESIX to create new opportunities, to bring added value and to optimize its efficiency, in a win-win way.

To understand the long-term interests of its customers and to respond to them in a 100% adapted way, BESIX is guided by a clear account management system. This approach enables BESIX to establish effective partnerships with its key customers, such as with PFO Africa. This collaboration has generated a relationship of trust, which help bring in the La Mé contract.

// READ MORE ON PAGE 72.

05 //

PROMOTING A GREAT PLACE TO WORK

BESIX thrives on the commitment and wellbeing of its employees. It's they who make all the difference! Ensuring good working conditions is a priority for BESIX worldwide. All employees are important: whether they are migrant workers in the Middle East, expatriates or locals working on European, African or Australian sites. Each of these people contributes directly to the life and success of BESIX. Each of them is important to the group. That's why BESIX anchors itself in a strong people-oriented strategy “#WeCare” to place its employees even more at the heart of its business.

// READ MORE ON PAGE 42.

06 //

CREATING SYNERGIES ACROSS THE GROUP

Another key part of the BESIX strategy is the simplification and harmonization of internal processes. Major harmonization processes are in progress and keep being stepped up. They cover a variety of aspects, including human resources policies, IT processes, purchasing and accounting practices. For example, as far as purchasing is concerned, BESIX now has ultra-specialised purchasers for specific product categories, serving all group companies globally, to generate substantial economies of scale.



Thanks to this clear strategy, BESIX can have a considerable and positive impact on society as part of its profitable business. Because of its international scope, BESIX has indeed a duty to support economic, social and environmental progress and to improve the quality of life of people everywhere it operates. The ultimate goal is to have a positive impact, to make the economy more sustainable, to contribute to the preservation of the planet and the legacy left to future generations.

// READ MORE ON PAGE 36.

Maximising effectiveness through Value Engineering

PROVIDING SPACE FOR CREATIVITY AND INNOVATION

WHAT STARTED MORE THAN 40 YEARS AGO AS A SMALL ENGINEERING UNIT HAS GROWN INTO A SEPARATE DEPARTMENT WITHIN BESIX, WITH OVER 200 EMPLOYEES IN BRUSSELS, DUBAI AND BRISBANE. FOR BESIX ENGINEERING, 2019 WAS ALL ABOUT VALUE ENGINEERING AS THE BASIS FOR THE FUTURE.

MOHAMMED VI TOWER, RABAT, MOROCCO





“A CLIMATE THAT FACILITATES INNOVATION NEEDS TO BE A SAFE CLIMATE.”

**JAN VAN STEIRTEGHEM,
DIRECTOR OF ENGINEERING**

Looking back we see that 2019 was a busy year for the construction sector. BESIX Engineering was able to contribute to countless exciting projects, both nationally and internationally, including the energy-neutral tunnel on Rotterdam’s new Groene Boog ring road, the prestigious Mohammed VI Tower in Morocco and the LNG terminal in Mozambique, a unique marine engineering project. “In 2019 we delivered high-quality operational work that forms the foundation for our future approach,” says Jan Van Steirteghem, Director of Engineering. “We took major steps forward in the field of parametric design. To this end, we are working together with, among others, the Dutch scale-up Viktor with its catchy slogan ‘Automate the boring, engineer the Awesome!’. That perfectly describes our approach. Repetitive elements are worked out by the computer, allowing our people to focus on their search for innovative solutions. Such an approach guarantees the adaptability of a design, freeing up time and space for creativity.”



A16 ROTTERDAM, THE NETHERLANDS



DARING TO ADAPT FASTER

One result of this focus on creativity is the development of ‘green concrete’, in which BESIX Engineering already cooperated in 2018. Jan Van Steirteghem: “Concrete’s merits as a building material are well-known, but unfortunately it comes with a heavy ecological footprint. The challenge is to find and develop an ecologically responsible concrete that can be applied in reduced quantities while maintaining the current quality. In 2018 we helped create green concrete, and in 2019 we experienced its breakthrough. We will shortly be using it for BEFIMMO’s ‘Zin in No(o)rd’ project in Brussels. As we strive for an increasingly circular economy, this product means added value.” Jan Van Steirteghem sees a role for both the government and the construction sector to facilitate the entry of similar developments into the sector. “The quality of sustainable recycled materials has greatly improved, allowing the normative framework to evolve with it. If that does not happen fast enough, you block innovation. Both the construction sector and the government have to dare to adapt standards faster and take a risk every now and then: our climate is almost literally crying out for it.”

From that point of view, BESIX started the ball rolling a good five years ago with lean building. This option is now bearing fruit. “If we want lean building to become commonplace, we have to increasingly work as colleagues rather than competitors. Such a cultural change obviously takes time. In any project it is important that everyone’s noses, those of architects, engineering firms, developers and contractors, all point in the same direction. Only then will we build the most optimal projects where the (failure) costs are minimal.”



“WE LEAVE THE COMPUTER TO WORK OUT THE REPETITIVE ELEMENTS, ALLOWING OUR PEOPLE TO FOCUS ON THEIR SEARCH FOR INNOVATIVE SOLUTIONS.”

**JAN VAN STEIRTEGHEM,
DIRECTOR OF ENGINEERING**

CONVERTING DATA INTO ADDED VALUE

When selecting projects, BESIX engineering's preference goes to assignments where engineers' input is as large as possible. Digitisation can play an important role in this. "Where it used to be *"No BIM unless ..."*, it is now *"Yes to BIM unless ..."*. In-depth digitisation creates enormous added value if it is implemented from day one. Unfortunately, as engineers we rarely sit at the table from day one," says Jan Van Steirteghem.

You can consider BIM as the catalyst for the digitisation of the construction sector. You build a building before it is actually erected. "It's now time for the next step. You create a huge amount of data during a BIM process, but how are you going to convert that data into long-term added value? A BIM approach only really pays off when the data structure is clearly defined from the outset. Fortunately, the young generation of engineers is increasingly thinking in data structures. Together with the customer, we develop a vision for applying the collected data during the operational and facility management phase and thereby minimising the operational costs. In this way you create a database with which you can make a building intelligent and, for example, reduce energy consumption. You can even go one step further and design a building so that it becomes an active player on the energy grid instead of a stupid consumer."

// Business culture

PROVIDING SPACE FOR CREATIVITY

People have to be given the space to express themselves creatively, Van Steirteghem says. "In our very operationally-focused construction sector, that is not obvious. Anyone who dares to create room for creativity will reap the benefits in the long term. At BESIX, we do this, among other things, through targeted project choices, looking not only at the turnover, but also at the margin, which needs to offer sufficient room for a creative approach."

Continuity, trust and a positive workplace atmosphere are the cornerstones of a stable corporate culture. "As the head of department, you have to communicate transparently and listen to your people. At BESIX Engineering we strive for an environment where growth potential is central. We offer opportunities and support where we can to both young and older employees with ambition."

In 2017, BESIX was already one of the very first European construction companies to receive the BIM Level 2 certificate, by meeting the criteria of the PAS 1192-2 standard. In February 2020, BSI Group, founder of the leading standards, awarded BESIX the ISO 19650-2: 2018 certificate, the world's first international standard for Building Information Modelling. These are attractive acknowledgements of BESIX's pioneering work, which translates into customer benefits in terms of quality assurance and reduced failure costs.

BROAD EXPERTISE

At the start of a construction project, the engineering department looks for a robust and comprehensive plan, including elements to positively surprise the customer. Such as an alternative formwork method or a smart building concept. This demands a small investment in the short term, but increases the long-term added value of the building. "We are applying our minds to possible cycles to optimise the building process and looking at other options such as modular building and off-site construction."

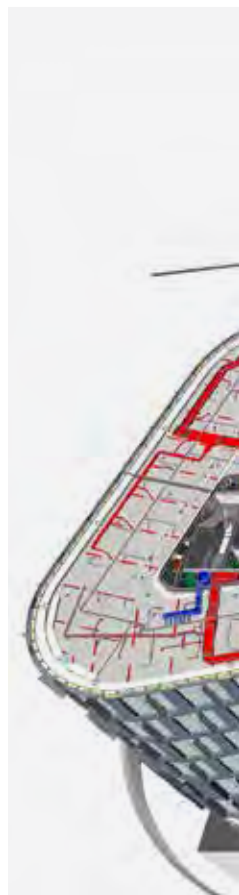
The façade team set up in 2017 illustrates BESIX Engineering's focus on having the widest-based possible in-house expertise. "We now have a large 35-person group focusing specifically on the engineering of façades under the name BESIX Façade. This allows us to integrate the façade, a dominant part of a building in terms of both aesthetics and sustainability, perfectly into the design from the outset."

A particular project in the area of facade engineering was the Al Janoub Stadium in Qatar, designed by Zaha Hadid Architects, for which BESIX Engineering worked out the entire roofing and facades. "A phenomenal project. All the data for producing the panels came from the digital model. Another major feat is the design of the Mohammed VI Tower in Rabat. During the design phase of the highest tower in Morocco, we focused strongly on parametric design."



"WE WANT TO DESIGN EACH PROJECT BETTER THAN THE PREVIOUS ONE."

**JAN VAN STEIRTEGHEM,
DIRECTOR OF ENGINEERING**





“WE HAVE INCREASINGLY TO BECOME COMPETING COLLEAGUES INSTEAD OF COMPETITORS.”

**JAN VAN STEIRTEGHEM,
DIRECTOR OF ENGINEERING**

FOCUS ON A MORE SUSTAINABLE CONSTRUCTION SECTOR

Jan Van Steirteghem describes sustainability in the construction sector as a train that cannot be stopped. “More than that, we have to accelerate where possible. This requires, however, a much greater stimulus from the government. A climate that facilitates innovation needs to be a safe climate. This is something we strive for in the engineering department. We want to design each project better than the previous one. It does not always have to be disruptive innovations, but every innovation, large or small, is a step towards a more sustainable construction sector. This requires us to continue to invest heavily in the preparation of our construction projects, to think about the life cycle of buildings, and above all, to increase trust between the various partners in our sector. Only then will we continue to take the necessary steps forward.”

KEY FIGURES 2019//

BESIX ENGINEERING DEPARTMENT

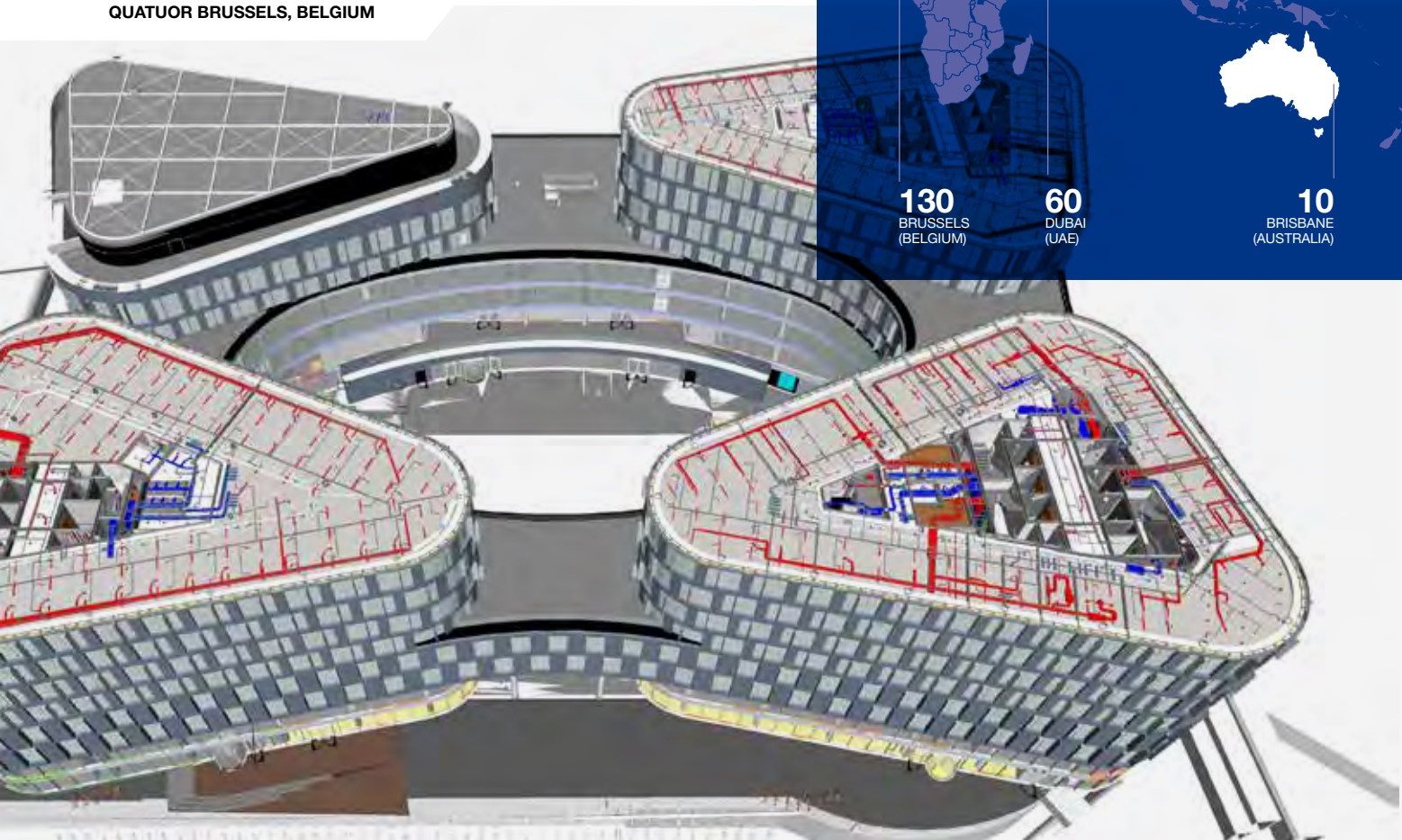


200

EMPLOYEES WORLDWIDE



QUATUOR BRUSSELS, BELGIUM



Driving innovation and new technologies

A LEADER IN OPEN INNOVATION

OPEN INNOVATION IS ONE OF THE SIX PILLARS OF THE 'BESIX FORWARD' STRATEGY. "WHAT IS CALLED 'INNOVATION' TODAY ARE THE POTENTIAL BENEFITS FOR TOMORROW. SOLUTIONS THAT ENABLE US TO CREATE ADDED VALUE FOR OUR CLIENTS. BESIX'S APPROACH IS TO GET INVOLVED IN THE DEVELOPMENT OF NEW IDEAS AND START-UPS AND THEN TO TRY THEM OUT IN OUR DEPARTMENTS AND ON OUR SITES", EXPLAINS PATRIK PEYNSAERT, INNOVATION COORDINATOR.

INTERNAL AND EXTERNAL IDEAS

Created in 2016, the Unleash program consists of a series of initiatives focused on open innovation. One of them is an internal innovation competition (see page 33) that gives every BESIX employee the opportunity to propose innovative ideas. This has led in recent years to the creation of quality projects, both focused on improving BESIX's operational performance and on the development of new services. For example 3D printing of concrete or the development of moss panels to process fine particles.

"Our Group can count on creative and passionate colleagues over 5 different continents. They are the first axis of our innovation strategy. Our own people", says Thomas Vanderbergh, president of the Innovation Board. "The second axis is external. There are also billions talented brains and hands outside our group. We also want to partner with them to co-create innovative solutions. Hence the concept of 'open innovation': good ideas can appear anywhere. We want to support them as much as possible and create a mutually beneficial relationship."

In this spirit, in 2018, BESIX created a start-up accelerator (see page 34), open to mature projects from all over the world. BESIX Start-Ups Accelerator today hosts nine start-ups, mostly active in robotics, construction 4.0 or artificial intelligence. It provides them with tailor-made support and opportunities for experimentation on construction sites.

BESIX has also set up partnerships with specific research fields. Since 2018, this is the case of a collaboration with Proximus, leader in the ICT sector in Belgium, to develop solutions in the field of 'Smart Buildings'. In 2019, BESIX built a first building of this type in Dordrecht, the Netherlands

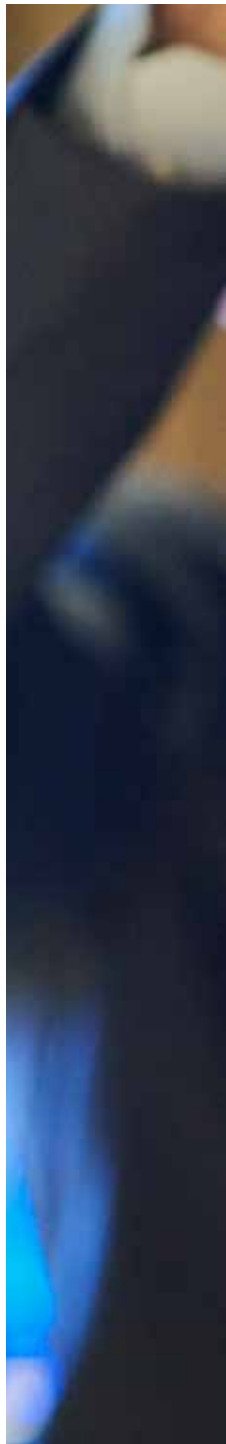
(see page 58). This building, which houses the headquarters of BESIX Nederland, is now considered to be a European reference in the field. In the same spirit, in collaboration with byNubian, Elia, Fluvius and Proximus, BESIX is participating in the Enleash program, a pilot project focused on the development of an Internet of Energy. 2019 was also the year the group started a collaboration with the Antwerp Management School in their Chair Corporate Innovation.

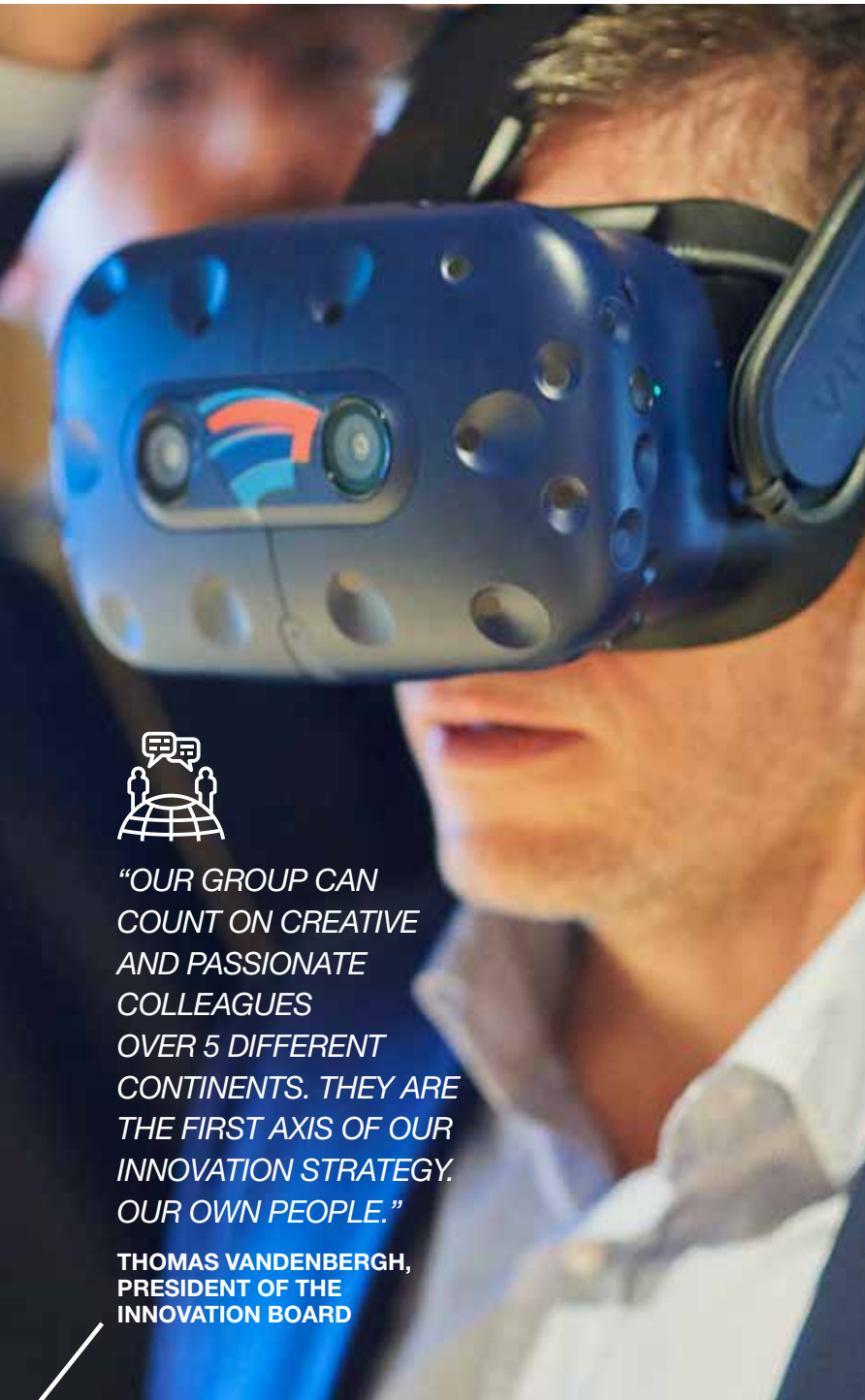
A NEW CULTURE

"Within BESIX, we want 100% of our entities to use innovative solutions on their projects and that each company or department is able to propose new ideas to their customers and partners", explains Peter Bertels, Senior Manager Creativity & Digital Enabling. Their respective experiences and good practices are then shared and gradually disseminated internally.

However, BESIX's objective is not to innovate alone, with a single objective of competitive advantage. On the contrary. "We want to contribute to the emergence of a state of mind turned towards innovation. In the construction sector, this is a cultural change in itself. It is fundamental to achieve it all together: if the sector is to open up to new technologies, there must be a general movement and a shared will."

This is why, in October 2019, BESIX organised a very first Innovation Fair. 27 exhibitors, linked to the innovation initiatives from all entities of our Group, presented their solutions to a large audience of competitors, customers and partners. "This is our vision of the 'leader' concept of open innovation: we are stronger together", concludes Thomas Vanderbergh.





“OUR GROUP CAN COUNT ON CREATIVE AND PASSIONATE COLLEAGUES OVER 5 DIFFERENT CONTINENTS. THEY ARE THE FIRST AXIS OF OUR INNOVATION STRATEGY. OUR OWN PEOPLE.”

**THOMAS VANDENBERGH,
PRESIDENT OF THE
INNOVATION BOARD**



// DeliverApp: an example of collective innovation

Developed by BESIX Infra, DeliverApp consists of digitizing the reception of deliveries to construction sites. Concretely, by using QR Codes, paper delivery notes are replaced by a fast, simple and efficient digital operation. This speeds up the administrative process, which is beneficial for both the supplier and the site manager. “DeliverApp is a perfect example of an innovation that only makes sense if it is widely shared within the industry,” says Peter Bertels. Today, supported by the Association of Belgian Contractors, the solution has already been fully adopted by two key suppliers in the construction sector, about 10 suppliers are working on implementation, and it continues to spread.

Want to know more? Just scan this QR Code:



// Hackathon: ‘Smart Buildings for Smart Cities’

BESIX’s leading role in the field of open innovation is increasingly recognized within the sector. For example, from 11 to 13 October 2019, at the request of the Brussels-Capital Construction Confederation, BESIX co-organized the ‘Smart Buildings for Smart Cities’ Hackathon.

This event brought together around fifty participants from various sectors of activity, including five BESIX employees. Divided into seven teams, their task was to develop solutions based on the theme of smart cities, and then to defend them before a jury. It was the “SOLAR OPT” project that won the first prize in the Hackathon. Its concept is to use the Internet of Things to measure and monitor the performance of solar panels and to ensure that a cleaning team equipped with a robot can intervene in the event of a problem.

“As a facilitator, it was exciting to see how vague ideas on Friday evening can be turned into really concrete projects in just two days, thanks to enthusiastic people with complementary profiles,” says Peter Bertels.

INTERNAL INNOVATION PROJECTS

BESIX SUPPORTS THE DEVELOPMENT OF IN-HOUSE INNOVATIONS. SEVERAL OF THEM HAVE BEEN SELECTED THROUGH INTERNAL INNOVATION CONTESTS, OPEN TO ALL BESIX EMPLOYEES. THESE NOTABLY INCLUDE BESIX 3D, BESIX CLEAN AIR AND BESIM.

BESIX 3D

BESIX 3D specialises in concrete printing. Compared to traditional construction methods, printing concrete in 3D guarantees a shorter construction time, a safer working environment, higher freedom in shape, zero waste and zero CO₂ emissions.

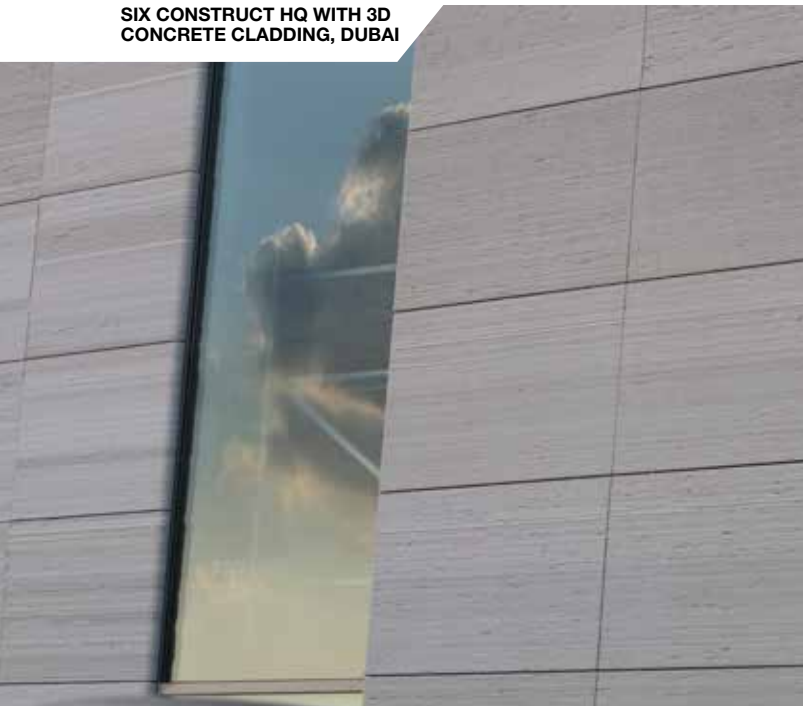
A 3D STUDIO

In April 2019, BESIX 3D opened a state-of-the-art printing facility in Dubai. Its main equipment is the KUKA robotic arm, set up in the middle of the production hall to optimise its printing capacity. Another specialised device is the concrete mixing pump, connected to a silo for direct and uninterrupted supply of 3D mortar.

BESIX 3D



SIX CONSTRUCT HQ WITH 3D CONCRETE CLADDING, DUBAI



SUSTAINABLE CONCRETE MIXTURES

Together with partners Ghent University, Resourcefull and Witteveen+Bos, BESIX is researching sustainable concrete mixtures for the 3D printing of breakwater units.

THE DECIDUOUS PAVILION

Deciduous is a 3D printed pavilion sculpture, with concrete elements fully printed by BESIX 3D. The sculpture was commissioned by Dubai International Financial Center (DIFC) and designed by MEAN* (Middle East Architecture Network). Exclusively of sustainable materials, the Pavilion was on display in Dubai's financial district as part of the DIFC Art Nights, in November 2019.

BESIX CLEAN AIR



BESIM

BESIX CLEAN AIR

BESIX Clean Air makes air-filtering panels with a moss multilayer. The panels are aimed to locally reduce the fine dust concentrations and improve the overall air quality.

HOW IT WORKS

Polluted air is extracted by fans and blown through a natural filtering membrane containing different moss species. The panels are fitted with sensors that collect environmental and performance data. Integrated IoT technology automates irrigation and ventilation systems. Moss vegetation also absorbs noise, makes cities greener and reduces urban heat island effects.

UNIVERSITY OF ANTWERP

From 20 August to 26 September 2019, BESIX Clean Air's panels were tested at the Faculty of Applied Engineering Sciences of the University of Antwerp. The test consisted in monitoring the rate of fine particles (i.e. PM10 & 2.5) captured by the panels through a scientifically valid methodology. The study revealed an average filtration efficiency of 43.1 % for PM10 and 22.8 % for PM2.5. These results are beyond expectations and indicate that the concept has a significant effect on the air quality nearby dense traffic roads in populated areas.

PILOT PROJECT ON THE N434

On 17 July 2019, panels were installed on the future N434 (RijnlandRoute), in the Netherlands. This road infrastructure project is undertaken by the COMOL5 consortium, for the Province of South Holland. COMOL5 is an international joint venture consisting of TBI Holdings, DEME and Vinci.

BESIX Clean Air has installed a 30 meter long moss wall with 45 m² active surface near a service road. The aim was to protect workers from environmental fine dust. In addition, it served to validate theoretical results and to measure more precisely the technical performance of the panels. Though the measurements during the third quarter showed an average air filtration efficiency of 11 % (PM10) and 18 % (PM2.5), this pilot project showed that extreme hot weather conditions require specific attention and that adequate connection to the internet is essential for the long-term performance. This will help the BESIX Clean Air team further improve the system in 2020.

PARTNERS

Besides University of Antwerp and COMOL 5, BESIX Clean Air has been able to count on many partners during the development of this product, both internal, such as BESIX Environment, and external with decisive assistance coming from Innoviris (Brussels innovation agency), the University of Liège and Achilles Design.

BESIM: BESIX SITE INSTALLATION MANAGEMENT

BESim standardises BESIX's site installations and make them more environmentally friendly, more economical and more comfortable.

HOW IT WORKS

The objective of BESIM is to relieve the operational teams during the start-up phase of the works by a quick but careful installation of site facilities offering increased user comfort. Major attention is also paid to minimising the energy consumption and reducing the facilities' ecological footprint.

DUBAI UPTOWN TOWER (DUT)

In 2019, in cooperation with Enerwhere, BESim has set a world record for the largest solar plant on a construction site. A 3,200 m² solar system was installed and produced up to 50% of the construction site's electricity needs. The site's facilities were also the largest ever installed by BESIM.

EARLIER PROJECTS

BESim is now used on multiple construction sites carried out by BESIX, both in Europe and in the Middle East. At the Port of Antwerp for example, where BESIX has deepened 600 metres of quay walling, the entire BESim installation was up and running in just one day. Equipped with solar panels, it also proved to be perfectly insulated, both in winter and summer.

COMTIS ENERGY: 'COMFORT AS A SERVICE'

In 2019, Vanhout launched 'Comfort as a Service' via its subsidiary ComTIS Energy. The concept was born within the framework of Unleash, BESIX's internal innovation competition. It consists of providing sustainable heating and cooling for residential buildings on a subscription basis.

A first contract was signed in 2019 with real estate developer Cores Development for its De Tuilerie project in Diest (Belgium). This is a district of the city that will not be connected to gas. It is ComTIS Energy that will organise the heating supply for the complex for 15 years, notably by optimally using sustainable energy sources with a low total cost of ownership.

Residents will therefore have nothing to worry about except paying their subscription. The subscription consists of a fixed part (for the repayment of the investment and maintenance) and a variable part (proportional to the individual energy consumption). ComTIS Energy is responsible for the optimal organisation and maintenance of the heating system.

BESIX START-UPS ACCELERATOR

IN 2019, THE BESIX ACCELERATOR SELECTED FIVE NEW START-UPS, BRINGING TO NINE THE NUMBER OF COMPANIES IT HAS SUPPORTED SINCE IT WAS LAUNCHED IN 2018. DURING THE YEAR, CERTAIN OF THESE START-UPS WERE ABLE TO TEST THEIR SERVICES ON GROUP SITES.

A 'start-up' designates a young company that is developing innovative services with strong growth potential. The role of the BESIX accelerator is to amplify this growth by providing start-ups with tailor-made support and possibilities to experiment.

The BESIX Start-Ups Accelerator is open to mature start-ups from around the world that are developing services that tie in with the group's activities.



CAD.42

"WE TESTED CAD.42 FOR MONITORING TWO CRANES. THE WAY WE USE OUR CRANES IS A MAJOR CONTRIBUTING FACTOR TO OUR SUCCESS. GIVEN THEIR HIGH OCCUPANCY RATE, IT WAS ESSENTIAL TO MONITOR THE CRANES' OPERATIONS IN ORDER TO OPTIMALLY ADAPT OUR WORKING METHOD."

FABIAN SINAPI, PROJECT DIRECTOR, QUATUOR SITE (BRUSSELS)

3 EXAMPLES OF EXPERIMENTATION IN 2019

SENSOHIVE: A CONCRETE MATURITY MONITORING SOLUTION (DENMARK)

Thomas Juhl, Business Development Manager: "Our Maturix solution optimises concreting by real time monitoring the curing process."

How does it work?

Before pouring, sensors are installed and connected to wireless transmitters. The system then monitors the temperature and calculates the resistance of the fresh concrete. The data collected is available in real time on a mobile phone.



SENSOHIVE

"WE TESTED MATURIX ON SEVERAL SITES, IN PARTICULAR IN IVORY COAST. THE SOLUTION TELLS US THE TEMPERATURE AND MATURITY OF THE CONCRETE IN REAL TIME. THIS OFFERS SIGNIFICANT TIME SAVINGS, ESPECIALLY FOR SOLID MASS CONCRETING. IT IS ALSO POSSIBLE TO CREATE ALERTS THAT THE TEMPERATURE HAS BEEN EXCEEDED OR THAT THE DESIRED RESISTANCE HAS BEEN REACHED."

XAVIER FARINA, SENIOR CONCRETE ENGINEER, BESIX

CAD.42: IMPROVING SITE SAFETY AND PRODUCTIVITY (FRANCE)

Jean-Philippe Panaget, CEO: "By connecting workers and machines, the system optimises safety and operating performance."

How does it work?

Workers and machines are equipped with connected devices, linked to the CAD.42 platform. This permits real-time monitoring of all movements, and proactive warning of potential dangers. Processed, this data also provides an in-depth analysis of the site dynamics.



PROPERGATE

"PROPERGATE HAS IMPROVED THE COLLABORATION BETWEEN THE VARIOUS PLAYERS, ENABLING US TO SET UP REAL-TIME CONNECTIONS WITH SUPPLIERS, SUBCONTRACTORS, PROJECT MANAGERS, LOGISTICS SUPERVISORS AND QA/QC MANAGERS. IT HAS REDUCED THE NUMBER OF UNCOORDINATED TRACKING SHEETS AND DOCUMENTS, WHILE OFFERING THE POSSIBILITY OF SHARED REGISTRATION AND LOGISTICS COORDINATION."

LUIS MIGUEL MONTEIRO, PROJECT DIRECTOR ON DUBAI UPTOWN TOWER (DUBAI)

PROPERGATE: OPTIMIZING DELIVERY MANAGEMENT ON SITE (POLAND)

Anna Walkowska, co-founder: "We provide logistics coordinators with intelligent assistance to better manage deliveries."

How does it work?

By connecting all players in the logistics chain, ProperGate optimises efficiency by controlling and coordinating in real time all goods and materials movements on site. The platform makes it possible to automate requests, to plan, to synchronize equipment deliveries and unloading points, to have a precise inventory of available materials, and monitor vehicle traffic.



SCALED ROBOTICS



“THE START-UPS WE HOST OPERATE IN VARIOUS DISCIPLINES: SMART BUILDING, ROBOTICS, DIGITAL TRANSFORMATION, LOGISTICS PLATFORMS, ARTIFICIAL INTELLIGENCE, SAFETY, AND 4.0 CONSTRUCTION.”

JÉRÔME CONSTANT, MANAGER OF THE BESIX START-UPS ACCELERATOR

START-UPS SUPPORTED BY THE BESIX START-UPS ACCELERATOR

FLUVES (BELGIUM)

Thomas Van Hoestenbergh, Managing Director: “We offer a solution for the intelligent real-time management of marine or energy infrastructures.”

How does it work?

Fluves installs sensors that gather data on conditions that affect infrastructures, such as a lock gate, or underwater and underground environments. The data are converted into monitoring tables, allowing an overview of specific problems as well as predictive analysis for optimising the management of the infrastructures.

KEWAZO (GERMANY)

Ekaterina Grib, co-founder: “Our Liftbot is a robotic, intelligent, inexpensive and safe hoist, used for transporting scaffolding parts during assembly”

How does it work?

Travelling along rails attached to the scaffolding structure, the Liftbot robot automatically transports the scaffolding parts for mounting. In this way Liftbot improves the efficiency and safety of scaffolding assembly process.

NPLAN (UNITED KINGDOM)

Dev Amratia, CEO: “We use artificial intelligence to identify risks linked to the project schedule, in order to improve planning and to foresee the execution of construction projects.”

How does it work?

Using artificial intelligence, the nPlan algorithms compare the tasks of a particular project with a large set of data from previous construction projects. On this basis, nPlan predicts, plans and programmes the development of the site, providing decision support via information on task criticality, duration and uncertainties.

PEAS & LOVE (BELGIUM)

Jean-Patrick Scheepers, founder: “We are creating urban farms that produce organic food in unused urban spaces. This helps cities to become greener and more sustainable, as well as creating social ties.”

How does it work?

Peas & Love maintains garden plots, especially on roofs, which it rents from individuals. On them it produces organic fruits and vegetables. Clients have access to the farm to harvest their produce, as well as to a cloud platform allowing them to join the Peas & Love community.

SCALED ROBOTICS (SPAIN)

Stuart Maggs, CEO: “Our autonomous mobile robot monitors progress and checks the quality of work on construction sites”

How does it work?

The Scaled Robotics robot moves independently around the site, producing scans with which it compares the actual data to the BIM model, and communicating any discrepancies to the site manager. This makes it possible to resolve any problems faster and more pro-actively.

SMART CAST (FRANCE)

Augustin Masurel, founder: “We offer industrial solutions for floor formwork to improve performance and simplify the installation of networks in buildings”

How does it work?

Smart Cast manufactures custom panels, used as floor formwork and pre-finished ceiling cladding, as well as for providing reliable support for networks in buildings. These panels are manufactured according to the BIM model and delivered pre-numbered. Information on the networks, measurements and the position of the partitions is printed on both sides of the panels, thereby facilitating installation by the various trades.

Citizenship & Sustainability

BESIX SETS OUT THREE SUSTAINABILITY AMBITIONS

IN 2019, BESIX GAVE CONCRETE SHAPE TO ITS CORPORATE PURPOSE ('EXCEL IN CREATING SUSTAINABLE SOLUTIONS FOR A BETTER WORLD') BY DEFINING 'PLANETARY' AMBITIONS AT GROUP LEVEL. IT AIMS TO PROVIDE A CLEAR DIRECTION FOR THE SUSTAINABILITY ACTIVITIES THAT HAVE BEEN INITIATED OVER THE LAST 10 YEARS BY THE DIFFERENT ENTITIES OF THE GROUP. SUCH TRULY IMPACTFUL MEASURES WILL ENABLE BESIX TO MAKE A CONTRIBUTION TO THE BENEFIT OF THE PLANET AND ITS INHABITANTS.

In 2017, BESIX has signed the International Framework Agreement with EWC and BWI, emphasising the importance of promoting and protecting well-being at work, an achievement of its 'People' pillar. Today, BESIX is focusing on the environmental aspect of sustainability ('Planet' pillar). As a major construction industry player, the group can indeed have a real impact, at a time when society as a whole, together with the group's stakeholders, customers and employees, are calling for this. And this is particularly true in two areas: growing scarcity of resources and climate change (CO₂ equivalent). To this end BESIX, which has been an active member of the United Nations Global Compact since 2017, not only supports the 17 Sustainable Development Goals (SDG) in general, but emphasises two of them in particular throughout its activities: Objective 12 (establishing sustainable consumption and production patterns) and Objective 13 (combating climate change).

2017

YEAR WHEN BESIX BECAME AN ACTIVE MEMBER OF THE UNITED NATIONS GLOBAL COMPACT





“OUR EMPLOYEES EXPECT FROM A GROUP LIKE BESIX CONCRETE ACTION TO REDUCE THE EFFECTS OF ITS ACTIVITIES ON THE ENVIRONMENT, AND WITH A REAL POSITIVE IMPACT ON SOCIETY. THEY ARE KEEN TO PARTICIPATE ACTIVELY IN THIS EFFORT.”

FRÉDÉRIC DE SCHREVEL, GROUP CITIZENSHIP & SUSTAINABILITY OFFICER, BESIX GROUP.

‘SUSTAINABLE SUCCESS STORIES’

In addition to defining a global long-term strategy, BESIX acts locally. A whole range of initiatives have been launched, showcasing and strengthening the group’s ability to carry out sustainable projects. These are a few examples that illustrate the three ambitions set out by BESIX:

// TOWARDS A LOW-CARBON SOCIETY

In the Netherlands, where a CO₂ performance certification system (prestatieladder) has been in place for several years, BESIX is on track to achieve a 10% reduction in emissions by the end of 2019 compared to the 2014 reference year. The ratio between emissions and turnover forms the basis of the calculation.

Also in the context of CO₂ performance certification, but in Belgium this time, BESIX has played an active part, along with ADEB/VBA (Association of Belgian Civil Engineering Entrepreneurs) and the regional and federal authorities, in aligning the tendering criteria in Belgium’s three Regions. By way of a test, 25 projects, for which this certification will be required, will be launched over a two-year period.

Several projects in the Netherlands illustrate BESIX’s pioneering role in terms of CO₂ reduction: on the A16 north of Rotterdam, BESIX is participating in the construction of the world’s first energy-neutral tunnel.

At corporate level, several initiatives were launched at the head office, such as the inclusion of electric vehicles in the company car fleet, the implementation of teleworking and energy audits leading to an action plan in coordination with ComTIS (see further).



GLOBAL STRATEGY

Starting from the observation that BESIX’s activities can have a real impact, the group has set out three ambitions aimed at supporting the society in which it operates: the circular economy, striving for zero waste, transition to a low-carbon society, and supporting clients in achieving greater sustainability in their projects.

In 2019, a global reflection took place to define a more coordinated sustainability strategy. Managers from all group entities gathered to weigh in on the climate issue, despite very different local circumstances in the various regions where BESIX operates. These ambitions will help define the main directions needed to achieve tangible objectives. In 2020, a baseline measurement will be established in the various entities of the group to quantify the required actions. This will involve calculating the emissions pertaining to the group’s installations and equipment in order to reduce them site by site. At a second stage, subcontractors will also be integrated into the process.

6,274 tonnes of CO₂

SAVED DURING THE WIDENING OF THE PRINCESS BEATRIX LOCK WORKS, THANKS TO OPTIMISATION OF SOURCING AND LOGISTICS, COMPARED TO THE ORIGINAL PROJECT FOOTPRINT



// BUILDING CIRCULAR

BESIX also plays a pioneering role in optimising the quality of materials. The “Green Concrete” project seeks to recover as much demolition concrete as possible for reuse in new construction-grade concrete. More generally, BESIX is seeking to examine the impact of choices of materials and construction systems, by analysing their life cycle. In partnership with architects, universities, SMEs, etc., it is all about imagining new ways of designing buildings, with demolition also an integral part of the overall picture. By showcasing their environmental skills, the teams are winning key deals, such as “Zin in N(o)ord” in Brussels (the Be Circular winning project).

In Belgium, BESIX and Vanhout have signed the Green Deal for circular construction, exhibiting thereby their willingness to commit to pool experiences and try out new forms of collaboration with other construction players to make circular construction a reality.

Several local initiatives have been launched successfully, such as recycling formwork wood (e.g. on the Quatuor site) for the benefit of Ferme Nos Pilifs, a non-profit sheltered workshop company.

A highly symbolic project, the Belgian Pavilion at the Universal Exhibition in Milan was built, dismantled and rebuilt by BESIX on the Namur Citadel site.

Internationally, the Concessions & Assets teams are looking for solutions to address water scarcity and waste management in the UAE. Thus, the Al Saja’a treatment plant treats waste water from all over the emirate of Sharjah, notably allowing reuse of the sludge as fuel for the production of cement.

1,000 tonnes

OF HOUSEHOLD WASTE THAT WILL SOON BE TRANSFORMED DAILY INTO REFUSE DERIVED FUEL IN THE UMM AL QUWAIN WASTE RECOVERY PLANT (UAE)



YOU CAN FIND OUT MORE ABOUT OUR CITIZENSHIP & SUSTAINABILITY MISSION, VISION AND OBJECTIVES IN BESIX'S C&S REPORT 2017-2018.

// ADVISING CLIENTS IN IMPROVING SUSTAINABILITY

BESIX has developed important skills in green certification which it wishes to make available to its clients, for them to increase the sustainability of their own projects. Where a client lacks information on the resources to be used, the BESIX expert teams are at hand to offer solutions in terms of both design and execution. In this way the client benefits from a project with reduced environmental impact and generating greater energy savings. Even during the submission process, BESIX can play an advisory role in achieving solutions that realistically take account of local circumstances and constraints.

A16 ROTTERDAM, THE NETHERLANDS: ENERGY-NEUTRAL TUNNEL



QUATUOR, BRUSSELS, BELGIUM. TARGET: CERTIFIED BREEAM OUTSTANDING

INNOVATION CAPACITY

In addition, pilot projects are emerging from BESIX's innovation programme, such as the installation of Clean Air green walls, aimed at capturing fine exhaust particles along roads. Under the same innovation programme, 3D concrete printing activities continue to reduce both waste and CO₂ levels .

ComTIS Energy is another example of a project from the BESIX innovation programme. This new division of the Vanhout group will offer 'Comfort as a Service' for residential buildings, delivering thermal comfort on a monthly basis with technical installations at the forefront of sustainability.

With its own projects (real estate, concessions & asset, etc.), BESIX has a free hand to implement different business models to guarantee green sustainability combined with long-term profitability. This includes the A-STAY hotel concept, with its strategy based on BREEAM "Excellent" certification for all the new hotels in the chain.

Still in the energy sector, BESIX is investing in smart buildings for intelligent energy management. The new BESIX Nederland headquarters, inaugurated in early 2019, uses this new technology.



“WE WANT TO UNITE THE INITIATIVES AND KNOWLEDGE OF ALL THE ENTITIES OF THE GROUP.”

PIERRE SIRONVAL, CHIEF OPERATING OFFICER, BESIX GROUP

The initiatives carried out at the head office (aiming for zero waste, measurement and optimisation of energy consumption, more sustainable food) are intended also as examples for the other group entities.

The basic directions that BESIX has set will allow it to unite all these initiatives by hooking them up to the three formulated ambitions: the circular economy, the transition to a low-carbon society, and customer support. All this to enable its employees, sub-contractors and clients to excel in creating sustainable solutions for a better world.

AL SAJA'A WASTEWATER TREATMENT PLANT, AL SHARJAH, UAE





OUR PEOPLE //



A PROUD TEAM OF EXPERTS WORKING ON THE CIVIL ENGINEERING WORKS OF THE FUTURE DRINKING WATER TREATMENT PLANT, ON THE LA MÉ RIVER (IVORY COAST)

People

A PEOPLE-ORIENTED STRATEGY

A CHANGING LABOUR MARKET AND THE SEARCH FOR TALENT

The construction sector is a constantly evolving one. Right now it finds itself at the start of the digital transition. And yet the number of young people choosing scientific and technical professions continues to decline year after year. This is reflected in an over-tight labour market. BESIX is relatively well equipped in this fight for talent. Firstly, because it has an effective home-grow policy, with internal training provided for newly recruited staff who have just left the school or university classroom. Secondly, because it works hard to retain its talents. Of course, BESIX also recruits people from outside to follow the growth of the turnover. Apart from its attractive pay policy, BESIX recruits new colleagues mainly thanks to a strong and attractive corporate culture, where innovation, environmental awareness and quality of life are central. In 2019, to bring this further to the fore, we introduced our '#We care' strategy.

#WE CARE, A 100% HUMAN STRATEGY

Developing a commercial strategy is actually quite simple. Translating it afterwards into a people-oriented strategy is where the real challenge lies. Especially because working methods, technologies and employee expectations are changing rapidly.

Today we no longer work in the same way we did a few years ago. And more will change very soon. With its "#We care" strategy, BESIX wants to place its employees even more at the heart of its business. They have always been important, but over the coming years we want to strengthen this focus even more. Under the heading "#We care" BESIX is committed to taking good care of its colleagues, supporting them in their daily lives and giving ample room for innovation and ambition across the group. This is also the first time that an HR strategy was developed in a group-wide co-creation process. The strategy has now been tested, documented and applied by employees and management within the group and in all subsidiaries around the world, from Australia to the Middle East, but also Africa and of course Europe. This is without any doubt an important milestone in the history of BESIX.

TOP EMPLOYER AWARD, A CROWNING CONFIRMATION!

BESIX was granted the Top Employer Award in early 2020. With its first participation in the Top Employers audit, BESIX came home with this prestigious label. A variety of themes including Leadership Development, Culture, Learning & Development and Succession Management were assessed on the basis of an in-depth study by the Top Employers Institute. Top Employer-certified organizations do everything they can to guarantee the very best working environment through progressive HR policies that place people centre-stage. This recognition crowns the work of recent years and offers strong encouragement to continue in the right direction. The label is also a boost for all BESIX employees and increases the group's attractiveness as an employer.



"AS BESIX, WE ARE PROUD TO RANK AMONG BELGIUM'S 73 TOP EMPLOYERS. THIS LABEL IS NOT ONLY A STRONG SIGNAL TO OUR OWN EMPLOYEES, BUT ALSO TO THE OUTSIDE WORLD, IN WHICH WE ARE CONSTANTLY LOOKING FOR A WIDE RANGE OF PROFILES."

GEERT AELBRECHT, CHIEF PEOPLE OFFICER

800

IN 2019, BESIX
RECRUITED ALMOST
800 NEW TALENTS

// Expanding range of professions

As in previous years, the number of recruitments increased sharply in 2019, with nearly 800 new employees. A striking evolution is the greater diversity in profiles. BESIX remains a company of engineers. However, as its activities become more complex, greater cooperation between the different knowledge areas becomes necessary. In addition to engineers, BESIX also has competences in completely different, but equally innovation-oriented domains, such as finance, IT, trade, biology, law, human relations and environmental sciences.

// Attention to diversity

It is a widespread stereotype that the entire construction industry is a man's world. But for years, BESIX has working hard to be attractive to women. With solid results in 2019. 40% of the young engineers hired by BESIX last year were women, well above the sector average. Another encouraging signal is that female engineers benefit from career development opportunities at a faster pace at BESIX.





**“BY CONDUCTING
PREVENTIVE EXAMINATION
THROUGH A FREE CHECK-
UP, BY ENCOURAGING
PEOPLE TO EXERCISE AND
BY EXERCISING TOGETHER
AS A BESIX COMMUNITY,
WE STRIVE FOR A HEALTHY
COMPANY, WHERE EVERY
EMPLOYEE IS PHYSICALLY
AND MENTALLY FIT AND
READY TO GO.”**

**GEERT AELBRECHT,
CHIEF PEOPLE OFFICER**

TRANSITION TO A MIXED TRAINING MODEL

2019 was marked by an evolution towards a mixed training model, in which e-learning is combined with conventional courses. The latter remain very relevant for stimulating exchange between people with different backgrounds and skills. A typical training course consists of an e-learning part that brings all participants to the same level of knowledge. This is followed by a traditional course that gives people the opportunity to better understand complex concepts, fill gaps, exchange information, set up competence networks and form cross-cutting teams.

Meanwhile, a platform has been developed to give people direct access to information and documentation about training courses. Today, the amount of available knowledge is enormous, but sometimes difficult to find. Thanks to this online service, employees can now retrieve important information and documentation about trainings efficiently and quickly without having to do too much research.

// BESIX-sitting

BESIX continues to develop innovative initiatives to improve employee well-being. An example of this is *Childcare*, which was introduced in 2019 in Belgium. *Childcare* is a babysitting service for sick children to enable the parent concerned to stay at work. The idea originally came from staff and was discussed and eventually implemented with the help of external partners.

// BESIX Academy

In November 2019, the BESIX Academy in Diegem (Belgium) was inaugurated. All training sessions will now take place at this brand new training centre. In addition to an open space, the location also has six meeting rooms fitted out with the latest technology. The centre can also serve for external meetings and events.



WELL-BEING AT WORK

800,000 kilometres on foot, by bike or in the gym! That is the distance travelled in 2019 by participants in the BESIX Fit programme. Promoting employee health is and remains an important commitment of BESIX Group. A good illustration of this is our collaboration with FibriCheck. This Belgian start-up has developed a medical app that measures the effect of heartbeats on the blood vessels. 850 people over the age of 45 were allowed to test the application for free. The result? A number of people appeared to have an increased risk of heart failure. Maybe in this way we have avoided one or more personal emergencies.

A GREAT PLACE TO WORK

BESIX is keen to obtain the "Great Place to Work" certificate in 2022. How will we go about it? By applying the #We care principle, i.e. by taking good care of our employees' well-being. This strategy will guide a series of actions to become a "Great Place to Work". In fact, everything indicates that BESIX is already on the right track. But improving the working environment is a crucial and ongoing process.

KEY FIGURES 2019 //



13,351

NUMBER OF EMPLOYEES (AT 31/12)



44 years

AVERAGE AGE



80

NATIONALITIES



9.5 years

AVERAGE LENGTH OF SERVICE



785

RECRUITMENTS IN 2019



Quality, Health, Safety and Environment

WE ARE #SAFETOGETHER

THE MAIN OBJECTIVES OF THE QUALITY, HEALTH, SAFETY AND ENVIRONMENT (QHSE) DEPARTMENT ARE TO DEVELOP A STRONG AND POSITIVE CULTURE IN THE FIELD OF QUALITY, HEALTH, SAFETY AND ENVIRONMENT AND TO EXCEL WITHIN ITS DOMAINS. IN THE SPIRIT OF ITS CORE VALUES, BESIX IS #SAFETOGETHER. NOT ONLY REGARDING THE INTEGRITY OF HUMAN LIFE, BUT ALSO WHEN IT COMES TO REDUCING ITS PLANETARY FOOTPRINT AND INNOVATING IN QUALITY.

ACCIDENTS

The accident frequency rate in 2019 indicates a slight increase. The integration of Watpac, having exemplary reporting practices, the overall improvement of reporting integrity in all regions but in particular Europe explains this difference. In Europe, and this includes globally all regional entities, the improvement of BESIX's direct employees accident rate has been significant and measured. Some key programmes such as BE SAFE (referred below) clearly had some impact in 2019.

The year 2019 was sadly marked by one fatal incident in the Middle East Business Unit. BESIX's teams have carried out in-depth research into the cause of this accident and have taken the necessary measures.

BESIX has also recorded 15 High Potential incidents in 2019. 30 % were related to working at height (fall from height and falling object from elevations). 40 % were related to lifting and rigging operations.

As a result of these accident and incidents, BESIX is even more determined to strengthen the safety performance of its projects worldwide, and thus prevent such adverse events from occurring in the future. Several initiatives were rolled out, such as awareness trainings, reinforced Project Management Safety Walkabouts, corporate dashboards and the BE SAFE program. All of which have proven to have raised ownership and participation to a higher level.

GLOBAL SAFETY TIME OUT 2019

On 28 and 29 April 2019, all employees and subcontractors around the world took part in a reflection on behavioral based safety. The Safety Time Out 2019 was the moment for all leaders within BESIX, all partners and all subcontractors to launch the BE SAFE program or to reinforce the Project Management Safety Walkabout. Both programs are designed to address the weak link between safety objectives and safety performance, being human behavior.

The Safety Time Out 2019 was attended by well over 26,600 participants on over 101 project sites and offices worldwide. The webcast presentation which was organised for office staff reached 1,500 unique views, of which a number of these were group viewings set up by the regional entities.

BE SAFE, BEHAVIORAL BASED SAFETY PROGRAM

2019 was the year in which BE SAFE was launched throughout the group. The core concept of BE SAFE is to reinforce and grow caring values and to help staff as well as subcontractors to work safely. This is done by positively influencing behaviour at work through frequent and on the spot observations and giving constructive feedback by peers.

Since the launch, the number of active BE SAFE Ambassadors has grown month after month. The number of BE SAFE Ambassador is now a key performance indicator reported to the BESIX Board of Directors: the group is promoting the enrollment of new ambassadors in all sites and projects. There were 173 active BE SAFE Ambassadors by the end of 2019. Sites running BE SAFE see an important increase in their safety performance and worker participation. The success which appeals the most to the imagination was BESIX's workshop in Belgium, where the number of work related accidents was cut back with 66%.



WALTER, ONE OF THE BE SAFE AMBASSADORS, ON THE CONSTRUCTION SITE OF THE DPG MEDIA HEADQUARTERS, ANTWERP, BELGIUM



// Visual Leadership

Safety leadership is not that different from any other kind of leadership. It is about setting the example, clarifying expectations, monitoring performance, and holding everyone to account. It aims to influence people's behaviours in function of BESIX's objectives.

In order to reinforce the idea that everyone at BESIX is a safety leader, executives participate actively in Project Management Safety Walkabouts to support efforts on the sites. They also chair each and every root cause analysis review and close out meeting following a High Potential event in order to enhance the transfer of lessons learned throughout the group and various Boards of Directors.

Furthermore the project managers encourage everyone to assume their responsibility regarding the Life Saving Rules and to act upon breaches in a consistent manner. In 2019 a steep increase of Life Saving Rules breaches were detected and remediated by project staff on site, thus multiplying opportunities to learn from failure to respect Life Saving Rules and improve on high risk control practices. And most of all, it shows increased ownership of health and safety at BESIX.

BESIX CLEANUP DAY

In order to raise awareness with employees, subcontractors, partners and clients and to give something back to the communities in which it operates, BESIX organised its first annual cleanup day. On 26 September, 60 teams all over the world volunteered to clean up the neighborhood around their project sites and offices. The result was remarkable: the 1,762 volunteers collected well over 5 tonnes of litter, which otherwise would have found their way to the oceans.



BESIX CLEANUP DAY

GLOBAL SAFETY TIME OUT



40 million

SAFE MAN-HOURS WITHOUT LTI ACHIEVED AT THE ROYAL ATLANTIS RESORT AND RESIDENCES PROJECT (DUBAI)



// Environmental highlights

- // Active membership of BESIX in the Steering Committee for the implementation of the CO₂ performance ladder in the project awarding process by Belgian authorities for the Belgian market.
- // Organisation of the **BESIX Mobility Month** in September during which employees could test electric cars and bicycles.
- // Organisation of **BESIX World Water Day** to raise awareness regarding clean water as a resource.
- // Organisation of **BESIX World Environment Day**, raising awareness for air quality.
- // Launch and signature of the Green Pledge at Six Construct, committing to sustainable goals.

// Quality highlights

- // Renewal of the **10CFR50 Appendix B Certificate of Authorisation** which is a quality assurance criteria to be applied to the design, fabrication, construction, and testing of the structures, systems, and components for Nuclear Power Plants and fuel reprocessing plants. BESIX received a **Certificate of Authorisation for Civil works design and execution**.
- // BESIX obtains **ISO9001:2015-RT05** certification for its activities in Italy. The RT05 regulation, which is an Italian specific legal requirement, contains provisions for the assessment and certification of quality management systems for construction and installation companies of plants and services in the construction sector (scope IAF 28).

// Awards and achievements in 2019

- // Dubai Shindagha Bridge (DSB) site got **Best RTA (Road and Transport Authority Dubai) Contractor Award (Safety and Green Economy Award)** for 2019.
- // Dubai Storm Water Tunnel project (DST) appreciated by Dubai Municipality for maintaining high safety standards.
- // Appreciation from Dubai Chamber for contributing to **Sustainability Week Program**.
- // Royal Atlantis project achieved **40 million safe man-hours without lost time injury** (10 October 2019)
- // Marine works Fujairah Port (FQ2) project celebrated **1 million safe man-hours** in November 2019.
- // Qatar Wakrah Stadium project (QWS) celebrated **8 million safe man-hours** in March 2019.
- // SsangYong-BESIX JV team at The Royal Atlantis Resort and Residences awarded at the **Oracle Aconex Connect Awards**:
 - . Project Award to The Royal Atlantis Resort and Residences for Excellence in Project Quality
 - . Hero Award to Erin O'Herlihy for Excellence in Innovation Configuration
- // Nachtigal project in Cameroon received a **safety excellence award** during visit of EDF's CEO together with the minister of Water and Energy of Cameroon.
- // In Kitimat (Canada), the BESIX-VanPile JV got recognised by **JGC Fluor** for their incident & injury free start of the project.
- // The Grand Egyptian Museum (GEM) project (Egypt) performed more than **12.5 million workhours** with only **1 LTI** (Frequency rate = 0.02)

// Certification

- // BESIX Nederland was certified **level 4 of the Safety Ladder** for a proactive safety culture.
- // BESIX and Six Construct maintained their **multisite certification for OHSAS18001 and VCA**2008/5.1, ISO14001:2015 and ISO9001:2015** of the IMS on BCO level.

Labour Standards

MIDDLE EAST: PROMOTING THE RIGHTS OF MIGRANT WORKERS

IN THE MIDDLE EAST, THE MAJORITY OF BESIX'S EMPLOYEES ARE MIGRANT WORKERS: PEOPLE LIVING IN THE REGION TEMPORARILY IN ORDER TO WORK THERE. THEY ARE MAINLY FROM THE INDIAN SUBCONTINENT AND SOUTH-EAST ASIA. BESIX PRIORITISES APPLYING HIGH STANDARDS TO ENSURE THESE WORKERS' RIGHTS ARE RESPECTED.

If every company in the world can claim to guarantee working conditions that exceed international standards, BESIX demonstrates this in many ways. The construction sites for the World Expo 2020 illustrate this perfectly. In 2019, Expo 2020 Dubai regularly ranked BESIX among the top companies, excelling in respecting workers. Since 2017, BESIX has also been audited by the BWI international trade union federation. As well as leading international organisations, it now portrays the group as a reference in this field in the Middle East. BESIX strives to continuously improve these standards, as well as promote them.

THE 2020 WORLD EXPO

Expo 2020 in Dubai is the first ever to be held in the Middle East. It will host 25 million people between October 2020 and April 2021¹. Built on a greenfield site, dozens of companies and thousands of workers contribute to its construction every day. This is the case of BESIX, which has built the site's infrastructure with Orascom. Since 2019, BESIX is also involved in the construction of the Belgian and French pavilions.

The Middle East is a distinct environment because companies employ mostly migrant workers. Employers are not only responsible for their working conditions on the construction site, but also for their living conditions (accommodation, food, transport, etc.). BESIX is no exception to this rule, and employs several thousand migrants workers. "Expo 2020 Dubai has decided to turn this event into an example of respect towards migrant workers by imposing unprecedented standards on companies in the country. Throughout 2019, it conducted quarterly audits of all companies and their workers' accommodations. BESIX has regularly taken first place on the podium", explains Vincent Gondouin, Regional People Director International & Middle East of Six Construct.

Ahmad Ataya, Mobility and Welfare Manager of Six Construct, continues : "A wide range of aspects were analysed, from the distance between the workplace and accommodation to the distance between the bedrooms, bathrooms and kitchens. The same applies to safety, working hours, hygiene, food quality, noise standards, sports facilities, internet access and the accessibility of TV programmes in the workers' own languages: Expo 2020 Dubai takes a broad and in-depth look at the workers' quality of life."

If BESIX's subsidiary in the United Arab Emirates obtained such good results, it is above all because it was already applying high standards, higher than the standards of the International Labour Organisation (ILO), the UN agency specialised in the promotion of decent work.



"WE WANT BESIX TO BE AN EXAMPLE ON A HUMAN LEVEL. WHAT WE DO IN THIS AREA IS NOTHING LESS THAN TO FOLLOW THE GROUP'S PURPOSE TO THE LETTER: TO EXCEL IN CREATING SUSTAINABLE SOLUTIONS FOR A BETTER WORLD."

**GEERT AELBRECHT,
CHIEF PEOPLE OFFICER**

1. Dates possibly subject to change due to recent COVID-19 outbreak

INTERNATIONALLY RECOGNISED BEST PRACTICES

In recent years, several prominent figures from international organisations and institutions have publicly cited BESIX as a role model for promoting workers' welfare in the Middle East. One such example was the head of Amnesty International Belgium, speaking in September 2019 on one of the country's main radio stations. Another such voice was the Chairperson of the Governing Body of the ILO. In its report on 'Migrant Workers' Rights' published in January 2019, the UK/US-based NGO 'Business & Human Rights Resource Centre' also presented BESIX as one of the top companies on this subject in the Middle East.

EXTERNAL PROMOTION

"We tell our partners about our requirements in terms of welfare. This sends a clear message: what we require often goes beyond international standards, because BESIX prioritises the human aspect. This is reflected today by the development of stricter compliance rules. If a subcontractor or supplier doesn't comply with our regulations, we will end that collaboration", says Hans Beerlandt, Executive Director of Six Construct. "We are convinced that, by acting this way, we will have an impact on other companies and we can become a driver of change".

// An international framework agreement

BESIX's commitment to the rights of migrant workers is not new. In December 2017, BESIX signed a framework agreement with the Building and Wood Workers' International (BWI). This international federation brings together 351 trade unions from 127 countries and represents around 12 million workers. This framework agreement on upholding International standards and human rights conventions aims to promote the welfare of people who work for BESIX and its partners, no matter where they are in the world.

"The agreement includes the establishment of independent oversight of our practices in terms of respecting our employees' rights. Since 2018, the BWI has audited group activities. Information was collected in various ways, including direct discussions with workers. Our aim is to ensure we are constantly challenged on these issues, and that we excel", says Vincent Gondouin.

BESIX's agreement with the BWI and the EWC does not merely aim to 'demonstrate' the Group's best practice but also to promote them among its subcontractors and suppliers.



BESIX Foundation

IN 2019, BESIX FOUNDATION CELEBRATED ITS 10TH BIRTHDAY!

- // 10 years of generous support to hundreds of voluntary associations in Belgium and abroad. Funding that has enabled them to pursue relevant activities, develop new projects or widen their circle of beneficiaries.
- // 10 years of a wide range of solidarity activities, with the precious help of the group's employees.
- // 10 years of gaining expertise, which also motivated us to create our own two projects, Right 2 Learn in the Emirates and KiddyBuild in Belgium. The former has already benefited 800 less qualified workers and the latter has helped more than 1,500 children from disadvantaged backgrounds.

HIGHLIGHTS OF THIS SPECIAL ANNIVERSARY YEAR INCLUDED: INTEGREAT ART IN DUBAI, THE CALL FOR PROJECTS FOR GRAINES D'AVENIR (SEED FOR THE FUTURE), THE LAUNCH OF TEACHBUILD IN BELGIUM AND BESIX CLEAN UP WORLDWIDE. AND FINALLY THE BESIX GAME!

INTEGREAT ART



GRAINES D'AVENIR (SEED FOR THE FUTURE)

Building on the success of the KiddyBuild project, BESIX was keen to motivate other players to create their own professional trades discovery projects for young people aged 8-14. Partnering with the King Baudouin Foundation, BESIX launched a call for projects. The 8 selected projects from the 3 regions of Belgium will now allow young people to discover new skills and other professional vocations.

GRAINES D'AVENIR



INTEGREAT ART

BESIX has supported this training centre for young disabled adults since it was created in Dubai in 2016. In 2019, its students transformed waste collected on construction sites into works of art. In May, an auction of their achievements was organised in collaboration with Sotheby's. The success of the evening will allow the centre to finance scholarships.

TEACHBUILD

One objective of KiddyBuild is to encourage professional vocations among children from less advantaged backgrounds. The second objective is to recreate enthusiasm for technical studies. To this end, BESIX set up discovery days for teachers of both general and technical courses. Technical course teachers can visit exceptional sites to see for themselves just how far the sector has evolved, while general course teachers can discover the variety of construction trades and requisite skills.

TEACHBUILD



"IN A WORLD WHERE INTEREST IN VALUES AND SUSTAINABILITY CONTINUES TO GROW, OUR FOUNDATION OFFERS A UNIQUE OPPORTUNITY TO CONTRIBUTE TO SOCIETAL PROJECTS. THE FOUNDATION'S GREAT INITIATIVES GIVE EVERYONE IN BESIX A GROWING FEELING OF PRIDE AND RESPONSIBILITY. I'M CONVINCED THAT THEY WILL ENERGISE OUR FOUNDATION AND MAKE IT SUSTAINABLE!"

**FREDERICK DE SCHREVEL,
PRESIDENT, BESIX FOUNDATION**

"INTRODUCING CHILDREN TO OUR PROFESSION IN THE FIELD, EXCHANGING, SEEING THE WONDER OF THEIR FACES, LAUGHING, EXPLAINING, SINGING AS WE CLIMB THE STAIRS ... IS A UNIQUE EXPERIENCE FOR CHILDREN AND VOLUNTEERS. I'M CONQUERED, UNDER THE SPELL OF THIS WONDERFUL PROJECT. I'LL DEFINITELY RETURN AS A VOLUNTEER AND I ENCOURAGE YOU TO TRY!"

**ISABELLE VAN AESBROECK, VOLUNTEER,
TADA AND KIDDYBUILD**

BESIX CLEANUP

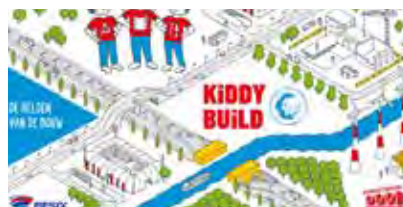
The Foundation's three focus themes are education, construction and the environment. BESIX therefore decided, in partnership with the QHSE team, to launch a major awareness-raising action in the form of a voluntary clean up around all group's sites. This first action exceeded all expectations as 1,800 colleagues, across 4 continents collected more than 5 tonnes of waste. The action will from now be organised annually.

BESIX CLEANUP



BESIX GAME

Every year, BESIX welcomes several hundred children to the KiddyBuild days but wanted to do even more. Is there any better way to discovering new things than by playing? That is how the bilingual French and Dutch game "The heroes of construction" was born, which is intended for the highest classes of primary school and the first classes of secondary school.



BESIX GAME

"THE FOUNDATION IS A GREAT OPPORTUNITY TO CONTRIBUTE IN VARIOUS WAYS TO IMPROVING OUR SOCIETY AND GIVING A LITTLE WARMTH TO OUR FELLOW CITIZENS IN NEED. AND THIS OFTEN LEADS TO REWARDING ENCOUNTERS."

**LIONEL DELHAYE, VOLUNTEER
FOR OPERATION THERMOS OPERATIE**

"EVERY DAY, WE FIGHT TO MAKE OUR PROJECTS A REALITY ... SO THANK YOU FROM THE BOTTOM OF MY HEART FOR BEING IN THE RIGHT PLACE, AT THE RIGHT TIME, WITH YOUR SKILLS, YOUR TIME AND YOUR GENEROSITY."

**FLAVIA SHAW-JACKSON,
FACE FOR CHILDREN IN NEED**



An aerial photograph of a city, likely Brussels, Belgium, showing a large-scale construction project in the foreground. The construction site features a circular structure and several cranes. In the background, there are numerous modern, multi-story office buildings with glass facades. The text "110 YEARS OF GLOBAL EXPERTISE //" is overlaid in large, white, bold letters across the center of the image. A white diagonal line is visible in the top left corner.

110 YEARS OF GLOBAL EXPERTISE //

QUATUOR, BRUSSELS, BELGIUM

Our areas of expertise

THANKS TO ITS EXPERTISE AND IN-HOUSE ENGINEERING KNOW-HOW, BESIX IS ALWAYS READY TO COME UP WITH HIGH-QUALITY AND COST-EFFICIENT SOLUTIONS ACROSS ITS MANY ACTIVITIES.

// CONTRACTING



Buildings //

From world-famous skyscrapers to low-impact housing developments, BESIX's impressive track record speaks for its professionalism and mastery. Today, BESIX continues to design, develop and deliver fully integrated buildings and properties with a unique architecture, cutting-edge technology and performance, complex logistical and environmental requirements and extreme construction deadlines. BESIX is especially known for its sound experience in carrying out sophisticated large-scale projects, such as high-rise buildings, shopping malls, hotels and hospitals.

READ MORE ON PAGE 58



Marine Works //

The market for modern port infrastructure is one of the most dynamic in which BESIX operates. After WWI, BESIX rebuilt the Belgian ports and waterways, and the company's expertise and experience have continued to grow ever since. Benefiting from its in-house engineers' know-how, BESIX carries out projects mostly on a Design & Build basis, and owns and operates its specialised marine construction equipment. This comprehensive design and equipment approach yields considerable cost savings. BESIX executes coastal marine works all around the world: breakwaters, jetties, quay walls, locks, marinas, water intakes, shore protection and refurbishment.

READ MORE ON PAGE 68



Infrastructure //

BESIX takes on the most challenging and large-scale civil construction plans for both public and private clients. Building on its engineering skills and its powerful implementation resources, BESIX constructs complex public works such as tunnels, bridges, transport and systems engineering, geotechnical improvements, landscaping... Time and again, BESIX' engineers devise and deliver optimum results in the (re)design, construction and maintenance of diverse infrastructure projects, actively collaborating with other teams and experts.

READ MORE ON PAGE 62



Environment //

BESIX has established itself as a key player in environmental contracting. BESIX provides innovative and tailor-made integrated solutions for today's growing water and waste challenges, and energy needs. It includes the design, engineering, execution, start-up and commissioning of wastewater treatment plants (WWTPs), treatment capacity upgrades (MBR, MBBR etc.), sludge drying and valorisation (digestion, biogas re-use, ...) and the polishing of treated effluent to near potable water standards (ultrafiltration, reverse osmosis, ...), pumping stations and hydroelectric installations, and the installation and maintenance of underground pipes and sewage disposal systems (collectors, gravity pipes or pressure, PVC distribution networks, cast iron pipes, ...).

READ MORE ON PAGE 72



Logistics & Industry //

In the niche market of industrial structures BESIX designs and builds logistic and handling centres, gas terminals, halls and warehouses... BESIX is particularly well-versed in contracting for the energy and water processing industries and has the resources to supply its own raw and aggregate materials for its projects.

READ MORE ON PAGE 76



Sports & Leisure //

BESIX builds places that turn people into participants. Al Janoub Stadium and Khalifa International Stadium (two of the official stadiums of the 2022 FIFA World Cup in Qatar), Ferrari World theme park, the Aspire Tower celebrating the 2006 Asian Games, the King Abdullah Sports City football stadium or the North Queensland Stadium in Australia are some of the iconic examples of world-class infrastructure for entertainment and sporting events BESIX has built over the years.

READ MORE ON PAGE 78

// CONCESSIONS & ASSETS



BESIX Concessions & Assets devises tailor-made solutions covering the complete infrastructure life cycle. With its broad experience in European and Middle-Eastern Public Private Partnerships, BESIX recognises that each project, customer and community has a unique set of challenges and takes pride in being able to form collaborative partnerships to deliver on their aspirations. Together with its Client-Partners and applying its range of financing options, BESIX devises a pragmatic approach to achieve a shared interest over the complete infrastructure life cycle.

READ MORE ON PAGE 82

// REAL ESTATE DEVELOPMENT



BESIX Real Estate Development (BESIX RED) has proven itself a responsible player in revitalising cities and acquiring prime locations across the Benelux, France and Portugal. It covers three lines of activities: Offices, Residential and Retail & Services. In addition to its 30 years of experience, BESIX RED relies on a team of great talents, whether it be architects, engineers or entrepreneurs. They serve the specific interests of clients with high-performance developments: maximising convenience of occupancy and optimisation of the environmental, economic and technical factors.

READ MORE ON PAGE 88



BESIX MAKES THE DIFFERENCE WITH 'SMART' HEADQUARTERS IN DORDRECHT

JUST OVER A YEAR AGO, BESIX MOVED INTO ITS NEW HEADQUARTERS IN DORDRECHT, THE NETHERLANDS. THE NEW BUILDING - A UNIQUE CREATION BY BESIX - IS EQUIPPED WITH MANY ADVANCED TECHNOLOGIES FOR ENERGY MANAGEMENT AND EFFICIENCY, SUSTAINABILITY, COMFORT AND SECURITY. "WITH THIS 'SMART' OFFICE, BESIX ONCE AGAIN DEMONSTRATES ITS DESIRE TO CONTRIBUTE EFFECTIVELY TO A MORE SUSTAINABLE ENERGY LANDSCAPE," SAYS BART GENTENS, SENIOR MANAGER NEW CLIENT SOLUTIONS.

"Excel in creating sustainable solutions for a better world." The BESIX baseline never lies and states exactly what the new Dutch headquarters is all about: theory is good, but practice is so much better. And that's where BESIX wants to make a difference. "In various sectors a great deal of attention is being paid to Industry 4.0, and the construction and real estate sector is no exception," says Bart Gentens. "As a contractor, BESIX has to ask itself what role it wants to play in this story. Do we carry out a theoretical, academic exercise or do we get our hands dirty BESIX-fashion? The answer is obvious: BESIX wants to be an active creator. And that has translated into the new office in Dordrecht. The building is more than a workplace. It also functions as a lab for smart technologies."

SUSTAINABILITY

BESIX stands out from the crowd with a solid dose of in-house knowledge and expertise. In smart technology, BESIX is also keen to play a pioneering role. Bart Gentens: "But with attention to periodisation. From smart toilets to the most advanced digital models, the spectrum of smart applications is very wide. But BESIX doesn't use these technologies just to play around. We also want to contribute effectively to a more sustainable energy landscape. We are constantly looking for technology that can help buildings make that transition. For BESIX, smart technology and sustainability go hand in hand. Forty percent of the world's energy consumption comes from buildings.

That means that whatever we do needs to be also relevant in terms of sustainability."

ENERGY BALANCE AND WELL-BEING

And that relevance is certainly present in Dordrecht. Artificial intelligence-based algorithms control the balance between energy production, consumption and storage. This is made possible by solar panels, an in-house storage battery for surplus energy and even the electric cars in the parking lot. Bart Gentens: "We ensure that as far as possible energy produced locally is also consumed locally. In this way we can respond to imbalances on the energy grid. When imbalances arise, our building can help solve the problem. The demand for such technologies is currently on the rise and we want to use our own expertise to advise our customers correctly."

In Dordrecht, the synergy between sustainability and technology is also expressed in the user experience. Bart Gentens: "BESIX pays a lot of attention to the well-being of its employees. Lots of light, comfort, a focus on the *new way of working*, flexible workplaces and a test with daylight control that adjusts the colour of the light according to the time of day are just a few examples. We are also strongly committed to *communities*. The Dordrecht office is a place where people meet and that feeling is enhanced by the BESIX app, which connects people. People on construction sites are often connected only via smartphone. We



"BESIX USES THE TECHNOLOGIES NOT JUST TO PLAY AROUND WITH THE LATEST GADGETRY. WE ALSO WANT TO CONTRIBUTE EFFECTIVELY TO A MORE SUSTAINABLE ENERGY."

BART GENTENS, SENIOR MANAGER NEW CLIENT SOLUTIONS

distribute information via the app, which can also serve as a digital badge to enter the building. Typical of Industry 4.0 is precisely that blend between the physical and digital worlds.”

BE PROUD

Just over a year after moving into the smart office in Dordrecht, users are unanimously positive. “The *community app* is used extensively every day by around 85% of the employees, a higher percentage than expected. In the energy field, the technology is also proving 100% effective. We notice that not all technology is fully utilised, but that

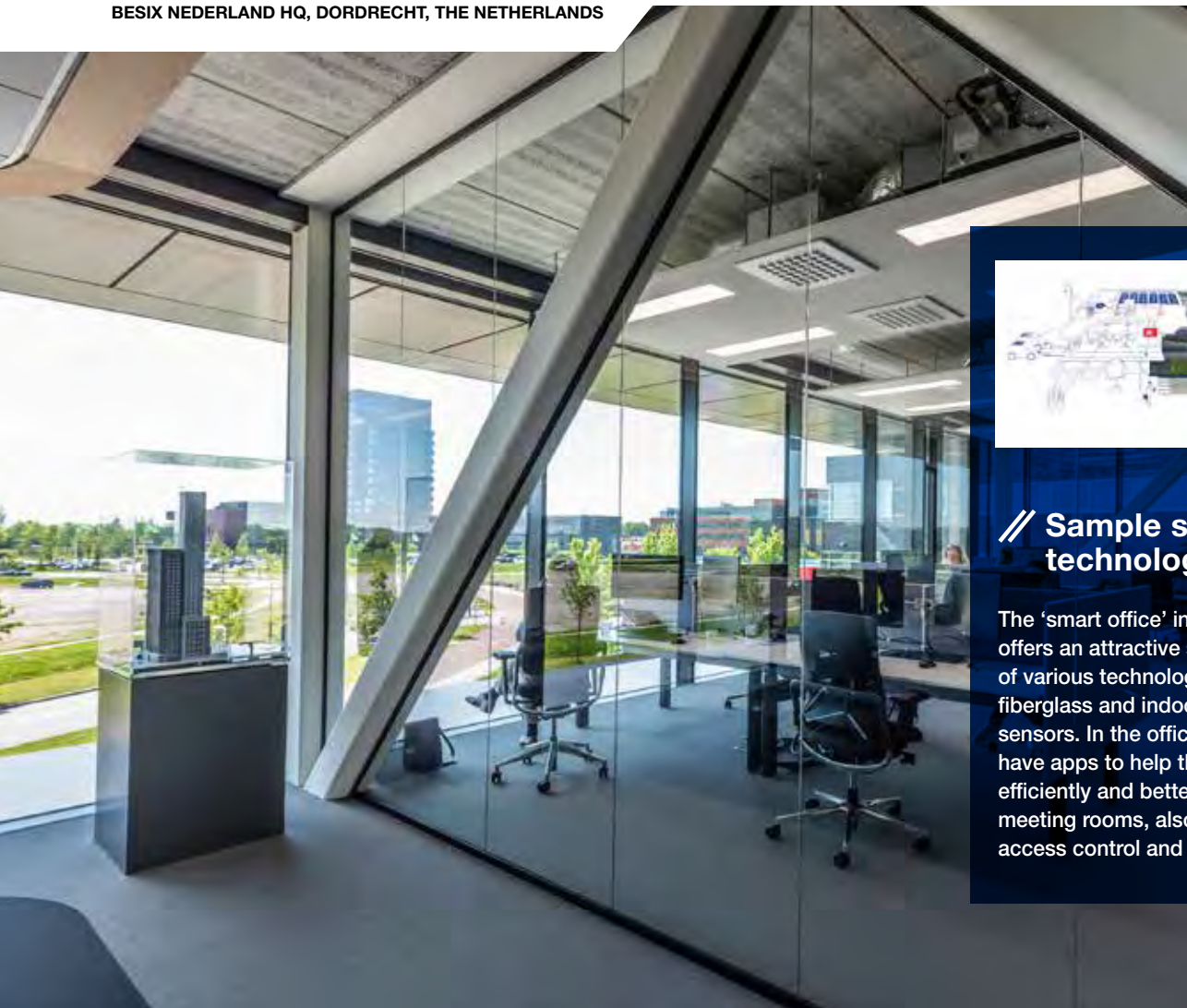
just proves that we are learning by doing. For example, employees can use an app to see where workplaces are still available in the building, but the building is designed so efficiently that you don’t actually need the app for that. This proves that you shouldn’t include technology just to play with the latest gadgetry. Ultimately, this is BESIX’s primary goal: to deliver a good building, supported by smart technology wherever this is necessary and useful. Right now we are learning a lot, but we are often too modest. BESIX people can safely show a little more pride. Companies that build up expertise in this way are few and far between”, Bart Gentens concludes.



“THE WELL-BEING OF OUR EMPLOYEES IS CENTRAL, WHICH IS WHY THERE’S LOTS OF GLASS FOR LIGHT AND PLANTS FOR GREENERY. THE OPEN OFFICE GARDENS AND THE TRANSPARENCY OF THE BUILDING STIMULATE FLEXIBLE WORKING. THIS CREATES A POSITIVE DYNAMIC; SHORT COMMUNICATION LINES WITH COLLEAGUES, TEAMWORK AND INSPIRING MEETINGS.”

JEROEN PHILTJENS, DIRECTOR BESIX NEDERLAND

BESIX NEDERLAND HQ, DORDRECHT, THE NETHERLANDS



// Sample sheet of technologies

The ‘smart office’ in Dordrecht offers an attractive sample sheet of various technologies, such as fiberglass and indoor and outdoor sensors. In the office, employees have apps to help them work more efficiently and better manage the meeting rooms, also with easier access control and security.



Buildings

MASDAR INSTITUTE NEIGHBOURHOOD HOUSING: AN EXAMPLE OF SUSTAINABILITY

SIX CONSTRUCT HAS COMPLETED THE MASDAR INSTITUTE NEIGHBOURHOOD HOUSING PROJECT IN MASDAR CITY, ABU DHABI'S SUSTAINABLE CITY. THE DESIGN AND BUILD, ENGINEERING, PROCUREMENT AND CONSTRUCTION CONTRACT WAS AWARDED TO SIX CONSTRUCT BY ABU DHABI FUTURE ENERGY COMPANY PJSC (MASDAR) IN DECEMBER 2016. MASDAR INSTITUTE NEIGHBOURHOOD AIMS TO CREATE A SUSTAINABLE, COMPACT AND WALKABLE MIXED-USE DISTRICT.

With buildings covering a total surface of 56,200 m², the project was handed over in the last quarter of 2019. Masdar Institute Neighbourhood encompasses nine buildings and provides residential accommodation for Masdar Institute students, as well as corporate residences for a major airline, and an office building. Large landscape and shading areas were also part of the scope of work.

The project was challenging in that the Design and Build nature of the contract involved higher risks and responsibilities for the contractor compared to traditional Build contracts. Six Construct had to implement a robust and highly professional design management setup to guarantee on-time delivery and a fully compliant design package within budget.

The narrow delivery time for the full scope of design and construction required devising and implementing innovative solutions and techniques. The off-site fabrication of several MEP (Mechanical Electrical Plumbing) and architecture elements demanded advanced coordination of engineering and sophisticated sequences for the construction, testing and commissioning.

BIM

For Six Construct, this was the first Design and Build Project in the UAE carried out entirely in-house with BIM L.O.D. 500¹ (Building Information Modelling), which allowed the team to create detailed renders and installation particulars, in addition to operational information of assets. To sustain the required level of productivity, Six Construct's design and engineering efforts have been key in the process. Around 14,800 shop drawings, including all disciplines, were processed by the end of 2018.

AT THE FOREFRONT OF SUSTAINABILITY AND EFFICIENCY

The project included high-performance specifications in terms of sustainability related to building envelope, facades, HVAC systems, as well as the implementation of building integrated renewable energy, etc., in addition to special requirements from the airline with regards to operations, security and integration.

These high-end sustainability requirements included the 3-Pearl Estidama² and LEED Platinum³ certifications for buildings. This means the design and construction had to comply with a range of MEP, architectural, and environmental international design guidelines and credit systems.

The project has received the Estidama 3-Pearl rating and LEED Platinum rating for residential buildings and offices for its high efficiency and sustainability.

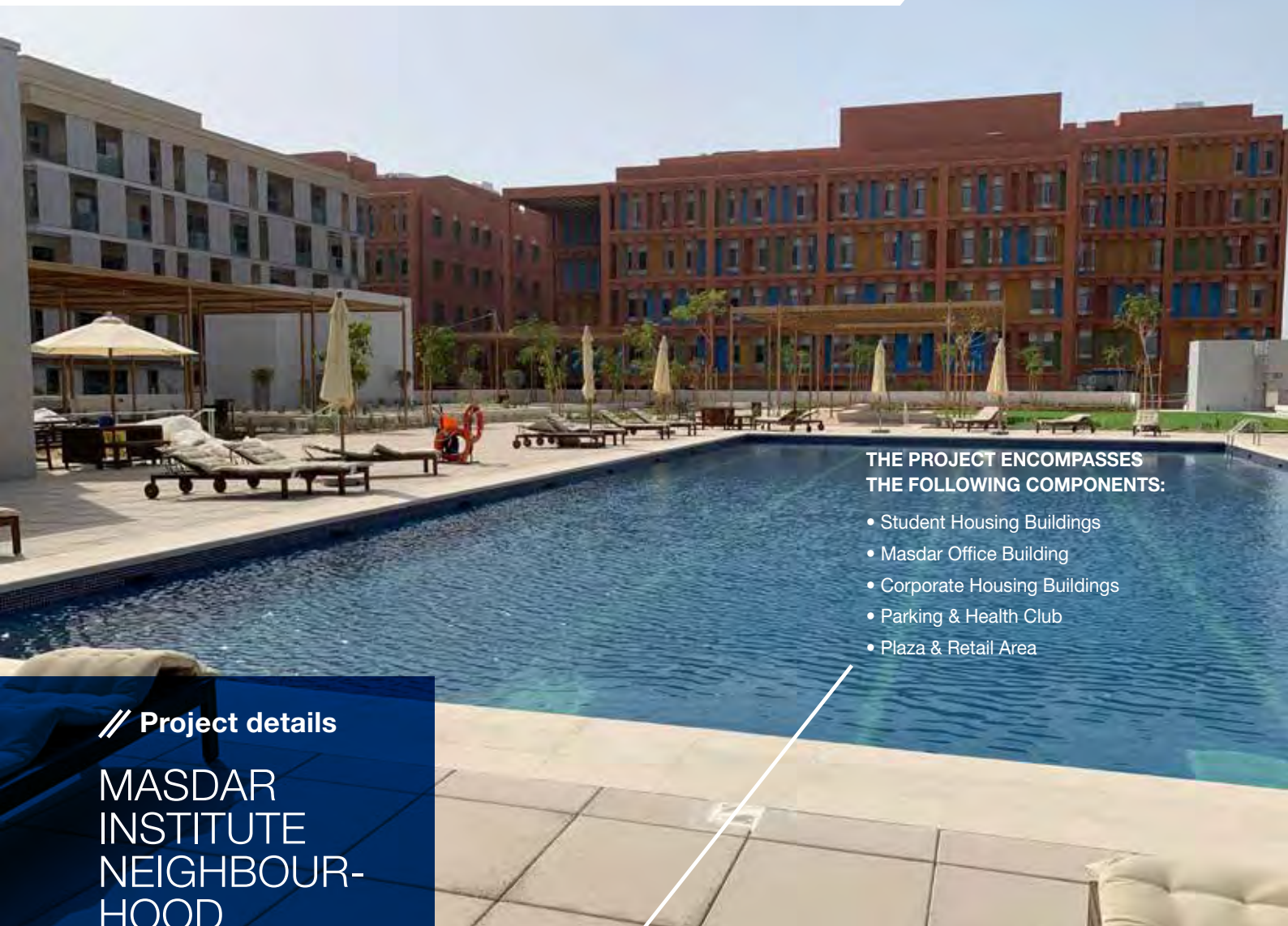


“THE USE OF MODULAR CONSTRUCTION HELPED US OVERCOME THE VERY TIGHT DELIVERY CONSTRAINTS. MOST OF THE MAIN MEP INSTALLATIONS WERE DONE THROUGH PREFABRICATED MODULES. ABOUT 6,500 UNITS WERE PRODUCED, RANGING FROM ELECTRICAL AND MECHANICAL RISERS, CORRIDOR MODULES TO PRE-FITTED AC TERMINAL UNITS WITH CONTROL PANELS AND VALVE ASSEMBLIES. IN ADDITION, 1,400 TOILET PODS WERE PREFABRICATED OFF-SITE, COMPLETE WITH THEIR FINISHING AND ACCESSORIES.”

AMIN NALOUTI, AREA MANAGER, SIX CONSTRUCT

1. L.O.D. : Level of Development: set of specifications that gives professionals the power to effectively and clearly document, articulate and specify the content of BIM.
 2. Pearl Rating System: green building rating system developed by the Abu Dhabi Urban Planning Council. Estidama is a building design methodology for constructing and operating buildings and communities more sustainably.
 3. Leadership in Energy and Environmental Design (LEED) is a green building certification program developed by the U.S. Green Building Council and used worldwide.

MASDAR INSTITUTE NEIGHBOURHOOD HOUSING, MASDAR CITY, ABU DHABI


**THE PROJECT ENCOMPASSES
THE FOLLOWING COMPONENTS:**

- Student Housing Buildings
- Masdar Office Building
- Corporate Housing Buildings
- Parking & Health Club
- Plaza & Retail Area

// Project details
**MASDAR
INSTITUTE
NEIGHBOUR-
HOOD**
Location

Abu Dhabi, United Arab Emirates

Client

Abu Dhabi Future Energy Company
PJSC – Masdar

Type of contract

Design and Build, Engineering,
Procurement & Construction

Construction period

2016-2019

Contract value:

€246 million

In addition, the project exceeds the targeted energy savings of 40% minimum for each building, thanks to the integration of various design energy saving enhancements in the building envelope, HVAC systems, service water heating, power, lighting and other equipment. It is also worth mentioning that the overall recycling rate of the waste generated from the construction site surpassed 90%, which was above the set target.

SAFETY FIRST

On 4 November 2018, Six Construct proudly celebrated the achievement of 10 million man-hours without lost time incidents. This milestone could not have been reached without the continuous dedication of the team who worked tirelessly in order to maintain and further enhance progress in all disciplines.





BY TRAIN TO OSTEND

THE OSTEND-GHENT-BRUSSELS RAILWAY LINE IS ONE OF THE BUSIEST IN BELGIUM. NOT JUST THE MANY TOURISTS TRAVELLING TO THE COAST BY TRAIN, BUT ALSO THE FREIGHT TRAFFIC BETWEEN THE PORT OF ZEEBRUGGE AND THE REST OF THE COUNTRY EXPLAIN THE CRUCIAL IMPORTANCE OF THIS INFRASTRUCTURE FOR BELGIUM'S ECONOMY. TO INCREASE THE RAILWAY LINE'S EFFICIENCY, INFRAABEL HAS DECIDED TO INCREASE FROM TWO TO FOUR THE NUMBER OF TRACKS BETWEEN GHENT AND BRUGES. THE ADDITIONAL TRACKS ALLOW FREIGHT TRAFFIC TO BE SEPARATED FROM PASSENGER TRAFFIC AND TRAIN FREQUENCY INCREASED. CLIENTS INFRAABEL AND TUC RAIL, THE ENGINEERING OFFICE OF THE BELGIAN RAILWAYS, CHOSE THE COMBINATION OF BESIX, BESIX INFRA AND VAN DEN BERG TO LAY THE THIRD AND FOURTH TRACKS ON THE AALTER-BEERNEM SECTION. IN THIS PROJECT, THE THREE PARTIES WORK AS EQUAL PARTNERS, EACH WITH ITS OWN SPECIALITY.

ENLARGEMENT OF TRACKS IN AALTER AND BEERNEM, BELGIUM

6,000 m³

OF CONCRETE

900,000 m³

EARTHWORKS - 16 KM OF TRACK BEDDING

116 km

CABLES AND CONDUITS

10,000 hours

DESIGN WORK

// Project details

ENLARGEMENT OF TRACKS IN AALTER AND BEERNEM

Location

Aalter, Belgium

Client

Infraabel Tuc Rail

Type of contract

Design and Build

Construction period

2019-2021

Contract value:

€37 million



A COMPLEX PROJECT

Laying a third and fourth track is more complex than you might think. Sewers and conduits need to be laid under the track, earthworks carried out for bedding the additional tracks, and station environments adapted. All this must be perfectly coordinated, requiring an integrated approach. Which is precisely what gave BESIX Group a head start in the tender process. By being able, as a single contractor, to offer various disciplines, this allowed BESIX Group to submit a competitive offer. In addition, the parent-subsidiary relationship between the different companies meant that they would always be working in the same direction, in the interest of a common goal. Which is not unimportant for the customer when choosing the right contractor.

A TEXTBOOK EXAMPLE OF ONE-STOP-SHOP

We can say that in this project, BESIX Group makes good its ambition to act as a One-Stop-Shop for customers. BESIX is responsible for the renovation work on the station area, including underpasses and major earthworks. BESIX Infra looks after the road and drainage works. Finally, Van den Berg takes care of the cabling, pipelines and certain aspects of the lighting. "The binding factor in this project is undoubtedly the BESIX Engineering department. Using advanced drone measurements, they moulded all elements into a 3D design before the works even started. This way, we now avoid important interface discussions, and we lose less time when carrying out time-sensitive jobs", says Patriek Depuydt of BESIX.



LINE BREAKS GIVE THE TEAM MUCH-NEEDED TIME

One such time-sensitive job is the new underpass that had to be placed at Maria-Aalter station. During a 3-day TLI (Temporary Line Interruption), the teams had to remove the tracks, remove soil to make room, hoist in and then push into place the prefabricated underpass, refill the soil and replace the tracks. The time window granted ran from 1 a.m. on Friday night to 4:30 a.m. on Monday morning. With detailed preparation work and a high degree of dedication, focus and flexibility during the works, the teams successfully completed the project and ensured that train traffic could be resumed on time on a busy Monday morning.

5 TLIs in all will be used during the project. These are essential to allow the team to undertake work that needs to be done too close to the tracks or for which the tracks themselves need to be moved. For example, the foundation works for a Berliner wall are carried out during such a weekend. Another interruption is planned for shifting the current tracks by 10 cm, followed by the installation of platform edges and a new awning. At each TLI, the entire teams are ready to give the best of themselves until the wee hours.

INTENSE COLLABORATION RIGHT DOWN THE LINE

Since the start of the works, weekly meetings have been held with representatives of the client, the engineering office and the executive teams. These are indispensable to achieve a good result: in situations where time can sometimes be lost due to miscommunication between different parties, these meetings help to perfectly align all wishes and possibilities.

A railway project, and certainly one on this scale, also involves numberless stakeholders. "Our client, TUC Rail, is in turn working for NMBS, Infrabel, Aquafin and the municipal administration," Kris De Smet, Construction Contract Manager at TUC Rail tells us. "This sometimes results for design changes at the implementation stage. Fortunately, we can fall back on the BESIX internal engineering department, which can quickly adjust the plans. The site is then prepared by the work preparation group, enabling the site implementation teams to get to work as soon as possible. In this way the three departments – engineering office, work preparation and implementation – are therefore working closer together than usual on this project. Additional support is provided by our specialist colleagues in Lean planning who ensure that the planning can respond sufficiently flexibly to changes. For example, almost all work is done in the open air, making us heavily dependent on the weather conditions. The planning must provide sufficient leeway for this, to enable us to meet all deadlines smoothly. Right now we are on schedule to complete the works by the end of August 2021."



UNDERGROUND RENOVATION OF THE LEOPOLD II TUNNEL



A CHALLENGING SITE IN THE HEART OF BRUSSELS

The site teams have to wait until 10 p.m. to access the tunnel. Then they don't have a minute to lose and need to start working right away. The Leopold II tunnel is a strategic traffic axis for Brussels. 80,000 vehicles drive through it every day. As on every night between 1 September and 30 June, the tunnel has to be reopened to thousands of vehicles from 6 a.m., as if nothing had happened. Since 2018, BESIX has been working as a member of the CIRCUL 2020 consortium on this complex renovation project commissioned by the Brussels Mobility public service. As well as the current works, the contract includes maintaining the tunnel from 2021 to 2046.

The Leopold II tunnel connects Belgium's western motorways with the centre of Brussels. At 2.6 km, it is the longest traffic tunnel in the country and one of the most heavily used. Over the years it had become obsolete, and a thorough renovation was the only option. Brussels Mobility awarded the contract to the CIRCUL 2020 consortium, consisting of BESIX, Jan De Nul and Engie-Fabricom. Work started in May 2018 and is due to be completed in 2021. The consortium's task is to turn the tunnel into an exemplary infrastructure in terms of safety, smooth flow and traffic management. All this without disturbing the daily commuters.

The works include major asbestos removal, followed by the renovation of the carcass, roadway, cabling and waterproofing. The teams are also renewing the fireproofing installations, safety recesses and the aeration system to optimise the removal of fine particles. Additionally, the project calls for major civil engineering works. These include 17 new emergency exits and technical rooms in addition to the refurbishment of the existing infrastructure.

Special technologies include cathodic protection, ultra-high pressure concrete removal, and the use of concrete spraying robots.

HUGE CHALLENGES

Opening the tunnel to traffic is a daily challenge. The teams and machines go in at 10 p.m. and at 6 a.m. hours everything has to be spic and span again.

Nor is this the only challenge. The 2.6 km tunnel runs under the Brussels-Charleroi canal and below the water table. Here and there it also crosses metro lines, water pipes and the city sewage system. On the surface, the emergency exits come out in densely built areas bordering the classified Elisabeth Park.

Bram Vandewalle, Project leader: "All work inside and outside the tunnel has to take account of numerous limitations. It is these major challenges that make the site so complex and exciting."

// Project details

LEOPOLD II TUNNEL RENOVATION

Location

Brussels, Belgium

Client

Brussels Mobility

Type of contract

Design, Build & Maintenance

Renovation period

2018-2021

Contract value

(excl. maintenance):

€218 million

WORKS IN JULY AND AUGUST 2019

“Only in July and August, during the school holidays, was the tunnel completely closed, enabling our teams to work 24 hours a day. These two months in 2019 were very intensive. During them we could carry out large-scale work which the daily traffic made impossible during the rest of the year. Our teams worked 24 hours a day, delivering a remarkable performance in a short time”, says Bram Vandewalle.

The biggest task was the reconstruction of 50% of the roads. All manhole covers and footpaths, with several kilometres of pipes inside them, were adapted. During the tunnel closure, the team was also able to move forward with renovating the ceilings. The concrete was repaired, an impermeable layer added and a fire-resistant covering applied.

Finally, the group carried out major civil engineering works for the new emergency exits and technical rooms. Several important facilities, such as high-voltage installations, transformers and extraction systems, were also updated.

2.6 km

TUNNEL LENGTH

24 hours/day

WORK HOURS DURING SUMMER PERIOD

LEOPOLD II TUNNEL RENOVATION, BRUSSELS, BELGIUM



// Concessions: transport infrastructure

In the Benelux, the BESIX concessions include various infrastructure maintenance contracts. The 25-year maintenance contract for the Leopold II tunnel is therefore not unique at BESIX. The group is also responsible for the Coentunnel, an important axis around Amsterdam, and the A16, a motorway and energy-neutral tunnel in Rotterdam. BESIX is also in charge of maintaining the Netherlands' largest river lock, the Princess Beatrix lock.

// New technologies

New technologies were used in the tunnel at the preparation stage. Milan Reniers, Digital Mapping Engineer: “Using a 3D scanner, we mapped the entire tunnel. This enabled us to create a complete BIM model, a digital model, as it were. This is an efficient tool for optimising both the preparation and then the execution of the works.” Other technologies were also used with a view to subsequent tunnel maintenance. Milan Reniers: “Photogrammetry allowed us to photograph and georeference the entire tunnel foundation plate. This will provide valuable, accurate information at any time in the future.”

// One-Stop-Shop

The Leopold II tunnel renovation clearly demonstrates the complementarity of the various disciplines within BESIX Group, with several entities brought in to perform specific tasks. BESIX Infra looked after the roadworks and Van den Berg took on the task of installing the kilometres of piping in the footpaths for the technical installations.



IMPROVING DUBAI'S MOBILITY WITH THE SHINDAGHA BRIDGE PROJECT

THE SHINDAGHA BRIDGE IS AN AED 394 MILLION INFRASTRUCTURE PROJECT THE DUBAI ROAD AND TRANSPORT AUTHORITY (RTA) HAS LAUNCHED TO IMPROVE THE CITY'S TRAFFIC FLOW AND SAFETY. SINCE BEING APPOINTED MAIN CONTRACTOR BACK IN 2018, SIX CONSTRUCT HAS PROVEN TO EXECUTE THE PROJECT SO FAR IN AN EXCELLENT WAY.

PART OF A AED 5 BILLION PROJECT

The Shindagha Bridge project consists of a 295-metre long bridge over the Dubai Creek. It is part of the AED 5 billion Shindagha Corridor Project, which focuses on improving various local roadways in the heart of Dubai. The larger project will eventually extend 13 kilometres and will significantly improve traffic on a major intersection in the old Dubai district. Works will mainly include two flyover bridges, a one-lane ramp and a two-lane tunnel.

The Corridor project is being developed in five phases; the Shindagha Bridge is part of the third phase and will connect the historic districts of Al Shindagha and Al Ras. It will run parallel to the 45-year-old Shindagha Tunnel, the only crossing in the area, and will have the capacity to accommodate a staggering 12,000 vehicles per hour per direction. A much-needed development to reduce traffic density for one of the busiest crossings on the Dubai creek.



TO INFINITY AND BEYOND

To facilitate that much commuting traffic every day, the design foresees six lanes in each direction in addition to a pedestrian crossing. Some 15 metres below the bridge, dhows and yachts will be able to pass under it.

What's more to the design – and what will definitely put the project on the map as Dubai's latest landmark - is the bridge's infinity arch: an architectural arch shaped in the form of the mathematical symbol for infinity. The top will rise up to 42 metres from the deck and the entire feature will require approximately 2,400 tonnes of steel to shape it.

TRAVELLING FORMWORKS

The Six Construct team started construction in May 2018. Among the milestones they successfully achieved are driving 1,400 sheet piles and boring and casting 2.5-metre-wide piles that are 50 metres long. They equally excavated ground 5 metres below the seabed to pour a 2,000 m³ concrete pile cap so the arch could be firmly anchored into the piers. Particularly crucial at this stage was keeping the cofferdam dry, which the team pulled off.

Following that successful achievement was the actual embedding of the arch in the concrete piers, for which they had to install six central pieces. The sheer weight and size of the arch was and continues to be the most challenging part of the entire project.



// Project details

THE SHINDAGHA
BRIDGE PROJECT**Location**

Dubai, United Arab Emirates

Client

Road & Transport Authority Dubai (RTA)

Type of contract

Build

Construction period

2018-2022

Contract value

\$102 million

THE SHINDAGHA BRIDGE PROJECT, DUBAI, UAE

As we speak (March 2020), the team is gearing up to cross the creek. This means they are putting in place the final preparations to construct the 295-metre-long bridge deck, using the method of travelling formworks. This method is similar to the one used at another BESIX landmark delivered in 2019, the Crown Princess Mary's Bridge in Roskilde, Denmark, where a balanced cantilever also did the job. It allows teams to access the bridges from the extremities if the middle span is not yet accessible. In the case of Shindagha, the team could work independently without affecting the marine traffic passing on the creek.

And so it happens, Six Construct is erecting an army of 16 form travellers on both sides of the pier to make the connection. Unlike Roskilde where precast elements were used, the elements here are being cast in-situ. Each traveller will cast a 3-metre element, along with a box girder, and will slide from one position to the next to complete the deck of the structure. Every time an element is cast on one side, another is cast on the other side to balance the loads on the pier. This phase of the project will take slightly less than a year to finish.

**AWARDED BEST CONTRACTOR
AND SAFETY**

The Shindagha bridge is yet to be completed, but has already received two awards, and from none other than the client. Six Construct was praised as 'Best Contractor of Mega Projects 2019' and 'Best Contractor for HSE performance 2019'.



"THE 'BEST CONTRACTOR OF MEGA PROJECTS 2019' AND 'BEST CONTRACTOR FOR HSE PERFORMANCE 2019' AWARDS ARE AN ASTOUNDING REWARD FOR THE HARD WORK ACHIEVED BY THE TEAM ON THE SHINDAGHA "INFINITY" BRIDGE PROJECT THIS YEAR. THANKS TO ALL MY BESIX AND SIX CONSTRUCT COLLEAGUES THAT HAVE HELPED AND GUIDED US TO REACH THIS HIGH LEVEL OF PERFORMANCE."

**NICHOLAS BRUYNINCKX,
PROJECT MANAGER**





DUQM AND THE INCREDIBLE BULK

LIQUID BULK TANKER BERTHING FACILITIES AT DUQM, OMAN



26 million m³

OF MATERIAL DREDGED FROM THE SEABED

// Project details

DUQM LIQUID BULK BERTHS

Location
Duqm, Oman

Contract type
Design & Build

Client
Special Economic Zone Authority
in Duqm (SEZAD)

Construction Period
2017 - 2019

Contract value
\$515 million

HAD THE SIX CONSTRUCT PROJECT IN THE PORT OF DUQM BEEN FILMED, IT WOULD CERTAINLY HAVE WON MULTIPLE OSCAR NOMINATIONS: **BEST ORIGINAL SCREENPLAY** FOR THE EXTREMELY PRECISE PREPARATION, **BEST VISUAL EFFECTS** FOR THE SPECTACULAR RE-FLOODING OF THE PORT AND, FINALLY, **BEST ACTORS & SUPPORTING ACTORS** FOR THE ROCK-SOLID DIALOGUES BETWEEN THE PARTIES INVOLVED. THE CLIENT CAN LOOK BACK MORE THAN SATISFIED ON A HAPPY ENDING. READ BELOW THE ACCOUNT OF AN EXEMPLARY MARINE WORKS PROJECT.

PLOT: Six Construct and RBW (Royal Boskalis Westminster) partner in a consortium to transform the port of Duqm, Oman, into an international fuel hub. Client SEZAD, the Special Economic Zone Authority in Duqm, appoints Six Construct as the main civil works subcontractor. Mission? To build two dual berth jetties and a 1-kilometre quay wall for giant liquid bulk tankers.



“ALMOST THE ENTIRE PROJECT WAS EXECUTED OUT ON PAPER AND ON COMPUTER BEFORE BEING ACTUALLY BUILT.”

**EMMANUEL CRAENEN,
PROJECT ENGINEER**



AN EXCEPTIONALLY DETAILED SCRIPT

It was clear from the outset: one of the biggest challenges in the project was the location. The site lay in a very remote area. Duqm's inhabitants had seen their town change in next to no time from small fishing village to a rapidly growing oil city, yet the closest urban area, the Omani capital of Muscat, was still 500 kilometres distant from the site. And that had an impact. On all facets of the project. From finding and recruiting subcontractors and suppliers to getting the material to the site in time. Bringing in equipment or heavy machinery from Dubai, for instance, quickly required 2 to 3 weeks.

The Six Construct-RBW team, however, tackled that challenge with an extremely detailed and perfectly coordinated planning right from the start. "The entire project was executed on paper and on computer before being actually built. In this way we left virtually nothing to chance. The success is largely due to this", says Project Engineer Emmanuel Craenen.

SUBLIME CASTING OF LEADING ACTORS

The roles in the Engineering, Procurement & Construction (EPC) contract were nicely divided. RBW carried out the rock cladding, dredging and raising works. A large part of the existing breakwaters was dismantled and dredged to create several hectares of land. Six Construct was responsible for the detailed design of the maritime structures and took care of building a 1-kilometre-long quay wall and two twin-berth jetties with associated facilities and navigation equipment.

With this division of roles, columns of RBW trucks could still be seen driving in and out removing excavated material, while Six Construct trucks were already delivering 2,500 tonnes of rock every day to backfill the newly-built quay wall.

In addition to the extreme preparation, smooth communication between Six Construct and RBW contributed greatly to the success of the project. Because despite the different tasks, both partners shared the same priority: meeting client expectations and delivering the project in record time.

A SPECTACULAR ACTION SCENE

The most spectacular moment of the entire project must have been the re-flooding of the port of Duqm. It was the last milestone that Six Construct needed to complete its part of the activities.

Normally maritime facilities like this are built from a platform in the water. In the case of Duqm, the BESIX engineering team proposed a different method: building 'in the dry'.

"This meant sealing off the construction site from the sea by building a sand dam – a retaining wall of reclaimed sand – and by pumping the site dry," says Benoit Vallée, Project Manager at Duqm. "Overall, some 26 million m³ of material was dredged from the seabed by RBW. This allowed the team to work on a platform 20 metres below sea level, which would later form the permanent seabed. Six construct built the quay and berths using specially designed temporary structures. Then they let the water flow in again."

The re-flooding operation happened on 15 January 2019 and lasted no less than two weeks.

"This solution enabled us to make a real difference: both limiting construction time and improving the quality of the permanent structures. With everything visible to the naked eye, precise working was crucial. All in the interest of our client", Benoit Vallée concludes.

A HAPPY ENDING

Did the team succeed in bringing this 515 million USD project to a successful conclusion? Absolutely! Thanks to the project, the port of Duqm can today export liquid refined oil products, enhancing its prominence and value in the national economy.



Marine Works

BESIX RETURNS TO A SAFE AND FAMILIAR HAVEN: THE PORT OF ZEEBRUGGE

WE CAN TRACE BESIX'S FIRST ACTIVITIES IN THE PORT OF ZEEBRUGGE BACK TO 1944. DURING WORLD WAR II, THE GERMANS TURNED THE HARBOUR INTO A FORTIFICATION ALONG THE ATLANTIC WALL, THE 5,000-KILOMETRE-LONG COASTAL DEFENCE LINE STRETCHING FROM THE NORTHERN TIP OF NORWAY TO THE FRANCO-SPANISH BORDER. THEIR SUBSEQUENT WITHDRAWAL AT THE END OF THE WAR WAS ACCOMPANIED BY THE SYSTEMATIC DESTRUCTION OF ALMOST ALL PORT INSTALLATIONS. THE PORT HAD TO BE REBUILT FOR THE SECOND TIME IN ITS HISTORY. IT WAS BY CARRYING OUT THIS WORK THAT BESIX LAID THE FOUNDATIONS FOR ITS EXPERTISE IN MARINE WORKS, TODAY RECOGNISED AND PRAISED ACROSS THE WORLD. 75 YEARS LATER, IN 2019, BESIX LAID THE FOUNDATION STONE FOR YET ANOTHER NEW PROJECT IN THE PORT, WHICH HAS BECOME A SAFE AND FAMILIAR HAVEN FOR THE COMPANY.

"The port of Zeebrugge is the world's largest car terminal port. The port authorities are keen to maintain its leadership position. This requires the port infrastructure to grow in line with its customers. When International Car Operators Zeebrugge (ICO) expressed the desire to expand, the port authority MBZ started looking for a suitable partner. As a known and trusted partner, BESIX was an obvious choice to carry out the work", says Jan Bauwens, project manager at BESIX.

"The works include building a quay wall on the Southern Canal Dock in the inner harbour," Jan continues. This 1,071-metre-long quay wall is the last missing piece of quay which will connect the Bastogne quay (Bastenakenkade) and the return quay at the dock end, where International Car Operators Zeebrugge handles its goods. Once finished, it will be the largest dock in the port of Zeebrugge.

Building a quay wall is no mean feat. Once delivered, the dock will welcome ships with a draft of 16 metres. This means that the quay wall will have to endure no less than 21 metres of ground pressure. Hendrik Vandekerckhove, site manager at BESIX explains how his team are tackling the task. "A 30-metre-deep diaphragm wall is placed over the entire length of the quay to act as a front wall. After that, pressure piles are installed, the necessary excavation work is carried out and the base plate and capping beam are built, along with the necessary anchorings. We started in spring of 2019 and will finish work at the end of 2020."

Only through the hard work of the whole team are we able to maintain a high work rhythm. The collaboration between BESIX and Franki Foundations, two companies working for the same group, also provides valuable synergies. "From the outset, both

parties chose to communicate as transparently as possible. Despite the sometimes divergent interests of the various parties, we develop solutions that reconcile these interests as much as possible, without compromising the safety and quality requirements during the implementation of the project. Placing the diaphragm walling is a daily challenge, both technically and logistically. The unambiguous approach of the site management of both BESIX and Franki Foundations ensures that the right choices are always made and that the works run smoothly", says Eric Bonnier, project leader at Franki Foundations.



// Project details

KAAI 1071

Location
Zeebrugge, Belgium

Client
Maatschappij van de Brugse Zeehaven

Type of contract
Build

Construction period
2019-2020

Contract value
€23 million

PORT OF ZEEBRUGGE, BELGIUM



1,071 m

OF QUAY WALL

35,000 m²

OF DIAPHRAGM WALLING WITH A WIDTH OF 1.2 M AND AN AVERAGE DEPTH OF 33.5 M UNDER THE WORK PLATFORM

6,000,000 kg

OF REBAR, SUPPLIED BY BESIX

80,000 m³

OF CONCRETE

// Working inside an operating seaport

GEOTECHNICS //

Deep foundations are all about geotechnics. We are confronted with layers of both soft clay and of tight-packed layers full of obstacles. For the excavation of the diaphragm walls, therefore, both hydraulic and mechanical grippers were used.

LOGISTICS //

All materials, such as concrete and reinforcing steel, are supplied through the terminal of operator ICO, between rows and rows of brand new cars. It's as if the team is building a new quay wall right in the middle of the car dealers' showroom.



“WHEN INTERNATIONAL CAR OPERATORS ZEEBRUGGE (ICO) EXPRESSED THE DESIRE TO EXPAND, PORT AUTHORITY MBZ STARTED LOOKING FOR A SUITABLE PARTNER. AS A TRUSTED PARTNER, BESIX WAS AN OBVIOUS CHOICE TO CARRY OUT THE WORK.”

**JAN BAUWENS,
PROJECT LEADER, BESIX**



DRINKING WATER FOR ABIDJAN

LARGE PIPES ARE STACKED ALONG THE ROAD OVER A DISTANCE OF THIRTY KILOMETRES. FROM DECEMBER 2020, THEY WILL CARRY 240 MILLION LITRES OF DRINKING WATER A DAY TO ABIDJAN. ONE JUST HAS TO FOLLOW THEM IN THE DIRECTION OF GRAND ALEPÉ TO FIND THE CONSTRUCTION SITE OF LA MÉ. THE SILHOUETTES OF FOUR CRANES RISE UP IN THE HEART OF THE VALLEY, WITH BESIX FLAGS FLYING FROM THEIR MASTS. WHEN BROUGHT INTO SERVICE, LA MÉ WILL BE ONE OF WEST AFRICA'S LARGEST DRINKING WATER TREATMENT PLANTS. IT WILL IMPROVE ABIDJAN'S DRINKING WATER DEFICIT, CURRENTLY STANDING AT 33% IN THIS CITY HOUSING ONE FIFTH OF THE CÔTE D'IVOIRE'S POPULATION. THE PLANT IS THEREFORE OF PRIMARY IMPORTANCE FOR THE COUNTRY'S PUBLIC HEALTH. BESIX AND ITS PARTNER, PFO AFRICA, ARE TAKING CARE OF THE CIVIL ENGINEERING, OF A TECHNICAL COMPLEXITY UNPRECEDENTED IN THE REGION.

ON THE RIGHT BANK OF THE RIVER

La Mé is the name of a coastal river. The plant will collect water from the river and treat it. The water will be pumped up from the riverside intake and piped to the plant, 500 metres away.

The water intake is a 10-metre-deep well, with walls made of secant piles. The plant, meanwhile, is a succession of concrete 'cathedrals', which are huge inter-connected basins. The treatment process has been designed by Veolia. The settling reservoirs are followed by basins for filtration, mineral treatment and chlorination, and then come the tanks and pumps, which will send the water to Abidjan's water towers. Each basin has its own specific concrete structure. Given the exceptional volume of water to be treated, such basins require a high degree of technical skill. It is the size and the complexity of these works which led PFO Africa to bring in BESIX to carry out the civil engineering of the factory and the water intake.

BESIX EXPERTISE

This site is faced with many challenges. In addition to the complexity of the structures, including concrete walls of unprecedented height for the region, there are also logistical difficulties. Because, unlike on BESIX's domestic markets, specialised materials and machines are not available locally and had to be imported.

"This requires all the more meticulous anticipatory work since the deadlines have been very tight from the start. The first concrete was poured in March 2019. In March 2020, the structural work will be completed, leaving us with the finishing works, the roads and the various networks. In September, the factory must be operational for the test phase", explains Cédric Marchand, Country Manager of BESIX.

To face these challenges while guaranteeing optimal quality, the BESIX team handled the entire production and the administrative, financial and human resources management. The use of subcontractors is extremely limited. The site has an on-site concrete mixing plant and a prefabrication workshop where the slabs and beams are made. The equipment used also belongs to BESIX, including two mobile cranes and four tower cranes, of which three were repatriated from Guinea and one from Qatar.

KNOWLEDGE TRANSFER

6 days a week, from 7:30 a.m. to 2 a.m., 500 people work on the site, taking turns in two 9-hour shifts. The workforce includes some fifteen expatriates. The other workers have been recruited locally and are employed by BESIX. They have been trained to meet the group's criteria of excellence. "We have introduced an extensive training programme for the workers. This is extremely beneficial to all of us. Locally, this represents a considerable knowledge transfer. The workers trained on our site are now the most qualified workers in the region in civil engineering", says Cédric Marchand.

A FIRST IN WEST AFRICA

These workers are now an asset of BESIX in the country and will follow the group on other projects. Although the La Mé site is the first in Ivory Coast, it will certainly not be the last. Its progress speed has not gone unnoticed. In just a few months, it has become an exceptional business card.

BESIX is also proud of its contribution to the project: the plant will supply drinking water to over 1.5 million people, with a considerable impact on their health and their daily lives.





> 1.5 million

PEOPLE SUPPLIED
WITH DRINKING WATER

10-metre

DEEP WELL FOR THE WATER INTAKE

// PFO Africa

PFO Africa is the leading operator in the Ivory Coast buildings and public works sector. It is also a BESIX customer and its reference partner in the country. Since 2017, the BESIX Engineering department has been assisting PFO in the design of a skyscraper, the F Tower, which will be erected in the heart of Abidjan in the next few years. This collaboration has generated a relationship of trust, which helped bring in the La Mé contract.

// New technologies

The site uses the concrete maturity monitoring solution developed by Sensohive, a member of the BESIX Start-Ups Accelerator. Thanks to sensors placed in the concrete, engineers can use their smartphones to monitor in real time the evolution of the fresh concrete. “By giving us live indications on the concrete strength, the application enables us to remove the formwork at the right time”, explains Julien Vanrobays, Technical Manager BESIX Côte d’Ivoire.

// A record number of women on site

They are about twenty and hold leading positions at La Mé. Engineers, team leaders, site managers, topographers, buyers, QHSE inspectors, etc. Few of the group’s sites anywhere in the world count so many women.

// Young Water Solutions

BESIX Foundation is providing logistics and financial support to the NGO Young Water Solutions. This organisation is promoting access to water in rural areas by helping young entrepreneurs carry out water projects in their communities. The organisation operates in various countries of the world.

// Water for all

The Ivorian government’s ‘Water for All’ programme is aiming at 100% access to potable water by 2030. La Mé is an iconic achievement. By 2025 this project alone will produce 30% of Abidjan’s needs, which by then will have nearly six million inhabitants. Today, most drinking water is pumped from the groundwater. Alternative sources are therefore vital in order to meet the country’s needs in a sustainable way.



MODERNISING LOCKS AND PUMPING STATIONS ALONG THE CANAL

ON THE CHARLEROI-BRUSSELS CANAL, BESIX IS HELPING MODERNISE PUMPING STATIONS AND GANTRY CRANES AT THREE LOCK SITES IN THE WALLOON REGION. BY THE END OF 2020, THE LOCKS AT VIESVILLE, GOSELIES AND MARCHIENNE-AU-PONT WILL EACH BE FITTED WITH ULTRA-MODERN EQUIPMENT, INSTALLED AND BROUGHT INTO SERVICE BY BESIX ENVIRONMENT, WHICH IS IN CHARGE OF THE ELECTROMECHANICAL WORKS. THE GROUP WILL ALSO BE DOING THE NECESSARY CIVIL ENGINEERING, WITH AS LITTLE HINDRANCE AS POSSIBLE TO RIVER TRAFFIC. ALL THIS IS COMPLEX, HIGH-PRECISION WORK.

3 LOCKS AND 2 CONTRACTS

The works consist of modernising the pumping stations, and replacing the gantries and operating mechanisms for the lock and sluice gates. All high and low voltage electrical installations, including the control systems, need to be renewed. Finally, all locks will be equipped for remote operation. While initially still operated on-site, control will subsequently be centralised at the Walloon Region's recently inaugurated PEREX inland waterways centre.

The works are being undertaken under two separate contracts. The first, with BESIX and Franki SA, covers the civil engineering works. The second, with BESIX Environment and John Cockerill, covers the electromechanical work, in this case the installation and commissioning of the technical equipment.

ARCHIMEDES SCREWS INSTEAD OF PUMPS

The lock sites are equipped with pumping stations. These pump water from the lower to the upper canal pond to compensate for the water losses inherent in the lock operations. In this way, a navigable water level can be maintained at all times. The pumping stations at Viesville, Gosselies and Marchienne-au-Pont were previously equipped with four vertical axis pumps each. These are now being replaced at each lock by three endless 'Archimedes' screws, each able to move 2.5 m³ of water per second, or 9000 m³ per hour.

Johan De Rouck, Operations Manager of BESIX Environment in charge of the electromechanical works: "The Archimedes screws require less maintenance than pumps and encounter significantly fewer problems from the presence of solid waste. They also consume less electricity and are more favourable to the movement of fish. Some can even generate electricity."

The demolition of the old pumping stations also requires the construction of new technical buildings. These will accommodate the transformers for supplying pumps and locks, high and low voltage switchboards, new generator sets and automation and control equipment.

ARCHIMEDES SCREWS





DEMANDING CIVIL ENGINEERING WORKS

The complete replacement of the old equipment with different technologies impacts the dimensions of the installations and calls for major civil engineering interventions.

Cédric de Biolley, BESIX Project Manager in charge of Civil Engineering works: "The modernisation work requires us to modify the load-bearing structure of the installations. For example, switching from pumps with a vertical axis to inclined Archimedes screws changes the design of the pumping station, both underground and on the surface. This calls for major earthworks, demolition and reconstruction, without compromising the functioning of the locks at any time. The only time during which navigation will be interrupted is during the replacement of the gantry cranes which raise and lower the lock gates. The overall project is therefore subject to precise and demanding scheduling."

ORGANISATION OF THE WORK

Johan De Rouck: "One of the first steps on the sites is to set up a temporary pumping system. Once the main pumping station is then dry, we can start asbestos removal and demolition work, and after that rebuild and commission the new screws". The start of work on each site is staggered at six-month intervals to allow the various trades to follow one another in an optimal manner to a precise schedule, a process considerably facilitated by the use of LEAN Planning.

ONE-STOP-SHOP

This project is a new example of how BESIX adds value for its client, at both the tender and execution phases, by calling on the group's wide-ranging skills and internal services. This "one-stop-shop" optimises coordination, from preparation through to project delivery, in both the civil engineering and electromechanical areas.

// The Walloon Region

The project is funded for 60% by the Walloon Region, the client, and the remaining 40% by the European Union. The works fall under the Region's policies for maintaining and improving its waterways and their equipment. These waterways play a major role at regional level, while acting at European level as a crossroads between the north of Belgium, France, Luxembourg, Germany and the Netherlands.

// Sustainable electricity

Adrien Theunissen, Senior Manager BESIX Environment: "The Gosselies and Marchienne-au-Pont stations will be equipped with bi-directional Archimedes screws, enabling them to operate also as turbines, using the falling water to produce electricity, which will then be fed into the electricity grid. This will be possible, however, only when water levels are too high, for example following heavy precipitation."

// The history of the canal is also that of BESIX

BESIX is no newcomer to the Charleroi-Brussels Canal. In the 1950s it built the locks that the group is renovating today.

In the 1920s too, BESIX was responsible for widening the canal, in those days the largest infrastructure project in the country. It was also the group's first very large-scale hydraulic contract. It included, in addition to work on the canal itself, the construction of locks, bridges and kilometres of quay walling, all to plans by the group's design office, the ancestor of our current Engineering department.

On the northern part of the Canal, it was again BESIX that built the Ronquières Inclined Plane, a boat lift brought into service in 1968. This, the longest infrastructure of this type in the world, compensates a drop of 68 metres by transporting the boats, in basins mounted on rails, along a 1.4-kilometre-inclined plane.



BRUSSELS AIRPORT GIGAPROJECT PRESENTS LOGISTICS SUPERCHALLENGE

BESIX HAS BEEN SELECTED BY BRUSSELS AIRPORT COMPANY TO CONSTRUCT A NEW TRANSSHIPMENT BUILDING ON THE BRUSSELS AIRPORT BRUCARGO SITE. THE GIGANTIC PROJECT CONSISTS OF THREE SHEDS AND THREE ASSOCIATED OFFICE UNITS, TOGETHER REPRESENTING MORE THAN 60,000 M². "BESIX IS IN CHARGE OF THE COMPLETE INFRASTRUCTURE PACKAGE FOR LOT 1, WITH THE PILOT ROLE ALSO IN LOT 2," SAYS JEROEN GOETHALS, PROJECT MANAGER AT BESIX.

The bulky project ended up in BESIX's lap in late December 2018. The contract consists of the complete infrastructure package for lot 1, ranging from all roads and sewerage under and around the building to the erection of the building itself. "The special technologies have not been ordered from us, but the current order, lot 1, includes our acting as pilot contractor for the other lot. The aim is to produce a fully completed building, including all finishing work and special technologies", Jeroen Goethals explains. "This means that BESIX is responsible for full coordination of the entire project."

OVER 60,000 M²

The total contract includes erecting over 50,000 m² of sheds, plus 10,500 m² of offices, divided into three units. The storage area part of the contract is also divided into three units, of between 10,000 and 25,000 m² respectively. On top of this come 88 loading and unloading docks, separate logistics buildings, a covered parking lot for over 300 vehicles and a 6,400 m² covered area. Lot 1 consists specifically of the structural work, roofing, facade work, installation of the lifts, surrounds, sewerage and road works, the finishing of the office and other areas, and boundary fencing.

With the contract awarded in late December 2018, an 18-month implementation period started. This is a very short period for such a large project. After Christmas leave, preparation work began at once. By the end of February 2019, site work could start, with the first piles drilled into the ground at the beginning of March. Around one year later, at the start of March 2020, the entire structural work was completed."

CHALLENGING TIMING

The tight timing and planning is certainly the biggest challenge in this project. In combination with lot 2, it amounts to about 60 million euros worth of building work to be completed in just 18 months. The timing also impacts the logistics. The site is large, but the tight deadline means there is always a lot of activity at any one time. The site is also in an airport environment, where multiple factors have to be taken into account. All this adds up to a tough logistics exercise.



// Project details

BRUCARGO

Location
Brussels, Belgium

Client
Brussels Airport Company

Type of contract
Build

Construction period
2019-2020

Contract value
€60 million



A PREFABRICATED FEAT

To save time, BESIX relied on its well-known flexibility and creativity. For example, a large part of the project was carried out in pre-cast concrete. The heaviest pre-cast elements, weighing no less than 44 tons, were installed using a 400T telescopic crane. It was decided to convert a large part of what the architects had developed for the customer into prefab. At first this was judged impossible, but BESIX nevertheless succeeded in coming up with a technical solution. Time pressure also played a major role in that story. The part-conversion to a prefab solution was both a technical and a commercial challenge. "First, the customer had to be convinced and second, we had to find the right partners to implement it, at short notice and in a totally saturated market. But we succeeded. This huge feat enabled much of the building to be prefabricated, with appreciable time savings", Jeroen Goethals concludes.

With its know-how, experience, strength, effectiveness and the valuable network able to free up the necessary resources to solve complex issues, BESIX once again successfully demonstrated its superiority in mega projects like this one.



"AT FIRST THIS WAS JUDGED IMPOSSIBLE IN TERMS OF PREFAB CONSTRUCTION, BUT BESIX NEVERTHELESS SUCCEEDED IN COMING UP WITH A TECHNICAL SOLUTION."

**JEROEN GOETHALS,
PROJECT MANAGER, BESIX**

// Attention to the environment

Obviously sustainability, a major item of attention at BESIX, runs like a red thread through the project. "We adapted our implementation methods so that minimum amounts of soil had to be removed and therefore also brought in," says Jeroen Goethals. "Instead of removing soil and bringing in other materials to ensure stability, we opted for soil stabilisation and working as far as possible with the materials at hand on site. In this way, we have also done our bit towards sustainability."

// The project in figures

The construction of the approximately 50,000 m² warehouse was divided into three units: unit 833 covers 15,219 m², unit 834 is 10,044 m² (plus a 1,903 m² mezzanine) and unit 835 is the largest warehouse covering no less than 25,195 m². The covered areas behind have an approximate surface area of 6,396 m², with a depth of 15 m. The three independent office units rise above the sheds and measure 2,598 m² (unit 833), 2,452 m² (unit 834) and 5,739 m² (unit 835), including the ground floor areas. A fenced forecourt in turn consists of approximately 88 loading and unloading docks, while a roof parking lot with access ramp can hold 338 vehicles.





AL JANOUB, A SUSTAINABLE STADIUM WITH STATE-OF-THE-ART FACILITIES

IN JANUARY 2016, THE JOINT VENTURE FORMED BY MIDMAC, PORR QATAR AND SIX CONSTRUCT WAS AWARDED THE CONTRACT TO DESIGN AND BUILD THE AL JANOUB STADIUM (FORMERLY KNOWN AS AL WAKRAH STADIUM). THE ULTRA-MODERN ARENA WAS COMPLETED EARLY 2019 AND INAUGURATED ON 16 MAY 2019 BY HOSTING THE AMIR CUP FINAL OF THE QATAR STARS NATIONAL FOOTBALL LEAGUE.

Designed by famous architect Zaha Hadid Architects, it is shaped like a futuristic boat hull, echoing the hull of a dhow, the traditional boat used in the peninsula. The site, covering an area of more than 580,000 m², will be one of the eight locations to host the 2022 FIFA World Cup in Qatar. The 40,000 seater stadium, which will hold matches up to the quarter-finals, is located in Al Wakrah, a coastal city 23 kilometres south of Doha connected to the capital via the Red Line of the new Doha Metro system.



“DUE TO THE COMPLEXITY OF THE GEOMETRY AND SHAPE OF THE ENVELOPE, THE BIM 3D MODEL WAS A STRATEGIC TOOL FOR THIS PROJECT. STARTING FROM THE 3D MODEL LOD 300 IN REVIT DEVELOPED AT THE IFC DESIGN STAGE, WE PREPARED A LOD 400 IN TEKLA, WHICH DEFINED A PROPER MODELED CONFIGURATION FOR EACH COMPONENT. THIS ALLOWED US TO AUTOMISE THE PROCESS OF PRODUCTION AND FABRICATION DRAWINGS AND FEED THE CNC MACHINE WITH THE REQUIRED PRODUCTION FILES.”

TOM MOONS, HEAD OF FACADE ENGINEERING

BESIX FACADE EXPERTISE

In June 2017, BESIX Facade was awarded the roof and facade construction package of the stadium, as a specialised subcontractor for the joint venture. The facade and roof package was done entirely in-house, allowing to keep control on the development of the project from the beginning of the design until the completion of the installation. The engineering and design phase, which strongly relied on BIM, was crucial for the success of the project. A thorough study brought forth many advantages including cost savings (e.g. reduced weight of steel structure), waste reduction and increase of installation speed. The fabrication was completed in a workshop located close to the site, giving BESIX Facade the required flexibility in case of adjustments or re-fabrication and allowing to produce as much as possible prior to starting the installation.

SUSTAINABLE STADIUM

Al Janoub stadium ranks amongst the world's most sustainable stadiums. In 2018, it has been awarded a four-star rating from the Global Sustainability Assessment System (GSAS). The latter is a green building rating system (similar to LEED and BREEAM). The major sustainability highlight of the stadium is its innovative and energy-efficient cooling technology. The complex uses an energy recovery system in order to reduce energy consumption.

MODULARITY FOR A SECOND LIFE

Especially noteworthy is the modularity of the two-tier football stadium. More than 40,000 spectators will be able to watch the World Cup matches, with everything provided for their comfort. The modular design of the stadium will make it possible to dismantle 20,000 of its seats after the World Cup and send them to developing countries to support their infrastructure.

PROTECTION AND WELL-BEING OF WORKERS IN THE MIDDLE-EAST

Since its creation, BESIX has been committed to offering optimal working conditions to its employees, both on its sites and in its offices.

In 2017, while the stadium was under construction, BESIX signed an international framework-agreement with Building and Wood Workers' International (BWI), which aims to promote and protect the well-being of all the employees and workers working for the group. Although the agreement is globally valid, it was first implemented in the Middle East. It provides, among other things, the promotion by BESIX of workers' rights with regard to its subcontractors and suppliers. In concrete terms, non-compliance by a subcontractor, supplier or agency with the rules imposed by BESIX, leads to the end of the collaboration.

BESIX is one of the only construction companies in the Middle East to accept independent supervision. In December 2018, the Al Janoub project was inspected by the BWI. These assessments cover all aspects including safety, working hours, hygiene, housing, food, sports facilities, etc. The overall positive report following the inspection praised, among other things, the excellent quality of the kitchen, the housing facilities and the well maintained green areas accessible to all workers.

AL JANOUB STADIUM, AL WAKRAH, QATAR



23.5%

REDUCTION ACHIEVED IN ENERGY FROM THE BENCHMARK SET

100%

RECOVERY OF THE CONDENSATE WATER, USED FOR LANDSCAPING NEEDS

96%

(BY WEIGHT) OF THE KEY MATERIALS USED IN THE CONSTRUCTION SOURCED LOCALLY

71%

(BY COST) OF THE KEY MATERIALS USED IN THE CONSTRUCTION SOURCED RESPONSIBLY

// Project details

AL JANOUB STADIUM

Location
Doha, Qatar

Contract type
Design & Build

Stakeholder(s)
Midmac, PORR Qatar and Six Construct

Client
The Qatar 2022 Supreme Committee for Delivery & Legacy

Construction Period
2016 - 2019



A WORLD-CLASS STADIUM FOR NORTH QUEENSLAND

WATPAC HAS A PROUD TRACK-RECORD OF BUILDING PREMIERE SPORTING FACILITIES, WITH MANY SHOWCASED AS VENUES FOR PRESTIGIOUS INTERNATIONAL EVENTS SUCH AS THE AUSTRALIAN OPEN GRAND SLAM TENNIS EVENT AND MOST RECENTLY THE GOLD COAST COMMONWEALTH GAMES 2018.

The North Queensland Stadium is the latest to join the list with Watpac handing over Australia's newest stadium in early 2020. The 290 million AUD project was constructed over two and a half years and was joint initiative of the Queensland Government, Australian Federal Government and the Townsville City Council to provide a best-practice, multi-purpose stadium for the region.

Recently renamed 'Queensland Country Bank Stadium', the stadium is a new home ground for the much-loved North Queensland Cowboys rugby league team and will host entertainment acts and special events. The stadium can host up to 25,000 people on game day and in concert mode the stadium can accommodate up to 40,000 patrons in the stands and on the field of play.

Boasting world-class amenities for fans and players alike, the stadium features a variety of plazas and green spaces, 29 permanent food and beverage outlets, over 100 corporate boxes and suites, two function rooms, and four player changerooms with spa baths, warm-up areas, medical room and massage room.

With a high profile in a regional tropical location, the project presented its challenges. A spectacular stadium roof, amongst the most geometrically complex in Australia, required extensive testing, modelling and engineering to ensure suitability for local conditions. Specially designed trusses were required to handle the extreme weather conditions, such as cyclones and high temperatures,

regularly experienced in North Queensland. Installation was a complicated operation for the team as each of the 36 trusses has a different geometry and required a slightly different installation process, with the total onsite assembly process for each truss taking around 14 days from delivery to being lifted and fitted into place.

Safety was a number one priority for the project team, with special attention required due to the dynamic nature and size of the project site throughout construction. Over 1.1 million hours were worked by hundreds of subcontractors and personnel, with over 2,000 inductions and more than 100 safety committee meetings and internal audits completed.



“THE PROJECT HAS BEEN CHALLENGING FOR NUMEROUS REASONS. IN ADDITION TO THE COMPLEXITY OF A LARGE PROJECT IN A REGIONAL TOWN WITH A HIGH LOCAL PARTICIPATION TARGET, OUR LOCAL SUPPLY CHAIN HAD TO REACH NEW HEIGHTS FOR THIS PROJECT. THE PRIDE FROM THE LOCAL COMMUNITY AND BUSINESSES AND HYPE AROUND THE STADIUM HAS BEEN ENJOYABLE TO BE A PART OF AND WE LOOK FORWARD TO THE UPCOMING OPENING EVENTS.”

BRIAN HAYES, PROJECT MANAGER, WATPAC



The project set out with a commitment to providing opportunities for local businesses and trades and the finished stadium certainly owes much of its success to the efforts of locals. Construction saw an average of 300 workers on site daily, with over 85 per cent of workers living in the region, and over 11.6 per cent of workers identifying as Indigenous peoples (far exceeding the target of 6.6 per cent goal set by the client). Ensuring that this was a stadium built by North Queensland for North Queensland.

In place of traditional trusses, special designed trusses that act like folded plates help achieve the roof's 'pandanus' designed geometry. These trusses provide the strength needed to resist cyclonic wind loads and the flexibility to allow the roof to expand and contract with regular temperature fluctuation. Conditions very common to tropical Townsville.

NORTH QUEENSLAND STADIUM, TOWNSVILLE, QUEENSLAND, AUSTRALIA

2,280 people

SIZE OF CONSTRUCTION WORKFORCE

1,154,082 hours

TOTAL CONSTRUCTION WORK HOURS -

488

LOCAL BUSINESSES ENGAGED IN SUPPLY CHAIN

2,493

TONNES OF STRUCTURAL STEEL

22,974 m³

CONCRETE POURED

// Design

The stadium's unique design was created by Cox Architecture and was inspired by the lush tropical environment of North Queensland, with the horseshoe-shaped design and cantilever roof drawing inspiration from the native Pandanus plant.

// Sustainability

Environmental sustainability was a key consideration in stadium design decisions, with several features incorporated to reduce water and energy use. These include 500,000 litres of storage for rainwater potable water-use minimisation, Waste recycling strategies, Water tolerant plant species for landscaping, Self-cleaning facade and roof types.

// Project details

QUEENSLAND COUNTRY BANK STADIUM

Location

Townsville, Queensland, Australia

Client

Queensland Government

Type of contract

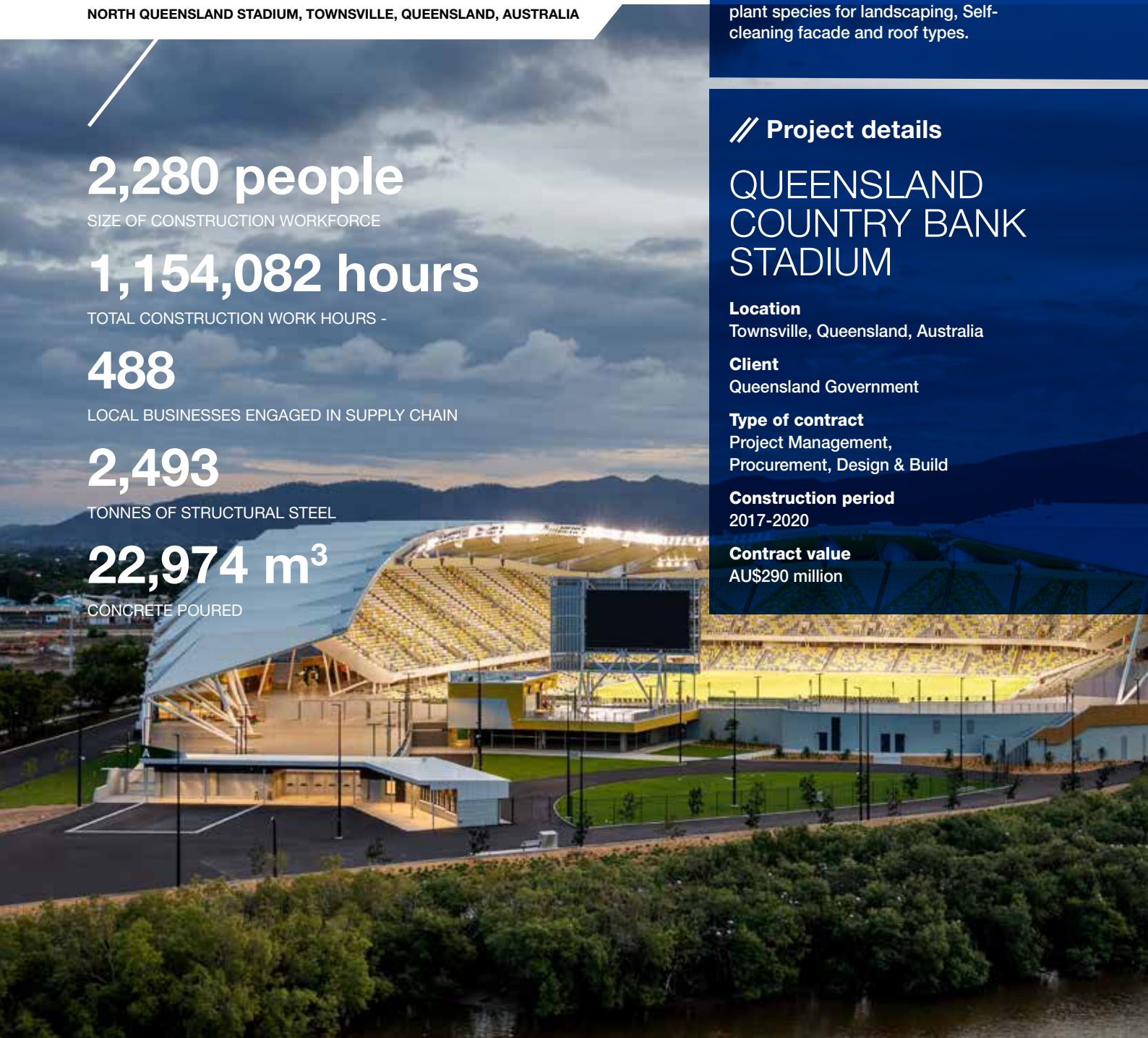
Project Management,
Procurement, Design & Build

Construction period

2017-2020

Contract value

AU\$290 million





A16 ROTTERDAM: WORLD'S FIRST ENERGY-NEUTRAL HIGHWAY

THE CONSORTIUM "DE GROENE BOOG", FORMED BY BESIX, DURA VERMEER, VAN OORD, JOHN LAING, REBEL AND TBI, HAS BEEN AWARDED THE CONTRACT TO DESIGN, BUILD, PRE-FINANCE AND MAINTAIN THE A16-PROJECT IN THE ROTTERDAM REGION. THE CONTRACT ALSO INCLUDES A TWENTY-YEAR MAINTENANCE PERIOD. AN EXAMPLE OF SUSTAINABILITY AND INNOVATION, SEAMLESSLY FITTING INTO THE ENVIRONMENT, THE MOTORWAY WILL DRAMATICALLY IMPROVE ACCESS TO THE REGION. THE ENERGY-NEUTRAL A16 ROTTERDAM WILL CONNECT THE A16 AT THE TERBREGSEPLEIN WITH THE A13 BY ROTTERDAM THE HAGUE AIRPORT AND IS EXPECTED TO BE OPEN TO TRAFFIC BY THE END OF 2024.



Rijkswaterstaat, the Dutch Infrastructure and Water Management agency, has decided to build the 11-km-long road to help smoothen the traffic as well as to improve the accessibility and liveability of the area. It will not only be seamlessly integrated in the landscape but will also be the world's first energy-neutral highway and tunnel, as it will generate the energy it consumes. The adjoining areas will be re-landscaped and connected by cycling and walking paths.

"The A16 Rotterdam is a new sustainable highway that is being built without disrupting the traffic, the trains and the businesses in the area. The inconvenience for the people living in the neighbourhood will also be limited as much as possible. Stakeholders in the surroundings will be closely involved in the execution of the project, so as to also make them proud of the achievement. A special Expo A16 has been set up to inform and educate local residents, pupils and students about the project. It is for good reason that 'Groen en Groos' (Green and Proud) is our project motto", says Stefan van der Voorn, Contract Manager, Rijkswaterstaat.

Several measures were implemented to preserve the environment and ensure safety on the site. A free-standing road dedicated to construction traffic has been installed along the entire route to separate construction traffic from regular traffic. The area surrounding the works is home to bats. To compensate for the removed greenery and safeguard their habitat, a special guide cloth has been hung up.

A flyover designed by BESIX's Engineering Department will be pushed out over the existing highway, using the so-called ILM (Incremental Launching Method). This method consists in prefabricating the segments in a casting yard located behind one of the bridge abutments and pushing the structure outwards from the abutment towards the pier. Each new unit is assembled directly against the preceding one and once it has hardened, the structure is moved forward by the length of one unit.

"I FIND IT PARTICULARLY FASCINATING TO BE ABLE TO TAKE PART IN ONE OF THE LARGEST INFRASTRUCTURE PROJECTS IN THE NETHERLANDS, IN WHICH CERTAIN MAJOR AND PREVIOUSLY UNEXHIBITED TECHNIQUES ARE APPLIED, SUCH AS THE ILM METHOD."

ALBERT TIMMERMAN, PROJECT MANAGER DE GROENE BOOG

// Project details

A16 ROTTERDAM

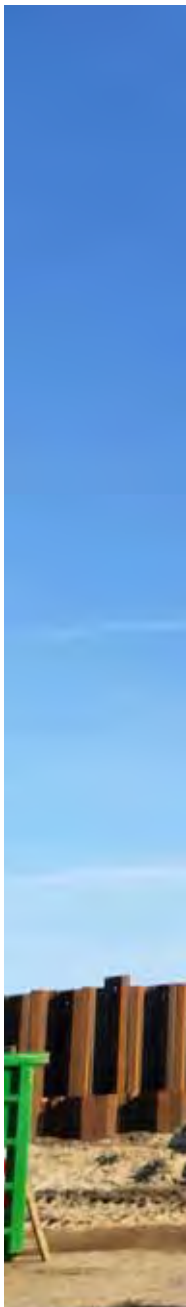
Location
Rotterdam region, Netherlands

Client
Rijkswaterstaat

Type of contract
Build

Construction period
2019-2024

Contract value
€712 million





“TO REDUCE CO₂ EMISSIONS TO A MINIMUM, WE USE SOLAR PANELS, LED LIGHTING, ELECTRIC TRANSPORT AND HYBRID EQUIPMENT”

**SJOERD GIJEZEN, MVO MANAGER
DE GROENE BOOG**

/// Sustainable Pearl Award

The project has received a “Sustainable Pearl”, an award granted to projects that apply the Sustainable Civil Engineering Approach in a unique way. Obtaining a Sustainable Pearl is quite an achievement. In the tender phase, ambitious commitments were made in the areas of material use and energy in the use phase. In addition, the De Groene Boog consortium has registered with CO₂ performance ladder level 5 setting a target of minimum 10 per cent of CO₂ reduction.

20,000 m²

OF SOLAR PANELS

100%

ENERGY-NEUTRAL

ENERGY EFFICIENCY

The project fits its surroundings seamlessly. Moreover, it sets the bar high in terms of sustainability by being entirely energy neutral. The use of energy efficient installations and close attention to the design of the tunnel and the road will lead to a reduced energy consumption.

The tunnel includes smart solutions for the electricity, heating, ventilation and lighting. The lighting will ensure optimum safety, and wherever possible, sunlight will stream in through grilles and fibre-glass panels. Special LED lighting will also be installed in the tunnel. Moreover, at the entrance of the tunnel, the lanes and walls will be painted in a light colour to maximise reflection, hence requiring fewer LED lights.

All the installations and systems will run on DC voltage, a first for a project of that size, which is a more sustainable and reliable system than AC voltage. The entirety of the energy will be produced by the road itself using 20,000 m² of solar panels. Noise pollution will be prevented by using extra noise-reducing asphalt on the A16 road surface (dual-layer fine porous asphalt) and installing noise barriers and earth embankments.

THE “TWIN-16”

BESIX is working with Soltegro and Infranea on the “Twin-16”, a virtual model of the 3D design. Twin-16 helps to ensure the smooth implementation of the project in several aspects. Where previously the teams had to go on site to verify functionality matters, the system is now tested in a simulation environment.

A digital twin consists of three components, namely the physical entity, the digital/virtual replica and the connections between them. The difference between a digital twin and BIM (Building Information Model), which is used more often in construction and civil engineering, lies mainly in the data connections and the applications. BIM is more focused on the design and engineering phase, while a digital twin is intended for the interaction between people and the physical entity or environment. It has for instance been set up to continuously receive data from the physical world for simulations and training sessions. By digitally imitating reality very precisely, costly errors can be avoided at an early stage. Virtual reality (VR), for example, makes designs literally visible and experienceable. It allows anyone to walk through the tunnel and understand what is going on.

“People are visual. It helps tremendously when you make things visible in a dynamic environment. That’s how we came up with VR. We make scenarios that are on paper, for example an accident, visible with images in a 3D environment in which we make things happen. This allows us to check with the client whether the design is accurate. With VR you understand each other faster than when you talk about a drawing”, says Franc Fouchier, Manager Systems Engineering & Innovation at software company Soltegro.



AJMAN SEWERAGE, A TEXTBOOK EXAMPLE OF WASTEWATER MANAGEMENT IN THE MIDDLE EAST

SINCE 2006, AJMAN SEWERAGE (ASPCL) HAS PLAYED A CENTRAL ROLE IN MANAGING THE WASTEWATER OF THE EMIRATE OF AJMAN. THE COMPANY BRINGS TOGETHER BESIX, WHICH OWNS 40%, THE GOVERNMENT OF AJMAN (GOA) (40%) AND VEOLIA (20%). AS THE FIRST PPP IN THE MIDDLE EAST IN THIS FIELD, ASPCL BUILT THE EMIRATE'S ENTIRE WASTEWATER COLLECTION NETWORK AND TREATMENT FACILITIES, WHICH WERE PREVIOUSLY NON-EXISTENT. ASPCL CONTINUES TODAY TO MANAGE THESE INFRASTRUCTURES AND TO EXPAND THEM TO SUPPORT AJMAN'S DEVELOPMENT AND TO INTEGRATE NEW TECHNOLOGIES INTO ITS OPERATIONS. THIS INCLUDES, IN 2019, AN INVESTMENT TO ENABLE THE WASTEWATER TREATMENT PLANT TO GENERATE ELECTRICITY USING THE BIOGAS PRODUCED BY THE WASTEWATER TREATMENT PROCESSES. AGAIN A FIRST IN THE REGION. WITH BESIX AT THE HELM.

WASTEWATER MANAGEMENT

450 kilometres of underground sewers collect wastewater from 175,000 properties and conveys it via a series of pump stations to the treatment plant located on the outskirts of Ajman city. The treatment plant processes it along with the wastewater from buildings not yet connected to the network, which is discharged at the treatment plant by tank trucks.

"The treatment plant, with a capacity of 140,000 m³ per day, is the treatment centre for all of Ajman's wastewater. This is treated to a high standard so that it can be reused. This is the case for 40% of the treated water, which is used for unrestricted irrigation of all Ajman's landscape and greenery, of which, another 10% is being refined for a higher treatment standard by SAFI, for commercial and industrial applications. The plant operates 24/7 with an advanced management system, including preventive maintenance", explains ASPCL General Manager Elias Sfeir.



AN UNPRECEDENTED CONTRACT

The concession runs until 2034. It was granted to ASPCL by GoA in 2006, giving the company an exclusive rights to finance, build, own, operate and maintain the Emirate's entire wastewater treatment infrastructure. Never before had such a contract been awarded in the Middle East. The years that followed have demonstrated its relevance. An advanced and efficient system was quickly put in place to serve the developed areas of Ajman city, which has since been expanded to meet the demands of the development of the Emirate and its ever-increasing population. This expansion included the wastewater treatment plant upgrade to provide 40,000 m³ per day of additional treatment capacity, which was completed in 2018.

ENVIRONMENTAL BENEFITS

"In the past, wastewater generated in Ajman was stored in septic tanks then conveyed by tanker trucks to the desert and discharged into open lagoons", explains Christophe Ledur, General Manager BESIX Environment. By establishing a modern sewerage system in Ajman, ASPCL has eliminated the risks to public health and environment linked discharge of untreated water." Christophe Ledur continues: "Water is a scarce resource. Treatment therefore offers an alternative source that is both sustainable and economically advantageous. With the Government of Ajman, BESIX has played a pioneer role in this field and we are certainly proud of this."





“THE TREATMENT PLANT, WITH A CAPACITY OF 140,000 M³ PER DAY, IS THE TREATMENT CENTRE FOR ALL OF AJMAN’S WASTEWATER. THIS IS TREATED TO A HIGH STANDARD SO THAT IT CAN BE REUSED FOR IRRIGATION AS WELL AS COMMERCIAL AND INDUSTRIAL APPLICATIONS.”

**ELIAS SFEIR,
GENERAL MANAGER, ASPCL**



// Green electricity from sewage sludge

In July 2019, ASPCL awarded BESIX the contract to design and build an extension to the wastewater treatment plant to digest sewage sludge and use the biogas by-product to generate electricity. These facilities will produce 50% of the treatment plant’s energy – a first in the United Arab Emirates. In addition to lowering the treatment plant’s dependence on the public electricity grid, these facilities will both reduce the quantity and improve the quality of the sludge to be disposed of, while opening the way for the development of other options to recycle the sewage sludge, such as organic fertilisers and alternative fuel for cement plants. The sludge processing plant is the third project of this type that BESIX has developed. The other two, located in the Netherlands, are among the first energy-neutral stations, producing 100% of their needs.

// The commercial approach

In addition to managing the infrastructure, ASPCL also takes care of the commercial aspects of the project. This is a special feature, quite unique in BESIX’s concessions portfolio. For example, ASPCL manages the issuing of invoices as well as debt collection. In fact, the establishment of a customer service centre and a customer charter was one central aspect of the solution developed by the partners. This has contributed to implement a sustainable system that is satisfactory to all stakeholders.

// Project details

AJMAN SEWERAGE PCL

Location

Emirate of Ajman (UAE)

Type of contract

Design, Build, Finance, Maintenance

Construction period

2003-2007

Maintenance / Operations

2007-2034



EMIRATES RDF: TURNING HOUSEHOLD WASTE INTO A SOLUTION

ON 7 OCTOBER 2019, HIS HIGHNESS SHEIKH RASHID BIN SAUD BIN RASHID AL MUALLA, CROWN PRINCE OF UMM AL QUWAIN, LAID THE FOUNDATION STONE OF A WASTE RECOVERY PLANT. CO-FINANCED BY THE MINISTRY OF PRESIDENTIAL AFFAIRS OF THE UNITED ARAB EMIRATES, IT IS BEING FINANCED, BUILT AND OPERATED BY A PUBLIC-PRIVATE PARTNERSHIP BETWEEN THE MINISTRY OF CLIMATE CHANGE AND ENVIRONMENT AND THE COMPANY EMIRATES RDF, IN WHICH BESIX IS A SHAREHOLDER. STARTING IN SEPTEMBER 2020, THE PLANT WILL CONVERT UP TO 1,200 TONNES OF HOUSEHOLD WASTE A DAY INTO REFUSE-DERIVED FUEL (RDF). RDF WILL PARTIALLY REPLACE THE FOSSIL FUELS USED IN LOCAL CEMENT PLANTS. IN THIS WAY, 90% OF HOUSEHOLD WASTE FROM THE EMIRATES OF UMM AL QUWAIN AND AJMAN, PREVIOUSLY LANDFILLED, WILL BE RECOVERED. WHILE THIS TYPE OF INSTALLATION IS FREQUENT IN WESTERN EUROPE, IT IS THE FIRST OF THIS TYPE IN THE GULF REGION.

Emirates RDF is a joint venture of BESIX, the Finnish company Griffin Refineries and Ajman-based TG Eco Holding. In October 2018, the Ministry of Climate Change and the Environment signed a 'Build-Operate-Transfer' contract with the joint venture for the design and construction of an RDF plant, followed by 15 years' operation of it. Six months later, in April 2019, Emirates RDF had reached financial close for the project.

The plant is dimensioned to process the waste of more than 550,000 people, corresponding to the combined population of the emirates of Ajman and Umm Al Quwain. It will be fitted with two parallel processing lines. In addition to producing RDF, the plant will also play an important role in the treatment of recyclable waste, which it will redirect after sorting to competent companies.

Emmanuel Craenen, Project Manager for Six Construct: "After receiving our Notice to Proceed on 7 May 2019, we immediately started the detailed design of the project with a small yet highly committed and efficient team. Since obtaining the Building Permit on 1 October 2019, the Project has been progressing at high pace, and works are currently on track to deliver an operational plant as scheduled, in September 2020."



"THE PROJECT CONTRIBUTES TO THE UNITED ARAB EMIRATES' STRATEGIC OBJECTIVE OF DIVERTING AT LEAST 75% OF WASTE FROM LANDFILLS BY 2021, WHILE HELPING CEMENT FACTORIES REDUCE THEIR USE OF FOSSIL FUELS. THE PROJECT IS AN EXAMPLE OF INTEGRATED AND SUSTAINABLE WASTE MANAGEMENT."

**NICO DE KONING,
GENERAL MANAGER OF EMIRATES RDF**



// Project details

EMIRATES RDF

Location

Umm Al Quwain, UAE

Client

Emirate of Umm Al Quwain (UAE)

Type of contract

Build, Operate, Transfer

Construction period

2019-2020

Maintenance / Operations

2020-2035

// Refuse-Derived Fuel (RDF)

RDF is a fuel produced from solid waste, consisting of the high calorific value parts such as paper, plastics, wood and textile. An RDF production facility consists of several successive stages of waste separation and sorting, using advanced technologies. In this way, the production of RDF drastically reduces the amount of waste landfilled. The RDF also replaces fossil fuels such as petroleum products or coal, which are considerably more harmful to the environment.

// Vision 2021

Vision 2021 is a national strategy of the United Arab Emirates focused on improving the country's performance in six areas including health, education and environment. The percentage of waste treated and the contribution of renewable energies in the energy mix are two of the indicators monitored in the field of Sustainable Environment and Infrastructure.

// RDF for cement factories

Firing is a central element of the cement production process, in which limestone and clay are fired up to 1,470°C to produce clinker. The necessary ovens, which consume large amounts of energy, function with RDF mixed into fossil fuels. Hence the increasing use of RDF worldwide.

1,200

TONNES HOUSEHOLD WASTE CONVERTED DAILY INTO REFUSE-DERIVED FUEL

90%

VOLUME OF HOUSEHOLD WASTE PREVIOUSLY LANDFILLED AND NOW DIVERTED INTO THE RDF FACILITY





SLUSHUIS

IT IS WITH A NEW AMBITIOUS PROJECT COMPLETELY BUILT ON WATER, THAT BESIX RED CHOSE TO ENTER THE NETHERLANDS. "SLUSHUIS" IS NOT JUST ANOTHER RESIDENTIAL DEVELOPMENT IN AMSTERDAM. IT IS THE ILLUSTRATION OF BESIX GROUP'S MULTIDISCIPLINARY EXPERTISE FOR THE BENEFITS OF END-USERS. A TECHNICALLY AND ARCHITECTURALLY CHALLENGING PROJECT THAT RESULTS IN A COMPLETE NEW LIVING EXPERIENCE ON AND AROUND WATER.

SLUSHUIS is a 39,000 m² residential development located on the IJ-bay in Amsterdam (Steigereiland-neighbourhood) offering 442 energy-neutral apartments. "More than a residential project, SLUSHUIS is an integrated concept of life on water that creates a new living experience in Amsterdam", states Thomas Veys, BESIX RED Country Director of The Netherlands. Next to the various apartment types - suiting with different buyer profiles - and the 400-meter-long promenade along the IJ, the project also offers 34 houseboat lots, 54 berths for pleasure crafts, and another 1,100 m² areas for catering facilities and retail space.

With BESIX RED as the developer and BESIX Nederland being the contractor of the project, SLUSHUIS is a prime example of the success of BESIX GROUP's synergy. Co-developed with strong local partner VORM, the new development also highlights another pillar of BESIX RED's strategy: partnership.

"Our presence in the Netherlands as well as our association with VORM are part of our geographical diversification strategy. When entering new countries, we usually partner up with local key players that have in-depth knowledge of the market and with whom to share our experience", explains Thomas Veys.

As an urban developer, BESIX RED's mission is to bring cities a new architectural and urban dimension. In other words, to identify tomorrow's neighborhoods where to create long-term value for its inhabitants. With iconic architectures, ambitious concepts, sustainable developments and innovative services. SLUSHUIS is the evidence.

"Besides the complexity of building on water with piles up to 60m deep, the project has been designed in order to allow boats to enter the courtyard through a large opening. In terms of construction, this involved additional technical skills to build a cantilever of 2 times 50-metre-long. Not to mention the two-storey underground carpark below water-level", points out the Country Director.

"The synergy within BESIX Group and the multidisciplinary expertise that we manage to bring together results in turning our vision into reality", continues Thomas Veys. "Leveraging on our in-house extensive know-how coming from our different entities (such as marine works, engineering, infrastructure, ...) enables us to optimize the development plans. As a result, we proposed to the city a program of technical, architectural and conceptual high quality", adds Stijn van de Sande, Commercial Director Buildings BESIX Nederland.

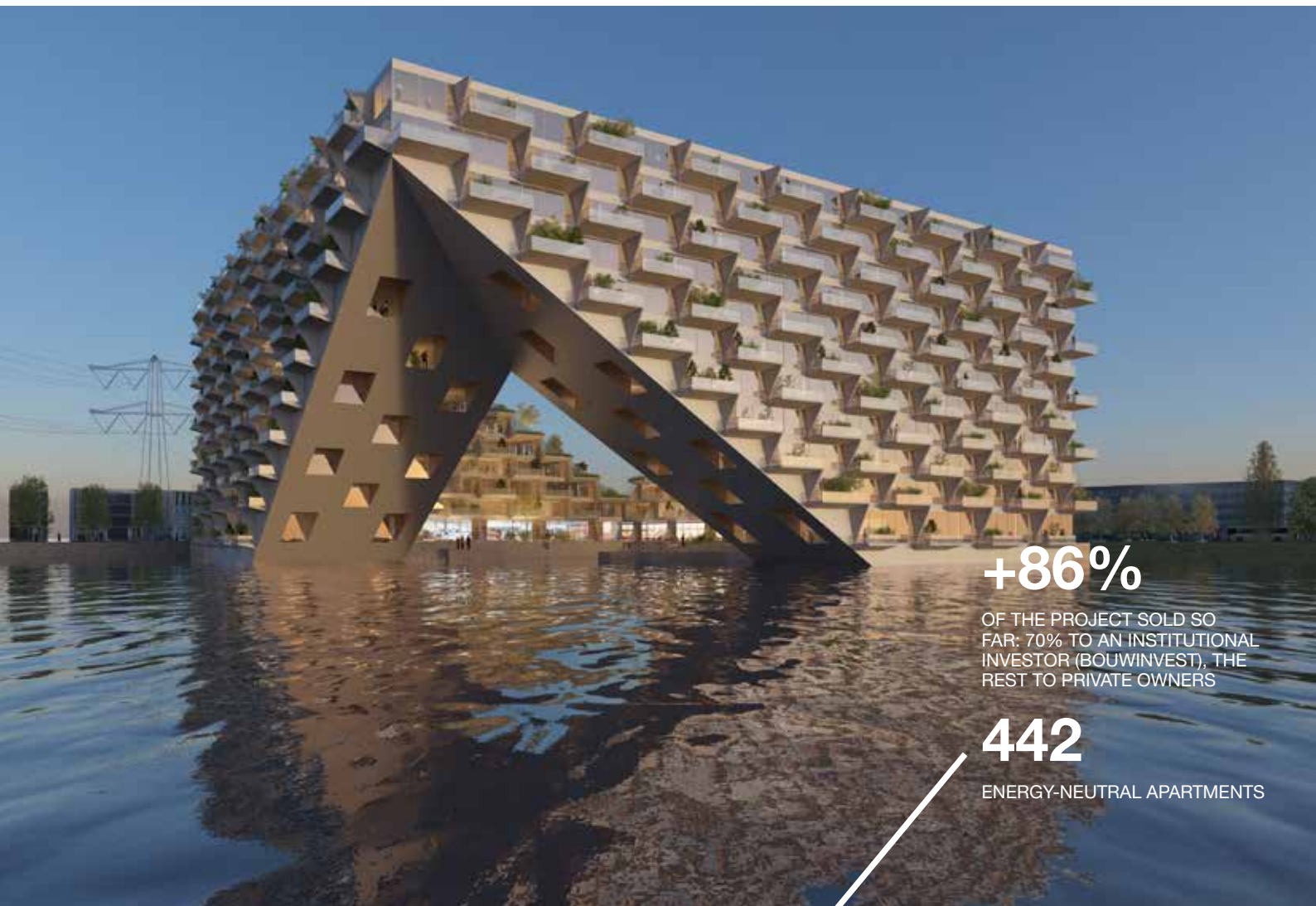
"The City of Amsterdam was immediately convinced of the concept and the architecture", continues Thomas Veys, mentioning that the project is already 70% acquired by institutional investor BOUWINVEST and another 16% by private owners.



"SLUSHUIS IS A ZERO-ENERGY BUILDING THAT WILL PERFORM -0,02 IN TERMS OF ENERGY PERFORMANCE."

**THOMAS VEYS, BESIX RED
COUNTRY DIRECTOR OF THE
NETHERLANDS**





+86%

OF THE PROJECT SOLD SO FAR: 70% TO AN INSTITUTIONAL INVESTOR (BOUWINVEST), THE REST TO PRIVATE OWNERS

442

ENERGY-NEUTRAL APARTMENTS

SUSTAINABILITY

Designed by BIG, internationally renowned and climate concerned Danish architect Bjarke Ingels, and its local peer BARCODE architects, the building is harmoniously integrated in its current environment and creates a large gateway - as if opening sluice gates - from the river IJ towards the inner harbor of the city. On the embankment's side, a wide staircase organized in between the greenery of the apartment terraces gradually rises towards the rooftop and offers passers-by a walkway.

Consistent with BESIX RED's sustainable strategy, various initiatives and techniques have been integrated in order to make SLUISHUIS a zero-energy building that performs -0,02 in terms of Energy Performance, generating more energy than it will actually use. Next to sustainable building materials, the project features:

- // solar panels installed on the roof and one of the islands,
- // ground-coupled heat exchangers,
- // triple-glazed windows,
- // user-dependent space heating,
- // balanced ventilation,
- // and a heat recovery system connected to the showers' discharges.



"SLUISHUIS is one of the most iconic projects BESIX RED has developed so far. It is an exemplary project that not only teaches us a lot for future developments but also demonstrates our expertise on the technical level as well as our vision in terms of sustainability and living experiences", concludes Thomas Veys.



ICÔNE BELVAL

“ICÔNE” – AN 18,700 M² OFFICE BUILDING DEDICATED TO THE NEW WAY OF WORKING (NWOW) - IS ONE OF BESIX RED’S LATEST REFERENCES IN LUXEMBOURG. LOCATED IN BELVAL, A FORMERLY INDUSTRIAL DISTRICT, THIS NEW DEVELOPMENT ILLUSTRATES THE COMPANY’S CLIENT-CENTRIC APPROACH AS WELL AS ITS VISION. CONCEPTUALLY INNOVATIVE, ARCHITECTURALLY AMBITIOUS, “ICÔNE” TAKES WORK EXPERIENCE TO A COMPLETELY NEW LEVEL WHILE JOINING IN THE GOVERNMENT’S EFFORTS IN THE EXPANSION OF BELVAL.

The presence of BESIX RED in Belval is no coincidence. Considered as one of the most ambitious urban projects in Europe, Belval is an example of the revitalization of an industrial zone into a new city quarter led by Agora, a public-private development company (Luxembourg state and private steel Group ArcelorMittal). Described as a symbol of city renewal initiated by the government, the former industrial zone has undergone an exemplary conversion into an international pole of knowledge and research as well as a district providing high-quality housing.

BESIX RED’s decision to logically extend its activities to this new city quarter confirms the company’s vision as an urban developer as well as its expertise in identifying high-potential sites: strategically located areas near facilities and communication nodes. “Somehow, ICÔNE reflects our tangible participation in the government’s approach to densification. The same way as we (re)invest at the train station district (a less established neighborhood) in the heart of Luxembourg-



“ICÔNE IS A CUSTOM-DESIGNED OFFICE DEVELOPMENT FOR USERS AND THEIR WELLBEING. IT RESULTS FROM A DEEP REFLECTION ON THE HUMAN BEING, THE FUTURE OF THE WORKPLACES, AND HOW INNOVATION CAN CONTRIBUTE TO CREATE NEW WORK EXPERIENCES.”

GEOFFROY BERTRAND, DIRECTOR BESIX RED LUXEMBOURG

city with projects such as Soho, Impulse, Kons..., we also develop hubs on the outskirts”, explains Geoffroy Bertrand, Director BESIX RED Luxembourg. “ICÔNE is located on one of the last sites within the already developed epicenter of Belval. The flow generated by the university and business district (Deloitte, Pictet Bank, RBC Investor Services Bank, ...) but also by the railway station, shopping center (Plaza), restaurants, creates a real dynamism in this area and ensures a prime location for our future office development.”

RECONNECTING PEOPLE

Consistent with BESIX RED’s client-centric approach, ICÔNE is the result of its intention to add a more human dimension to its developments. Besides sustainability, wellbeing at work is another major concern of the developer. “Our concept has been designed from the inside to the outside, by first imagining spaces - such as informal meeting areas - that reconnect people”, explains Florian Esnault, Senior Project Manager BESIX RED. “Then, we wrapped those with an iconic architecture that also provides a high level of comfort while maximizing performances and productivity of the users”.

Redefining tomorrow’s workplaces, the 18,700 m² new office building embodies the New Way of Working. One which is flexible, interactive and co-creative. “ICÔNE is a custom-designed office development for users and their wellbeing. It results from a deep reflection on the human being, the future of the workplaces, and how innovation can contribute to create new work experiences”, comments Geoffroy Bertrand. “By optimizing spaces and flexibility, integrating new technologies, ICÔNE offers qualitative spaces which encourage co-creation, interaction and connectivity. Its purpose is to re-create a sense of community”, pursues the Director.

Far from a common workplace, the next generation office building integrates the latest innovations and technologies in terms of construction and working environment (BREEAM EXCELLENT), enabling the building to evolve over time. Intended as a place for active life and encounter, it offers 17,500 m² office spaces dedicated to the latest work trends, such as co-working and certain forms of so-called “nomadism”.





18,700 m²

OFFICE BUILDING DEDICATED TO THE
NEW WAY OF WORKING

Next to interior and exterior terraces, another 1,500 m² is dedicated to restaurants and retail spaces.

“Beyond traditional office spaces, the conception of the building allows a wide range of surfaces (from 200 m² up to 3,000 m² per floor), as suitable for several start-ups as for the future headquarters of one single tenant”, describes Patrick De Meirleir, Deputy Technical Director BESIX RED.

Designed by internationally renowned architects Foster + Partners and Luxembourgish Beiler François Fritsch, the transparent architecture is inspired by Belval’s rich industrial heritage and offers a bright work and living environment. The structure is arranged with two wings that enclose the all-glass atrium; an open and green space forming the social and environmental heart of the building. The entire volume is wrapped by a distinctive orthogonal facade and a glass roof, playing of transparency, light, openness and completing the development’s industrial look.

“The building’s large flexibility of fitting out and its design - its glass walls, atypical facade and glass ceiling - involved exhaustively detailed architectural plans as well as a specific coordination. Not only between all project’s stakeholders but also on the legal level; with Luxembourgish law and local regulations”, concludes Patrick De Meirleir.



**“THE CHALLENGE WAS TO
CREATE A BUILDING THAT
WAS OPEN AND FLEXIBLE,
RESPONDING TO THE
CONTEMPORARY PATTERNS
OF WORK IN TODAY’S
ORGANISATIONS WHILE ALSO
RESPECTING THE SITE’S
INDUSTRIAL HERITAGE.”**

**DARREN HAYLOCK,
PARTNER FOSTER + PARTNERS**



／ BUSINESS REVIEW 〃



 **BESIX**

Contracting

THE GLOBAL CONSTRUCTION INDUSTRY POSTED ITS SLOWEST PACE OF GROWTH IN A DECADE IN 2019, DROPPING TO 2.6%, ACCORDING TO GLOBALDATA¹. DESPITE THIS DIFFICULT MARKET SITUATION, BESIX WAS ABLE TO SUCCESSFULLY DELIVER A NUMBER OF HIGH PROFILE PROJECTS IN EUROPE AND AUSTRALIA. BESIX HAS ALSO WON SIGNIFICANT NEW CONTRACTS, INCLUDING STATE-OF-THE-ART MARINE WORKS IN CANADA, AFRICA, EUROPE, AND THE MIDDLE EAST, AS WELL AS VARIOUS ENVIRONMENTAL, CONSTRUCTION AND INFRASTRUCTURE PROJECTS IN AUSTRALIA, THE UNITED ARAB EMIRATES, THE FRANCE/BENELUX REGION AND THE REST OF EUROPE. EACH AND EVERY PROJECT, REGARDLESS OF ITS SIZE OR PROFILE, HAS AGAIN BEEN AN OPPORTUNITY TO DEMONSTRATE AND SHARE THE EXCELLENCE WHICH PREVAILS THROUGHOUT THE GROUP.



DUQM JETTY, OMAN

2019, A DIFFICULT AND CHALLENGING YEAR

The economic situation was less dynamic than hoped in several parts of the world. This was especially true of the Middle East, where the number of calls for tenders was significantly lower than anticipated. On the other hand, Europe has seen a significant increase in the number of projects on the market. BESIX has been able to consolidate a leading position on its home markets and continues to be viewed as a valued long-term partner by its clients.

EUROPE

Overall, market conditions in 2019 have been good, although some regions were faced with a continuous pressure on market prices. In Belgium several large infrastructure works have been put out to tender or will be awarded in 2020 (Oosterweel, Ring Ghent, Cycling Highway Brussels-Leuven, ...). These projects will generate income in the market from 2021 onwards. In the Netherlands, the new legislation on Nitrogen and PFAS (Per- and polyfluoroalkyl substances) has started affecting the market in the summer of 2019. The impact will be clearer in the course of 2020, as the government is expected to take measures to mitigate

its effects. In the meantime, major clients are postponing their projects. The already difficult housing market is also impacted, further leading to a very high demand for housing. In Luxemburg, the market remains strong in office, housing and infrastructure works. Lastly, France is seeing a sustained strong activity in civil works in the Paris Region as a result of the Grand Paris metro project and many larger building projects under development in the office, housing and hospital sectors.

In **Belgium**, several important projects were delivered in 2019 such as the new offices for the DPG Media and the Hansadok quay walls in Antwerp, as well as the CIAC project for BESIX RED in Ghent. BESIX also signed new contracts in 2019, including ZIN in NO(O)RD, which involves the renovation of the WTC Towers in the Brussels North District, and Paradis Express in Liège, both for client Befimmo, the metro project Constitution for the Brussels public Transport Company STIB in Brussels, and infrastructure works for the RER in Waterloo. BESIX also won a number of contracts thanks to its One-Stop-Shop approach, which combines the different expertise areas and specialties available within the group: a water pumping station near the Royerssluis and the renovation of the Kennedy Railway tunnel, both in Antwerp, as well as infrastructure works for the future Spartacus tram in Diepenbeek.



BESIX HAS BEEN ABLE TO CONSOLIDATE A LEADING POSITION ON ITS HOME MARKETS AND CONTINUES TO BE VIEWED AS A VALUED LONG-TERM PARTNER BY ITS CLIENTS.

ZIN IN NO(O)RD, BRUSSELS, BELGIUM



In **Luxemburg**, the CASA Ferrero project was successfully delivered to the client. Several contracts were signed in the water treatment sector and for industrial installations.

In **France**, works on the hospital in Neuilly-sur-Seine and the Nice Airport Promenade continued. Early 2020, BESIX won two new projects: the Deloitte University EMEA in Val d'Europe, near Paris, for Nexity, and the finishing of the new metro station Saint-Denis-Playel in Paris.

In **the Netherlands**, the widening of the A6 in Almere and the Beatrix Lock in Nieuwegein, two PPPs, were delivered ahead or within schedule. The sludge treatment plant in Tiel was also successfully handed over to the client. Several major new projects were signed at the end of 2019: the renovation of the PostNL Building in the Hague for a private client and the infrastructure project 'Gebiedsontwikkeling Oostelijke Langstraat' in the Den Bosch area. Lastly, the PPP-project A12/A15 near Arnhem could boost BESIX' orderbook to record heights.

INTERNATIONAL

In 2019, BESIX International has signed four new contracts, while entering two new markets (Latvia and Mozambique). In **Latvia**, BESIX was awarded the reconstruction and enlargement of the Riga station, including a railway bridge on the Daugava river. In **Mozambique**, BESIX will, in joint venture with Mota-Engil, build marine facilities (material offloading facility and loading jetty) for the Mozambique LNG Gas Development Project, currently the worlds' largest marine infrastructure project. Already operating in Cameroon (Nachtigal Dam) and Ivory Coast (La Mé, Water Treatment Plant), BESIX is seeing an increased activity in Africa.

In **Canada**, BESIX has successfully delivered Baffinland Freight dock at Milne Port, in the north of Baffin Island, despite the very difficult working conditions in this part of the world. BESIX was awarded a second contract in Canada to build the first Canadian LNG export ocean terminal in British Columbia.

BESIX is also further expanding in Northern Europe. In **Denmark**, the Crown Princess Mary's Bridge was officially opened on 28 September 2019 by her Royal Highness Crown Princess Mary of Denmark two months ahead of schedule.

Lastly, BESIX will also resume its activities in **Poland** with the newly won contract for the construction of a shipping channel through the Vistula Spit peninsula, in joint venture with NDI.

DPG MEDIA, ANTWERP, BELGIUM



RIGA STATION, RIGA, LATVIA

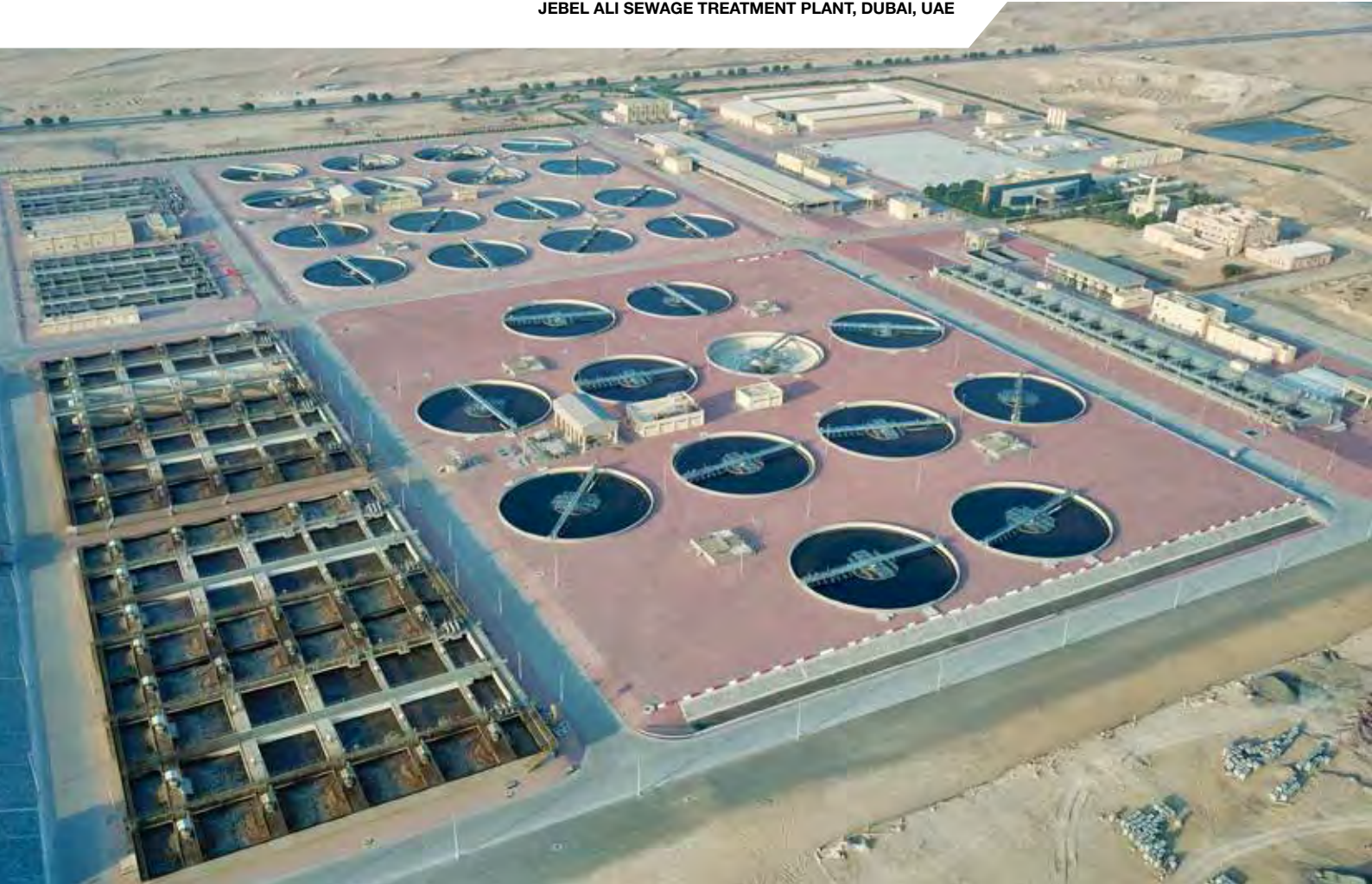


MIDDLE EAST

BESIX' subsidiary Six Construct has been operating in the Gulf Cooperation Council (GCC) area since 1965. The region has experienced a drastically slow real estate market and a year-over-year decline in number of contracts awarded. This is a downtrend following the drop in oil prices, given the region's heavy dependence on oil revenues for government expenditure. To counter that trend, governments have increased their reliance on filling the funding gap through procuring projects on a BOT and/or PPP basis. Furthermore, launching of numerous sustainable projects within the renewables energy sector is an increasing trend.

In terms of competition, Chinese companies have predominantly impacted large scale projects with their lower cost pricing structure. After the major financial crisis in 2008 and the downsizing of the Middle Eastern markets in 2014, Six Construct seized the opportunity to realign itself and focus on core sectors and strategic clients (mainly Government-related entities), while staying clear of the real estate sector.

JEBEL ALI SEWAGE TREATMENT PLANT, DUBAI, UAE



Six Construct has been able to substantially grow its portfolio and relationships with key government clients in the region and secure a number of notable projects such as Dubai waste-to-energy, Jebel Ali sea water reverse osmosis plant, Ajman sludge-to-energy, Dubai landfill gas-to-energy, Umm Al Quwain Refused-Derived fuel facility, Dubai Shindagha Infinity bridge, and Dubai Shindagha Corridor project, while completing and successfully delivering Jebel Ali Sewage treatment plant phase 2, Masdar Institute Neighborhood and Duqm liquid berth terminal.

AUSTRALIA

BESIX's subsidiary Watpac was founded in Australia nearly 40 years ago. Watpac delivers medium- to high-complexity building works to diverse clients across the East Coast, South Australia and Northern Territory. Watpac's portfolio is largely delivered through Design and Build contracts, with private and public sector clients in areas such as health, education, defence, sports, airports and property development. Since its acquisition in December 2018, Watpac has focused on positioning the company to leverage the full scope of BESIX Group's resources on future opportunities, particularly in civil and marine contracting and high-complexity building projects.

Australia's construction sector remained steady through 2019. However, it still is characterised by highly competitive tendering processes and project pipelines closely linked to economic conditions. While international capability for value-add solutions is appreciated, clients continue to focus



JUBILEE PLACE, BRISBANE, AUSTRALIA

on local experience and procurement from contractors. In civil construction, many of the more complex contracts are delivered as part of mega-infrastructure projects by well-established, multi-national contractors and consortiums, creating both opportunities and entry challenges for Watpac. Watpac Management is currently focused on positioning the company for opportunities in New South Wales and Victoria, where there are multi-year, long-term public infrastructure investment programs. In Queensland, where the majority of Watpac's revenue has historically been generated, investment continued into social infrastructure such as schools, hospitals and defence facilities, and private property development is slowly recovering after a significant slowdown in 2018.

In 2019, Watpac stayed focused on implementing its strategy and further integration with BESIX Group to establish a compelling new offering in the Australian market. While there is still much work to be done, prospective clients are starting to respond favourably to the enhanced offering, which leverages both Watpac and BESIX's in-house capacity and expertise in Design, Engineering and Methods, and underpins Watpac's pursuit of larger projects and civil project opportunities. Thanks to BESIX's huge expertise in these areas, Watpac is working on further expanding its civil and marine contracting services through the company's existing regional footprints and local expertise, aiming to deliver projects such as bridges, water treatment plants and manufacturing facilities.

Within Watpac's core portfolio of largely Design and Build contracts, further differentiation is pursued through value-add, fit-for-purpose and sustainable solutions, and importantly,

collaborative long-term relationships with clients and the supply chain. To lead and move this strategy forward, Watpac has bolstered its management team through the appointment of Mary Jane Bellotti as Chief Development Officer. Mary Jane commenced in March 2020, bringing over 25 years of experience primarily in the construction industry.

Watpac delivered several key projects in 2019. The Queensland Country Bank Stadium in Townsville was completed in two and a half years. It features a spectacular roof, amongst the most geometrically complex in Australia, which required extensive testing, modelling and engineering to ensure suitability for local tropical conditions. Other completed projects include the Kodo apartments in Adelaide, the Mid North Coast Correctional Centre expansion in Port Macquarie, the Bouverie Street student accommodation in Melbourne, the Deakin University Law School building in Melbourne and the Ripley Valley school in Queensland.

Despite a highly competitive market, Watpac also signed a number of new contracts in 2019: the Jubilee Place, a 14-level commercial tower in Brisbane, the Poly Centre, a 26-level commercial tower in Sydney, the James Cook University Cairns Innovation Centre, a 3-level multi-functional building in north Queensland, the Natura Macquarie Park, two premium 21-level residential towers in north Sydney, the Sun Metals refinery, a zinc plant expansion in north Queensland, the Naval Guided Weapons Maintenance Facilities, a defence project in western Sydney and the Qantas Founders Museum Airpark Roof in central Queensland.

SNCB HEADQUARTERS, BRUSSELS, BELGIUM**OUTLOOK 2020**

For BESIX Europe, the year 2020 started with a record order book well distributed over the different countries. Major projects, which have already been awarded early 2020, including the SNCB headquarters in Brussels, will further increase the order book. Meanwhile BESIX Europe is a member of different consortia participating in large tenders for which decisions are expected in 2020. Moreover, the priority in 2020 will lie in continuously improving operational excellence on ongoing or newly acquired projects, whilst focusing on those new projects where BESIX can deliver added value for clients.

BESIX International has significantly renewed its order book in 2019 and now needs to focus on the realisation of those major projects. Several projects still in the negotiation phase, for instance in Ivory Coast, will ensure the continuity of activities from 2021 onwards.

In the Middle East, Six Construct has identified three main strategic sectors for 2020: Infrastructure, Marine and Environment (water and waste management, energy, ...) projects, in addition to Special Buildings. Considering the lack of liquidity on the market, clients will increasingly develop procurement mechanisms implying a wider involvement of the private sector (PPP, concessions, ECA fundings, ...). The development of the company in project delivery also implies operational excellence, which is why the digitalisation of management tools is very high on the agenda and will continue to mobilise resources.

While there has been a significant reduction in the order book in 2019, Watpac is optimistic about Australia's contracting outlook and is well positioned to navigate potential highs and lows of the economic cycles. Market fundamentals are strong with a robust pipeline of public and private sector investment, historically sound economic performance and relatively steady political environment. After an initial transition year, Watpac will continue key integration activities to support strategic pursuits, enhanced services, operational excellence, career and professional development opportunities. A number of key projects will reach completion or key milestones during the next year, enabling transfer of staff to new projects and adding further credibility to Watpac's delivery expertise.

“FOR EUROPE, THE PRIORITY IN 2020 WILL LIE IN CONTINUOUSLY IMPROVING OPERATIONAL EXCELLENCE ON ONGOING OR NEWLY ACQUIRED PROJECTS, WHILST FOCUSING ON THOSE NEW PROJECTS WHERE BESIX CAN DELIVER ADDED VALUE FOR CLIENTS.”

KEY FIGURES 2019 //**€3.2 billion**

REVENUES

**€13.2 million**

NET RESULT

**€3.8 billion**

ORDER BOOK AS AT 31/12

Concessions & Assets

A6 ALMERE, THE NETHERLANDS



THE YEAR 2019 WAS THE LAST IN A LONG SERIES WHERE LARGE INFRASTRUCTURE PROJECTS WERE TENDERED AS PPP IN THE NETHERLANDS. CONVERSELY, 2019 SAW A STRONG REVIVAL IN PPP TENDERS IN BELGIUM, AFTER A FEW YEARS OF SLOWER ACTIVITY. BESIX IS CURRENTLY TENDERING FOR SEVERAL LARGER BUILDINGS AND INFRASTRUCTURE PPP PROJECTS IN THE FLEMISH AND BRUSSELS REGIONS.

In the Middle-East, and the UAE in particular, BESIX continues to grow its portfolio of municipal waste water treatment and energy from waste projects. The projects are either concessions – carrying a price and volume risk – or capacity payment based.

BESIX Concessions & Assets (C&A) creates and offers tailor-made solutions covering the complete scope and lifecycle of infrastructural, environmental or building projects. For PPP (Public-Private Partnerships), DBFM (Design Build Finance Maintain) and BOOT (Build Own Operate Transfer) projects, BESIX C&A has the capacity to completely align with its clients' vision and expectations. BESIX C&A provides customised technical, commercial and financing schemes to meet the client's long-term needs, that is to help them optimise an asset's total lifecycle cost.

ONE-STOP-SHOP SOLUTIONS

More than ever, the market demands solutions that provide not only an asset but a total service: Design, Build, Finance, Operate and Maintain. Through its international network, BESIX C&A is able to arrange funding by bringing financial parties and investors together and look for the optimal financial structure over the economic lifetime of a project. BESIX C&A can provide such solicited added value, offering a broad multidisciplinary range of solutions along the entire value chain and, when appropriate, inject its own capital to finance initial investments.

BESIX C&A skills nicely add to BESIX's strong engineering, design and planning skills. The group's strong balance sheet allows to aim for sizeable equity stakes in the financing part of the projects, together with a strong presence in the joint ventures that will carry out the EPC (Engineering, Procurement and Construction) and O&M (Operation & Maintenance) works. Whether buildings, infrastructure, civil works, road surfacing, or environmental projects, BESIX can do them all. BESIX' worldwide footprint allows for participation in PPP tenders in its three home markets (BeNeLuxFra, GCC and Australia), but also in other emerging countries that consider PPPs as a true value-for-money proposition for the longer term.



“MORE THAN EVER, THE MARKET DEMANDS SOLUTIONS THAT PROVIDE NOT ONLY AN ASSET BUT A TOTAL SERVICE: DESIGN, BUILD, FINANCE, OPERATE AND MAINTAIN.”

**TOM NEYRINCK, GENERAL MANAGER
CONCESSIONS & ASSETS**

PRINCESS BEATRIX LOCK, THE NETHERLANDS**MILESTONES 2019**

In the Netherlands, together with its consortium partners Dura Vermeer, Hochtief, John Laing and Van Oord, BESIX won the ViA15 motorway PPP project in December. Located in the vicinity of Arnhem, this joint venture dubbed “GelreGroen” will build a 12 km section of the A15, which connects it to the A12, and widen an additional 23 km segment of the A12 and A15. The ViA15 project is the sixth successful PPP project for BESIX, in addition to the Second Coen Tunnel, the Limmel Flood Barrier, the Beatrix Lock, the A6 Motorway, and the A16 Motorway.

In the UAE, Emirates RDF reached financial close for the Refuse Derived Fuel Facility in the Emirate of Umm Al Quwain in May 2019. Emirates RDF is a joint venture formed by BESIX, Ajman-based Tech Group holding company, and Finland-based Griffin Refineries. The project is a PPP implementing a BOT (Build Operate Transfer) scheme with a 15 year post-construction operational phase. As from September 2020 the facility will receive 1,000 tonnes of municipal waste per day from approximately 550,000 residents living in the Emirates of Umm Al Quwain and Ajman. The waste will be converted into an alternative energy source called Refuse Derived Fuel (RDF), which will be used as a fuel in cement factories instead of coal. It simultaneously results in a diversion of at least 90% of household waste from landfill.

In 2019, BESIX C&A participated for the first time in PPP tenders for industrial scale solar PV projects, which is an area of activity that will be further developed in the future.

In the hospitality sector, BESIX STAY launched its first brand, A-STAY, and officially opened its first location next to the Central Train Station in Antwerp (Belgium) on 15 November. By the end of 2019, it had sold more than 2,000 nights. Customers have quickly taken notice of the experience, rating A-STAY over 240 times as either “very good” or “excellent” on several online review platforms. In August, BESIX STAY moved into their new offices in Diegem (Belgium).



AL SAJA'A WASTEWATER TREATMENT PLANT (QATRA), SHARJAH, UAE



“IN 2019, BESIX C&A PARTICIPATED FOR THE FIRST TIME IN PPP TENDERS FOR INDUSTRIAL SCALE SOLAR PV PROJECTS, WHICH IS AN AREA OF ACTIVITY THAT WILL BE FURTHER DEVELOPED IN THE FUTURE.”

TOM NEYRINCK, GENERAL MANAGER CONCESSIONS & ASSETS



GOTTHARD RESIDENCES, ANDERMATT, SWITZERLAND



RDF, UMM AL QUWAIN, UAE

OUTLOOK 2020 AND BEYOND

In Europe, 2020 will see a strong shift in BESIX C&A tendering activities from the Netherlands to Belgium. The European C&A team will also actively consider new countries with a stable PPP framework (e.g. Poland), and new sectors in its home market (e.g. water treatment, energy from waste).

A-STAY Brussels obtained its building permit in April 2019 for a project in Diegem, and A-STAY Chisinau (Moldova) received city approval early January 2020. Both properties will start construction soon in 2020. BESIX STAY is further making aggressive headway to achieve a goal of opening 10 locations in total by 2025.

In the GCC, BESIX C&A will continue working towards financial close of the huge Warsan waste-to-energy project in Dubai together with partners Hitachi Zosen Innova, Itochu Corporation, DUBAL and Dubai Holding. Tendering activity will continue to be mainly focused on the UAE, with potential new developments in more environmental and power production projects.

Last but not least, BESIX C&A will further support Watpac in moving up the PPP value chain, from being a mere contractor to an active participant in SPVs through equity stakes, and potentially also in the O&M part of the projects. A few countries in Western Africa also provide PPP opportunities that will be considered on a very selective basis.

Real estate

BESIX RED CONTINUES ITS ORGANIC GROW

2019 IS SYNONYMOUS WITH NEW ACHIEVEMENTS AND MEDIUM-TERM COMMITMENTS FOR BESIX RED. THE DELIVERY OF ONE OF ITS RESIDENTIAL REFERENCE PROJECTS IN BRUSSELS, *THE COSMOPOLITAN*, AND FERRERO INTERNATIONAL'S NEW HEADQUARTERS IN LUXEMBOURG CLEARLY DEMONSTRATE THE COMPANY'S EXPERTISE ON A VERY COMPETITIVE MARKET. BESIX RED INTENDS TO PARTICIPATE IN URBAN RENEWAL THROUGH LARGE-SCALE DEVELOPMENTS THAT SYMBOLISE ARCHITECTURAL QUALITY AS MUCH AS BESIX GROUP'S MULTIDISCIPLINARY EXPERTISE.

2019 also confirms its pan-European ambition with the acquisition of a second site for a large residential development in Lisbon. Faithful to its mission of providing innovative and sustainable urban as well as architectural solutions, its sectoral and geographic diversification strategy, established in 2011, has led to a balanced portfolio and the organic growth of its activities.

The many successful projects of recent years bear witness to the company's multidisciplinary expertise. A broad know-how that BESIX RED now intends to share with institutional and private investors.

More than just developing residential, office and retail buildings, BESIX RED conceives living and meeting spaces that contribute to the users' well-being. To this end, people and innovation – as a means – form an integral part of its reflection on tomorrow's real estate.

Today active in 14 cities, across 5 countries, with 27 projects under development, BESIX RED has repeatedly seized development opportunities in cities marked by a real socio-economic dynamism. The success of this strategy is demonstrated by the company's long-term and sustained growth over the past 9 years and its portfolio of more than 600,000 m² of projects in development. Despite a large number of pending permits, BESIX RED closed 2019 with a strong turnover of €154.3 million in line with the one achieved last year (€154.6 million), and with a return on equity of 16.3% (vs. 21.7% in 2018).

"The decrease of our 2019 results does absolutely not reflect a drop in our operational performances. On the contrary, it demonstrates our medium- and long-term commitment to large-scale multifunctional projects, which will allow us

to fulfil our societal mission as 'district creators'. A sustained investment in the future across the Group. We do not think of our projects as free electrons. But rather it is together that they contribute to the renewal of the districts and cities of tomorrow", says Gabriel Uzgen, Managing Director BESIX RED.

With over 30 years' experience, strengthened by the expertise of BESIX Group, BESIX RED positions itself as a large-scale project developer that brings quality of life and new dynamics into neighbourhoods.

"The investment decisions aimed at consolidating our development portfolio have borne fruit. They are part of our organic growth policy based on 3 major pillars:

- // a strategy of sectoral and geographic diversification to reduce our exposure to economic cycles in one single market,
- // growing synergy between the different entities of BESIX Group, allowing us to benefit from our subsidiaries' wide-based expertise (engineering, maritime, infrastructure, high-rise buildings),
- // our focus on innovation, considered as a means to serve our customers.

To this philosophy we add our desire to build long-term loyalty in our relationships with key accounts and to share our expertise with them," continues Gabriel Uzgen. BESIX RED has already demonstrated this approach by renewing a financial partnership with Belgian stock exchange-listed investor COMPAGNIE DU BOIS SAUVAGE for the DUUO-project in Portugal.

With its current pan-European dimension, BESIX RED nevertheless wants to maintain a strong anchoring to its home territories, in order to expand from a solid base.





“MORE THAN DEVELOPING RESIDENTIAL, OFFICE AND RETAIL BUILDINGS, BESIX RED CONCEIVES LIVING AND MEETING SPACES THAT CONTRIBUTE TO THE USERS’ WELL-BEING.”

GABRIEL UZGEN, MANAGING DIRECTOR BESIX RED

KEY FIGURES 2019//

14 CITIES ACROSS
5 COUNTRIES

THE NETHERLANDS

BELGIUM
LUXEMBOURG

FRANCE

PORTUGAL

€154.3 million

TURNOVER

16.3%

RETURN ON EQUITY

600,000 m²

OF PROJECTS IN DEVELOPMENT



FERRERO INTERNATIONAL'S HEADQUARTERS, GRAND DUCHY OF LUXEMBOURG

1 // BELGIUM

LARGE-SCALE DEVELOPMENTS

Although its ambitions in Belgium are still very present, BESIX RED is positioning itself on more complex, larger-scale developments. Its multidisciplinary expertise allows the company to face stronger competition and build a real estate portfolio that clearly marks the impact of its vision on neighbourhoods to become.

- // **Brussels:** *Les Promenades d'Uccle* (new 42,000 m² residential district); *Porte de Ninove* (multifunctional office, residential, hotel and retail project along the canal); *Europea-NEO 1* (a large-scale mixed-use project revitalising the Heysel plateau - 212,000 m²); *Cours-Saint-Michel* (70,000 m² of offices and housing, Etterbeek); *Matisse* (40,000 m² of offices, residential and retail spaces, Evere).
- // **Wallonia:** *Esprit Courbevoie* (new 60,000 m² urban district in Louvain-la-Neuve built around an open landscaped park); *Le Côté verre* (multifunctional project aimed at creating a link between the upper and lower city of Namur); *Croisée des champs* in Gembloux (57,000 m² of residential and retail spaces)
- // **Flanders:** *KAAI District* (40,400 m² mixed project in Aalst, including a first public phase of redevelopment of the railway station and a second phase of revitalising the neighbourhood); *Meyvaert* (new residential district in Ghent, 17,500 m²), *Meadow* (259 housing units in a large park in Herent-Leuven)

DELIVERIES

In January 2019, BESIX RED delivered **THE COSMOPOLITAN** (15,100 m² - 158 units and 1,500 m² of offices sold to Gezinsbond vzw, Belgium's largest independent family association), a complete refurbishment project of an old office tower, right in the centre of Brussels. The expertise of BESIX Group enabled the dismantling of the initial facade, the addition of 3 levels and the enlargement of the building with full-length terraces.

With contemporary architecture by Bogdan & Van Broeck and a unique concept of living at height, THE COSMOPOLITAN offers a new living experience with a panoramic view on the city. This reconversion project is now one of the most emblematic architectural buildings in Brussels, according to the authorities, and has been selected for the 2020 MIPIM Awards within "BEST REFURBISHED BUILDING-" category.

BESIX RED was also proud to deliver **DUNANT GARDENS** (26,400 m² - 209 residential units, retails and offices spaces co-developed with IMMOGRA - Ghent) and the first phase of **LES PROMENADES D'UCCLE** (13,770 m² residential - Brussels) co-developed with MATEXI on the plateau d'Engeland.

2019 also marks the start of new projects including:
SO STOCKEL-Phase 1 (13,800 m² residential development in Woluwe-Saint-Lambert), co-developed with BelgianLand and
MEADOW-Phase 2 (6,600 m² - 64 apartments - Herent).

2 // LUXEMBOURG

CASA FERRERO - the new headquarters of FERRERO International (29,500 m² - Luxembourg co-developed with Luxembourg strategic partner F. GIORGETTI): this very constructive double partnership with GIORGETTI and BESIX Group has resulted in an built-to-suite office building offering its 1,200 occupants a unique work experience.

3 // ACQUISITIONS

2019 was synonymous with growth in its activity. BESIX RED acquired a total of 70,000 m² of new sites for development in Belgium, Luxembourg and Portugal:

- // **DUUO**, Lisbon (P) - 34,000 m², residential;
- // **MAJERUS**, Brussels (BE) - 3,850 m², residential;
- // **FAÏENCERIE**, Luxembourg (LU) - 46,000 m², residential, on the former Villeroy & Boch site, in partnership with ICN development and Tralux Immobilier. This co-development illustrates both BESIX RED's partnership strategy and its recognition on the Luxembourg market. "We join forces with strategic local partners for large-scale projects or those requiring specific added value", explains G. UZGEN.

4 // A NEW ARCHITECTURAL AND URBANISTIC DIMENSION

The desire to *excel* and the respect for the client, specific to our Group allow BESIX RED to surround itself with the most prestigious architects. Together, they conceive emblematic projects bringing a new architectural and urban dimension to city districts:

- // Belgium: **Bogdan & Van Broeck** / The Cosmopolitan, **Axent Architects** / Canal District, **Binst Architects** / Meadow;
- // International: **Jean-Paul Viguier (FR)** / NÉO 1; **Bjarke Ingels Group DK** / SLUISHUIS (442 residential units - 39,000 m² - Amsterdam - co-developed with the Dutch developer VORM Holding); **Foster + Partners (UK)** / ICÔNE (18,700 m² of offices dedicated to the latest working trends - Belval, LU).

5 // INNOVATION AND SUSTAINABILITY

Next to its societal involvement through respect of the environment, BESIX RED attaches much importance to the concept of 'well-being', aiming to offer a new '(residential, work or commercial) experience' to future users. Ambitious architecture, eco-responsibility, but also new technologies/innovation are common denominators of its future projects.

In its desire to diversify its activities, the company has taken a capital participation (40%) in PROPCHAIN, a Belgian start-up combining blockchain technology and secured ledger of all real estate and technical documents related to a building. This investment confirms its long-term vision of innovation as a means serving its clients and not as a purpose.

6// OUTLOOK

BESIX RED's diversification strategy combined with a prudence policy, today results in a balanced, high-potential portfolio; taking into consideration the number of operational m² (today still at permitting or study stage) which should grow in the coming years.

Its client-centric approach enables the company to identify future needs and promising new niches; thereby ensuring a high rate of return on its future developments. In addition, its international experience is also contributing to enriching its innovation strategy and its awareness of new trends (such as co-living, co-working, NWoW but also sustainable solutions or digital tools ...)

BESIX RED intends to continue its pan-European expansion with a targeted approach through developing an ecosystem of services and expertise that will serve its clients and partners.

This ambition is all the more solidly rooted thanks to the growing synergy within the BESIX Group entities, the matrix structure of its organisation and its expertise as a developer-contractor.

This identity specific to BESIX RED has enabled the company to win the trust of many high-quality customers and partners.



“WE INTEND TO CONTINUE OUR PAN-EUROPEAN GROWTH THROUGH DEVELOPING AN ECOSYSTEM OF SERVICES AND EXPERTISE THAT WILL SERVE OUR CLIENTS, PARTNERS AND INVESTORS.”

**GABRIEL UZGEN,
MANAGING DIRECTOR
BESIX RED**

DUUO, LISBON, PORTUGAL



Diversification

FLAMANT DESIGN

Flamant creates inspiring interior collections that turn every house into a welcoming home. From furniture and decorative items to textiles, wallpaper and own brand Flamant Paint. With 6 company-run stores in Belgium and France, 36 partner shops on every continent and an easily accessible webshop, Flamant offers its products across the world. Management attention is divided between 3 business activities: Wholesale & Franchise, Retail, and e-Commerce.

The collections reflect a careful search for authentic products from all over the world and are renewed every 6 months. Designed and manufactured in craft workshops, each object tells its own story.

In this way Flamant profiles itself as not just as an interior decoration brand, but as a very unique way of dwelling and living. This lifestyle concept has been the basis of Flamant for more than 40 years. The brand has a rich history and has gained worldwide fame as a supplier to royal courts. Its acquisition by BESIX in 2018 has allowed Flamant to focus once again on essentials: creating and studying new trends and listening to its customers' needs.

2019, THE YEAR OF CHANGE

Last year was dominated by change, with the appointment of a new management team, the recruitment of additional employees and the redesign of the showroom, with the flagship Flamant Sablon store in Brussels reopened in October. In just 2 months, this store had been magicked into a modern experience shop, with a large display area, its own bar and in-store entertainment.

After 41 years the time was ripe for a rebranding, with due respect for the well-known Flamant DNA and for the brand's evolution over the years. Supported by BESIX and the new management team, Flamant has opted for a more contemporary image. The new logo with the punchy baseline "You're Home" was launched online and offline in October 2019.

At the end of 2019, a contract was signed for the first franchise shop in Jordan. This new partnership with International Brands Limited has led to the opening of a Flamant shop in the capital, Amman, in early 2020. In Greece, Flamant has been appointed official partner for the interior decoration of one of the newest projects of the Sani hotel chain. Finally, in order to make an even stronger connection with its customers, partners and other stakeholders, Flamant launched its own magazine in 2019. The *A Touch of Flamant Magazine* is published twice a year in 5 languages and is distributed free of charge in all shops and during events.

FLAMANT IN THE MIDDLE EAST

In December 2019, the agreement was signed between Flamant and International Brands Limited. This resulted in a new 600 m² Flamant store in Amman, the capital of Jordan. This successful outcome was made possible by the intensive collaboration between all Flamant departments: from Sales & Management to IT, Accounting, Logistics, Merchandising and Purchasing.

This collaboration also served as a motivation to thoroughly (re)evaluate a number of issues within the organisation. For example, a Dealer Manual and Concept Book were drawn up, setting out in detail the Flamant concept and the basis for professional collaboration.

The physical store has opened in early 2020. In addition to this new cooperation, Flamant hopes to expand to Saudi Arabia and Qatar in the near future.



FLAMANT

YOU'RE HOME



AXEL FLAMANT & JOHAN BEERLANDT



36

PARTNER SHOPS
ON EVERY CONTINENT

6

COMPANY-RUN STORES
IN BELGIUM AND FRANCE

FLAGSHIP STORE FLAMANT SABLON, BRUSSELS, BELGIUM



“FLAMANT HAS A FIRST FRANCHISE SHOP IN JORDAN AND HOPES TO EXPAND IN SAUDI ARABIA AND QATAR IN THE NEAR FUTURE.”

KURT MOONS, CEO FLAMANT

LN24

LN24 is a 360° media company which launched in Belgium in 2019. The company operates via the internet (on its own website and social media) and on television, as a news channel broadcasting 24 hours a day, 7 days a week. LN24 covers the latest political and economic developments in Belgium, in Europe and around the world. It gets to the bottom of major developments in society, and covers cultural and sporting events. This is an outlet which isn't afraid of broadcasting live when news is breaking. BESIX Group holds a 42.4% share in LN24.

LN24 was launched on 2 September 2019 in the presence of numerous special guests from politics, business and the media. Today it is Belgium's premier French-language news channel. LN24 produces an average of 10 hours' live

broadcasting daily, which is a first for the country as a whole. It is the only channel in Belgium to broadcast three evening news bulletins (at 8, 9 and 10 p.m.). Its news bulletins are both the first and last live news programmes to air in Belgium each day, at 6:30 a.m. and 10 p.m.; the 10 p.m. bulletin is also broadcast on Facebook Live.

The editorial team is a blend of youth and experience, with an average age of 28, a real hotbed of local talent. LN24 has attracted over a million viewers in French-speaking Belgium since its launch. The channel has become a preferred platform for brands and advertisers seeking the meaning behind the headlines. The 24-hour news channel is still developing its digital side, thus moving even closer to achieving must-watch 360° media status. Its priorities for further development include internet streaming and social media.



“BY THE END OF 2019, LN24 HAS ATTRACTED OVER A MILLION VIEWERS IN FRENCH-SPEAKING BELGIUM SINCE IT LAUNCHED IN SEPTEMBER.”

JOAN CONDIJTS & MARTIN BUXANT, FOUNDERS OF LN24



42.4%

SHARE OF BESIX
GROUP IN LN24



REGIONAL & SPECIALISED ENTITIES IN EUROPE //







COBELBA, ORIGINALLY FROM NAMUR, HAS OPERATED AS A GENERAL CONSTRUCTION COMPANY SINCE 1994. IT JOINED THE BESIX GROUP IN 2007 AND HAS BEEN A SUBSIDIARY OF ETS JEAN WUST SINCE 2018.

Building on its long experience, Cobelba constructs industrial buildings, shops, public buildings, apartment and office blocks and other buildings. It has also positioned itself as a real estate developer for major projects such as the 'Les Jardins de Baseilles' eco-neighbourhood at Erpent, the 'Les Tilleuls' revitalisation project in downtown Andenne and the conversion of the former Moutarderie Bister (mustard factory) site in Jambes.

The company operates out of two sites, Naninne and Virton, covering the geographical area around the E411 axis. It has an annual turnover of around 40 million euros and employs almost 120 people.

ISO 9001 and VCA certified, it is constantly striving to improve its professionalism for the satisfaction of its customers, as well as safety in the broad sense of the term, both for internal employees and those of subcontractors.

As part of the revitalisation of its activities initiated in 2018, Cobelba diversified throughout 2019 in the markets it has followed and selected: public projects, private projects, bouwteam contracts, contracts in temporary partnerships. Cobelba new management has set up new partnerships with clients, engineering offices and architects. At the same time, a number of very large apartment building and industrial building projects helped swell the order book in 2019 (around 45 million euros).

TRAKK NAMUR



// NEW CONTRACTS 2019 //

AVIETA //

Wanze

Construction of a new waffle production unit of approximately 13,500 m² with a contract value of around 11 million euros.

This is a completely prefabricated structure with concrete columns, facades and fire walls. Certain facades take the form of metal sandwich panels. The entire interior layout consists of food safe sandwich panels. The project also includes a waste water treatment plant at a cost of approximately 2 million euros.

PRÉ DES DAMES - SIMHO //

Andenne

Construction of 61 apartments for a private investor with bouwteam type contract (5 blocks).

This is traditional-style construction using sand-lime blocks for the load-bearing walls, precast concrete slabs or concrete beams with infill slabs for the floors and gypsum blocks for partitioning. The special technical part is reduced to the maximum in order to lower construction costs and rental charges for the Client.

CARLIER BOIS //

Suarlée

Construction of three manufacturing halls and administrative offices.

The halls are built in prefabricated mode with concrete columns, glulam beams and exterior wooden cladding. The office part is semi-prefabricated with a high degree of finish, showcasing the products sold by the client, Carlier Bois.





// Flagship project

MILLESIMMO

MILLESIMO - BASTOGNE

14

APARTMENTS

4

LEVELS

Location: Bastogne**Period:** August 2018 -
December 2019

Description: In 2019, Cobelba constructed a 14-apartment building on 4 levels, for “turnkey” delivery. It consists of a traditional building with a pitched roof, concrete block masonry, brick facing and fibre cement cladding. To guarantee the comfort of the apartments’ occupants, an acoustic and thermal screed has been provided between each level. The apartments have been delivered fully finished (painting/dressing/lights and blinds) with a type C ventilation system and individual wall-mounted gas boilers, PVC door and window frames, and architectural concrete balconies with glazed balustrades. The total built surface is approximately 285 m² per level.





JACQUES DELENS IS A GENERAL CONSTRUCTION AND PROPERTY DEVELOPMENT COMPANY. FOUNDED IN BRUSSELS IN 1967, IT OPERATES ESSENTIALLY IN THE BRUSSELS REGION, AND IN BOTH FLEMISH AND WALLOON BRABANT. ITS SPECIALTIES INCLUDE CONSTRUCTION, RESTORING LISTED BUILDINGS – SOME OF WHICH ARE ROOTED IN THE COLLECTIVE MEMORY – AND RENOVATING BUILDINGS OF ALL TYPES AND SIZES.

Through its three construction entities (Jacques Delens, Sud Construct & Corebat), it operates in both public and private markets as well as in the renovation and modernisation of care units, office development and renovation and the construction of luxury housing.

In strategic terms, 2019 was a year of readjustment of the company's resources. The Corebat unit was successfully integrated, enabling us to scale up on the small building sites market while remaining within the Jacques Delens legal entity.

Sud Construct successfully delivered work in the hotel sector. Follow-on orders from the same customer (Marriott) meet its ambition of building client loyalty. It also delivered a maternity ward (for a recurring customer), and a set of biotech offices and laboratories.

Jacques Delens construction had a particularly difficult year, with some private construction sites generating losses. This was an opportunity to redefine commercial policy, to concentrate production resources and overheads and, consequently, to go into 2020 with a smaller order book, but with greater added value for the company and its partners. The main achievements are the redevelopment of the Brussels offices of European MEPs (complete renovation of 58,000 m² of offices in 3 months), the TIVOLI district for City.Dev, the highly prestigious Greenhill Park project in Woluwe-Saint-Pierre, the first phases of the Promenades d'Uccle (plateau Engeland), as well as many other housing projects. In 2019 Jacques Delens was also able to start projects where its technical skills and know-how are put to good use, such as the fast-building Qbic Hotels site in Brussels and the reconstruction of the Green Dog building.

Two new promotional projects were initiated, one in February (implementation in 2020) the other in December, for a projected total of forty homes in Braine-l'Alleud, in the still profitable Brussels hinterland housing market.

Entreprises Jacques Delens is pursuing its development strategy, internally through research into building performance and the digitisation of construction processes with a view to generate added value upstream of its core business. Externally, this is done by seeking to acquire companies specialising in individual building trades, with a view to the downstream vertical integration of its core business.

+/- 900 m²

OF COPPER CLADDING
IN PREMIUM TECU

6

PREFABRICATED COLUMNS DIAM.
40 EACH CAST IN 1 PIECE



// **Flagship project**

ERMITAGE

Location: Ixelles

Period: November 2017 - December 2019

Description: In Ixelles, at the intersection of Rue de l'Ermitage and Rue du Hennin, Sud Construct completed at the end of December 2019, for architect Philémon Wachtelaer, a surprising and unusual building in the shape of a copper-covered 'ship's bow', hovering on stilts 8 m above the pavements. This 'spectacular' residential building consisting of a single dwelling will undoubtedly mark the Brussels urban landscape.

Special technologies were needed to perch the reinforced concrete hull above the Brussels treeline.

The project was carried out by its owner and architect, passionate about construction. He erected with precision a building which corresponds to his personal choices, down to the smallest details.

It is with this same contagious passion that the Sud Construct teams worked, building mutual trust as the site progressed.

To witness this wonderful adventure, all you have to do is go to Ixelles, between Place Flagey and Avenue Louise, and look up. The result cannot leave you indifferent.



ERMITAGE - IXELLES



// NEW CONTRACTS 2019 //

PETITE SENNE//

Brussels

Creation of a new public space and construction of a crèche for 72 children (demolition/reconstruction inside building island).

EUROPEAN PARLIAMENT (EP)//

Brussels

Renovation of office spaces in the European Parliament (in temporary partnership).

QBIC//

Brussels

Renovation of the Four Points hotel (bedrooms, ground floor, reception, restaurant and meeting rooms).



PETITE SENNE



EP



QBIC



FOR MORE THAN 45 YEARS, LUXTP HAS BEEN CARRYING OUT WORKS OF ALL KINDS AND SIZES (BUILDINGS, ROADS, CIVIL ENGINEERING, CAR PARKING GARAGES, SEWAGE TREATMENT PLANTS, APARTMENT BLOCKS, CONVERSIONS, RAILWAYS AND BUILDING SURROUNDS) FOR ITS CUSTOMERS IN LUXEMBOURG, AND ALSO IN BELGIUM AND FRANCE. THIS SUCCESS IS THE FRUIT OF THE EXEMPLARY COMMITMENT OF ITS MORE THAN 300 LOYAL EMPLOYEES WHO EXCEL IN THE SUPERVISION OF THEIR CLIENTS' PROJECTS.

Choosing the right projects as well as the right partners and subcontractors is also a key element in successfully carrying out all kinds of projects, from the most modest to the most ambitious. Respect, flexibility, proactive approach and positive attitude are LuxTP's core values. Customer satisfaction and respect are essential criteria of its corporate culture and philosophy. In response to these, its competent and motivated employees make every effort to meet its objectives for quality, health and safety and environmental protection. LuxTP is ISO 9001, ISO 14001 and ISO 45001 certified.

LuxTP is currently carrying out projects in the electromechanical field, including 4 projects in partnership with BESIX. A major client is and remains the Luxembourg rail company CFL, for whom LuxTP has several projects in hand including the modernisation and transformation of Rodange Station, together with its partners Giorgetti and Perrard. In 2019, the ambitious CASA FERRERO project was finalised, with final client acceptance in November of that year.

The acquisition of MABILUX, a specialist in metal constructions, will enable LuxTP to undertake other projects and broaden its skills in this area, based on the experience of this family business. LuxTP received 21 new orders in 2019, as well follow-on work for existing sites.

CASA FERRERO



MABILUX

IRRGARTEN (SCHAFFNER) ROUNDABOUT - LUXEMBOURG



// NEW CONTRACTS 2019 //

LITHOPARK//**Differdange**

Construction of apartments and underground parking. Earthworks, structural work and civil engineering.

**TURQUOISE AND
TAUPE RESIDENCES//****Ettelbruck**

Construction of apartment blocks. Structural work and exterior fittings.

**SNCFL LUXEMBOURG -
RODANGE RAILWAY LINE //****Rodange**

Redevelopment and modernisation of Rodange Station. Civil engineering works.

HOUSE OF BIOHEALTH III//**Esch-sur-Alzette**

Construction of a 3rd administrative building, supplementing two earlier ones built by LuxTP.



// Flagship project

**IRRGARTEN (SCHAFFNER)
ROUNABOUT
REDEVELOPMENT**

Location: A1 motorway - Hamm interchange (Luxembourg)

Period: September 2017 - December 2019

Description: The new layout provides significant capacity gains, thereby shortening traffic queues. The roundabout has been completely redeveloped into a guided roundabout, regulated by traffic lights.

The situation before the start of the redevelopment work was such that in the evening rush hour the roundabout was gridlocked and no longer functioning. The new development provides significant capacity gains while limiting the length of the queues. The roundabout has been completely redeveloped into a guided roundabout, regulated by three-coloured traffic lights. This new configuration is designed for 5,700 vehicles a hour (compared to 4,200 at the moment) and will be able to work well beyond these projections. For a long time now, the two crossroads have presented growing capacity and fluidity problems, especially at peak traffic times, to the point of producing tailbacks to the motorways. The morning's saturation limit was exceeded in the evenings with a situation of total blockage.

The budget for the redevelopment of the "Irrgarten (Schaffner) turbo roundabout" amounts to 10.5 million euros. The work was divided into 7 construction phases, similar to those of the Serra roundabout in Kirchberg.

The works were located within the borders of the City of Luxembourg on the A1 motorway at the Hamm - Irrgarten interchange.

The work involved;

- the 4 motorway ramps of the Irrgarten interchange;
- the two branches of the National Route N2 in the direction of Hamm and in that of Sandweiler-Remich;
- the branch of the National Route N2a, in the direction of Findel and the airport;
- the start of Rue John L. Mac Adam;
- the carriageway of the roundabout itself;
- a cycle track starting from the railway bridge (Val de Hamm) and connecting to the Rue Val du Scheid.

The main challenges of this project were working with the roundabout open all the time, and the permanent coordination with the Ponts et Chaussées highways authority, so as not to disturb traffic already saturated at peak times. Night and weekend work was therefore inevitable.

77,000 m³

TOTAL EARTHWORKS

1,400 m³

GABIONS





VANHOUT'S HISTORY STARTS WAY BACK IN 1928. THE COMPANY ALSO CONTINUED TO GROW STEADILY IN 2019. TODAY IT IS A WELL-KNOWN MULTIDISCIPLINARY CONSTRUCTION GROUP WITH A WIDE RANGE OF CONSTRUCTION PROJECTS.

In addition to general contractors Vanhout and Vanhout Bilzen, the Vanhout Group also comprises Vanhout Projects (project development), HBS (general contracting and finishing), Isofoam (PUR) and Isochape (EPS mortar), Isopearls (EPS, floor and cavity wall insulation).

The Group is also active in building maintenance and management through its company ComTIS Services. The companies Energieconcepten (sustainable technologies) and ComTIS Installations (sanitary and HVAC) operate in the market for sustainable technical installations.

Contractors Vanhout and Vanhout Bilzen can look back on a number of attractive achievements in the healthcare, residential, utility and industrial sectors. In Antwerp the innovative YUST hotel opened its doors to the public, in Hasselt the new arts campus for PXL (University of Applied Sciences and Arts) was delivered and in Brussels, a high-rise building has been renovated for BESIX RED into The Cosmopolitan residential tower. In 2019, construction began on the Louise Marie residential project in Antwerp for Cores and the new school campus on the Gallait site in Schaarbeek for the Flemish Community Commission (VGC).

The year 2019 ended with a well-filled order portfolio.

The subsidiaries Vanhout Projects, Energieconcepten, ComTIS Services and ComTIS Installations, Isofoam, Isochape and Isopearls and HBS have seen their activities grow and are able to report healthy margins. At the end of last year, Vanhout also welcomed ComTIS Energy as a new and promising member of the Vanhout Group.

www.vanhout.be



// Flagship project

Z33

Location: Hasselt

Period: delivered in 2019

Description: The Z33 museum in Hasselt was delivered in 2019. The new building and the renovated exhibition wing together form a new home for contemporary art in the heart of the city of Hasselt.

The new Z33 is designed by Italian architect Francesca Torzo. The austere but unusual exterior of diamond-shaped bricks is in keeping with the brick architecture of both the existing Vleugel '58 exhibition building and the adjacent beguinage. The building fits in with its surroundings like a piece in a jigsaw puzzle to complete the historic beguinage site.

The new building offers space for exhibitions, research, productions and collaborative projects on contemporary art, design and architecture.



Z33 - HASSELT



© OLMO PEETERS

// NEW CONTRACTS 2019 //

LOUISE MARIE//

Antwerp

Next to the Singel in Antwerp, on the site of the former Louise-Marie children's hospital, Vanhout and Vanhout Bilzen have been building a new 14-floor eye-catcher since spring 2019. The Louise Marie project counts 207 apartments.

SO STOCKEL//

Sint-Lambrechts-Woluwe

In the heart of Sint-Lambrechts-Woluwe, close to the Dumon Square and the Groene Wandeling, SO Stockel offers its residents a unique environment, with 138 apartments in 3 new blocks.

SO Stockel is a sustainable project with respect for the environment down to the smallest details. And all this in a green neighbourhood a stone's throw from the Groene Wandeling (the old railway line) that connects Stockel with Auderghem.

CEGEKA//

Hasselt

Cegeka opened its new headquarters on the Corda Campus in Hasselt in 2019. For this HBS undertook the complete interior design, transforming three floors, representing 6,448 m² of office space, into a creative and inspiring working environment.



LOUISE MARIE



SO STOCKEL



CEGEKA



WUST IS A GENERAL CONSTRUCTION COMPANY THAT COMBINES MORE THAN 85 YEARS' EXPERIENCE WITH A CONSTANT QUEST FOR PROGRESS AND INNOVATION. WUST OPERATES IN WALLONIA, BRUSSELS AND THE GRAND-DUCHY OF LUXEMBOURG, BUILDING RESIDENTIAL COMPLEXES, OFFICES, INDUSTRIAL HALLS, RETAIL OUTLETS, EDUCATIONAL, HEALTH AND CARE BUILDINGS, SPORTS AND LEISURE FACILITIES, UNDERTAKING RESTORATION AND RENOVATION WORK, AS WELL AS SERVICE WORK FOR INDUSTRIES.

The Company's subsidiaries and its dedicated property development department complete its range of services, along with the teams who work with commitment on the projects entrusted to them.

WUST's activities showed significant growth in 2019, in particular thanks to its Luxembourg subsidiary and a number of major projects. The proportion between private and public contracts tends to become more balanced. The Healthcare sector shows a significant progression and is now positioned just behind the Industrial Halls & Commercial Premises sector, which still represents the most important part of WUST's activity.

Major projects were completed in 2019. The imposing CASA Ferrero, built in temporary partnership with BESIX, Lux TP and a local company, is without any doubt an outstanding achievement.

Nor can we overlook the success of WUST's Promotion Department. Two new projects were launched in 2019 and the apartments in the current projects are selling very well.

Iconic projects are being carried out in various sectors, including the Espace Rogier in Namur. Undertaken in a temporary partnership with WUST subsidiary Cobelba, it perfectly embodies the two entities' desire to develop mutual synergy.

The outlook for 2020 is promising. The order book contains some fine references, including building the new wing of the Clinique Saint Pierre in Ottignies and the multipurpose room for the Mardasson war memorial site in Bastogne. The Legiapark project comprising buildings for biotech companies, undertaken in temporary Early Contractor's Involvement mode, will undoubtedly be one of the flagship projects.

www.wust.be 

// NEW CONTRACTS 2019 //

LEGIAPARK//

Liège

Construction, in Early Contractor Involvement, of two sets of office and laboratory buildings (28,000 m²) to accommodate biotech companies on the Mont Légia site. This project is being carried out as a joint venture for the LEGIAPARK company created by Noshaq Immo and the CHC.

LE CHÊNE//

Heusy-Verviers

Construction of the first of 4 residences that will accompany the senior citizens' care home within the Domaine du Parc intergenerational project. Le Chêne has 9 apartments and a retail area.

BPOST SAINT-VITH//

Saint-Vith

Construction of a local postal redistribution platform, comprising a two-level administrative section and a sorting hall. Particular attention has been paid to the implementation of special technologies, as well as the development of more than 7,500 m² of surrounds.



LEGIAPARK



LE CHÊNE



BPOST





// Flagship project

LIÈGE AIRPORT - B24

Location: Bierset - Liège Airport

Period: 2018-2019

Description: WUST has completed the construction of building B24 for the Liège Airport Business Park on the Bierset airport site. This is an air cargo handling hall covering an area of over 12,000 m², equipped with awnings. The ensemble is completed with a related administrative area. The building includes 22 dock levellers. The laying out of the surrounds and a dedicated truck parking lot are an integral part of the contract.

This work continues the development of the zone of Liège airport dedicated to this type of cargo. Here WUST has won the contracts for five halls, one of which, the B26 building, is still under construction.

A particularity of this project lies in its modularity and the possibility of successive duplication of spaces; each building can be constructed in two phases depending on the need to extend the handling area.



640 T

OF METAL STRUCTURE

+12,000 m²

GROUND SURFACE



BESIX INFRA IS THE KNOWLEDGE-DRIVEN CONTRACTOR, OPERATING IN ROAD-BUILDING, SEWERAGE, ENVIRONMENTAL REHABILITATION AND THE CREATION OF PUBLIC SPACES. THE COMPANY IS A TOP 3 PLAYER ON THE BELGIAN INFRASTRUCTURE MARKET, WORKING FOR BOTH PUBLIC AND PRIVATE CLIENTS.

Its Bilzen and Burcht facilities have their own concrete and recycling sites. Belasco, its 100% subsidiary operating in Bilzen, Ghent and Puurs, has its own asphalt production facilities.

BESIX Infra is also profiling itself, not only as operating to market standards, but increasingly as a true partner in communication, neighbourhood consultation and nuisance limitation.

Typically for a post-election year, the procurement market cooled in 2019, bringing prices under pressure in the second half. Fortunately, BESIX Infra entered the year with a sufficiently strong order portfolio to absorb the decline and not be immediately caught in a pricing war. This allowed BESIX Infra to focus on the following three pillars in 2019:

1. With its existing strategic customers Aquafin, AWW and utility companies, the focus was on major works, where possible combined with a quality aspect at the tender phase. In this respect we note that more and more major projects are taking the form of tenders in which the contractor's vision of the project is taken into consideration. The contracts for the AWW (Roads and Traffic Agency) in Stabroek and for Aquafin (wastewater treatment) next to the Royers lock were awarded in 2019 on this basis.
2. In 2019 BESIX Infra opted wholeheartedly for the one-stop-shop concept that the BESIX group is aiming at, making maximum use of the combined knowledge of all companies within the group, at both the tender and implementation stages. Various projects have since been successfully taken on in temporary partnerships with BESIX Vlaanderen, such as Spartacus Diepenbeek (express tram connection), the Machelen cycle highway and the above-mentioned Royers lock project. On other projects BESIX Infra is collaborating closely with Van den Berg and Franki Foundation. With Vanhout, a project was also accepted for Deurne airport, and other dossiers are pending.
3. BESIX Infra was aware of the advantage of diversifying its client portfolio. Aquafin in particular represented a large portion of turnover. In the meantime, major contracts have also been received for, among others, 'De Werkvennootschap' (roadbuilding) and TUC Rail (rail infrastructure).

BESIX Infra also remained busy in the market for renovation and construction of tramway networks, in close collaboration with its long-time partner Frateur - De Pourcq. Challenges remain for BESIX Infra in the private sector. The renovation of the Westland Shopping Center in Anderlecht for Redevco can be cited as a major project. Work continues here in 2020.

The procurement market is expected to cool further in 2020. BESIX Infra will therefore be focusing even more on high complexity projects in order to safeguard its margins to the maximum. This will be the challenge of this year.

// NEW CONTRACTS 2019 //

RENOVATION OF TRAM LINES//

Ghent

As a subcontractor to its regular partner, Frateur - De Pourcq, BESIX Infra is renovating worn tram tracks for De Lijn at various locations. In addition to De Lijn, Farys is a co-customer. This utility company manages the sewerage network of the city of Ghent and is taking advantage of the track renovation to re-lay underground sewers below the tracks.

RECONSTRUCTION OF THE N777//

Wellen

BESIX Infra will completely reconstruct the N777 (Zonneveldweg-Vloeiherkestraat) over a length of 2 kilometres, including the sewerage system. A 6,000 m³ buffer basin will protect the surrounding area from flooding.

LEOPOLD II TUNNEL RENOVATION//

Brussels

The renovation work on the Leopold II tunnel is a good example of the one-stop-shop collaboration within the BESIX Group. BESIX Infra is the most important subcontractor on site, while Van den Berg is responsible for installing several kilometres of conduit piping for the technical installations in the pavements.

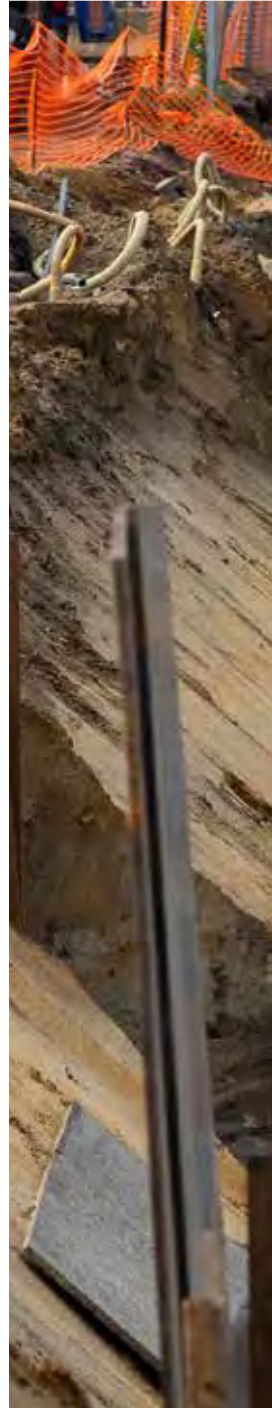
TRAM GHENT



N777



LEOPOLD II



TERBEKEHOF BUSINESS PARK



// Flagship project

TERBEKEHOF BUSINESS PARK RE-CONSTRUCTION

Location: Wilrijk

Period: April 2019 – July 2021

Description: BESIX Infra and Van den Berg are involved in the redevelopment of the Terbekehof business park in Wilrijk, an initiative of POM Antwerp (Antwerp provincial development company) and water-link (Antwerp water company), in collaboration with Aquafin (wastewater treatment), ISVAG (waste disposal), the City of Antwerp and the Wilrijk district. Engineering office Sweco Belgium has been commissioned to manage these complex renovation works. BESIX Group has been selected as contractor, with specialisations for BESIX Infra (roadbuilding, sewerage, district heating and buffering) and Van den Berg (construction and technical implementation of district heating network).

Van den Berg is developing the district heating network and completing the above ground work. BESIX Infra provides the additional specification required for the combined installation of district heating and sewerage.

€14 million

TOTAL VALUE

1.6 km

DISTRICT HEATING NETWORK



Franki Foundations

IN 2019, FRANKI FOUNDATIONS AGAIN CARRIED OUT VARIOUS DEEP FOUNDATION PROJECTS IN BELGIUM, AND ALSO VIA ITS SUBSIDIARIES IN FRANCE (ATLAS FONDATIONS), THE NETHERLANDS (FRANKI GRONDTECHNIEKEN) AND THE UNITED KINGDOM (FRANKI FOUNDATIONS UK AND MARTELLO PILING).

These projects were undertaken in the various sectors in which Franki has been active for many years: housing, office construction, infrastructural works and industrial environments like petrochemicals, high-voltage power pylons and the nuclear sector.

Franki Foundations also undertook total solution projects, in which it acted as general contractor and provided the overall coordination of earthworks, ground water lowering and other preparatory works.

With deep foundation projects becoming increasingly complex in the current building environment, in 2019 Franki Foundations tailored its project-based approach even more to customers' changing needs. Today, projects are being monitored through a logistically optimized approach on the one hand and a customized approach specific to the client on the other hand.

In Belgium, work continued on foundations for high-voltage power lines, while secant piles and anchors were installed for the new lock at Ampsin. In the heart of Brussels the diaphragm wall for a new administrative centre for the City of Brussels was realised.

In the Netherlands, Franki Grondtechnieken expects major executed infrastructural works such as - among others - the foundations carried out for the Theemswegtracé to be continued in the execution of the Groene Boog project in 2020.

In France, Atlas Fondations will complete the final works of the present phase of diaphragm walling in the "Grand Paris express" project in 2020 and then shift the focus to other deep foundation projects in Paris and northern France.

A well-filled order book in the UK at the start of 2020 will allow the Franki Foundations UK Group to confirm its position in the top 10 of deep foundation companies in UK with projects that again combine Martello Piling's specific expertise (large diameter bored piles in restricted access and low headroom conditions) with the Group's other technologies.

In the area of innovation, in 2019 Franki Foundations went full out for the digital data monitoring of projects in progress. This digital process will help to optimize execution in terms of speed, quality and accuracy and will benefit all parties involved.

// NEW CONTRACTS 2019 //

BASF //

Antwerp, Belgium

BASF is investing in a major capacity expansion at its port of Antwerp site. In the second half of 2020, Franki Foundations will therefore install 1,000 driven displacement piles, 609 mm in diameter and 19 m long.

THEEMSWEGTRACÉ //

Rotterdam, Netherlands

Partnering BESIX on the "Theemswegtracé" project in the port of Rotterdam, Franki Grondtechnieken has installed 1,400 soil displacement screw piles with lost tip in order to provide solid foundations for the future elevated railway viaduct.

GRAND PARIS EXPRESS - LINE 16, LOT 2 //

Paris, France

As part of the construction of the new metro line 16, Atlas Fondations is in charge of the realisation of the foundations for five additional works in lot 2. The additional work OA 603, a shaft for the entrance and the exit of a tunnel boring machine was completed at the end of 2019. The other four additional works will follow in 2020. On the programme: piles, diaphragm walls and injections.

SHERWOOD STREET //

London, United Kingdom

Martello was required to install piles in the existing basement of the building behind the famous 'Piccadilly Lights' in London to support its redevelopment. 146 large diameter bored piles, up to 36 m long, were installed under just 3.5 m headroom. A challenge realized thanks to the bespoke Martello piling rigs.



GRAND PARIS EXPRESS



SHERWOOD STREET



// Flagship project

BRUCITY

Location: Brussels, Belgium

Period: July 2018 - January 2020

Description: AG Real Estate asked Franki Foundations to execute the deep foundations for the new City of Brussels Administrative Centre. 37,000 m² of offices and a 4-level underground car park will replace the emblematic Parking 58 in the heart of the capital.

After preparatory nailing works to secure the existing peripheral wall (the old “Mur des Halles”), Franki realised 400 linear metres of diaphragm wall which constitute the walls of the future car park. The particularity of this project was, in addition to the number of technologies applied such as soil nails, anchors, a diaphragm wall and Atlas displacement piles, the use of struts to support the walls of the excavation before and during the placement of the slab. These steel tubes fitted with hydraulic jacks and a monitoring system make it possible to do away with banquettes and the issue of watertightness when installing anchors under the level of the water table, as originally planned.

Advantages? Struts adapt easily to a very dense urban environment, they reduce the risk of waterproofness problems associated with anchors installed under the water table level, and they allow a phased approach with earth works done in parallel with a number of civil engineering works.

“FOR OUR AMBITIOUS PROJECT, FRANKI FOUNDATIONS HAS SHOWN ITSELF TO BE HIGHLY PROFESSIONAL IN IMPLEMENTING A WELL-PLANNED OPERATIONALLY AND FINANCIALLY BALANCED SOLUTION, WITH AN INNOVATIVE COMBINATION OF CONSTRUCTION TECHNIQUES, AND A CUSTOMER-ORIENTED APPROACH.”

PHILIPPE MONSEREZ – CHIEF DESIGN & BUILD OFFICER AG REAL ESTATE



THANKS TO ITS 70 YEARS OF EXPERIENCE, THE SOCOGETRA GROUP HOLDS AN ESSENTIAL PLACE AMONG BELGIUM'S CONSTRUCTION COMPANIES. IN BELGIUM, SOCOGETRA IS APPROVED IN THE TOP CATEGORY, CLASS 8, ENABLING IT TO TENDER FOR AND CARRY OUT WORK IN UNLIMITED AMOUNTS FOR PUBLIC AUTHORITIES AND PRIVATE CLIENTS ALIKE. SOCOGETRA'S OPERATING ACTIVITIES DIVIDE INTO FOUR MAIN AREAS: ROAD WORKS, RAILWAY WORKS, CIVIL ENGINEERING AND BUILDINGS.

Through its subsidiaries, Socogetra also owns and operates various plants and entities that produce construction and asphalt materials: Famenne Enrobés, Enrobage Stockem, Enrobés des Trois Frontières, Emubel, GNB Béton and Vialines.

It also owns and operates quarries: the Carrière des Limites in Rochefort and Carrières de Grès Réunies at La Roche-en-Ardenne. Materials from these quarries are used in the asphalt and concrete plants in Belgium and the Grand Duchy of Luxembourg.

Bagetra, a subsidiary based in Mons in the province of Hainaut, rounds off these activities in the fields of civil engineering and industrial building.

The Socogetra group had an intense 2019, both in its works and industries divisions. The order book is well-filled with new projects, promising a very good future. In particular, a large number of new orders have come in for Civil Engineering. This activity really took off at Socogetra in 2019 and will continue strong over the coming years.

In 2019, the Marche-en-Famenne bypass was inaugurated. Socogetra also completed the carpool lane into Luxembourg and resurfacing with more than 60,000 tonnes of asphalt. The tunnel under the tracks at Braine-le-Comte station was a pretty spectacular operation, carried out perfectly by our teams. Work on the Eisch wastewater treatment plant and the North collector at Steinfort have continued to make good progress and should be completed in 2021. Strong civil engineering activity is also to be noted in the province of Hainaut for chemical and petrochemical clients like Total and Inovyn.

On the production side, both the concrete and asphalt sectors reached new production and sales records in 2019, with the two quarries producing more than 2.2 million tonnes of stones and the asphalt mixing plants over 425,000 tonnes of asphalt.

Last but not least, convinced of the values of unity, co-creation and the commercial advantage of the "One-Stop-Shop", Socogetra and Wust/Cobelba also decided in 2019 to come closer by creating BESUD. This common structure will serve to develop all the possible synergies between these different Walloon entities, presenting the full range of its parents' construction skills across Wallonia.

// NEW CONTRACTS 2019 //

TUC RAIL// **Brussels and Wallonia**

RER, Line 161 & Line 124, completion of civil works, line constructions and finishing.

INFRABEL// **Thuin**

Line 130A, renewal of two bridges over the Sambre.

SPW ARLON// **Chiny**

Resurfacing of the National 891 between Chiny and Tintigny.

INASEP// **Assesse**

Construction of a major collector.

TUC RAIL// **Leignon**

Construction of a new regional road, stabilisation of the rock walls, creation of a service track and adapting of the aqueducts. Earthworks, roadworks and civil engineering.



NOVYN: CONSTRUCTION OF A NEW PVC PRODUCTION LINE



UNDERPASS TUNNEL, BRAINE



2022

OPENING 1ST QUARTER

OVER

3,000 m²

OF SPACE

// Flagship project

NEW HEADQUARTERS IN WEX ZONING



Location: Marche-en-Famenne

Period: 2020-2022

Description: Since 1948 Socogetra has been based in the small village of Awenne, nestled in the heart of the Province of Luxembourg between Saint-Hubert and Rochefort.

In 70 years of history, the company has undergone quite a few changes and this trend has accelerated in recent years.

Even if the offices of Awenne had a certain charm for all who worked there on a daily basis or who visited us, they no longer corresponded to contemporary standards of equipment, size, accessibility and comfort, etc. In 2019, the decision was therefore taken to move, but not too far away, and to launch the future head office building project!

This will be completed in early 2022. This contemporary,

pure-lined building, set in a still green and wooded region, will reflect the surrounding nature in a heavily glazed facade. The materials that represent our activities, stone, concrete and water, will feature strongly in its architecture!

125 employees will find a workplace there conducive to performance and success. An extension is already planned into the design.

In addition, our entire project aims for a very good BREEAM result and will be an excellent example of environmental integration.



ATHUS: RAILWAY CONNECTION



STEINFORT: CONSTRUCTION OF A SEWAGE TREATMENT PLANT

STERPENICH : CREATION OF A CARPOOL LANE





WITH ITS EXTENSIVE EXPERIENCE IN CABLE AND PIPELINE CONSTRUCTION VAN DEN BERG OFFERS ITS CUSTOMERS HIGH-QUALITY INFRASTRUCTURE SOLUTIONS. UNDERGROUND AND ABOVE-GROUND CABLE AND PIPE-LAYING, HORIZONTAL DIRECTIONAL DRILLING, HIGH VOLTAGE LINES AND SUBSTATIONS, NETWORKS AND STRUCTURED CABLING SYSTEMS, FIBRE OPTIC NETWORKS, DISTRICT HEATING NETWORKS, SIGNALLING AND MONITORING SYSTEMS, HOME CONNECTIONS, TECHNICAL TUNNEL INSTALLATIONS AND TRAFFIC TECHNOLOGIES. VAN DEN BERG'S EXPERTISE IS STRONG, BROAD-BASED AND CONSTANTLY BEING REFINED.

With increasing demand for faster data transport connections, Van den Berg has put a lot of effort into the fibre optic market. Fiber to the Site (connecting of antenna masts) and Fiber to the Business (B2B) for Eurofiber and Telenet, and the Fiber to the Home project for Proximus are all very intensive assignments. We are keenly looking forward to the ultra-fast internet connections and the preparation of the future 5G network. Our people are on the road every day bringing Orange's multimedia services to your home under the "Love Generation" logo.

The implementation of the Alegro project, which involved the installation of a high-voltage direct current connection between Belgium and the German border has represented an important part of Van den Berg's activity. This connection will greatly improve the stability of Belgium's energy supply in the future.

An internal reorganisation was carried out that should lead to greater synergy between all of Van den Berg's activities. This includes a greater focus on orders for railway signalling. The rollout of the ETCS (European Train Control System) has started, which should make a major contribution to traveller safety.

Thanks to its cooperation with its subsidiaries Larabo and Uniconnect, Van den Berg can offer versatile excavation work and provide all kinds of utility piping and connections. The underground drilling department is also an important partner for many public partners.

In 2019, the first major district heating projects got under way. For this Van den Berg continues to focus on renewable energy sources and are working on an ecological policy.

// NEW CONTRACTS 2019 //

FIBER TO THE BUSINESS - EUROFIBER//

Belgium

Van den Berg provides customer fibre connections to the Eurofiber network. This involves connecting the antenna masts for the future G4 Orange network, as well as expanding and completing the ring structure of Eurofiber's backbone network.

HIGH-VOLTAGE CONNECTIONS//

Rijkevorsel-Beerse

Van den Berg is installing two new high-voltage connections as part of the Elia high-voltage network. The 9 kilometre route combines open trench work with number of complex directional drillings.

KENNEDY RAIL TUNNEL//

Antwerp

This project involves the renovation and expansion of the technical tunnel installations in the Kennedy railway tunnel. The temporary partnership's expertise will be used in a number of specialised works. From installing tunnel ventilation and fire detection systems to the renovation and safety of the technical rooms; all forces are combined to ensure perfect implementation.



EUROFIBER



KENNEDY RAIL TUNNEL



HIGH-VOLTAGE



50

VAN DEN BERG
TECHNICIANS ON THE
ROAD

52,057

INTERVENTIONS IN 2019

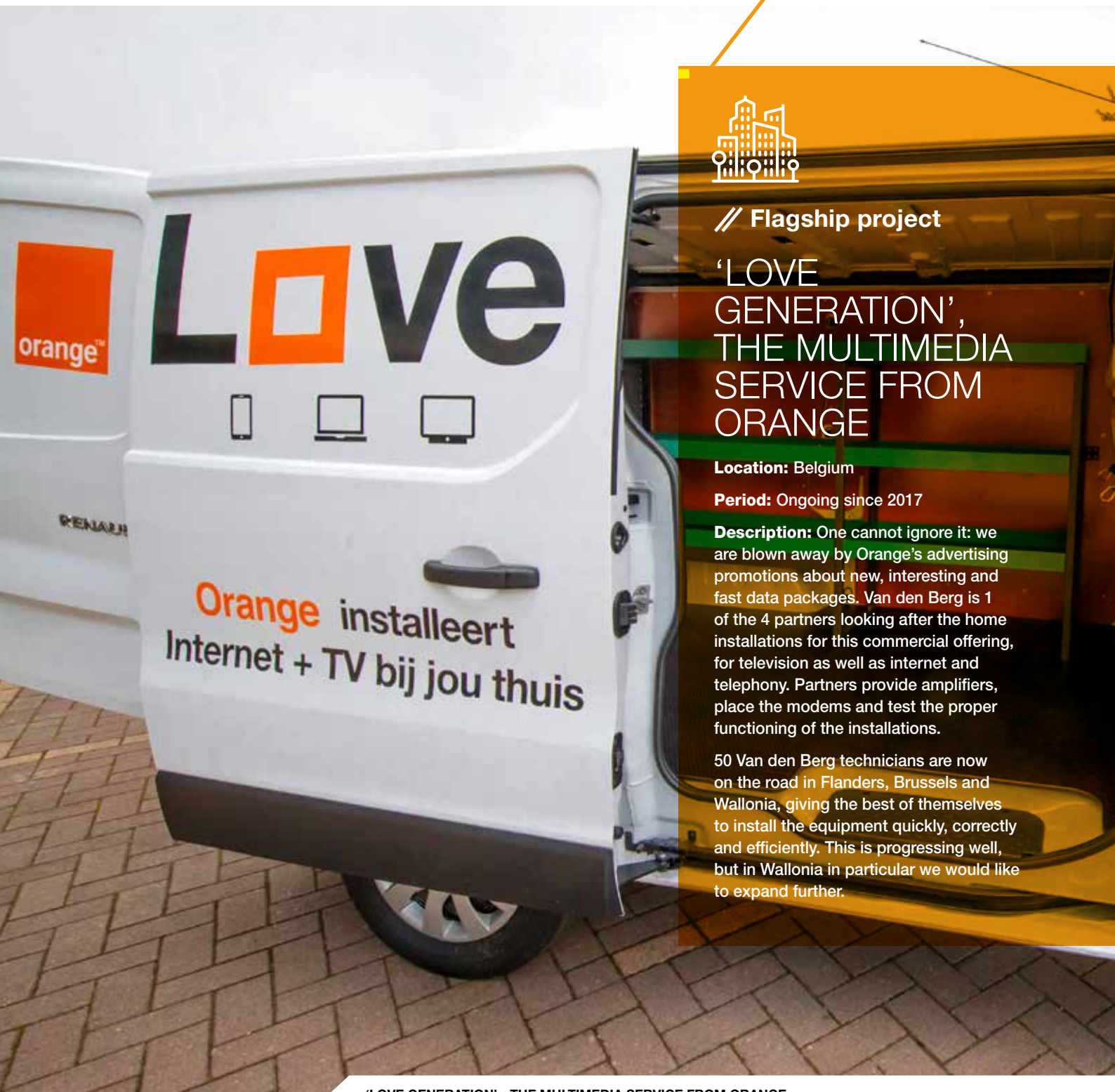


// Flagship project

'LOVE
GENERATION',
THE MULTIMEDIA
SERVICE FROM
ORANGE**Location:** Belgium**Period:** Ongoing since 2017

Description: One cannot ignore it: we are blown away by Orange's advertising promotions about new, interesting and fast data packages. Van den Berg is 1 of the 4 partners looking after the home installations for this commercial offering, for television as well as internet and telephony. Partners provide amplifiers, place the modems and test the proper functioning of the installations.

50 Van den Berg technicians are now on the road in Flanders, Brussels and Wallonia, giving the best of themselves to install the equipment quickly, correctly and efficiently. This is progressing well, but in Wallonia in particular we would like to expand further.





／ BESIX FINANCE 〃



Word from the CFO

2019 PROVED TO BE A TWO-SPEED YEAR. WHILE REAL ESTATE DEVELOPMENT AND CONCESSIONS & ASSETS POSTED STRONG RESULTS, THE CONTRACTING ACTIVITIES PERFORMED BELOW EXPECTATIONS. THIS REFLECTS THE SLOWING OF BUSINESS IN THE MIDDLE EAST AND THE CONTINUING NEED TO BE PRUDENT AND MAKE THE NECESSARY PROVISIONS IN THE CONTEXT OF SOUND RISK MANAGEMENT.

Jan Gesquière - CFO BESIX Group



We recorded consolidated revenues of €3,332 million. Our consolidated net result amounted to €42.2 million.

BESIX Group reported a consolidated net cash position of €141 million. The solvency ratio was 24.2%, which is still well above the sector average.

In January 2019, BESIX Group completed the full acquisition of Watpac in accordance with the Australian Corporations Act 2001. With payment of the last 8%, BESIX Group finally became 100% owner of Watpac.

From 2019, in addition to the assets and liabilities (already taken into the books at the end of 2018), Watpac's full profit and loss account is now included in the BESIX Group consolidated figures.

Other acquisitions in 2019 were very limited, consisting of no more than a number of transactions involving our regional and specialist companies. In this way Socogetra acquired the remaining 50% of Vialines (road markings) that it did not yet own. Lux TP acquired 80% of Mabilux (steel and aluminium construction), while Isofoam – a subsidiary of the Vanhout Group – acquired 60% of Isopearls (insulation material).

No divestments took place in 2019.

2019 was also a dynamic year on the marketing front. BESIX Group goes into 2020 with a record order book of €4.8 billion, slightly higher even than the record set by the group the year before.

Western Europe (including our regional companies) accounts for 49.7% of our orders, the Middle East for 18.2%, and Australia for 16.8%, while our international operations (Africa, Canada and Western Europe) count for 15.2%, up strongly on the end-2018 figure.

Building construction accounts for the largest portion of the order book with 57.7%, followed by civil engineering with 27.5% and maritime works with 7.0%.

PERFORMANCE BY ACTIVITY AND BUSINESS UNIT

Contracting

BESIX Group's Contracting business unit generated revenues of €3,211 million and a net result of €13.2 million.

The slowing of business in the Middle East, due in part to stronger presence of the Chinese competition, resulted in a lower than expected turnover of €564 million and a net result of €4.5 million. It is true that a number of sizeable recoverable claims have been submitted (not yet included in turnover) that we expect to realise in 2020.

The Europe & International business areas posted revenues of €608 million with a small loss of €4 million. This is still a remarkable improvement over the past few years, as we gradually evolve towards positive results.

Australia (via Watpac) was included for the first time in our income statement, and with

revenues of €940 million and a break-even result made a good contribution after the creation of limited provisions.

The regional companies contributed a third of the total Contracting turnover (€1,099 million), with a result of €13.1 million.

In 2019 again, a number of provisions were made and recoverable claims were submitted for a number of challenging projects. This is in line with our proactive attitude towards healthy risk management and should further safeguard the long-term financial health of our company.

Real Estate Development

BESIX Real Estate Development, the real estate entity within the group, again had a record year in 2019 with revenues of €154 million and a profit of €15.7 million.

BESIX RED continued its expansion in 2019 thanks to its geographical and sectoral diversification. The real estate entity is today present in 14 cities in Belgium, Luxembourg, the Netherlands, France and Portugal, with more than 600,000 m² under development. This strategy was supported by a focus on innovation and on synergies with the various BESIX Group entities.

These pluses, combined with 30 years' expertise in complex and large-scale projects, have helped BESIX RED build strong public and private partnerships and respond to market cycles and customer needs.

Concessions & Assets

With a net result of €22.4 million, Concessions & Assets was again very profitable, with solid and sustainable results in the Middle East in particular.

In Europe, Concessions & Assets is continuing to expand its DBFM (Design, Build, Finance & Maintain) portfolio, and was successful in bringing in the "ViA15" project in early 2020.

The hotel business faced start-up costs in 2019, and continued to be supported by the group.

In the Middle East, the unit continued to work hard on the start-up of projects involving waste water purification and refuse-derived fuels.

BALANCE SHEET

At the end of 2019, the balance sheet totalled €2.9 billion, €205 million more than the year before. Non-current assets increased by €44 million and current assets by €161 million, the latter figure reflecting mainly a larger volume of works in progress and more real estate in the portfolio.

On the liabilities side these increases are reflected primarily in higher long-term borrowings and in advances on contract that have not yet started to produce turnover.

The group continues to work on securing the necessary financing for the coming years. In 2019, we concluded an additional €30 million short-term facility. Preparations are also currently under way for a new debt (Schuldschein) issue.

EVOLUTION OF NET CASH POSITION

BESIX Group's consolidated net cash position amounted to €141 million at the end of 2019 compared with €97 million at the end of 2018 (including IFRS 16).

This strong increase is mainly due to the positive difference between, on the one side, the income from operating cash flow, the positive impact of tight working capital control, and dividends received from associates, and on the other side expenditure on current investments, the support provided to associated companies and dividends paid.



“BESIX GROUP GOES INTO 2020 WITH A RECORD ORDER BOOK OF €4.8 BILLION, SLIGHTLY HIGHER EVEN THAN THE RECORD SET BY THE GROUP THE YEAR BEFORE.”

**JAN GESQUIÈRE,
CFO OF BESIX GROUP**

CONSOLIDATED BALANCE SHEET

(in EUR '000)	31/12/2019	31/12/2018
// ASSETS		
NON-CURRENT ASSETS	624,202	580,173
Intangible assets	64,089	38,308
Goodwill	29,156	53,211
Tangible assets	285,726	236,745
Investments in associates	95,479	96,932
Receivables	114,880	121,485
Other assets	11,443	14,274
Deferred income tax assets	23,429	19,218
CURRENT ASSETS	2,263,484	2,102,881
Inventories	35,203	29,241
Construction contracts in progress	287,414	108,973
Real estate held for sale	240,762	229,099
Trade receivables	782,069	893,570
Other receivables and other assets	282,831	253,830
Cash and cash equivalents	635,205	588,168
// TOTAL ASSETS	2,887,686	2,683,054
// EQUITY AND LIABILITIES		
EQUITY		
SHAREHOLDERS EQUITY	698,461	695,132
Capital	32,000	32,000
Retained earnings	655,659	656,018
Hedge reserves	-14,583	-10,913
Translation differences	25,385	18,027
MINORITY INTEREST	2,242	1,204
// TOTAL EQUITY	700,703	696,336
LIABILITIES		
NON-CURRENT LIABILITIES	458,819	371,578
Borrowings	284,904	230,060
Provisions	78,707	72,163
Other liabilities	73,021	50,003
Deferred income tax liabilities	22,187	19,352
CURRENT LIABILITIES	1,728,164	1,615,140
Borrowings and bank overdraft	209,334	222,396
Trade payables	860,944	903,573
Advances received on contracts	133,070	117,640
Billing in excess on construction contracts	274,072	136,783
Current income taxes payable	18,388	18,019
Provisions	55,713	46,363
Other liabilities	176,643	170,366
// TOTAL EQUITY AND LIABILITIES	2,887,686	2,683,054

CONSOLIDATED INCOME STATEMENT

(in EUR '000)	2019	2018
// CONSOLIDATED INCOME STATEMENT		
SALES	3,332,046	2,542,129
COST OF SALES	-3,105,881	-2,316,221
of which depreciation	-60,207	-42,283
of which provisions	-7,584	-9,428
GROSS PROFIT	226,165	225,908
GENERAL & ADMINISTRATIVE EXPENSES	-223,319	-191,862
of which depreciation	-15,588	-5,501
of which provisions	-1,509	3,245
OTHER INCOME / EXPENSES	19,203	49,618
OPERATING PROFIT	22,049	83,664
Financial income	13,662	11,498
Financial charges	-12,427	-11,854
Results from associates	24,809	19,882
PROFIT BEFORE INCOME TAXES	48,093	103,190
INCOME TAX EXPENSE	-5,605	-7,405
of which current taxes	-16,491	-18,293
of which deferred taxes	10,886	10,888
CONSOLIDATED PROFIT	42,488	95,785
Minority interest	-309	-487
GROUP CONSOLIDATED PROFIT	42,179	95,298
Earnings per share – basic (in EUR)	14.89	33.65
Earnings per share – diluted (in EUR)	14.89	33.65
// CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME		
PROFIT FOR THE YEAR	42,179	95,298
OTHER COMPREHENSIVE INCOME		
Cash flow hedges	-3,489	2,944
Fair market value - available for sale	0	0
Actuarial impact provision for employee benefits	-2,537	497
Currency translation differences	8,660	11,181
Other comprehensive income for the year, net of tax	2,634	14,622
ATTRIBUTABLE TO		
Owners of the parent	44,813	109,920
Minority interest	0	0
// TOTAL COMPREHENSIVE INCOME FOR THE YEAR, NET OF TAXES	44,813	109,920

CONSOLIDATED CASH FLOW STATEMENT

(in EUR '000)	2019	2018
Operating result	22,049	83,664
Adjustments for:		
Depreciation	75,795	47,784
Result on disposal of (in) tangible assets	-16,810	-3,935
Result on disposal of other long term assets	0	0
Result on disposal of investment in associates	203	-16,771
Provisions	9,093	6,184
Allowances	95	302
OPERATING CASH FLOW BEFORE CHANGES IN WORKING CAPITAL	90,425	117,228
Income taxes paid (net)	-7,025	-11,283
Changes in working capital	34,452	-7,854
CASH FLOW FROM OPERATING ACTIVITIES	117,852	98,091
TRANSLATION DIFFERENCE CASH AND CASH EQUIVALENTS FOR ENTITIES REPORTING IN FOREIGN CURRENCY	13,595	2,267
Purchase of intangible assets	-2,701	-6,604
Purchase of tangible assets	-66,121	-54,970
Purchase of other long term assets	-24	-106
Acquisition and capital increase / (decrease) investment in associates	-1,478	-19,797
Proceeds from sale of intangible assets	0	3
Proceeds from sale of tangible assets	22,799	10,457
Proceeds from sale of other long term assets	2,506	19
Proceeds from sale of investment in associates	4,814	46,044
Dividends received from investment in associates	26,778	21,120
(Acquisitions)/Disposal of subsidiaries – net of cash	-1,330	93,084
NET CASH FROM INVESTING ACTIVITIES	-14,757	89,250
CASH FLOW FROM FINANCING ACTIVITIES		
Proceeds / (repayments) of borrowings	226	136,844
(Proceeds) / repayments of long term receivables	-26,963	-20,518
Interest paid (net)	-2,716	-3,061
Fair Market Value - Cash and Cash equivalent	0	0
Change in consolidation methods	180	0
Dividends paid to Group shareholders	-40,000	-75,000
Dividends paid to minority interests	-380	-240
NET CASH FROM FINANCING ACTIVITIES	-69,653	38,025
(DECREASE)/INCREASE IN CASH & CASH EQUIVALENTS	47,037	227,633
MOVEMENTS IN CASH & CASH EQUIVALENTS		
Cash at beginning of the year	588,168	360,535
(Decrease)/Increase	47,037	227,633
Cash at the end of the year	635,205	588,168

STATUTORY AUDITOR'S REPORT

(FREE TRANSLATION)

STATUTORY AUDITOR'S REPORT TO THE GENERAL SHAREHOLDERS' MEETING OF BESIX GROUP NV ON THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2019.

In the context of our statutory audit of the consolidated financial statements of BESIX Group NV (the "Company") and its subsidiaries (jointly "the Group"), we hereby submit our statutory audit report to you. This report includes our report on the consolidated financial statements, as well as other legal and regulatory requirements. The whole is integrated and is indivisible.

We were appointed as statutory auditor by the general meeting of June 8th, 2018, following the proposal formulated by the board of directors. Our mandate will expire on the date of the general meeting which will deliberate on the consolidated financial statements prepared on 31 December 2020. We have been in place since at least 12 years.

REPORT ON THE CONSOLIDATED FINANCIAL STATEMENTS

Unqualified opinion

We have performed the statutory audit of the Group's consolidated financial statements, which comprise the consolidated balance sheet as at 31 December 2019, the consolidated income statement, the consolidated statement of comprehensive income, the consolidated statement of changes in equity and the consolidated statement of cash flows for the year then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies, and other explanatory information, and which is characterised by a consolidated balance sheet total of KEUR 2,887,686 and for which consolidated income statement and other comprehensive income shows a profit for the year of KEUR 42,488.

In our opinion, the consolidated financial statements give a true and fair view of the group's net equity and consolidated financial position as at 31 December 2019 and of its consolidated financial performance and its consolidated cash flows for the year then ended, in accordance with International Financial Reporting Standards ("IFRS") as adopted by the European Union and with the legal and regulatory requirements applicable in Belgium.

Basis for unqualified opinion

We conducted our audit in accordance with International Standards on Auditing (ISAs) as applicable in Belgium. Our responsibilities under those standards are further described in the *Statutory auditor's responsibilities for the audit of the consolidated financial statements* section of our report. We have fulfilled our ethical responsibilities in accordance with the ethical requirements that are relevant to our audit of the consolidated financial statements in Belgium, including the requirements related to independence.

We have obtained from the board of directors and Company officials the explanations and information necessary for performing our audit.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of the board of directors for the preparation of consolidated financial statements

The board of directors is responsible for the preparation of consolidated financial statements that give a true and fair view in accordance with International Financial Reporting Standards as adopted by the European Union and with the legal and regulatory requirements applicable in Belgium, and for such internal control as the board of directors determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the board of directors is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the board of directors either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

Statutory auditor's responsibilities for the audit of the consolidated financial statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

For the execution of our control, we respect the legal, regulatory and normative framework applicable to the audit of consolidated financial statements. The scope of the audit does not include an assurance on the future viability of the Company or on the efficiency or effectiveness with which the Board of Directors has conducted or will conduct the Company's operations.

As part of an audit in accordance with ISAs, we exercise professional judgment and maintain professional scepticism throughout the audit. We also:

- /// Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- /// Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's internal control.
- /// Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the board of directors.
- /// Conclude on the appropriateness of the board of directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a

material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our statutory auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our statutory auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.

- /// Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- /// Obtain sufficient and appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with the board of directors regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

OTHER LEGAL AND REGULATORY REQUIREMENTS

Responsibilities of the board of directors

The board of directors is responsible for the preparation and the content of the director's report on the consolidated financial statements and the other information included in the annual report.

Statutory auditor's responsibilities

In the context of our mandate and in accordance with the Belgian standard (revised version 2020) which is complementary to the International Standards on Auditing (ISAs) as applicable in Belgium, our responsibility is to verify, in all material respects, the directors' report on the consolidated financial statements and the other information included in the annual report, and to report on these matters.

Aspects related to the directors' report on the consolidated financial statements and to other information included in the annual report

After having performed specific procedures in relation to the directors' report on the consolidated financial statements and the other information included in the annual report, we are of the opinion that this report is consistent with the consolidated financial statements for the year under audit and is prepared in accordance with the article 3:32 of the companies' and associations' Code.

In the context of our audit of the consolidated financial statements, we are also responsible for considering, in particular based on the knowledge acquired resulting from the audit, whether the directors' report on the consolidated financial statements and the other information included in the annual report on the consolidated financial statements is materially misstated or contains information which is inadequately disclosed or otherwise misleading. In light of the procedures we have performed, there are no material misstatements we have to report to you.

Statement related to independence

Our audit firm and our network did not perform any assignments that are incompatible with the legal audit of the financial statements, and our audit firm remained independent of the Company during the course of our mandate.

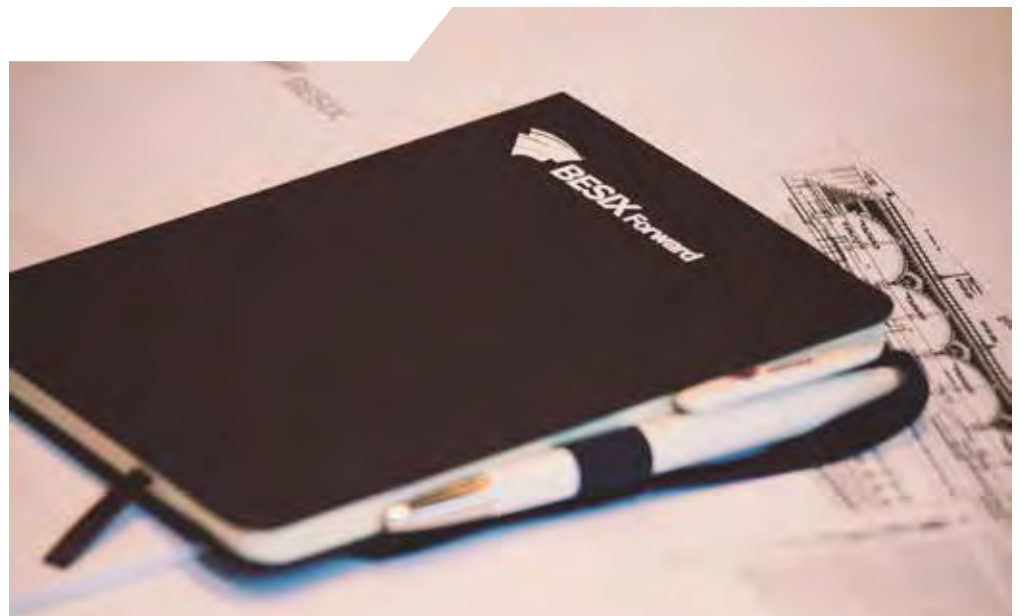
The fees for additional services which are compatible with the statutory audit of the consolidated financial statements referred to in article 3:65 of the companies' and associations' Code are correctly disclosed and itemized in the notes to the consolidated financial statements.

Antwerp, April 15, 2020

Mazars Réviseurs d'Entreprises SCRL

**Statutory auditor
represented by**

**Anton Nuttens
Auditor**





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