

ACTIVITY REPORT

2016

LIGHT.
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UP
YOUR
FU-
TURE

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colophon

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thanks to all our colleagues & partners who
 have contributed to this report, special thanks
 to Heidi Lagneaux



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DEAR READER,
 I BELIEVE THAT
 - JUST LIKE ME -
 YOU ALWAYS TRY
 TO KEEP A POSITIVE
 MINDSET, VIEWING
 THE GLASS AS HALF-
 FULL, RATHER THAN
 HALF-EMPTY, ...

CEO

statement

... this also applies to the complexity of today's global business and political environment.

Yes, **2016 was an extraordinary year**. Despite some ups and downs, a sustainable and irreversible shift towards a **cleaner energy world** has begun. Smart energy and infrastructure solutions are appearing everywhere, improving the quality of people's lives - especially those of urban citizens - and mitigating the impact of climate change. Furthermore, the ratification of the Paris Agreement has brought a tremendous cost reduction in renewables and the proliferation of multiple digital applications, which not only increase efficiency and energy savings, they also preserve natural resources whenever and wherever possible.

The essential breakthrough, however, relies on **what we can do together to make things better**. The fostering of human contact and personal relationships should, in my opinion, lie at the heart of our company: combining our expertise and knowledge with you, partners and clients, as a modest contribution to **shaping a better world**. And as for what Tractebel has achieved in the past year and where we are heading, it gives me great pleasure to give you an update in this Activity Report.

I hope you like it.
 Daniel Develay, CEO

Daniel Develay

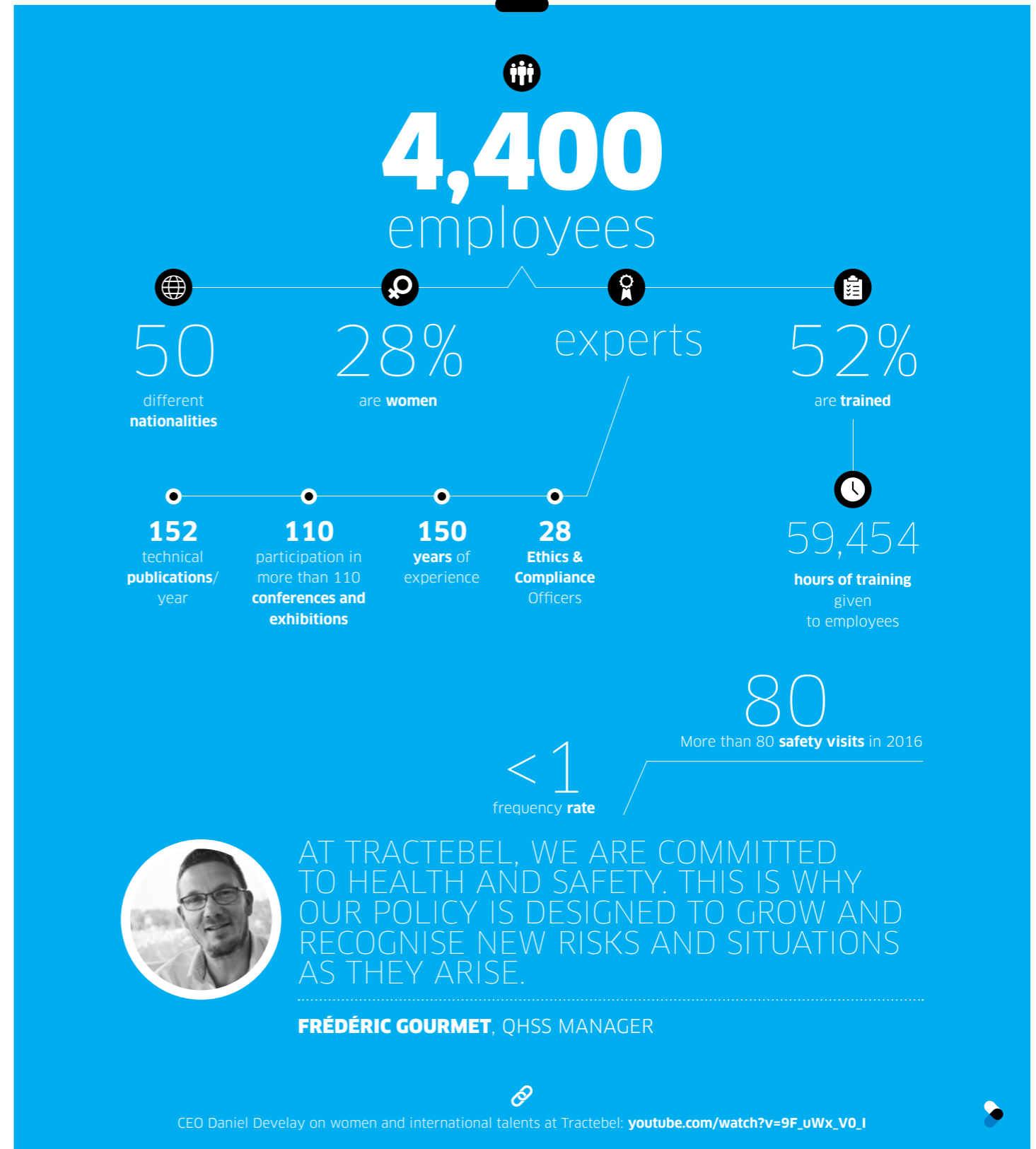


at a glance



To shape the world of tomorrow, working together with our clients to provide them with first-class engineering and consulting services, that it is our mission. We want to play an active role in the world we live in, by developing solutions to mitigate climate change and its effects, and bringing electricity to everyone.

facts and figures



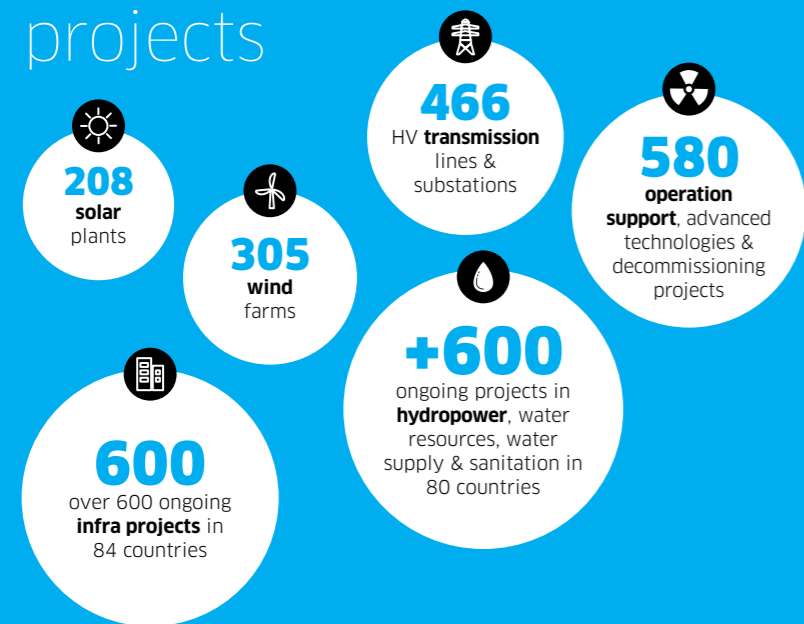
facts
and
figures

€570 million turnover

PROUD TO BE IN ENR'S* 2016 TOP INTERNATIONAL RANKING

- # 2 HYDRO
- # 3 TRANSMISSION & DISTRIBUTION
- # 4 POWER & WIND
- # 5 SOLAR

projects



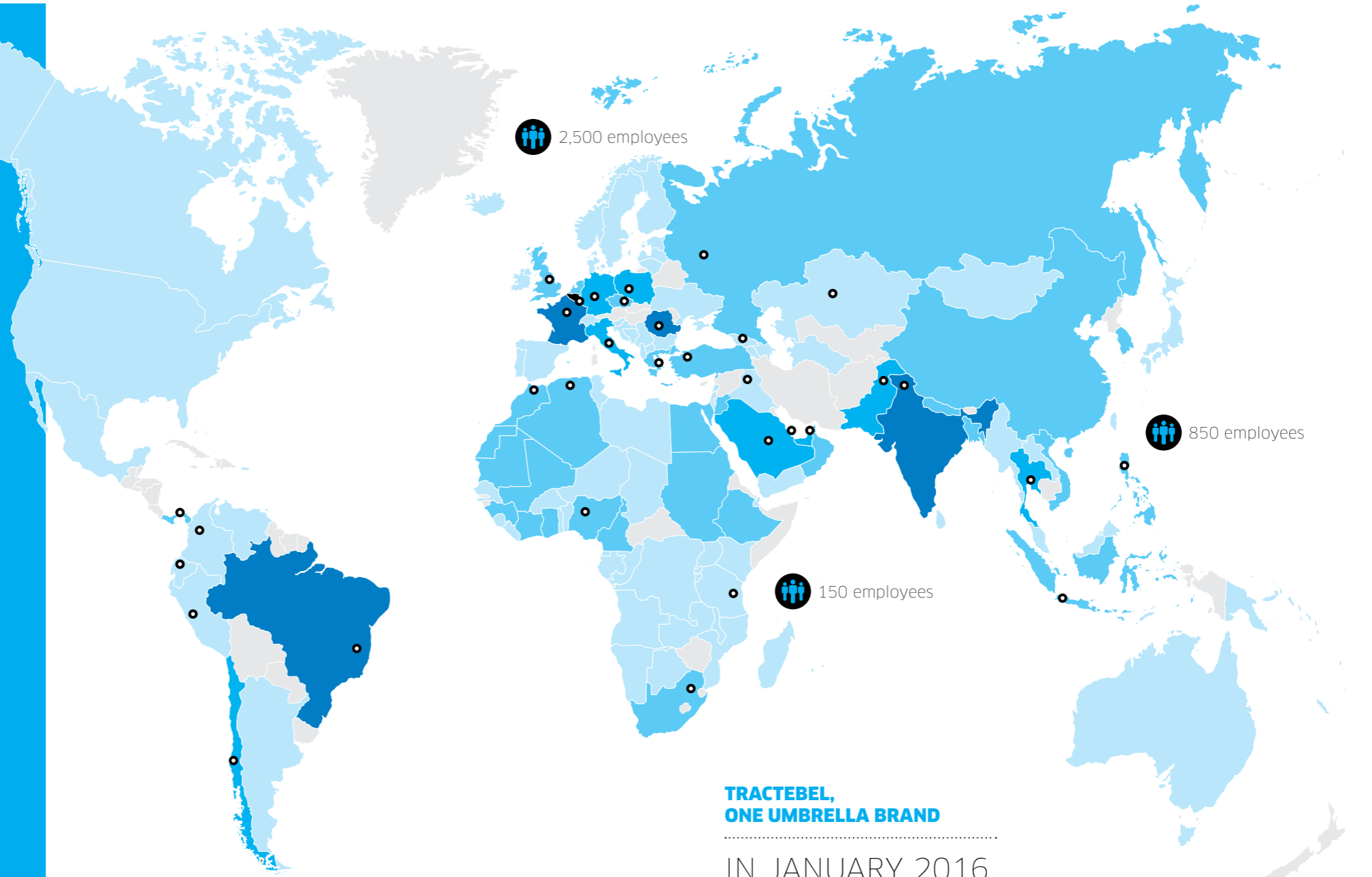
600

GWh of identified energy savings for our clients in Belgium, Italy, Romania and UK

1,100 Energy Transition projects

90%

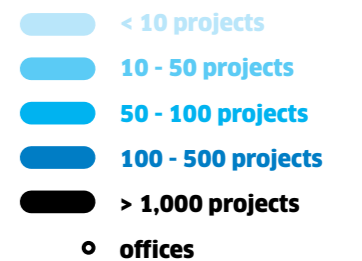
satisfaction index
688 satisfaction surveys answered by our clients in 2016



**TRACTEBEL,
ONE UMBRELLA BRAND**

IN JANUARY 2016, TRACTEBEL ENGINEERING, LAHMEYER, COYNE ET BELLIER AND LEME ENGENHARIA JOINED FORCES.

33
offices
worldwide



* ENR = Engineering News Record publishes rankings of the largest construction and engineering firms, based on gross revenue. The rankings are generated from projects outside each firm's respective home country.

Q&A

OUR PARTNERS SPEAK

We interviewed Alain Bernard, CEO of DEME, specialists in Dredging, Environmental and Marine Engineering, and Jean Polet, General Manager of Belgian construction group BESIX. Our partners speak and give their thoughts on Energy Transition.

Which one thing do you believe will revolutionise the energy and/or infrastructure markets in the future?

Alain Bernard: "The Paris Agreement and the increasing commitment to mitigate climate change. Rising sea levels have a big impact on many countries like Bangladesh or the Maldives. Many islands will disappear within 25 years if nothing changes."

Jean Polet: "Mobility and smart grids are the two biggest challenges we face in the next few years. Most European countries face the same problems. That's why we're working, like Tractebel, on the Grand Paris Express, a massive project to eco-develop Paris with new metro lines. We are also participating through several companies of the group in the massive investments Elia is realising on the Belgian energy grid."

How does Energy Transition affect your business?

Alain Bernard: "It's a big shift for us. Ten years ago, we were purely a dredging company. Today, about 1/3 of our turnover is from energy-related businesses. For example, we are building offshore wind farms as well as tidal power plants, and laying cables between France and the UK. We've worked with Tractebel for years. We built C-Power, Belgium's first wind farm, and are also partners in Mermaid and Merkur, two other offshore wind projects."

Jean Polet: "Our goal is to diversify our portfolio and move up the value chain. We are entering the energy market together with Van den Berg, which has expertise in power and communication network infrastructure. We

really believe there's more to do in the energy business, so we're following the market closely and looking for opportunities. A few years ago, we set up a new company, BEWIND, to offer a one-stop-shop for onshore windmill foundations. Like many other companies, falling oil prices also affect our business. So we're redirecting some of our activities and extending our scope. We've seen Energy Transition arrive with the booming offshore wind industry. Now we're focusing on the next generation of offshore wind farms, namely gravity-based foundations, as opposed to monopiles which are common today. It's very important that this expertise and know-how can be developed in Belgium and exported afterwards."

SOLAR AND WIND ARE NOW EITHER THE SAME PRICE AS, OR CHEAPER THAN, FOSSIL FUELS. PRICES ARE BECOMING VERY COMPETITIVE AND THAT'S FANTASTIC.

ALAIN BERNARD
CEO OF DEME GROUP

What is your major challenge for 2017?

Alain Bernard: "Offshore wind is getting very competitive now, as subsidies are decreasing, this means that renewables are more competitive than nuclear energy or gas plants. So DEME is building new crane vessels to install mega-turbines. I'm dreaming of building the next big French wind farm with ENGIE. Like John Lennon, I still have a lot of dreams. If I wasn't a dreamer, I would never have built the first offshore wind park in Europe."

Jean Polet: "Our challenge is to integrate the acquisitions we made earlier this year into the Group and let them grow. Moreover, we focus a lot on innovation and further diversification of our activities." ●



© Karel Duerinckx

THE COMPANIES WE'VE ACQUIRED ARE ALL ACTIVE IN INDUSTRIES WHICH WILL SHOW STRONG GROWTH OVER THE NEXT FEW YEARS TO SUPPORT THE BELGIAN ECONOMY: MOBILITY, SMART NETWORKS AND HEALTHCARE.

JEAN POLET
GENERAL MANAGER EUROPE
OF BESIX



© David Plas

Alain Bernard (62) has worked with Tractebel for 30 years.
BUSINESS HIGHLIGHT 2016: Donald Trump's election, as it has a big impact on everybody's lives. It makes the world more volatile. Just think about the changing geopolitical relations or America's new position on renewables.

Jean Polet (48) has worked with Tractebel for 20 years.
BUSINESS HIGHLIGHT 2016: The acquisition of the Belgian entities of the Heijmans Group, specialising in infrastructure, networks and buildings.



highlights 2016



Latin America

3,750^{MW}

The Jirau Hydropower Plant has an installed capacity of 3,750 MW, enough to serve approximately 10 million homes.



Brazil's third largest dam reached completion

The **Jirau Hydropower Plant** on the Madeira River, in the State of Rondônia, was officially inaugurated on December 16th after 90 months of construction. The plant has an installed capacity of 3,750 MW, enough to serve approximately 10 million homes. By moving the axis 10 km downstream from the original location, Tractebel's experts were able to significantly reduce the amount of excavation required and thus reduce the project's CAPEX by 10%, which was a crucial factor in the bidding process.

[Learn more about the Jirau Hydropower Plant](https://www.youtube.com/watch?v=VO-3EHWOIwc) [youtube.com/watch?v=VO-3EHWOIwc](https://www.youtube.com/watch?v=VO-3EHWOIwc)

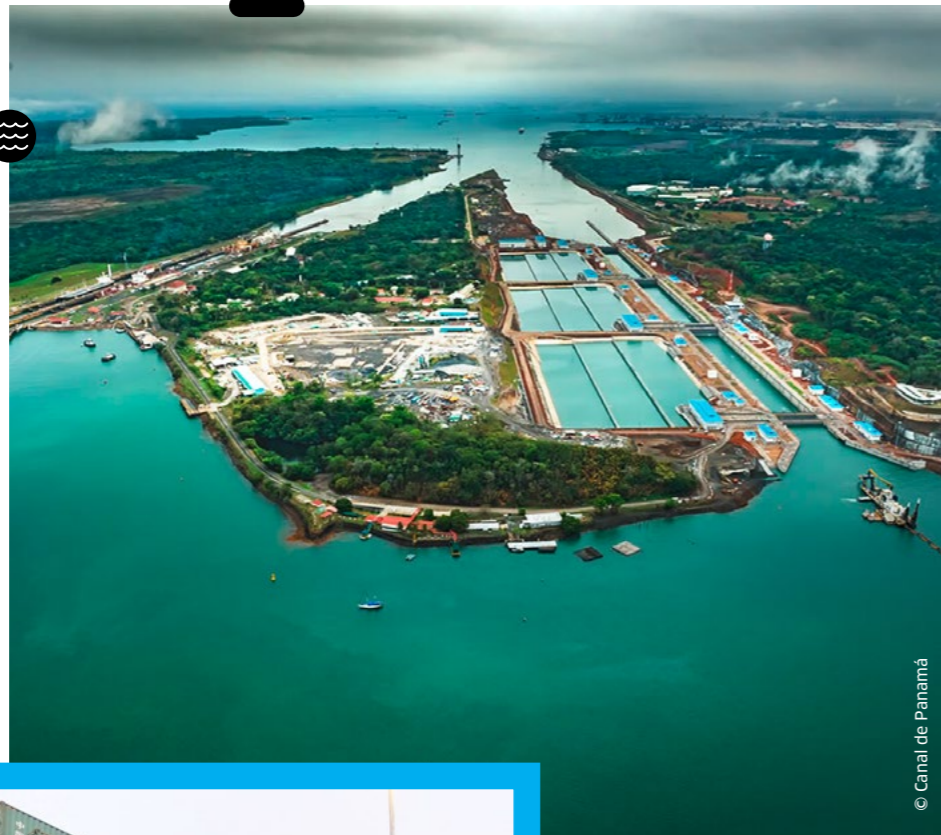




highlights 2016 Latin America

Panama expands its doors to the world

During the *Panama Expands its Doors to the World* event, co-hosted with Jan De Nul Group and DEME, Tractebel's Product Director of Ports and Waterways Jan Groeninckx explained how his team **optimised the use of energy and water** for the operations at the **Panama Canal**. From as early as 2007, the Consorcio Post-Panamax, which includes IMDC and Tractebel amongst its members, started preparing the reference design of the new locks and water-saving basins. The consortium also supported the Autoridad del Canal de Panamá (ACP) by providing a range of engineering services for the design review and technical assistance during the construction of the third set of locks. In addition, IMDC carried out 3-D mathematical model studies and in-situ measurements for calibration and validation.



© Canal de Panamá

1914

The Panama Canal Expansion Program is the **largest construction project** undertaken in the waterway since it opened in 1914.

On June 26th 2016, a memorable event took place, namely the **inauguration** of the Expanded Panama Canal with **the first commercial transit** of the COSCO Shipping Panama container ship.



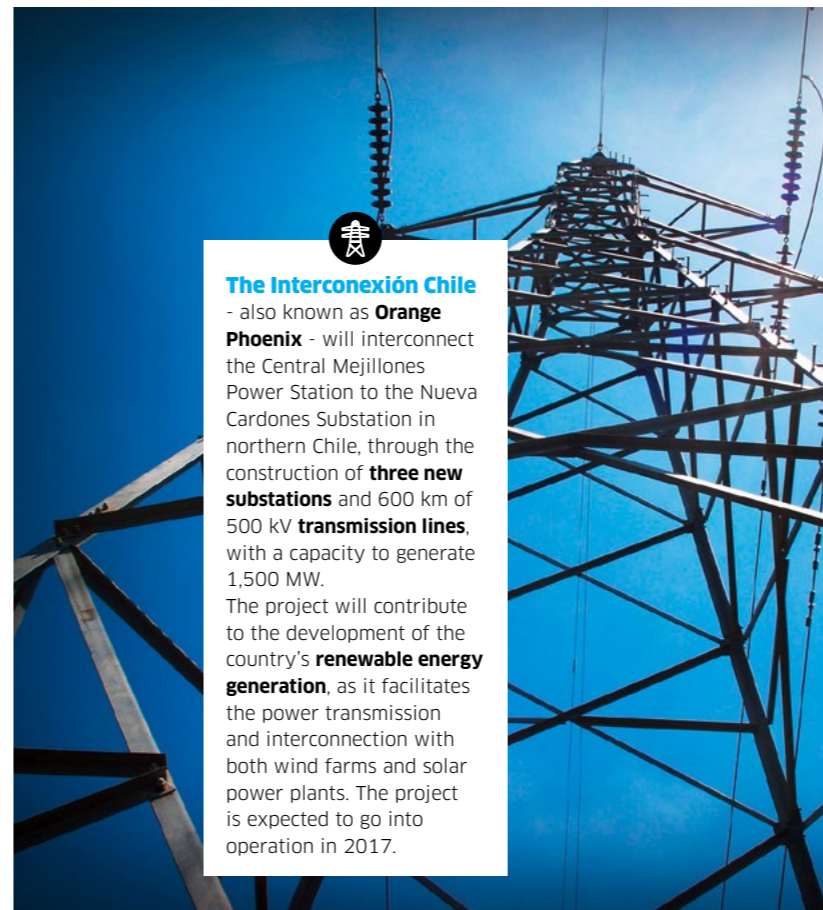
THE EXPANDED CANAL WILL DOUBLE THE WATERWAY'S CARGO CAPACITY, ENHANCING ITS EFFICIENCY, RELIABILITY AND CUSTOMER SERVICE.

The new waterway will provide **greater economies** of scale to global commerce, as Neopanamax ships (with up to 13,000/14,000 TEUs) will be able to use it.



Colombia keeps it cool

Colombia's Ministry of Environment and Sustainable Development is investing in an innovative **District Cooling System** for **five cities** in Colombia: Cali, Bogotá, Cartagena, Medellín and Bucaramanga. The system uses underground pipes to interconnect multiple buildings, so a small district can benefit from a single air conditioning system, **saving between 25-30% on electricity**. In addition to the economic and technical analysis of the sites that will host the DCS, Tractebel is coordinating the project in partnership with experts from Climespace and IMDC. Work will be carried out in a consortium with the Belgian-Colombian company HINICIO.



The Interconexión Chile

- also known as **Orange Phoenix** - will interconnect the Central Mejillones Power Station to the Nueva Cardones Substation in northern Chile, through the construction of **three new substations** and 600 km of 500 kV **transmission lines**, with a capacity to generate 1,500 MW. The project will contribute to the development of the country's **renewable energy generation**, as it facilitates the power transmission and interconnection with both wind farms and solar power plants. The project is expected to go into operation in 2017.

200⁰ km

Providing drinking water for Peru

Chavimochic will enter its **third phase** and will rely on our services to perform specialist supervision of the relevant technical, economic and financial obligations of the company in charge of the hydraulic works. In addition, a **dam** and about 200 km of **canals** will be built. They will then provide drinking water and subsequently electricity that will contribute to the development of the region.

CHAVIMOCHIC WILL ALLOW APPROXIMATELY 63,000 HECTARES OF ARID LAND TO BECOME SUITABLE FOR AGRICULTURAL DEVELOPMENT.

global presence

THE WORLD AS YOUR WORKPLACE

With its worldwide presence, Tractebel offers people the chance to work abroad on a wide range of projects. Mechanical Engineer Rebecca Deraeck explains the many personal and professional benefits of working in other countries – as well as some of the inevitable challenges.

Which countries have you travelled to for work?

I worked in Ivory Coast for seven months and found it really interesting. People were so open and welcoming there. I was in Chile for over a year and have had shorter projects in France, the UK, Japan and China. Now I'm in Athens and hope I can stay here for a bit!

SURE THERE WILL BE CHALLENGES BUT THE CHANCE TO WORK ON PROJECTS ABROAD OPENS THE DOOR TO A WORLD OF NEW OPPORTUNITIES.

REBECCA DERAECK

Did you always want a job where you could work abroad?

Yes, I always wanted to live abroad. Even when studying, I spent a year at university in Prague. Travel connects you to a more adventurous side of life. Sometimes it brings a lot of stress and it can be rather tiring, but it certainly makes things more interesting and adds more colour to your life. I remember a Design Review meeting in Beijing. We were there for just one week and had to complete a huge amount of work along with 20 Chinese engineers. Already jet-lagged, you're working twelve hours a day and don't get much sleep. But the pressure forces you to come up with solutions to every problem. By the end, you're dead on your feet – but I still love these kind of assignments.



ABOUT REBECCA DERAECK
Rebecca (32) is a Belgian Mechanical Engineer who has worked with Tractebel for ten years. Based in Brussels, her work has taken her to many countries including China, Japan, UK, France, Chile, Ivory Coast and Greece.

Why are these foreign assignments good for the company?

There are a lot of benefits. I think it's important to travel to understand your clients – especially in a company like Tractebel. You can't be truly "client-oriented" if you don't understand that your counterpart may be thinking differently to you. Also, going to different sites, I get to meet many people. It's the best way to get answers to questions and you learn different ways to apply technology. I've also had the chance to visit sites like the workshop in Japan where they build the world's biggest turbines. Amazing.

Are there any challenges in working abroad?

When I first arrived in Chile, I found myself in a small flat in the middle of nowhere and there was no water in the house. I felt like I'd travelled to the ends of the world and didn't even have any water! But what can you do? You make the best of things and try not to be deterred.

In general, culture shock is always a problem. People in different countries do things in different ways. You have to learn to be positive and do things differently in different situations. Also, as a woman, it's sometimes not so easy to be an engineer in certain cultures. So you have to adapt and this makes you more creative.

Any advice for colleagues going abroad?

Go! Go! Go! But do be aware that you need to prepare. It's not as simple as just buying a plane ticket. If you're going for a while you need to think about things like tax and insurance. Of course, don't let these put you off but it pays to be prepared for anything! ●

The CIPREL Thermal Power Plant in Ivory Coast



Want to know more about Rebecca and her experiences working abroad?
[youtube.com/watch?v=NKZJw-xmLAQ](https://www.youtube.com/watch?v=NKZJw-xmLAQ)



highlights 2016



Europe

200 km
new automatic metro lines

2 million
passengers every day
by 2030



A special line of work

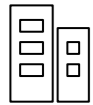
The **Grand Paris Express** is a massive state project to eco-develop the Paris Île-de-France metropolitan area as a more sustainable city, with over 200 km of new automatic metro lines and 72 state-of-the-art stations expected to serve 2 million passengers every day by 2030. Tractebel's involvement covers Project Management of the stations.

[Watch the testimonial from employees working on the Grand Paris Express and other projects at Tractebel France:](https://www.youtube.com/watch?v=SfVyQhruWak)
[youtube.com/watch?v=SfVyQhruWak](https://www.youtube.com/watch?v=SfVyQhruWak)





highlights 2016 Europe



IF WE ADD UP THE AVERAGE AMOUNT OF HOURS WORKED PER WEEK, WE ALL SPEND 70,000 HOURS OF OUR LIVES AT WORK.

A NEW VISION OF WORK

That's why our office should be a space that has been designed so that we can be and feel at our best. In Brussels Tractebel has launched the **Dynamic@Work Project**. Tractebel wants to grasp the opportunity to create an **inspiring work environment**, adopt **new ways of working**, optimise office space use and emphasise a customer-driven approach, as business agility is crucial in today's fast-moving energy markets. Moreover, activity-based working makes it easier to telecommute or work close to home, ensuring a better work/life balance. **By the end of 2017, Tractebel will move to its new headquarters in the heart of the business district in northern Brussels.**

20 MW wind farm for Georgia

The **first wind farm** in the former Soviet Republic came into service in October 2016 in Gori, 70 km east of Tbilisi. The Qartli plant has **6 turbines** each with a capacity of 3.45 MW, generating 88 million kWh of electricity, easily enough to provide 18,000-20,000 families with energy. Tractebel was awarded an **Owner's Engineer contract** for the detailed design of the balance of the plants (foundation, road, substation, cabling), the procurement, the construction and supervision of the wind farm.



A new landmark on the Antwerp skyline in Belgium

Antwerp's new **Port House** repurposes and extends an old fire station to create a new head office, bringing the Port Authority's **500 employees under one roof**. The building was designed by the famous architect Zaha Hadid, who passed away unexpectedly a couple of months before its completion in September 2016. Tractebel's Competence Center Structural Engineering made the calculations for the steel structures of the 20,800 m² house.

OTHER PROJECTS



Protecting Greifswald Hanseatic City against floods

The **Ryck Flood Barrage** protects Greifswald and the surrounding area against floods caused by extreme storms. In a **joint venture** using the expertise of Lahmeyer and Paulu & Lettner, Tractebel has supervised the project successfully since the planning phase. Our engineers applied their experience to the flood study, the final design and the implementation and commissioning. Because of their extraordinarily innovative solution, they were awarded the **German Civil Engineering prize**.



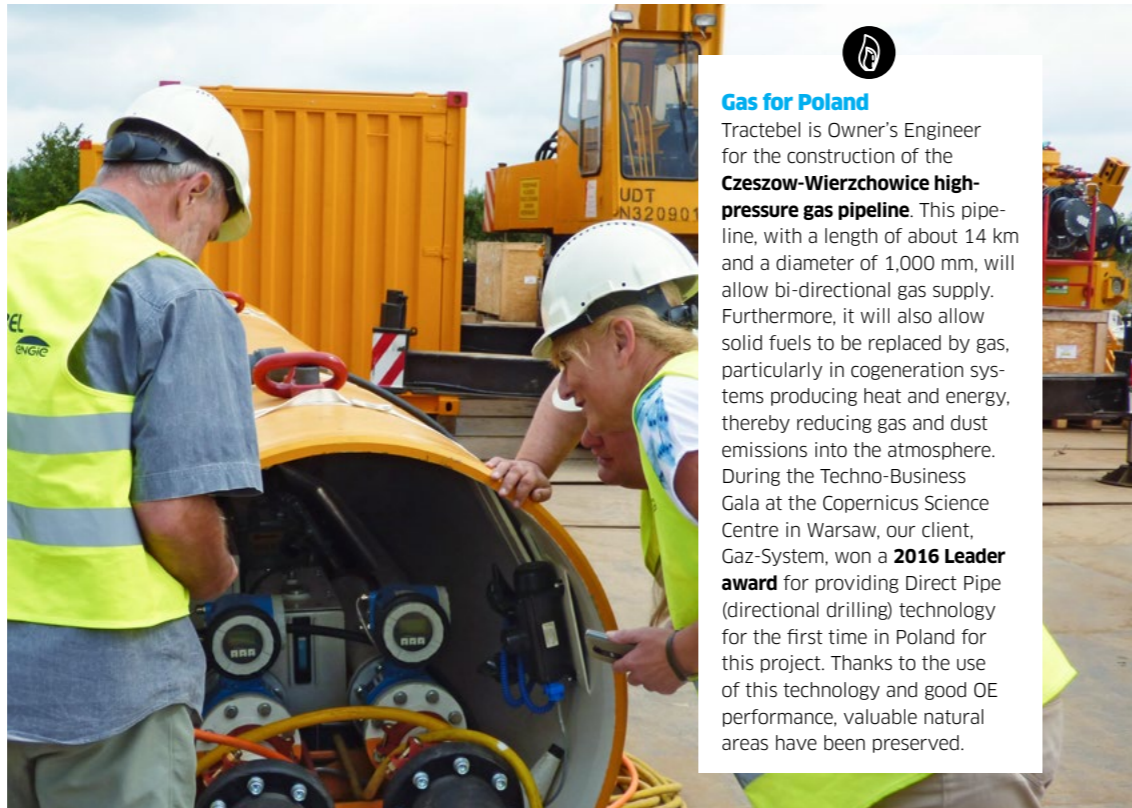
World's biggest lock officially opened

The **Kieldrecht lock** is located at the end of the Deurganck dock on the left bank of the River Scheldt, with a maritime connection between the Scheldt and the Waasland in the Port of Antwerp, Belgium. This is the **largest lock in the world**, 500 m long, 68 m wide and 17.8 m deep. Tractebel's assignment was to assist the Flemish Government with reviewing all the notes, drawings and technical data during the implementation, organisation of work groups in civil works, document management, etc.



RA-APPS saves energy

Tractebel in Romania has **won a two-year contract** to carry out **energy audits** for the buildings (153,100 m²) and car park owned by the Romanian Self-Governing Department for Administration of the State Heritage and Protocol (RA-APPS). The project will be carried out over the next two years.



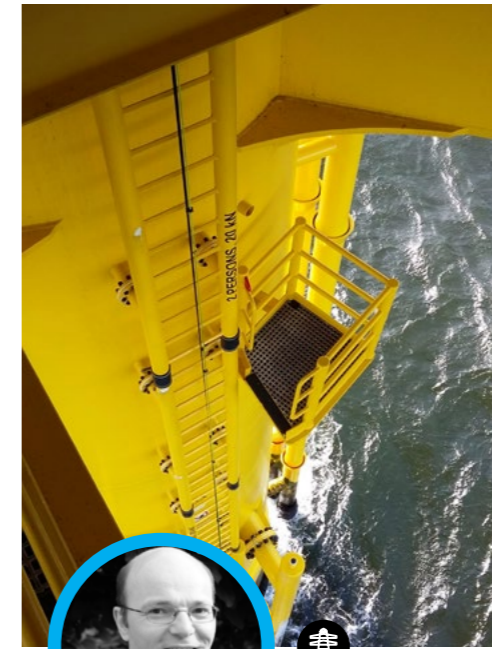
Gas for Poland

Tractebel is Owner's Engineer for the construction of the **Czeszow-Wierzchowice high-pressure gas pipeline**. This pipeline, with a length of about 14 km and a diameter of 1,000 mm, will allow bi-directional gas supply. Furthermore, it will also allow solid fuels to be replaced by gas, particularly in cogeneration systems producing heat and energy, thereby reducing gas and dust emissions into the atmosphere. During the Techno-Business Gala at the Copernicus Science Centre in Warsaw, our client, Gaz-System, won a **2016 Leader award** for providing Direct Pipe (directional drilling) technology for the first time in Poland for this project. Thanks to the use of this technology and good OE performance, valuable natural areas have been preserved.

17%

Boosting Albania's power generating capacity

Tractebel acted as Owner's Engineer on the **Banja Hydro Power Plant**, working in a joint venture with Mott MacDonald. Banja is located on a complex geological site, and is the first of two plants along the Devoll River Cascade earmarked for an overall installed power of 256 MW. Thanks to the project, Albania's total **electricity production** has **increased** by about 17%.



A mind-blowing step in Germany's Energy Transition

For the first time Tractebel, ENGIE Fabricom and Iemants have established a **joint venture** to take on the role of **EPC Contractor**. The joint venture was awarded the contract for the engineering, procurement, construction, testing and commissioning of Merkur's offshore substation and associated jacket. Merkur is a 396 MW wind farm located approximately 45 km north of the islands of Borkum in the North Sea. As one of Germany's largest offshore wind projects, consisting of 66 GE Haliade 150-6 MW turbines, the farm will generate enough clean energy (1,750 GWh) to power around 500,000 households. The project thus forms a **major step in the country's Energiewende**.



highlights 2016 Europe

Small-scale LNG

GNL Italia is a company belonging to the SNAM group that owns and manages the **LNG regasification Terminal** at Panigaglia (between Genoa and Florence). The terminal was the **first ever built** in Italy and has a maximum regasification capacity of about 3.5 billion m³ of natural gas per year. Tractebel in Italy, in partnership with D'Appolonia, has been awarded the contract for the pre-feasibility and feasibility study for the provision of small-scale LNG.



After two years of study, **Béatrice Descamps** obtained a **Masters in Safety Engineering**, magna cum laude, after presenting her thesis entitled *Review of industrial safety studies required or recommended during the different phases of onshore LNG terminal projects*. This detailed study has great added-value for our LNG activities and clients.

On June 23rd, **Cédric Dewandre** presented an innovative paper on *First floating Wind Farms* at Power-Gen Europe.

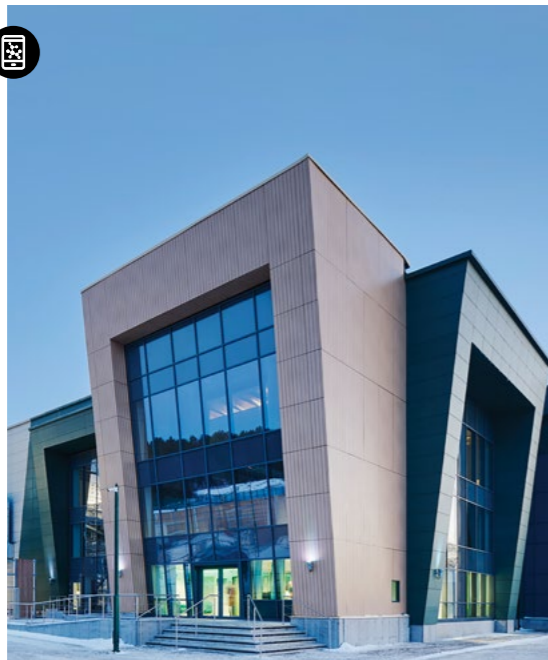


In October 2016, Tractebel acquired a 70% stake in RED, an award-winning company specialising in low-energy building design.

160 employees
16 MILL EURO turnover

DigiPlex, one of Sweden's greenest data centres

RED provided MEP consultancy services to **DigiPlex** in this conversion project to create one of Sweden's **greenest and safest colocation data centres**. The site is located in Upplands Vasby, between Stockholm city and Arlanda airport. The data centre will be split into seven phases creating seven separate data halls. The second phase of the project, providing 1,050 m² of IT space and 1,500 kW of IT load, has just been completed. The project will provide over 6,000 m² of net technical space at an average load density of 1,600 W/m². The data centre cooling comprises highly energy-efficient indirect mass air free cooling systems.



Renovation of Opera's cold production plant

Built in 1993, Opera's **cold production plant** in the Galeries Lafayette in Paris provides air conditioning to banks, museums, hotels, department stores, theatres and other large Parisian cool-air consumers. Climespace engaged Tractebel for the comprehensive project management for renovating the 35 MW plant. Tractebel was able to comply with a strict 8-month work schedule and to establish a suitable site organisation, minimising the impact of the works on the public.

Safe and efficient decommissioning of BMB

Tractebel has been awarded a 7 year contract to help the **Belgian Radioactive Waste Management Agency** in the **safe clean-up** and **decommissioning** of a radioisotope production facility. The facilities feature two cyclotrons successively used for the production of radioisotopes, as well as hot cells and glove boxes. Our team's role will range from defining clean-up and decommissioning strategies, to helping to develop the programme for managing dismantled radioactive materials safely, efficiently and cost-effectively.

THIS MISSION OPENS UP NEW POSSIBILITIES TO DIVERSIFY INTO THE NUCLEAR MEDICINE SECTOR.

BERNARD DEREOPER,
MARKETING & SALES DIRECTOR
NUCLEAR

Offshore Wind in the Normandy and Vendée region

In June 2014, the French State selected a **consortium** called **Eoliennes en Mer**, comprising ENGIE, EDP Renewables and Neoen Marine. The consortium is working with wind turbine supplier ADWEN to develop, install and operate a 2 x 500 MW **offshore wind project** in northern France. The estimated production could provide the electricity for 1.6 million people. Having contributed actively to the winning bids, Tractebel, in collaboration with IMDC, is also taking part in the de-risking phase, pre-FEED and conceptual design.

OTHER PROJECTS

Antwerp's Central Park
The Flemish Government Architect team and the City of Antwerp in Belgium launched a **design competition** for the redevelopment of the **Gedempte Zuiderdokken**, an 800x80 m cobbled parking area. Tractebel/ADR/Georges Descombres, in collaboration with LEA and Erik De Waele, were unanimously **awarded first prize** by the jury, the city council and the public, from a list of 60 candidates. Bart Van Gassen, Project Manager of Dok Zuid, and Koen Couderé, MER Climate Expert, published the article *New study describes climate adaptation for Flemish cities* in the Journal on Public Spaces (Tijdschrift Publieke Ruimte).

Highly secure Waste Disposal Engineering

The **Cigéo project** is designed for the deep disposal of the most **radioactive French waste**, primarily from nuclear power plants and the reprocessing of their spent fuel. Tractebel, together with its partners, is responsible for designing the nuclear surface facilities and the nuclear and non-nuclear installations and equipment for the construction and operation of underground infrastructure and surface/bottom connecting structures. The first phase of the project, involved the optimisation of the concept, resulting in a saving of approximately 50% of the facility footprint and reducing the total cost of the project by about €200 million.

Leading role in the global production of medical isotopes

Tractebel has signed a contract to be the Owner's Engineer for the **PALLAS research reactor** to be built at Petten in the Netherlands. The new reactor, which is a 'tank-in-pool' type and has a thermal power rating of around 55 MW, will play a leading role in the global production of medical isotopes. The design, construction and commissioning of PALLAS will take about ten years, and its lifetime is expected to be at least 40 years. PALLAS and Tractebel form an **integrated project team** to provide intelligent customer capability.

facing common challenges

As the world is undergoing a rapid transformation, we all face common challenges: to mitigate climate change and ensure access to sustainable, affordable and reliable energy, water and smart infrastructure.



About half a million **solar panels** were installed every day around the world. In China, two **wind turbines** were installed every hour. (IEA)



17%

17% of the global population **lacks access** to electricity. (IEA)

5.5
million
new things



5.5 million new 'things' will be connected to the Internet each day. (Gartner)
By 2020, up to 200 billion **IoT devices** will need securing. Intel claims that the number of connected devices could surge from 15 billion in 2015 to 200 billion by 2020. (CSO)



+2°C

The **global temperatures** will increase 2°C by the end of the 21st century, causing **heatwaves** and **floods**. (IPCC)
In recent years, Europe has suffered over 100 major damaging floods. Since 1998, floods have caused some 700 fatalities, the displacement of about half a million people and at least €25 billion in insured economic losses. (European Environment Agency)



Electric vehicles to be **35%** of global **new car sales** by 2040. This projected change between now and 2040 will have implications beyond the car market. Bloomberg's research estimates that the growth in electric vehicles means that, by then, they will account for a quarter of the cars on the road, reducing crude oil use by 13 million barrels per day, but using 2,700 TWh of electricity. (Bloomberg)

48%

According to the U.S. Energy Information Administration, the world's **energy consumption** will increase by 48% between 2012 and 2040, with fossil fuels accounting for more than 75% of world energy use in 2040. (EIA)

41
megacities



By 2030, there will be 41 megacities with more than **10 million inhabitants**. By 2050, 66% of the world's population will live in cities. (UN)



+3 billion people in 2050

In 2000, the **world population** was 6.2 billion. The UN estimates that by 2050 there will be an additional 3 billion people, with most of the growth in developing countries that already suffer water stress. (WB/CSD)

highlights 2016



Africa

160 km

of piping (oil) under
concentrated solar mirrors

1,000

parabolic trough elements

384,000

mirrors

1,300 MWhth

molten salt thermal storage
tanks (45,000 tons of
molten salt)

8 km

of new transmission line to
existing 132 kV grid line



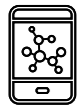
Kathu: a hotly energised project

Kathu **Concentrated Solar Power (CSP)** project in South Africa is a build, own and operate project owned by ENGIE and its consortium partners. The design concept is based on **Parabolic Trough Technology** driving a power plant with a 100 MW capacity. The plant also incorporates molten salt thermal storage tanks allowing power generation for an additional 4.5 hours after sunset. The Owner's Engineer mission is being led by a mixed Tractebel/Lahmeyer project team and local partner Thabo Consulting.





highlights 2016 Africa



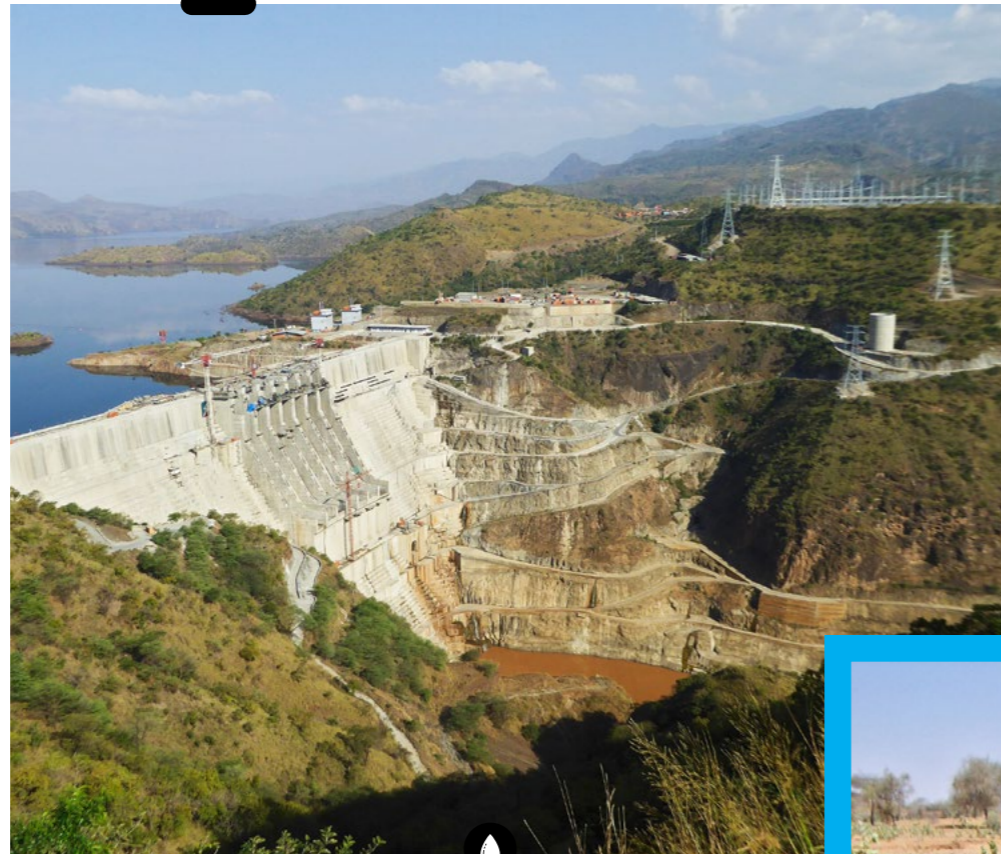
AROUND 620 MILLION INHABITANTS IN AFRICA STILL DO NOT HAVE ACCESS TO ELECTRICITY. THESE MINI-NETWORKS COULD ULTIMATELY MEET THE NEEDS OF MORE THAN 120 MILLION OF THEM.

POWERCORNER

The United Nation's seventh sustainable development goal is: to ensure access to affordable, reliable, sustainable and modern energy for all. Tractebel is actively contributing to this, thanks to its innovative PowerCorner mini-grid. On October 19th, the **first PowerCorner** was inaugurated in the village of Ketumbeine in Tanzania, 36 km from the national grid. Today, **161 households benefit from electricity**, which is produced via solar energy and stored in a battery.



Find out about the solar mini-grid: [youtube.com/watch?v=80SI87JlghE](https://www.youtube.com/watch?v=80SI87JlghE)



The world highest RCC dam

On December 17th, Ethiopia inaugurated **Gibe III**, the country's **biggest hydroelectric dam**, with an installed capacity of 1,870 MW and the highest of its kind in the world (240 m). Tractebel provided consultancy services for the management of the EPC contract as the Employer's Representative and supervised the construction works.



Improved health through safe water in Uganda

GKW Consult, in association with Alliance Consultants Ltd, is delivering consulting services for the conceptual designs of the new **Drinking Water Treatment Plant** near Katosi, as well as a bulk transmission. The subsequent tendering and supervision of the execution of associated works are also part of this consulting contract. The project is part of the Kampala Water - Lake Victoria Water and Sanitation Plan. The main objective is to **improve living conditions** by providing a safe and reliable water supply. The project targets a population of over 4.5 million people by the year 2025 and over 7 million by the year 2040.



Protecting West Africa's Coast

The World Bank's **West Africa Coastal Areas Programme** helps countries like Ghana, Togo and Ivory Coast, to integrate infrastructure and natural resources management to **mitigate climate change**. By managing erosion, decreasing the number and the impact of floods and protecting the region's biodiversity, the lives of the people living in those coastal areas can be improved significantly. A study carried out by IMDC will provide a framework to examine the country's coastal erosion and flood risk, identify the hazard hotspots and quantify the cost of coastal environmental degradation.



Annelies Bolle was invited to present the case study *An Innovative Early Warning System For Flooding/ Operational Risks In Harbours* during the 3rd International Conference on Coastal Zone Engineering and Management in the Middle East.

In 2016, GKW became part of the Tractebel family. GKW Consult ranks among the top international independent consultants for environmental engineering, with particular emphasis in the area of water supply, waste water treatment and disposal.

**130 employees
16 MILL EURO turnover**



2000

MW

With the commissioning of a **CIPREL combined-cycle power station** (capacity boosted to 536 MW), Ivory Coast has reached its **2,000 MW capacity target** as promised by the country's new authorities. Thanks to this power station, the people of Ivory Coast will not only benefit from more abundant electricity, they will also have good quality electricity that will improve their everyday lives and help neighbouring countries. Eranove and Tractebel signed an agreement for another Owner's Engineer mission for the CIPREL5 400 MW plant.

STUDIES HAVE SHOWN THAT ABOUT 4 BILLION PEOPLE ARE FACING WATER SCARCITY.



for a better world

A FESTIVAL OF LIGHT

Energy Assistance is a volunteer organisation established in 2001 by Tractebel, Electrabel and Fabricom employees. Together with personnel from ENGIE and a few Belgian grid operators, they give people access to energy. The focus is on long-term projects in hospitals, healthcare centres and schools in developing countries. Johan Baert has been a member of Energy Assistance since 2004.

What prompted you to volunteer?

As a young man at Tractebel, I would often go backpacking. During my travels through Venezuela I stayed at a guesthouse in the middle of the jungle. There were problems

with the power distribution boards and power cables, and I sorted them out. I was a big hero (*laughs*). This made me realise that it was great to help people, especially in countries where it's really needed. Later, I ended up at Energy Assistance, where the practice is different from engineering. Our colleagues from grid operator Ores taught me the best approach for renovating the low-voltage distribution system at a hospital. In turn, we ensure that young people are also involved, so that we can transfer our knowledge.

The Mosango hospital in Congo is one of the projects. How did you get involved?

Doctors at AZ Gent travel regularly to Mosango to train doctors there and to operate. They asked us to help pump water using electricity. Ultimately, that initial request



ABOUT JOHAN BAERT
Johan (51) is an Electrical Engineer and Project Manager Transmission & Distribution at Tractebel. He also manages the expertise centre for electrical energy and transmission systems. In recent years, he has mainly worked on projects in other countries, including Congo, Haiti and Armenia.

resulted in an entire power supply system for the hospital.

What are the biggest energy challenges facing Congo?

The big problem is that energy, if there even is any, is generated by diesel engines. It's complex, expensive and not always efficient. In hospitals, the patients themselves sometimes have to pay for the diesel fuel. In other words, you will not be operated on if you don't have money or if there is no fuel. So, for the Mosango hospital, we designed a three-phase installation consisting of solar panels, batteries and inverters. As a result, there is now free power day and night.

What gives you the most satisfaction?

Indirectly, we help surgeons by ensuring a reliable power supply for their medical devices. We also make the lives of local residents more bearable. Since our time on site is very limited, we work late every day. We always work with local partners. This creates a lively atmosphere and they help with installing solar panels and digging trenches for the electrical cables. After a long day's work, we go and drink a



A GAME FOR CHARITY

Every year, Tractebel employees send out vast numbers of New Year wishes to colleagues and customers alike. For several years, we have replaced paper cards with electronic ones and we donate the amount saved on printing to a charitable cause. In 2016, the charity chosen was the Mosango hospital in the Democratic Republic of Congo. Instead of an e-Christmas card, we went one step further and developed a game for PC, smartphone and tablet.

TRACTEBEL DONATES THE AMOUNT SAVED FROM PRINTING END-OF-YEAR GREETINGS CARDS TO A CHARITABLE CAUSE, HELPING CHILDREN IN NEED.

Primus or Mützig beer together. Over time, we've become friends.

What is something typically unknown about Africa?

The lack of hang-ups and the gratitude shown by ordinary - generally young - people. A girl once came up to us during a project at a boarding school to thank us because she could now read and study in her room in the evenings. In the evenings, it's pitch black in a country like Congo. When the lights went on for the first time, everyone was really enthusiastic: "C'est la fête de la lumière!" (*it's a festival of light*). ●

OTHER PROJECTS

- 1 **Tractebel India has joined hands with SOS Children's Villages** to sponsor the education of 44 abandoned children. Through this initiative, our company is providing financial support for school fees, transport costs, tuition and fees for extracurricular activities, as well as books and stationery costs.
- 2 **Our Brussels headquarters' "Eco-dynamic Company" certificate has been renewed.** This certificate rewards dynamism in the environmental field and progress in areas such as waste management, energy consumption and the rational consumption of raw materials.
- 3 **Bart Wolput developed a non-profit social app called "Give a Day"** for people who want to do voluntary work in their neighbourhood. "With this more flexible approach customised to the needs of the volunteer, we open up a whole new potential source of volunteers," says Bart.
- 4 **From now on, bees will be keeping an eye on the environment** of the Brussels-Capital Region. This project, led by Beediversity in collaboration with several Brussels companies, allows us to perform a situational analysis of biodiversity and pollution.
- 5 **The Katowice Business Run is a charity event** organised in 7 major cities in Poland for the "Beyond Horizons" Charity Foundation, which helps amputees and victims of unfortunate accidents on an everyday basis. Our colleagues in Poland formed a strong team called the "Tractebel Fellowship", which ranked 90th (out of 401 teams).
- 6 **Within the context of the Sustainable Week**, Tractebel Belgium organised different events and activities. One of them was the Bike Project. More than 50 employees came to work by bike during this week and took part in a training session.



11 km

The Boardwalk has transformed Palm Jumeirah's crescent into a vibrant destination in its own right for shopping and dining, as well as for jogging, cycling or a relaxed waterfront stroll.

highlights 2016



Asia & Middle East



Walking the walk on Palm Jumeirah

We are not just talking the talk. Tractebel has concluded the detailed design and site supervision of the **Palm Jumeirah Boardwalk** in Dubai, working with local marine contractor Overseas AST Co Ltd. The Boardwalk will cover the entire 11 km length of the Palm Jumeirah's crescent breakwater, and will be home to around 20 food trucks. Tractebel's mission also consisted in the coordination of all health and safety inspections related to the mission, whenever and wherever required.





highlights 2016 Asia & Middle East



Clean water in Delhi

The Indian Government is aiming to develop the Yamuna River in the city of Delhi. The Tractebel-IMDC study is focusing on the Delhi area, but developments outside the project area, such as changes in **water resources management, water quality** and **climate change**, cannot be ignored. Various development alternatives for shipping were determined in consultation with stakeholders. They were examined according to feasibility, taking changed preconditions into account, as well as the possibility of integrating them into the urban development and connected nodes (tourism, passenger transport, goods transport).



THE SPECIALISTS JOINTLY PREPARE MAPS OF FLOOD HAZARDS AND RISKS FOR THE 25 MOST IMPORTANT RIVER BASINS.



Analysing flood hazards in Nepal

On behalf of the Water Resources Project Preparation Facility, Tractebel, using Lahmeyer's expertise, is analysing flood hazards in Nepal. We are active in this project together with Total Management Services, our long-standing Nepalese partner. The studies should counteract both the impact of **climate change** and ensure the sustainability of **food supply**, thus contributing to Nepal's economic growth.



JEDDAH ECONOMIC CITY IS A NEW DISTRICT IN THE NORTH OF JEDDAH, HOSTING THE KINGDOM TOWER, THE TALLEST BUILDING IN THE WORLD CURRENTLY UNDER CONSTRUCTION.

SMART CITY OPPORTUNITIES FOR JEDDAH

Tractebel, together with ENGIE Ineo, was granted a pre-feasibility study of the City Management Services to show the **opportunities of the smart city** layer in the development and exploitation of this new district of Jeddah. The study, combining multidisciplinary fields such as urban planning, mobility, energy, water and buildings, also investigates the opportunities on how to co-develop Jeddah Economic City, together with JEC. This study had to be completed within a very tight time frame of 8 weeks.



During the Smart City Workshop organised by the European International Contractors Association Hein Dirix, Chief Officer Infrastructure and Environment, presented the new Tractebel-Novante's Methodology for the development of a Balanced Sustainable Masterplan for Smart Cities. The methodology assures that prosperity criteria in the areas of Social, Economic and Environmental Development are being activated in a balanced way.



10

KM PIPELINE

On October 29th the opening ceremony for the gas supply to the IPP3 Power plant near Amman in Jordan took place. IPP3 is **the world's largest internal combustion engine power plant**, using multi-fuel engines with a combined capacity of 573 MW. Tractebel was the designer and technical adviser during the EPC contract for the gas project. The project consisted of a 36" Arab gas pipeline hot-tap, a 10 km 16" branch pipeline as well as a filter, pressure reducing and metering station.



Solar PV for Subic Bay

This project is the first part of a 150 MW combined **Solar and Wind power development**, located in the hills of Subic Bay (Luzon Island, Philippines). Tractebel's task includes the preparation of the tender specifications for the main equipment, the review and selection of main equipment suppliers, the review of the detailed design and construction supervision.

paving the way to the future

THE WINNERS ARE ...

The Tractebel Innovation Awards are an opportunity to spotlight those innovative projects and initiatives that stand out and have shown sufficient evidence of creativity, quality and reactivity in the course of the year.

CATEGORY 1 Collaboration between Geographical Entities, Business Entities and/or Business Lines

Winner: Project Management Services for the Construction of 2 radioactive waste storage buildings

CATEGORY 2 Collaboration with partners outside Tractebel

Winner: GNLMN, A comprehensive study of the impact of the conversion of French Navy ships to LNG. Collaborative approach to win the Transco CLSG OE Phase II project.

CATEGORY 3 Commercial and customer relations

Winner: E²PRO - Energy Efficiency Project Development Energy savings financed by their earnings

CATEGORY 4 Engineering or scientific publication

Winner: Sediment transport simulation models for the environmental management of dredging plumes

CATEGORY 5 Disruptive innovation

Winner: The underground Storage Cavern of the Forbach Pumped Storage Plant

SPECIAL PRIZE Young generation

Winner: Tenov', an accelerator of digital projects



RESEARCH WHICH IS GETTING THINGS ON TRACK

Capacitel is a new stochastic traffic and optimisation model for the optimisation of traffic light design and public transport priority.

New formulas for optimal signal settings with transit signal priority and the development of a decision tree enables consultants to choose the optimal transit priority for different traffic situations. This is the main result of Bart Wolput's PhD, which he obtained on May 25th.

Bart Wolput (Mobility Expert Traffic Modelling): "The results of this research will already be used to enhance the public transport flow in the Belgian capital, as a project run by the Brussels region and STIB to give priority to trams and buses at intersections with traffic lights is getting on track."



1 PAPER, 2 AWARDS

AWARDS?

For his paper based on his PhD research entitled *Towards a Better Prediction of Dredging Plumes: Numerical and Physical Modelling of the Near-Field Dispersion*, he received:

- a 2016 Tractebel Innovation Award
- the PIANC De Paep-Willems Award 2017. Boudewijn is only the 4th Belgian ever to win.

WHAT?

In this research, Computational Fluid Dynamics (CFD) simulations are used as a tool to determine the three-dimensional flows of water, sediment and air bubbles directly after release from the overflow shaft. A realistic dredger hull geometry and an actuator disk to simulate propeller action add to the representation of the complexity of the flow. The CFD model simulations have been validated against results of laboratory experiments and field observations.

WHY IS IT SPECIAL?

It gives insight for the first time into the dispersion of sediments near hopper dredgers at work, using overflow. This is of paramount importance for environmentally sensitive areas such as coral reefs, sea grass fields and wetlands, during the execution of off-shore works, navigation channel works and port construction works requiring dredging.



INNOVATION IS EVERYONE'S BUSINESS

During the ENGIE Innovation Week 2016 Karim Karoui, Technical Director of the Energy Transition department, was one of the organisers of a series of events intended to highlight the fact that innovation is everyone's business.

Karim Karoui: "The energy landscape is undergoing a major transformation. Digitisation, amongst other factors, is affecting a wide range of processes and energy flows. Tractebel has to consider and respond to the new needs that arise from those changes. Our business is engineering and we are reinventing our products to meet our clients' new challenges. This is where innovation makes sense. Innovation must be seen as a process, a state of mind even, it can't just be a matter for a few specialists!"

Since the beginning of 2016, the Energy Transition department has included a small team responsible for leading and coordinating innovation throughout the company. The principle is to collect new ideas from any staff member through an ideas box, identify those with sufficient potential from the business model perspective, and then support them in getting to the product stage. The Innovation Week fits into this framework, with our main concern being to strengthen the belief that innovation involves everyone, at all levels of the company.



PLATE FOR PIERLOT

Tractebel developed a Full Scope Training Simulator for the Tihange 1 Nuclear Power Plant in Belgium.

Christian Pierlot, Chief Officer Nuclear, received a commemorative plate to emphasise the excellent collaboration with Tractebel that allowed a 'ready for training' simulator to be delivered to a very tight schedule.



GOOD VIBRATIONS

The noise created by a new wind turbine farm is a major concern for its environmental approval.

As a consequence, it is crucial that noise level predictions are accurate and reliable. Tractebel's acoustics and vibration team, working in close collaboration with Laborelec, was awarded an ENGIE research project to investigate the accuracy of different simulation methods such as ISO9613, NORD2000 and HARMONOISE. The analysis was based on extensive measurement data from different production sites in France. Luc Schillemans presented the results of the study during the *International Conference on Wind Turbine Noise* which took place in Rotterdam. In 2017, the complete scientific paper will be published in *WindTech*, a respected international journal about the industry.

lighting
up your
future



Energy Transition

The Energy Transition is the gradual shift from the current non-sustainable, fossil fuel driven energy system to a decarbonised, decentralised, digitalised and integrated energy system.

lighting
up your
future



85

PRESENT IN 85 COUNTRIES

The Energy Transition Department was created in early 2015 to take a holistic approach to the changes in the world situation regarding energy, usually referred to as Energy Transition, and to boost innovation within Tractebel.

Energy Transition is the gradual shift from the current non-sustainable, fossil fuel driven energy system to decarbonised, decentralised, digitised and integrated energy systems. This new paradigm of the energy markets is changing the way in which we will produce, consume and experience our energy enormously, no longer as consumers but as prosumers.

FOCUS OF OUR STRATEGY

Using simulation, optimisation and data analytics (artificial intelligence, machine learning, big data, IoT), ENGIE is making Energy Transition the focus of its strategy. Tractebel's aim is to be an architect of Energy Transition, acting as a **one-stop solution integrator** for all the stakeholders in the energy value chain. In practice, our team of international experts are specialists in power system modelling and simulation, from the transmission to the distribution networks, asset performance optimisation, digital energy efficiency (including big data, agile project management, applied mathematics, artificial intelligence, machine learning and IoT), energy market regulation and dynamics. We are committed to supporting our clients, partners and other stakeholders throughout their energy transition.

1,100
ENERGY TRANSITION PROJECTS

OUR AMBITION IS TO BE IN THE TOP 3 EUROPEAN ENERGY ARCHITECTS BY 2022, DELIVERING CONSULTING SERVICES AND OPTIMISED SOLUTIONS TO SHAPE THE ENERGY WORLD OF TOMORROW.

GILLIAN-ALEXANDRE HUART,
CHIEF OFFICER ENERGY TRANSITION AT TRACTEBEL

HIGHLIGHTS

1. PREDICTIVE MAINTENANCE BASED ON C3IoT TECHNOLOGY

Thanks to Predictive Management, maintenance works at a power plant can be planned more efficiently. Numerous "unplanned stops" can be transformed into shorter and fewer "planned stops", increasing the plant's availability, safety and flexibility. Today, very few maintenance strategies use quantitative models, although they are fed by a continuous flow of the plant's data. To this end, Tractebel has developed a **software application** based on C3IoT technology to improve the plant's performance and reliability, by **cleaning data**, defining **data analytic algorithms** and **implementing a solution**.

384
EXPERTS WORLDWIDE

2. PLUG MY CAR

With Plug My Car, we want to deliver a systemic, platform-based business model for **Electric Vehicle mobility**, where the mobility system (passengers and goods) and the energy system meet, based on a disruptive 2030 vision rooted in Brussels. Tractebel was responsible for the analysis



of end-user mobility needs, the simulation analysis of mobility and power systems, and the business model development.

3. TAHITI'S 2020 ELECTRICAL SYSTEM EVOLUTION STUDY

This study analyses the operational measures that could be enforced to minimise diesel fuel consumption and investigates possible investment options in order to **operate the grid with maximum renewable energy sources**.

4. SUPPORTING MADAGASCAR

The objective of the Rural Electrification project is to support the Government of Madagascar in designing and implementing a



© Flickr - Marco Zanferrari

WE ARE VERY EXCITED TO BE SUPPORTING ENGIE IN THIS INNOVATIVE SOLUTION BY PROVIDING KEY TECHNICAL SKILLS AND PUTTING TOGETHER NEW TECHNOLOGIES.

XAVIER STURBOIS,
HEAD OF PROCESS GAS & LNG
AT TRACTEBEL

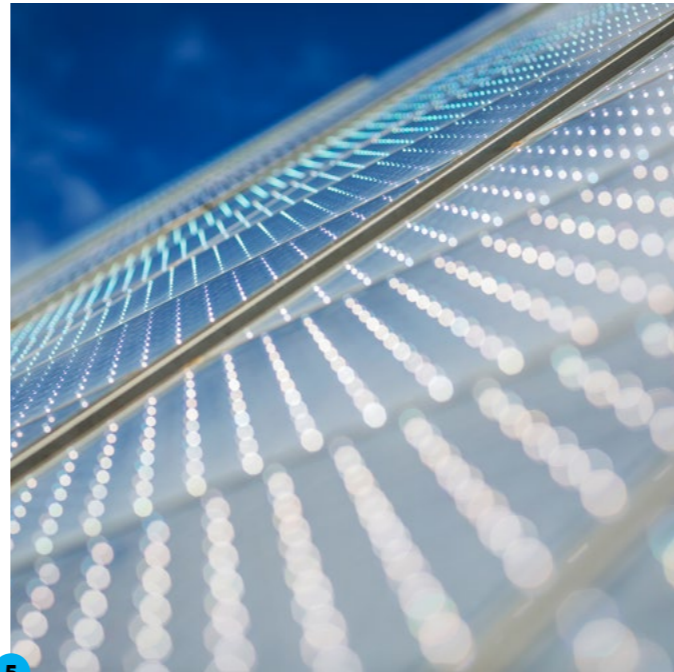
9 MW
CAPACITY

DELIVER ELECTRICITY TO AROUND
50,000 HOMES

Can hydrogen be the missing link for boosting energy transition?
[youtube.com/watch?v=tCYCMQwwk5w](https://www.youtube.com/watch?v=tCYCMQwwk5w)



5



DAY TIME
The Solar PV will feed an isolated grid and the excess electricity will be converted into hydrogen for storage.
NIGHT TIME
When the Solar PV is not operational, the grid will be fed by a set of fuel cells which will consume the hydrogen.



4X
R&D

Here are just four of the many research and development projects in which Tractebel is actively participating:

PROMOTION: new concept for a meshed offshore transmission network in the North Sea using new HVDC technologies.

PENTAGON: development of models to simulate flexible multi-fluid systems for energy districts.

PLANGRIDEV: development of new operational principles for managing electricity grids for coping with large-scale integration of electric vehicles.

GREDOR: development of tools for smart management of distribution grids with large penetration of renewable energy sources (real time, one day ahead and long-term planning).



National Electrification Strategy and Action Plan to ensure access to good-quality, low-cost electricity. This is why Tractebel's experts interviewed stakeholders to collect data, analysed the current programmes and processes of rural electrification, (examining the institutional, technical, legal and financial aspects) and defined a strategy for planning and implementation. They created a lowest cost national rural electrification plan (load forecast, technology, prioritising areas, arbitration between grid and off-grid, lowest cost electrification solution).

5. BOOSTING HYDROGEN
Like other sources on earth, the sun and wind are available, en masse and locally,

but are also highly unpredictable. So researchers and scientists all over the world are currently trying to find a **technological breakthrough**. And hydrogen could be one of them. We highlight two projects, in Australia and Chile.

PROJECT AUSTRALIA
In line with ENGIE's strategy of promoting hydrogen as a powerful enabler of the energy revolution, Tractebel is carrying out a feasibility study for installing a new Solar PV and Hydrogen power plant in central Australia.

PROJECT CHILE
Working with specialists from Tractebel in Belgium, the Chilean team is closely

considering hydrogen as one of the options for the Magallanes' Energy Storage project. In October, Empresa Nacional del Petroleo awarded Tractebel the contract to carry out a feasibility study for installing an energy storage system in Magallanes, Chilean Patagonia, where a wind farm will generate electricity, to be stored for use at the highest consumption peak.

6. COMFORT@HOME
In parallel with the ongoing deployment of NEST thermostats for ENGIE's individual customers in several European countries like France, Belgium and the Netherlands, Tractebel developed a web application allowing access to thermostat data and the

€45

MILLION REVENUE
Our turnover increased by around 41% between 2015 and today

creation of new innovative services for these customers. The platform is currently being extended to be compatible with other **connected thermostats**, starting with the Netatmo. The objective is to offer the same services regardless of the thermostat chosen by the end-customer.

7. 100% RENEWABLE ENERGY FOR THE CÔTE D'AZUR

Is it possible to install an energy system which is **100% powered by renewables** and which is completely autonomous, guaranteeing security of supply across a full year? That was the question posed by the Provence Alpes Côte d'Azur (PACA) region in the south of France. Tractebel carried out detailed **modelling** to assess the techno-economic performance of the system at the **2030 horizon**. The model includes production units, transmission and distribution grids, and the energy demand. The study also delivers recommendations in terms of best techno-economic options. ●



Tractebel is intent on developing its entrepreneurial streak by fostering a close collaboration between millennials and senior managers, and by offering young talents a creative but purposeful “playground”, the Shadow ExCom.

the Shadow ExCom

Comprising **11 young talents**, this ExCom’s role is to come up with new and fresh ideas for the Executive Committee which are relevant to the entire organisation. By doing so, we want to develop a new mindset. We want to be more agile, to drive innovation and to promote collective intelligence, as we believe that the rich diversity of our teams makes our company stronger.

1. HEIN DIRIX
CHIEF OFFICER
INFRASTRUCTURE AND
ENVIRONMENT

Credo: “Everyone can take a small step every day in making this world better.”

2. RICHARD WILHELM
CHIEF OFFICER POWER
& GAS

Credo: “There is only one environment on this planet and we need to look after it, as we are only borrowing it from our children.”

3. BERNARD GILLIOT
CHIEF OFFICER GLOBAL
BUSINESS DEVELOPMENT

Credo: “Cooperation and partnership are the only routes offering any hope for a better future for all humanity.”
(Kofi Annan)

4. SABIEN VERMEULEN
CHIEF LEGAL, ETHICS
AND COMPLIANCE
OFFICER

Credo: “Learn from yesterday, live for today, hope for tomorrow.”
(Albert Einstein)

5. MARTIN SEEGER
CHIEF EXECUTIVE
OFFICER GERMANY AND
ASSOCIATED TERRITORIES

Credo: “A day without laughter is a day wasted.”
(Charlie Chaplin)

6. CLAUDIO MAIA
CHIEF EXECUTIVE
OFFICER LATIN AMERICA
AND ASSOCIATED TERRITORIES

Credo: “The best is yet to come.”

7. BRIGITTE BOCQUÉ
CHIEF HUMAN
RESOURCES AND QHS
OFFICER

Credo: “Optimism is the faith that leads to achievement. Nothing can be done without hope and confidence.”
(Helen Keller)

8. SAMY BENOUDIZ
CHIEF EXECUTIVE
OFFICER FRANCE AND
ASSOCIATED TERRITORIES

Credo: “The nature of the engineer is to make the impossible not only real, but also necessary, and this is what we are proud to achieve every day.”

9. MARC FRANCHIMONT
CFO

Credo: “Be fair, be reactive, be good in everything that you do.”

10. DANIEL DEVELAY
CEO

Credo: “Each by himself is responsible for all.”
(Antoine de Saint-Exupéry)

11. MICHAEL MARIQUE
MANAGING DIRECTOR
LABORELEC

Credo: “Research is formalised curiosity. It is poking and prying with a purpose.”
(Zora Neale Hurston)

12. ANNE HARVENGT
CHIEF STRATEGY,
COMMUNICATIONS & CSR
OFFICER

Credo: “Success is not an accident! It comes from a belief in what we are doing, teamwork and perseverance.”

13. CHRISTIAN PIERLOT
CHIEF OFFICER NUCLEAR

Credo: “Managing extremely competent and motivated teams makes it possible to achieve what everyone believes to be impossible.”

14. GILLIAN-ALEXANDRE HUART
CHIEF OFFICER ENERGY
TRANSITION

Credo: “Don’t wait for the future to come to you, make it yours now.”

15. MARC LEPIÈCE
CHIEF EXECUTIVE
OFFICER BELGIUM AND
ASSOCIATED TERRITORIES

Credo: “Nothing is impossible, there is always a solution.”

16. ERKAN TEKIRDAGLIOGLU
CHIEF OFFICER HYDRO

Credo: “Luxury is a question of money. Elegance is a question of education.”
(Sacha Guitry)

more
about
Tractebel

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Discover our new website: [tractebel-engie.com](https://www.tractebel-engie.com)

Contact us: engineering@tractebel-engie.com

FOLLOW US ON



The Banja Hydro Power Plant
in Albania

TRACTEBEL
