GLOBALREPORT





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THE WORLD IS OUR OYSTER

I was having a conference call the other day when a fellow CEO said that we must stand firm and hang tough now. No kidding. I told him that hanging tough is business as usual for me. In Belgium, construction and infrastructure projects often come up against administrative burdens of such magnitude that you don't need a Covid-19 crisis to lose your patience or temper. Examples? In Brussels, we waited six years to get the green light to build the new Haren prison, a project that has been persistently labeled as 'highest priority' by the authorities.

And does anybody remember the Brussels Eurostadium? This prestigious project for a new national football stadium to be ready for the 2020 European Championships failed even to materialize due to opposing views among the various authorities involved. The Antwerp Oosterweel ring road project—the largest infrastructure project in Flanders almost suffered the same fate but finally got off the ground after 20 years of studies and discussions.

Don't get me wrong. Major projects need to be meticulously prepared, especially when multiple actors are involved. But I would encourage the public authorities to assume a more positive role. In Geneva, for example, we were pleasantly surprised to see the authorities take the lead in managing and coordinating the different construction projects and contractors. Thumbs up for this kind of welcome initiative.

Every business faces huge challenges right now, but nothing can stop Denys, not even Covid-19. Our successful multidisciplinary approach makes us one of the most versatile, agile and resilient contractors on this side of Europe and beyond. As I often tell my business directors, quoting Shakespeare: keep going, the world is your oyster.

Johan Van Wassenhove CEO Denys Global



DENYS

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A STRIKING APPEARANCE

Talk about unique buildings. Well, here's one, the new Antwerp Province Headquarters. The 14-storey twisted volume designed by Xaveer De Geyter Architects completely lives up to its promise now that it has been completed. The floors that rotate as they ascend, and the triangular windows give a striking appearance from the outside and offer great views over the surrounding gardens from within.

The twisted building completely lives up to its promise now that it has been completed.





ADDITIONAL GREEN SPACE IN THE CITY

lt's spectacular but not giddying at all. Xaveer De Geyter is happy to take the time to explain his seemingly curious design decisions. For example, why the twisted outline? "The city of Antwerp is very short on green areas. Here, we saw an opportunity to create an additional green space as great as the city park. By rotating the floors around a corner axis, we were able to create a visual and physical connection between two formerly distinct spaces, Harmony Park and King Albert Park. In this way, we also avoided the upper floors being oriented towards the south, which would have required a lot of cooling in the summer." De Geyter also points out that the building is 40% smaller in volume than its predecessor, a clear benefit in environmental terms.







UNIQUE BUILDINGS / PROVINCE HEADQUARTERS ANTWERP

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- The twisted building completely lives up to its promise now that it has been completed.
- 2. The library connects levels 11 and 12 of the building.
- 3. The triangular shape of the windows also turned out to be beneficial from an energy point of view.
- 4. Patioview on the top floor.

MORE DAYLIGHT WITH A SMALLER GLASS AREA

"The triangular windows came from the structural concept. We needed the façade to be loadbearing, spanning above the existing foyer, and therefore designed it as a truss structure based on triangles. This turned out to be beneficial from an energy point of view, because we positioned the tip of the triangles at the foot of each level, reducing the façade's total glass area without compromising daylight penetration into the office spaces."

PLEASING INTERIOR SPACES

The twisted shape sitting on two concrete shafts also makes for pleasing interior spaces. "These are open plan offices, but you never have the impression of being lost in a huge space. Lines of sight are always short, wherever you are."

WORTH THE EFFORT?

De Geyter chuckles softly when we argue that his design made for tough construction challenges. "I am aware of that. Denys needed to develop hydraulically adjustable and twistable formwork to cast the oblique walls with triangular windows. The concrete reinforcement was extremely dense, and a large number of technical components had to be integrated. And we had very high expectations with respect to the white fair-faced concrete, which further complicated the formwork design. But wasn't it worth the effort? I kindly leave that judgement to the people of Antwerp."

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NDGA Matthias Van Bassan



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SAVING MONTEFIORE FROM NEGLECT



The iconic Montefiore Institute is due to be renovated after decades of neglect.



The Montefiore Institute is our first inner-city project in Liège.

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IMPLANTING A GRACEFUL TOWER OF GLASS

We can't wait to break the seal on this one, because it's another fascinating urban densification project with multifarious challenges. Preserving architectural heritage is one aspect but, as well as restoring the façade, we'll be developing modern new spaces behind it to fulfil a variety of functions, including offices and auditoria. What's more, we'll be constructing a graceful tower of glass as a student residence, right there in between the protected buildings. And then there's the parking space to be created underneath the main building.

INNER-CITY CHALLENGES: BRING THEM ON!

No surprise, then, that this multidisciplinary endeavor is right up our alley. It's a unique and grand historic location. It involves constructing underground spaces below precious architectural heritage. Existing foundations need to be reinforced to make way for an exquisite highrise extension. And we will be faced with typical inner-city challenges such as assuring the accessibility of the construction site and the need to reduce impact on local traffic flows. Work starts in 2021 and we'll come fully prepared.



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The practice of urban restoration and renovation has undergone significant change over the past decade, mainly influenced by the need to develop sustainably. Urban densification is increasingly the strategy of choice to generate sustainable urban growth, and that inevitably impacts the built heritage. To what extent should we preserve this heritage? Think not only of old churches and institutional buildings, but also of end-of-life commercial spaces and offices. How can we redevelop and convert them while respecting their cultural and architectural worth?

REVALORIZING OUR ARCHITECTURAL HERITAGE



Confiserie Roodthooft - Antwerp







Les Bains - Spa

DIFFERENT PRACTICES

It's interesting to see how different countries have adopted different approaches for redeveloping heritage. In Belgium, for example, redevelopment projects tend to start by looking at the obsolete heritage: you see an architecturally valuable but worn-out building and you want to give it a new purpose. It seems to be different in the Netherlands, where projects start at the functional level: a need is identified, and you go looking for an appropriate building.

MORE STIRRING PROJECTS TO COME

Denys has been involved in quite a few inner-city redevelopment projects over the past few years, the most spectacular being the Antwerp Handelsbeurs site. More projects of this kind are ongoing or in the pipeline, for example in Liège (Montefiore), Spa (Les Bains), Ghent (Art School), Brussels (Ancien Hotel de Flandre) and again Antwerp (Confiserie Roodthooft). These are all unique, fascinating buildings giving rise to stirring projects that will implicate the full panoply of disciplines and crafts. Denys!

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101 m





At 2.5 km, the Leopold II tunnel in Brussels is Belgium's longest vehicle tunnel. Built in the 1980s to replace the viaduct of the same name, it has suffered a lot in recent years due to poor maintenance. At one time, debris coming from the roof struck a car, the signal that it was time to renovate.

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The tunnel is now closed overnight, but on average 80,000 vehicles drive through it during the day.



A NEW ROOF AND A NEW NAME

Denys is now involved in the renovation of renewing the tunnel roof. We're applying a cathodic protection system to the reinforcing steel and overspray it by means of our robot, repairing the concrete locally, and installing a false ceiling.

The tunnel was completely closed during the 2019 summer vacation, and normally work is carried out at night because it's a vital route to the city center for the 80,000 or so vehicles per day coming from the west of the country.

Meanwhile, the authorities announced that following the renovation, the tunnel will have a new name, given the brutal colonial legacy of King Leopold II in the Congo.



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RAIL TRACKS FOR A NEW METRO FACILITY

In Anderlecht, the third largest municipality of the Brussels-Capital Region, Denys is constructing the 5-km railway cluster of the new Erasmus metro train storage and maintenance facility. The facility, for 23 metro trains and including 7 maintenance areas, is needed to allow operator STIB-MIVB to increase network capacity and put into operation an additional fleet of 43 M7 driverless metro trains.

MOBILITY & TRANSPORTATION / ERASMUS METRO DEPOT ANDERLECH



The project involves constructing multiple types of rail tracks, including column-supported tracks over maintenance pits as well as 'metrowash' installations, concreted tracks to allow forklift trucks to cross, and special test tracks. The whole operation is challenging, given the tight single entrance to the underground workspace.

The rail tracks for the Erasmus metro train storage and maintenance facility will be completed by the end of 2020.





SETTING NEW STANDARDS IN CONSTRUCTION TECHNOLOGY

Denys is working on the second generation of WallSlotRobot, the revolutionary underground trench excavation system for use in densely built environments. In close collaboration with an international team of specialists, we're making the system capable of excavating below groundwater level, working in small spaces with no impact above ground. That means it will be the perfect tool for challenging up-coming inner-city projects, such as the Brussels North subway extension.





SMALLER AND SMARTER

As a matter of fact, we believe that WallSlotRobot will be setting new standards in construction technology. Getting away from the big-bigger-huge trend we've seen over recent decades, we're looking to develop smaller but smarter machines that can be put to work effectively in the most difficult urban terrain. By limiting the impact on aboveground activities, these machines will pave the way for the kind of construction projects that nobody dares to dream of today. Nobody but us!



CREATING SPACE UNDERNEATH THE BRUSSELS NORTH-SOUTH CONNECTION?

Check out this animation video showing how WallSlotRobot can create valuable space underneath existing inner-city infrastructure such as the Brussels North-South connection.



A CLEVER SOLUTION

 This year, Denys is due to complete their largest project in the Netherlands, constructing the triple DN2400 water pipeline between the intake in the Maas River to the Biesbosch water basins south of Dordrecht. We won the tender because we proposed a more suitable method to build and put in place the 1.7 km pipes in this precious nature reserve nicknamed the Water Lungs of Holland.

© Régine Mahaux



WATER MANAGEMENT / BERGSCHE MAAS THE NETHERLANDS



A CLEVER SOLUTION

To minimize risks and reduce the environmental impact, we set up an onsite factory where we connect and weld our prefabricated pipes prior to launching them into the water. To allow waterborne transportation to continue during pipeline installation, we're using the off-bottom tow method, which uses buoyancy modules and chains to position the pipes close to the bottom of the submerged trench without risking any damage.

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With the off-bottom tow method, the pipes are sunk about 5 meters below the waterline so that ships can continue to pass.

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LOOKING FOR GOOD VIBRATIONS

Denys just completed the construction of an 8,000 m³ stormwater basin in Woluwe in the Brussels Capital Region. It is a segment tunnel with a length of 377 meters and a 5.2 m inner diameter created from a very small launch shaft at one-end. We needed to use an Earth Pressure Balance TBM, given the risk of subsidence due to the limited soil overburden.

The tunnel is in the middle of a dense residential area, so we also had to keep a close eye on the vibrations and noise we produced.

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An Earth Pressure Balance TBM was used to reduce the risk of subsidence.





WATER MANAGEMENT / LUXEMBURG AIRPORT



DURING THE NIGHT HOURS

At Luxemburg Airport, we had to order a special cutter head to create a DN2400 micro-tunnel under the runway for wastewater evacuation.

Work was carried out during the night hours and special precautions were taken to avoid any interference with airport operations.









SIGNIFICANT PROGRESS

Although Africa still lags a long way behind with respect to the United Nation's sixth Sustainable Development Goal, access to safe drinking water and sound sanitation has certainly improved over the past decade.

From our experience in sub-Saharan countries such as Ghana, Mali, Niger, Kenya and Liberia we can see, however, that there has been significant progress. Drinking water projects are increasingly supplemented by projects for wastewater evacuation and treatment. What's more, programs to set up factories and industries are under development.





WATER MANAGEMENT AFRICA



SIGNIFICANT PROGRESS

In Ghana, for example, the 'One district, one factory' policy aims to create jobs for Ghanaians, illustrating the continent's ambition to reach beyond basic needs and fully participate in the world economy. It also shows that projects in Africa are becoming more diverse and complex, requiring the commitment of multidisciplinary contractors like Denys.

LEADING ROLE

Whatever the current situation, a major element of investment projects in Africa will always be about water supply and sanitation. But there's a remarkable evolution towards greater efficiency, productivity and professionalism in these projects, including more emphasis on environmental and social concerns. In Bamako, Mali, for example, we needed to incorporate a program to provide fair compensation to people affected by the project. No problem for Denys, we've got plenty of experience with that. We're flexible too, unlike some of the newcomers on this market. So, we're eager to assume an increasingly leading role here.



A SEMI-PERMANENT PRESENCE

Niger is one of the African countries where Denys has developed a semi-permanent presence of engineers and workers. We encourage local people to join us, learn a craft and develop their skills. All this comes in handy to win new projects and deliver on time, which is what we did with the recent extension to the city of Niamey's water supply network.



WATER MANAGEMENT / NIGER



A SEMI-PERMANENT PRESENCE

The most recent project in Niger, however, is a first for us. It is a small dredging operation to remove sediments from the Niger River and enlarge the water intake basin to prevent supply running out in the dry season. A nice detail: we will also install a small hydropower unit at the basin's overflow, allowing the intake pumps to run on free renewable power in the wet season.







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WELCOME! WELCOME!! WELCOME!! MR. PRESIDENT, THE STAFF, PTA, AND STUDENTS OF THE C.H.HENRY PUBLIC SCHOOL SAY YOU ARE WELCOME INITHIS NOBIE TOWNSHIP.

CAREFULLY MANAGED DISRUPTION

Our DN1200 water supply pipeline project in Monrovia, Liberia, is progressing at a fair pace. It's a Design & Build project, meaning that we were able to optimize the design and engineering to make construction more efficient. Operations occur in an inhabited area with a lot of farmland. That's why we developed a comprehensive plan to manage any involuntary resettlement of the population and compensate them for loss of earnings. And then there's the rehabilitation plan to reinstate the land. Or at least part of it, because greater areas of habitable land are needed for Monrovia's expanding population.

WATER MANAGEMENT / LIBERIA



CAREFULLY MANAGED DISRUPTION



Involuntary resettlement is being managed as well as compensation for loss of earnings.



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PLAYING THE SOPHISTICATION GAME

The infrastructure market has undergone significant changes over the past ten years. Tunnelling machines have become more powerful and versatile, and new techniques such as direct pipe and earth pressure balance have emerged. Over the decade, Denys has grown from a niche player in micro-tunnelling to an all-round contractor of tunnel solutions of any size.

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That also meant we had to deal with increasing expectations from authorities and project developers, especially on environmental issues such as noise nuisance, vibration impact, and sludge treatment and removal. In Europe, environmental concerns also give sophisticated tunnelling solutions the edge over the more common open trench techniques. And that's our game!

PROFOUND CHANGES

The energy market is subject to even more profound changes, with oil and gas projects making place for a wider gamut of projects, including HV cabling, heat networks, and a diverse range of pipelines for hydrogen and CO₂ storage.

EXPORTING OUR MULTIDISCIPLINARY APPROACH

As a contractor, you need to be agile and resilient to cope with this kind of change. Guess what? Denys is probably the most agile and resilient of all the contractors in the Benelux and even Europe due to our much-admired multidisciplinary approach. We're masters of a whole range of complementary crafts, including building construction, building restoration, foundation techniques, pipeline construction, micro- and segment tunnelling, clean water and wastewater infrastructure, heat networks, and HV cabling did we forget anything?

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To diversify with a multiplier effect, that has been our business and service model in our home country for many years. Now we're vigorously exporting this model to the rest of the world, but always with due respect for the local entrepreneurial culture. You're welcome!



BUSIER THAN EVER IN THE NETHERLANDS

The first stops on our export strategy route are our neighbors. Evolutions in the Netherlands provide an excellent example of how diversification helps us gain market share. Since the Dutch authorities have decided to accelerate transition towards a carbon-free energy mix, the natural gas pipeline business has fallen silent. Yet we're busier than ever, laying underground HV cables, installing heat networks, and working on pipe infrastructure in and around ports and on industrial sites.

The 'Warmtebaan' will distribute waste heat from the Twence biomass power station.

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THE MISSING LINK

In <u>Amsterdam</u>, Denys is busy constructing the Amsterdam South Connection, a 4.5 km missing link in the city's heat network. We won this project on sustainability, innovation, cooperation, quality management and care for the environment. One eye-catcher is how we use pontoons to create a floating work area on the South Amstel canal to avoid occupying precious land. This also allowed us to place the HDD entrance under the busy Amstelveenseweg road, avoiding traffic disturbance. No wonder we've won the Dutch No-Dig Award 2019 for this.

SUSTAINABLE HEAT

In <u>Enschede</u>, we're building the ambitious 'Warmtebaan', a six kilometer network taking waste heat from the Twence biomass power station to the town center and adjacent districts. Having been awarded the title of 'most sustainable heat network' in the Netherlands, this project of Ennatuurlijk will bring district heating to a good half of Enschede buildings. Similar projects will be carried out soon in the towns of Tilburg and Breda.

DREAMING BIG

In line with corporate strategy, we're further diversifying our <u>Dutch activities</u>. Soon, we'll be entering the local construction and utilities markets. It's these markets, by the way, that are particularly interesting because of their increasing emphasis on sustainability. In the Netherlands, private investors are taking the lead in developing a true circular construction economy and we're happy to jump on that train. We're also aiming to land challenging renovation and restoration projects there. Are we dreaming big? Yes, a Dutch counterpart of the Antwerp Handelsbeurs project would be very nice indeed!

CUTTING THROUGH GLACIAL DEBRIS

Denys completed a DN1600 and a DN1200 micro-tunnel for kerosene pipelines running beneath the runways at Geneva Airport. Drilling was somewhat tricky because it's in a heterogeneous moraine glacial debris of clay and large rocks. A special cutter head was manufactured to do the job.

Work continued without the slightest interruption to airport operations. Interestingly, projects at Geneva Airport are very well managed by the authorities, who assume a supervisory role to ensure that all the contractors working at the site coordinate their activities, to everyone's advantage.

Discover how the GeniLac project uses water from Lake Geneva to heat and cool buildings in the city.

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MANAGED BY THE AUTHORITIES

We're also involved in the extension of GeniLac, an innovative hydrothermal energy project that uses water from Lake Geneva to heat or cool oity center buildings, depending on the season. Denys is supplying pipes and is one of numerous contractors constructing the network extension. Interestingly, this massive project is professionally managed by public law institution SIG. What a treat it is to see how public authorities assume this crucial coordination role, moving things forward serenely and efficiently.

Authorities at Geneva Airport ensure that contractors working at the site coordinate their activities.

IN A CONSTANT STATE OF FLUX

After completing the secondary water circuit in Unit 1 at Hinkley Point nuclear power station in England's south west, Denys is anticipating doing the same for Unit 2. But will it really be the same? Seems unlikely. Things are in a constant state of flux in a project of this magnitude and complexity, so interfaces with other contractors need to be managed continuously. But we'll do what it takes.

Denys has a team of nearly 200 working at Hinkley Point C.

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REPUTATION BUILDING

As well as its activities in the Benelux and France, Denys is building a growing reputation in other parts of Europe, notably in Germany, Switzerland, the Czech Republic, Poland, Denmark, and the United Kingdom. While for now this is primarily a pipeline and micro-tunnelling business, we plan to enter other markets in these countries too. We're convinced that there's high demand in businesses like restoration and special techniques.

The first thing to do is to build up confidence among project initiators right from the tendering phase, showing that we really master the technicalities and can adapt to the local culture. We've learned that technical excellence is increasingly valued as an award criterion, which is a good thing for an engineering-driven organization like ours.

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ENERGY & INFRASTRUCTURE / EUGAL BERLIN

Preserving nature Check out the video featuring the smooth construction of DN1400 pipelines and DN2500 micro-tunnels.

USING DIRECT PIPE TO CROSS RIVERS

In Poland, Denys is laying a 55 km DN1000 gas pipeline with a number of crossings between Tworóg and Tworzen. For the crossings, we're using the innovative direct pipe technique, which is a new way of installing prefabricated pipelines in a single step without having to create shafts.

The GazSystem Tworóg-Tworzen pipeline crosses rivers at several points.

SERVING 200 HOMES

Denys is building a heat network for Fluvius to serve 200 homes in Dessel. The commission initially was part of a broader plan to develop a network of deep geothermal heat sources in the Kempen. However, the geothermal power station in nearby Mol is currently failing to deliver to promise, leading to the bigger ambitions being put on hold. The Dessel network is now being developed as a 'heat island', which will temporarily be served by a natural gas heating installation at the De Ark site awaiting progress on the deep geothermal project.

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ENERGY & INFRASTRUCTURE / BRUSSELS BELGIUM

ROYAL HEAT

In Brussels, Denys is working on a heat network for the royal family residence at Laeken. Capturing heat from the waste incineration plant at Neder-Over-Heembeek, just across the Zenne canal, the network is destined to replace the current fuel oil fired installation heating the Castle of Laeken, the Royal Greenhouses and three other castles.

The Castle of Laeken and the Royal Greenhouses will be heated by the waste incineration plant across the Zenne canal.

CROWDED DOWN BELOW

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Denys has been very much at home in the Port of Antwerp for a long time. On average, some 50 of our people are busy working there, mostly laying and maintaining pipelines as well as installing and maintaining valve stations for chemistry and energy companies such as Total, Shell and Air Liquide. A major new project is the pipeline we're building from the Sea-Invest tank terminal at the Hansa dock to the Total refinery along the Scheldt River. Underground cables are a burgeoning activity too. But it's pretty crowded down there. Fortunately, we've been involved in developing this network for decades, so we know exactly where to look when it comes to setting out a new pipeline or cable route.

In the Port of Antwerp, we're pipelining from the Sea-Invest tank terminal to the Total refinery.

REINFORCING QUAY WALLS

In the same corner of the port, we're involved in increasing the mooring capacity of the 4th Port Dock quay walls. The project is much like the one we did in Ivory Coast a few years back, which involved deepening the quay wall to allow deep-draught ships to moor. In Antwerp, we're also replacing the entire capping beam to allow for the bigger mooring forces.

The 4th Port Dock quay walls are being reinforced to increase mooring capacity.

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TOP EXPERTISE FOR THE HEXAGON

France is a somewhat different story because in the Hexagon the transition seems to be happening at a slower pace. Our strategy here is to send in our top expertise at a great price. Micro-tunnelling is one example, but we're also tendering for construction and infrastructure projects as well as restoration work. Notre Dame? We're standing by to lend a hand there too.

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PIPELINE UNDER THE SEINE

To allow the Seine River between Le Havre and Rouen to be made deeper, Denys constructed a new dual gas pipeline crossing for GRTgaz at a depth of 30 meters near Tancarville. The project involved driving a 632-meter micro-tunnel under the Seine in very demanding terrain with high groundwater pressure and an unpredictable soil made up of clay, sand and silex. To make our operations more efficient, we decided to create a DN1600 micro-tunnel, big enough to carry two pipelines instead of one. Trolleys were used to connect the two pipelines and position them in one single neat operation.

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Smooth operator

Check out the video to see the smooth operation to create the tunnel and how trolleys were used to connect and position the two pipelines.

ENERGY & INFRASTRUCTURE / DENMARK

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LILLEBAELT CROSSING

Our first commission in Denmark involves prefabricating a 1.2 km gas pipeline for the Lillebaelt Crossing, which is a water crossing in the heart of Denmark, and forms part of the Baltic pipeline running from the North Sea to the Baltic States.

We built a DN1600 micro-tunnel, big enough to carry two pipelines.

MANIFESTO FOR A RADICAL THINK-BEFORE-YOU-BUILD ATTITUDE

The construction industry has changed a lot over the past ten years, and not everything has evolved for the better. One factor is the increasing pressure put on contractors to accelerate execution, with severe penalties being exacted for any delay.

This is not to diminish the importance of swift execution, on the contrary! Construction projects must run smoothly and with minimal disruption to traffic and economic activity. But this can only be achieved when contractors are allowed to come well-prepared, and especially not when barely-substantiated 'x calendar days' completion deadlines are imposed.

'Think before you build' should be everyone's motto today. Contractors should be flexible during the design and engineering period. But architects should also be happy for their designs to be effectively frozen when the time has arrived to start construction work. Unfortunately, a lot of major construction projects underway today suffer from this dirigiste approach, with project owners and contractors thrust into opposing camps. Deadlines are too tight, and the price of failure runs rampant.

At Denys, we know how much smoother things can go in a collaborative atmosphere, for example in DB or DBFM projects. With designers and builders acting as partners, a lot more time is invested upfront, for example building a solid BIM system, setting up a Systems Engineering quality assurance process, and optimizing designs to improve feasibility and enhance future operational efficiency.

PRACTICALLY PERFECT

DESIGN & BUILD / BIO-ACCELERATOR III GHENT

The last of a series of three buildings at Zwijnaarde Technology Park will be completed this year. It's an 11,550 m² Denys investment in collaboration with Ghent University and the Flemish Institute for Biotechnology. This DB-arrangement puts us in the privileged situation of being both designer and builder. What does it mean in practice? No insurance claims, no quibbling. 'Practically perfect in every way,' as Mary Poppins would have said.

The second tower of the research building is about to be completed.

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CONSTRUCTED IN NO TIME

Constructing a 13-storey structure with a two-storey underground carpark in the heart of Brussels in just 14 months? That's what Denys achieved in the lively Madou district with Spectrum, a mixed office building that includes co-working spaces as well as flexible open-plan and enclosed offices. While it wasn't a Design and Build project, we did make a decisive contribution to the engineering by optimizing the slim prestressed concrete floors. It was also a pleasure working with Jaspers-Eyers Architects, who engaged in the project with an open mind and a willingness to think along practical lines.

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SITTING ON 4000 PILES

It's the largest construction site in Belgium. By far. The major prison project in Brussels-Haren is a €320 million investment consisting of 11 buildings with a total floor area of 125,000 m². They will sit on 4000 screw piles spread across a 105,000 m² piece of land. At the peak of construction, we'll be using 15 tower cranes. It's massive.

Structural work should be completed by the end of 2020. Haren prison is primarily a logistical challenge.

100 TRUCKLOADS PER DAY

The project is not so much a technical challenge, it's the logistical organization that keeps us awake. Imagine an average of 100 truckloads coming in every day. Loading and unloading is complicated, given the limited space for temporary storage, the just-in-time planning, and the uneven terrain. That's why we decided to construct a lot of paved yard roads, many more than we usually do.

Project management is a challenge too. We already had some delay due to contaminated soil and the presence of asbestos that had to be removed. That had to be removed. And as it is the case with other big projects, we too experienced the administrative hassle of obtaining the necessary permits. Also the fact that there were some last-minute changes to the building program, was an extra challenge. But we managed it okay.

FEASIBLE AND DURABLE SOLUTIONS

There's also the need to coordinate multiple contractors and subcontractors from different parts of Europe, with language barriers making it tricky at times. But in many respects, we're reaping the rewards of our solid preparation. For example, our experience with the Forensic Psychiatric Centers in Ghent and Antwerp meant that we could improve the design in a lot of ways. In addition, we modeled the entire project in a BIM system with clash controls. As a result, we've got very few onsite conflicts and issues. Of course, the design phase was pretty intense, with 15 Denys people engaged almost full time for a period of 18 months.

But that's the thing with a DBFM project: the huge effort upfront makes for more feasible and durable solutions, and that pays off during construction and subsequent operation.

REDEVELOPMENT PROJECTS / ART SCHOOL GHENT

ALL SET FOR THE GRAND OPENING

The transformation of the old Art School of Ghent into a residential building with eleven apartments is making progress.

We've just completed the new central staircase, an impressive piece of work built from granolithic concrete. With some of the apartments already being delivered in autumn, everything is set for the grand opening in December 2020.

The impressive staircase is built from granolithic concrete.

REDEVELOPMENT PROJECTS / CONFISERIE ROODTHOOFT ANTWERP

HAVE A CANDY

Arabierke is the street name of a well-known Belgian candy produced by Confiserie Roodthooft. Wrapped in a sachetti carrying a portrait of an Arab gentleman, the coffee-flavored Caramella Mokatine is the crown-jewel of the company, which until recently operated a site in Antwerp's Lange Leemstraat. The site is currently being redeveloped into a high-end mixed residential and office complex and the centerpiece of it is a listed Art Nouveau building designed and built in 1905-7 by former students of Victor Horta.

A site with a history, that's how Denys likes them. The more so because it also involves creating underground parking in the middle of a densely built urban area and the restoration of some remarkable Art Nouveau interiors. It reminds us a bit of the Handelsbeurs project: similar fun, be it on a smaller scale.

The site with the listed Art Nouveau building is being redeveloped into a high-end mixed residential and office complex.

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GOING OUT ON A LIME FOR SPA

In 2011, a consortium led by Denys won the commission to redevelop Les Bains de Spa, the distinguished eclectic neo-Louis XVI style structure designed and built by architect Léon Suys in 1868. However, negotiations are still to be finalized before the 125-room high-class hotel and restaurant we plan to create in this building get the go-ahead. In September 2019, Denys took the initiative to begin restoring the beautiful façade, which is crowned by a richly decorated tympanum and topped with high relief statues. Sometimes you need to go out on a limb to get things moving.

We've taken the initiative to begin restoring the façade of this Unesco World Hertitage building.

REDEVELOPMENT PROJECTS / LES BAINS DE SPA

In truth, we expect to face some administrative challenges in the project. For example, the permission for the underground parking has limited the construction to just one level, because experts say that plans for a second level would disturb Spa's vital Peter the Great well. As always, we're working on a solution.

Régine Mahaux

REDEVELOPMENT PROJECTS / ANCIEN HOTEL DE FLANDRE BRUSSELS

OFFICES IN AN 18TH-CENTURY MANSION

In Brussels, Denys is renovating the Ancien Hotel de Flandre where, behind an unassuming façade in the Rue de l'Hopital remarkable remnants of an 18th-century mansion remain hidden. There's an impressive staircase in Louis XI style and a few salons with original upholstery, testament to the ancien regime interior architecture.

The whole is being redeveloped into office space. We're restoring the salons and the monumental staircase, the stucco sets, the wood carvings and the interior joinery. Technical installations, including an elevator, are being added with due respect for the architectural heritage.

The impressive Louis XI staircase is testament to the ancien regime interior architecture.

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THE LONG-ANTICIPATED TOP CONCERT HALL

The concert space is being deepened and will provide better sight lines.

Acoustics are improved through both architectural and technical measures.

Despite the fact that Ghent is a UNESCO Creative City of Music, it offers only limited concert facilities for classical music. The Bijloke Concert Hall, created in the 1990s inside a former medieval hospital ward, is in fact the only larger venue, and it carries a somewhat mixed reputation in terms of acoustics. That problem is being firmly addressed this year since Denys is carrying out the ambitious makeover project resulting from an international competition.

LARGER VOLUME WITH BETTER DIMENSIONS

We're deepening the concert space by about 1.5 meters to create a larger volume with dimensions that are better suited for good acoustics. This also allows the public seats to be placed in a gentle rake, creating better sight lines for everyone. In between the original medieval trusses, we're erecting steel frames to allow acoustic roof panels to be installed and stage equipment to be attached. Then Ghent will finally have its top concert hall. And it's a real beauty.

MODERNIZING THE RETREAT CENTER

In the outskirts of Ghent, Denys completed the fourth phase in the Drongen Abbey restoration and renovation. The former Premonstratensian and Jesuit abbey located on the River Leie has been a retreat center for individuals and groups since the 1960s. We modernized the retreat rooms and restored the main building's roof and exterior.

The retreat rooms were modernized to meet today's comfort needs.

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HERITAGE REINSTATED

The beguinage in Lier is among the oldest Flemish beguinages listed among UNESCO's World Heritage Sites. A so-called urban beguinage, referring to its location just outside the medieval town centre, it was founded in the first half of the 13th century. Today, it consists of 92 small dwelling houses built in the 17th and 18th centuries.

A number were renovated in the nineties, but quite a few have been in a rather deplorable state for decades following the departure of the last beguine in 1984. Denys has restored eight houses along the Symforosastraat. The job involved removing numerous vernacular elements added over the years, renewing the foundations, and restoring the trough vaults and wooden floors. Heritage reinstated.

Vernacular elements were removed, foundations renewed and trough vaults and wooden floors restored.

In the Brussels municipality of Schaerbeek, Denys completed the restoration of the Saint Servatius church, a richly decorated neo-Gothic edifice built in the 1870s and a local landmark since then. We restored the facades, the stained-glass windows, the lower roofs and the wrought iron gates around the building, all with due respect for the original architecture but with a view to long-term durability.

The facades, the stained-glass windows, the low roofs and the wrought iron gates were restored.

WITNESSES TO AN INDUSTRIAL ERA

In the 19th century, gas holders or gasometers were erected all over Europe to store natural gas or town gas as a buffer for industrial or residential use. In Ghent, several gas holders were built next to the city's gas production plant. Today, two 10,000-m³ gas holders remain. Denys is restoring and renovating them as important witnesses to the industrial era. One of the gas holders will be restored to its original state and filled with water. The other will be arranged in a museological setting, partially opened up to lay bare the remarkable interior support structure made of wood.

One of the gas holders will be arranged in a museological setting to lay bare its remarkable interior.

DOWN BY THE RIVER

Denys is restoring the large concert hall in Ghent's illustrious Vooruit Arts Center, an eclectic masterpiece designed and built by Ferdinand Dierkens just before WWI. The concert hall is located at the back of the building, facing a branch of the Scheldt River. The first step was to use jet grouting to reinforce the foundations. Now we're restoring the facade, the roofs and the interior of the concert hall.

REINSTATING THE TOWN HALL ROOF

In 2018, leaks were found in the roof of Ghent town hall, a building with a rich architectural history displaying a mix of late-Gothic, Renaissance and Classical styles. Denys is now restoring it, an operation involving reinforcement work, reinstating the medieval wooden structure, slating, and applying a fire protective treatment to the attic floor. We also put in place ventilation shafts and a technical space in preparation for the future restoration of the Bollaertskamer and the concierge residence.

A LUXURY SUITE OF SPACES

In Victor Horta's Palais des Beaux Arts in Brussels, we're now restoring the Royal Salon, an 81 m² luxury suite of spaces including dining rooms and a small theatre. In addition to restoring the interior, we're adapting the original air conditioning system by installing channel tubes to reduce noise nuisance.

- 1. The medieval wooden roof structure of the town hall is being reinstated.
- 2. The Royal Salon has a private entrance to the right of the Palais des Beaux Arts.
- 3. The interior of St. Leonard's Church Zoutleeuw was restored in its original ocher and oxblood colors.

WELL-PREPARED. WELL DONE

We're putting the final touches to a few projects at Park Abbey in Leuven, the former Premonstratensian abbey which is now a multifunctional culture, sports and leisure site. The south wing and the sculpted

restoration of St. Leonard's Church, a mainly Gothic masterpiece built between the 13th and 16th centuries.

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