

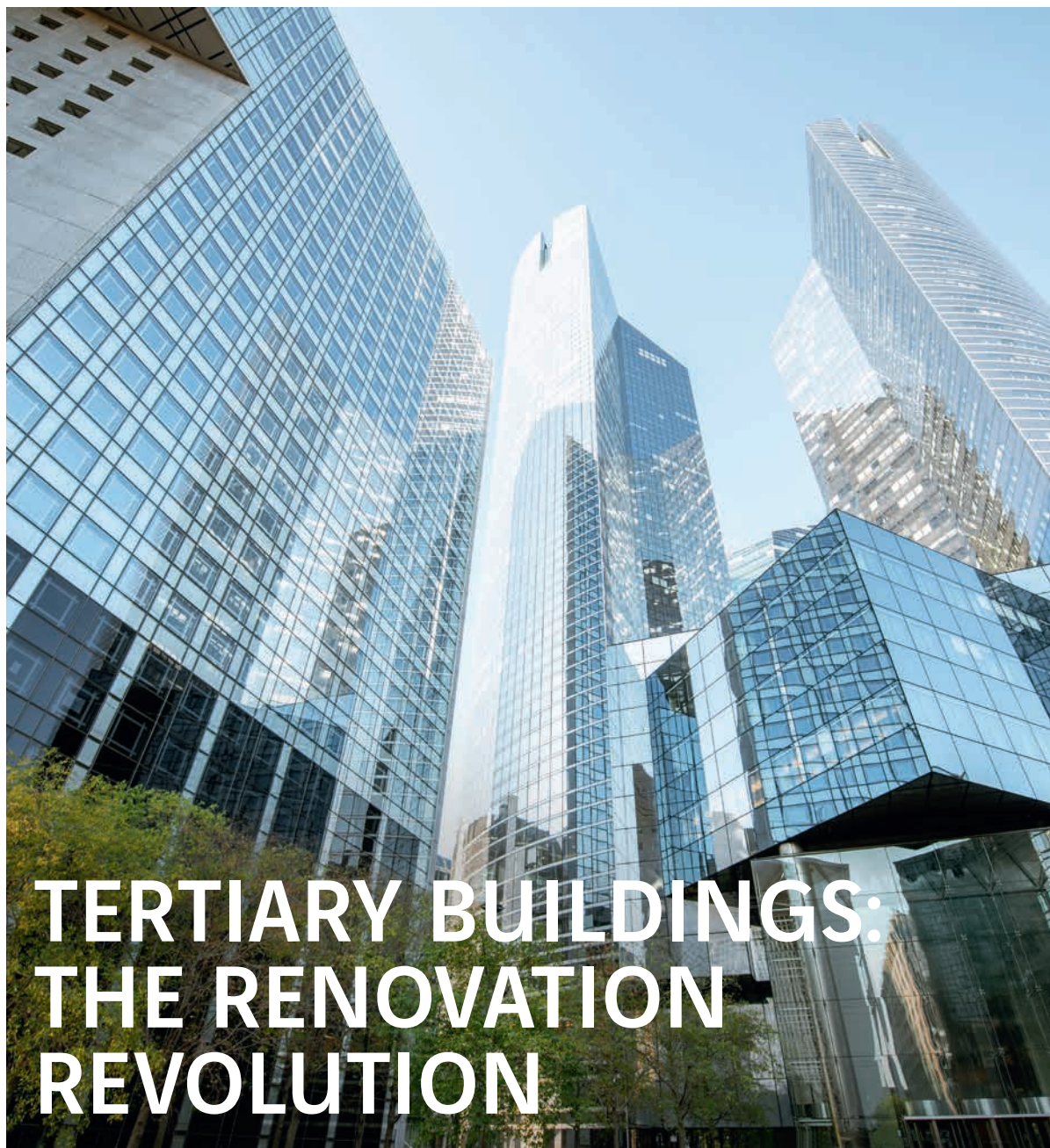
# THE **AGILITY** EFFECT

MAGAZINE

BEHIND THE  
SCENES AT  
A NATO SUMMIT

THE AUTO INDUSTRY  
IN THE SMART  
FACTORY ERA

DATA CENTRES:  
BETWEEN GROWTH  
AND SUSTAINABILITY



## TERTIARY BUILDINGS: THE RENOVATION REVOLUTION

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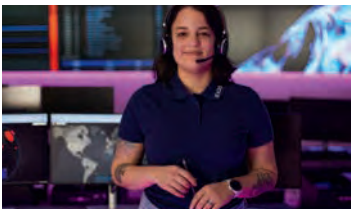
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EDITORIAL

There's plenty to think about in the latest issue of The Agility Effect, which focuses on the tertiary property sector in Europe. Long considered the poor relation to new builds, renovations are now driving the continent's construction activity, of which they currently represent more than 50% – an unprecedented level.

With the sector under mounting pressure from environmental, economic and land constraints, renovation is increasingly becoming the norm for investors and operators.

For example, a former rail freight station in Brussels, the Gare Maritime, has been reborn as a sustainable mini-city mixing workplaces, shops and event spaces. This huge wood-built energy-positive building is one of Europe's most ambitious renovation projects.

Also in the Belgian capital, the former Saint-Michel tobacco warehouse in Molenbeek has become a vast Dutch-speaking school campus. This exemplary transformation combines circular renovation, technical innovation and urban regeneration.

In the Netherlands, on the Noordkade industrial site in Veghel, a former animal feed production plant has made way for The Chocolate Factory. This fun educational space brings together schools and businesses such as Actemium in a common purpose: to discover the technical talents of tomorrow.

These renovations illustrate how issues such as energy saving, circularity and inclusivity are increasingly profoundly permeating and transforming our economies and societies. But it would be a huge mistake to see renovation as a form of conservation hostile to innovation. That's why we decided to make the title of this issue "The Renovation Revolution".

We hope you enjoy this issue!  
The Editorial Team



## AGILITY **PICTURE**

# THE ROTTERDAM PHOENIX

To breathe new life into a century-old port building by transforming it into a spectacular 16,000 sq. metre museum named Fenix – such was the task awaiting the teams from Bosman Technische Installaties in Rotterdam, Netherlands.

The new museum is devoted to exploring the history of migration through art, architecture and immersive experiences. Experts from the VINCI Energies Building Solutions network business unit handled all the technical installations: a custom HVAC system, underfloor heating, and an innovative thermal storage solution providing sustainable climate control. The whole project was guided by a single principle: to meet modern standards while preserving the location's unique spirit.

# DIGITAL INFRASTRUCTURE BEHIND THE SCENES AT THE NATO SUMMIT

**For the NATO Summit in The Hague in June 2025, Axians designed and implemented highly secure and fully segmented digital infrastructure. This critical mission was completed in record time to ensure the success of an international diplomatic event.**

In June 2025, The Hague hosted that year's NATO Summit. With 45 heads of state, more than 6,000 delegates, 2,000 journalists and 90 special guests in attendance, the success of this event taking place under tense geopolitical circumstances was in large part dependent on ensuring impeccably reliable and secure digital infrastructure. The Dutch Ministry of Foreign Affairs entrusted Axians with this mission.

*"Our mission was to supply a complete, highly secure network capable of supporting every digital component of the summit: audiovisual systems, surveillance cameras, IT equipment, etc.,"* explains Jasper van Nederpelt, Lead Consultant Connectivity

at Axians ICS Government. The team installed and secured the required IP, DNS and DHCP<sup>(1)</sup> services: *"We literally built the entire digital environment for the NATO Summit."*

The Axians proposal, selected following a call for tenders, impressed due to the solidity and flexibility of its architecture: a Cisco Software Defined Access (SDA) network, which allowed the creation of several logical networks on the same physical infrastructure. *"It was the best solution in both functional and financial terms,"* says Jasper van Nederpelt.

The solution was based on advanced segmentation

to isolate different user profiles and on Fortinet firewalls to secure internet access and traffic between segments. Authentication was managed using Cisco ISE, and DNS/DHCP services using Infoblox. *"We combined Cisco and Fortinet solutions to design a resilient, flexible architecture compliant with the most exacting security standards,"* says Jasper van Nederpelt.

## Meticulous preparation

The tight timescale required particularly meticulous preparation. With the future summit's location still a construction site, Axians preconfigured the entire network in-house, ready for an immediate rollout as soon as the building was ready. Multiple Axians Netherlands entities mobilised for the installation, plus monitoring and round-the-clock surveillance

via the NOC and SOC.<sup>(2)</sup> Submitted to independent intrusion testing and an audit by Dutch secret services, the zero-trust architecture passed every test without further modification. *"The intrusion-testing teams couldn't find a single vulnerability – they actually seemed a bit disappointed..."* says André van Grieken, Senior Project Manager at Axians Nederland. *"But it came as no surprise to us. We have years of experience in this type of project. It was our 22nd or 23rd SDA implementation in the Netherlands, and we've built them even bigger than this."*

## Teamwork

The human dimension was also key, with close coordination between the Ministry of Foreign Affairs,

NATO, the American government and the providers. *"We quickly formed a trust relationship with the Ministry,"* says Jasper van Nederpelt. *"They recognised our expertise and had complete confidence in us, backing each of our recommendations with the other stakeholders."*

For André van Grieken, it was the team spirit that made the difference: *"We worked hard, but with remarkable team spirit. We proved the adage 'teamwork makes the dream work' every day. If we can secure an international summit like this, we can protect any customer."*

- (1) Internet Protocol, Domain Name System, Dynamic Host Configuration Protocol  
(2) Network Operations Center, Security Operations Center



# AN IT PLATFORM TO ACCELERATE GENETIC DIAGNOSTICS

**The genetic sequencing data interpretation portal DIAGHO, developed by the university hospitals in Rennes and Nantes, was implemented with support from Axians. This cutting-edge initiative confirms France's position in an international genetic medicine ecosystem.**

In the 1990s, it took anything from three to ten years of international research to identify the gene responsible for a condition such as cystic fibrosis. Today, thanks to huge advances in genome research, geneticists and patients with cancer or rare conditions may find hope in genetic sequencing.

By making it possible to read and decode an individual's entire genome, this method opens up unprecedented prospects in personalised medicine and treatments tailored to individual genetic profiles.

Though France is one of the first countries to incorporate

DNA sequencing clinically at national level, the international medical community is focused on cooperating to advance knowledge and practice in what remains an extremely complex sphere.

## Collaborative approach

This collaborative approach allowed the rapid development of DIAGHO, an assisted-diagnosis platform for rare conditions that uses high-throughput sequencing

data (Next-generation Sequencing, or NGS), which can read and filter tens of thousands, even millions, of genetic variations in patients' DNA or RNA molecules.

*One of the group's challenges lay in making DIAGHO a sovereign entity.*

The project was given the green light in 2019 from the cooperative healthcare group Hôpitaux Universitaires du Grand Ouest (GCS HUGO), which includes six major hospitals in Brittany, Pays de la Loire, and Centre-Val de Loire, along with the Cancer Institute of Western France, and two hospitals in Le Mans and Vendée.

One of the group's challenges lay in making DIAGHO a sovereign entity and keeping the control

of medical data subject to public governance by ruling out any external cloud hosting.

From an operational perspective, the project was principally driven by the university hospitals in Rennes and Nantes – the former recognised for its expertise in bioinformatics, and the latter a certified “healthcare data hosting provider” – with the IT expertise to lead the other establishments.

“In 2022,” says Cédric Quillévére, Senior Datacentre Architect at Nantes Hospital, “our executive management tasked us with responding to a call for tenders for implementation of this future portal developed by Rennes Hospital. The timescales were incredibly tight and we had to work at pace. So, we contacted Axians, our partner of many years’ standing, which had the skills needed for such an advanced technical brief.”

*A non-prescriptive, platform-independent solution that allows each laboratory to apply it alongside their own methods.*

## The containerised architecture challenge

The main challenge with DIAGHO, a SaaS (Software-as-a-Service) platform based on the Red Hat OpenShift container platform, was its containerised architecture, which at the time was a relatively new technology to the teams from Nantes.

“Containerisation involves packaging software applications together with their system libraries and dependencies into a single, lightweight executable known as a container, which operates consistently on any architecture,” explains Christophe Fogel, Senior Business Developer (Healthcare) at Axians, the VINCI Energies ICT brand. “This means developers can create and roll out applications more quickly and with total security in any environment, whatever the operating system.”

Openness, portability, scalability and ease of use are the trademarks of DIAGHO, in a non-prescriptive, platform-independent solution that allows each laboratory, including new entrants, to apply it alongside their own methods. The platform has been designed to facilitate the continued addition of new user establishments, along with ever-increasing quantities of data.

“Through skills transfer, we will enable the teams in Nantes and Rennes to gain experience and become autonomous,” adds Christophe Fogel.

## Focus on western France

As the cornerstone of innovation in bioinformatics and healthcare innovation, initially at interregional level, the DIAGHO platform will facilitate access to NGS techniques for all hospitals in western France.

The aims are to reduce diagnostic errors for patients with rare conditions, empower biologists to access volumes of data that as yet remain untapped at local level, refine therapeutic strategies, improve knowledge sharing, standardise tools and practices, and cut costs. The project also consolidates western France's position in a national genetic medicine ecosystem.



# GREATER TOULOUSE AUTHORITIES TO EXTEND AND MODERNISE THE AREA'S TRANSPORT NETWORK

In southwestern France, the capital of the Occitanie region has launched a plan to extend and modernise its mobility network with support from Axians. Optical fibre and data management are key elements of the project.

More fluid, connected and sustainable mobility in the face of increasing demand – this is the ambition for Tisséo Collectivités, the local mobility authority for Toulouse and the surrounding area (population: 820,000), with an urban transport network serving 5 inter-municipal authorities and 114 municipalities. With two metro lines, a tramway, an aerial tramway (France's longest at 3.2 km) and 125 bus routes, the network recorded 206 million journeys in 2024.

Due to demographic growth, the regulatory authorities expect an additional 500,000 journeys

a day over the next decade. This will require increased capacity, which the city hopes to create with the opening in 2028 of a third automated metro line linking 21 stations along a 27 km route. Tisséo Collectivités hopes that once operational, this new Line C alone will absorb 200,000 journeys and thus eliminate 90,000 km of car travel every day. Alongside this network extension project, the mobility authority has launched a programme to modernise its existing infrastructure.

## Night working

One of the key aspects of this project is the rollout of optical fibre, which Tisséo selected early on as the technological foundation for managing its self-driving

metro line system. Essentially, only optical fibre offers the capacity required to handle the data flows between the urban transport network's infrastructure, train controls, radio protocols, mobile private network and public data centre.

*"Our mission includes studies and design, the supply of materials, the physical work, and connection to the database."*

In January 2025, the Santerre Toulouse (Axians France) business unit Axians Fibre Sud-Ouest was awarded a €4.2 million contract covering extensions to the fibre for Lines A and B and an interconnection with the future Line C.

*"Our mission includes studies and design, the supply of materials, the physical work, and connection to the database," says Patrick Vu, Area Manager at Axians. "In October 2024, we had already secured the maintenance contract for the optical fibre on Lines A and B. These contracts really set the seal on a solid partnership, because we've already been supporting the Toulouse regional network for over six years with our expertise in fibre and geolocation data."*

*An urban transport network serving 5 inter-municipal authorities and 114 municipalities.*

Among the challenges facing the contractor were the narrow operating windows – outside metro operating hours – and the importance of not affecting service continuity. All works took place exclusively at night, more precisely between 01:30 and 04:30 – no earlier or later. The first empty trains start moving at 05:00, and the slightest delay due to work overrunning would be subject to contractual penalties.



# CYBERSECURITY: HOW TO RECONCILE EXTRA-TOUGH SECURITY AND PROCESS FLUIDITY

**Axians Italy has strengthened cybersecurity at a major aerospace transport company with the implementation of an integrated Cisco solution that meets strict security requirements while simplifying operations management.**

In a sector as strategic as aerospace transport, data security is a mandatory and fundamental requirement. Axians Italy recently completed a large-scale cybersecurity project for a key player in the sector, implementing a solution based on Cisco FPR4245 NGFW K9 firewalls and Nexus 9300 switches.

The customer is active in the management of satellite data for crucial applications relating to the environment, agriculture and urban planning, and needed to upgrade its security architecture. Its infrastructure is already highly specialised, so all this had to be done without increasing operational complexity.

*"In this type of environment, security is just as important as reliability," explains Marco Gasparri, Senior Sales Consultant at Axians Italy. "The objective was clear: to meet extremely high-level requirements*

*without compromising the fluidity of internal operations."*

## **An integrated, standardised and effective solution**

Axians proposed a unified infrastructure based exclusively on Cisco equipment. This native integration helped eliminate some of the friction inherent in managing multiple brands, while ensuring perfect compatibility with the existing environment, which is made up of Cisco SD LAN and SD WAN technologies.

*"Cisco was the natural choice in this context," says Marco Gasparri. "The FPR4245 NGFW K9 firewalls and Nexus 9300 switches integrate natively with the existing architecture without requiring any additional expertise on the customer's part. That represents a major benefit in terms of operational efficiency."*

Compared with a well-established competitor in the cybersecurity market, Axians was able to demonstrate the superiority of the Cisco solution in this specific case, at the same time highlighting its own expertise as an integrator. *"This project hinged on more than the choice of equipment; it was also about our ability*

*to build an economically viable solution," explains Marco Gasparri. "We worked with Cisco at the Italian and European levels to obtain the pricing conditions necessary to outperform the competition."*

## **Tangible and recognised results**

Technical teams from the Axians partner DXC executed the project. The solution is now operational and achieving performance in line with or superior to initial expectations. *"The feedback is excellent," says Marco Gasparri. "Not only has security been enhanced, but operations are now easier to manage, and the customer can be more confident of business continuity. This is genuine recognition of how well our approach works."*

Axians hopes to build on this success and continue its collaboration with this strategic customer. *"We showed our ability to meet the highest standards. There is now real potential for expanding our role within this excellence-based technological ecosystem."*

The aim? To become the go-to technology provider not only for the core network, but also for other operational departments.



# MINI-BAS ADAPTED FOR SMALL RETAIL PREMISES

**Having long been penalised by the high cost of overly large building automation systems (BAS), the owners of smaller premises, particularly in retail, can finally now access lightweight, effective and affordable solutions.**

The evidence speaks for itself. According to GIMELEC, the group of companies in the French digital electronics industry, in 2025, just 16% of retail sites and buildings were equipped with a BACS (building automation & control system) or BAS (building automation system). Most notably, the total number had only increased by 1% compared with 2024. This is far less than dictated by the regulatory roadmap, which requires 100% of existing tertiary buildings with effective rated output of more than 70 kW to have such a system installed by 1 January 2030.

The sector will therefore need to redouble its efforts, particularly in regard to premises smaller than 1,000 sq. metres, only 7% of which have invested in a BAS (compared with 80% of premises larger than 20,000 sq. m).

The problem is that the standards are incompatible with the needs and budgets of their owners and operators.

*"The solution was initially designed for larger premises and the material cost reflects that, in the order of €40,000, or even more as capacity and function increase,"* explains Damien Fougère, Business Unit General Manager at Elec Ouest (VINCI Energies Building Solutions). *"These levels of investment are prohibitive for food retail chains, specialist stores, bank branches and restaurants, for instance."*

## Simple, lightweight solutions

Given the size of the market to be satisfied, sector representatives, with GIMELEC in the forefront, are recommending accelerated development of "mini-BAS" tailored to the operational needs

of smaller premises, especially in retail. *"Several manufacturers are in the process of building provision based on simple, lightweight solutions with no compromise on performance and security,"* says Damien Fougère.

A VINCI Energies subsidiary specialising in the integration of power supply and low-voltage solutions for retail premises and for industrial and logistics buildings, Elec Ouest is offering its customers a turnkey solution based on Loxone technology.

*"It's a small, licence-free automated system that's easy to program because it integrates natively with the monitoring system,"* explains Ronan Bédou, Project Manager at Elec Ouest. *"You just have to install it on the distribution*

*board and configure it to the specific needs of the site."*

***"The smaller size doesn't affect the returns in terms of energy efficiency."***

Reduced electricity consumption  
A mini-BAS, however small,

is still a BAS. Its purpose is to reduce a site's overall energy consumption by automating applications such as the lighting in car parks, service areas, and retail floors; the alarm system; metal blinds; the heating, ventilation and climate control (HVAC) system; movable sun shades; etc. *"A mini-BAS certainly implies less computing power and a narrower range of applications restricted to essential functions, but the smaller size doesn't affect the returns in terms of energy efficiency,"* says Ronan Bédou. *"With a lightweight automated system operated via a mobile application, it is possible to reduce electricity consumption by 30%. Plus, those customers that manage multiple branches or stores can have full visibility across all their assets."*



# FROM ARTIFICIAL INTELLIGENCE TO BUILDING INTELLIGENCE

**What if AI could be a heavyweight supporter of the energy transition in buildings? If we can produce sufficiently potent, reliable and robust computing models, algorithms will have the power to transform building-sector engineering projects. This is what the Mines Paris - PSL businesses and researchers are working on in the VINCI environment research lab.**

Because it accounts for 43% of annual energy consumption in France and generates 23% of the country's greenhouse gas emissions, the building sector occupies a prominent position in the discourse around decarbonisation. To accelerate its transition, the sector is teeming with innovations, many based on recent advances in artificial intelligence.

Life cycle analysis of buildings shows that the operational phase weighs heavily in their overall carbon footprints. In a paradigm shift from passive planned management to a dynamic approach, algorithmic models could in the future disrupt the status quo and give buildings the ability to perceive, adapt and anticipate.

On 20 November 2025, the environment research lab's annual conference focused on the role of AI in engineering projects. It was an opportunity to examine the potential of research and experiments being undertaken jointly by VINCI business units, Mines Paris - PSL, l'Ecole nationale des ponts et chaussées, and AgroParisTech in this area of building intelligence.

## **TwinOps: AI and operational BIM**

One of the first scientific collaborations launched in the lab more than 10 years ago was concerned with digital twins, now a central tool in operating the systems in buildings and managing the flows of data they produce.

This shared work resulted in TwinOps, a VINCI Facilities (VINCI Energies Building Solutions) BIM O&M (building information modelling – operations and maintenance) solution to facilitate building management and monitoring. AI is now expanding the scope of digital twins. *"By injecting AI, we can make the operation of infrastructure and spaces smarter, more sustainable and more responsive,"* says Mustapha Bismi, Business Unit General Manager - TwinOps VINCI Facilities. How? By harnessing the power and stability of today's computing models.

One of the hot topics in smart buildings is the collection of data and its interoperability in environments containing

a plethora of systems and applications. This source fragmentation is exacerbated by two additional complicating factors: the extreme diversity of building layouts and the specificity of owners', operators' and users' needs.

In such a context, which is also marked by increasing industrialisation of economic as well as computing models – since the two are intrinsically linked – the use of AI will be justified if algorithmic models can be consolidated to reduce, as much as possible, the gap between theory and practice. *"We asked one of our customers to give Mines Paris - PSL access to a dataset and weather information relating to one of its buildings.*

*A year later, research had shown that it was possible to optimise energy consumption using AI,"* explains Mustapha Bismi.

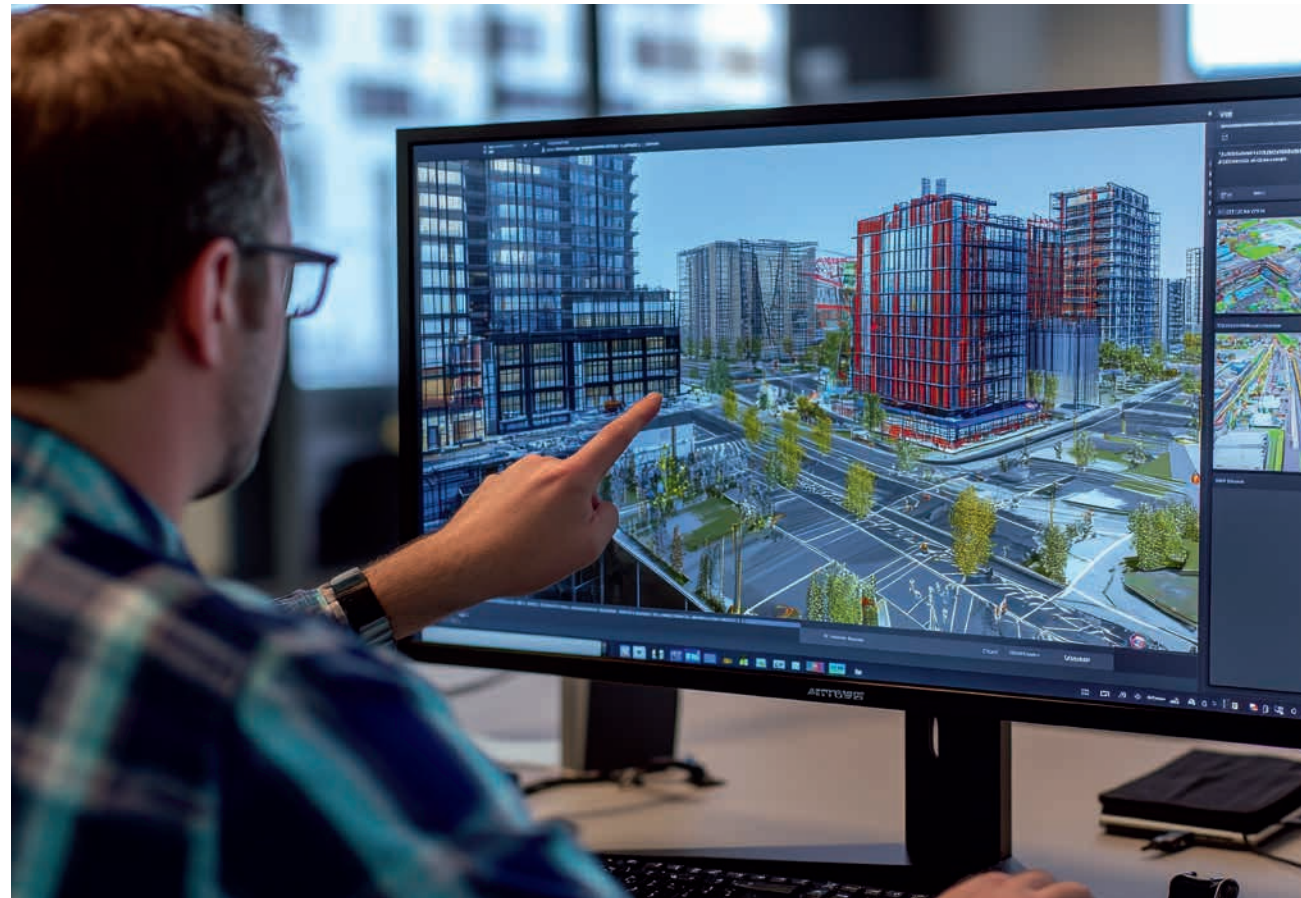
## ***Projects in line with technical requirements and budget constraints***

### **Computation times reduced by a factor of 10,000**

Increases in computing capacity and speed are undoubtedly opening up promising new horizons in the realm of energy efficiency.

Patrick Schalbart, Research Engineer at the Mines Paris - PSL Energy, Environment and Processes Centre, is working on how AI can enhance the performance of Pleiades STD COMFIE, dynamic thermal simulation software created 30 years ago but still relevant today. His research in collaboration with the VINCI Energies business unit Qivy has produced significant upgrades to this tool.

*"It was partly a question of making the solution easier to use (spending less time training the model), but it was also about increasing the computation speed. With success on both counts! Using AI hugely shortened the analysis time. Computation speed was 10,000 times faster, from one simulation a second to 10,000 simulations a second,"* says Patrick Schalbart.



These initial results provided the material for two research theses at Mines Paris - PSL. The first of these considers optimised energy management in buildings by reducing consumption at peak times. The approach is based on making AI work with stochastic factors, i.e. details that cannot be predicted exactly, such as weather or user behaviour. These unpredictable parameters cannot be factored into conventional models, because computation then takes hundreds if not thousands of times longer.

*"Automatic learning allows us to create a model based on data already recorded by building automation systems. The aim is to eliminate the technical data-collection and physical modelling stages. This reduces computation times, making it possible*

*to optimise building settings in just a few days and assess the impact of uncertain factors on the projections,"* explains Ryad Adel Ghouti, a PhD student at Mines Paris - PSL.

### Neural networks and random forests

The other thesis inspired by the environment research lab's work is concerned with the role of AI in modelling energy renovations of existing building stocks. *"It's about developing predictive models, such as neural networks and random decision forests, to rapidly calculate energy performance in buildings and incorporate this into a multi-criteria optimisation process, alongside costs and energy and/or environmental performance,"* explains Ayoub Hannad, also a PhD student at Mines Paris - PSL.

Establishing a database of building simulations provides training materials for the metamodels that are then used to identify the best renovation solutions.

### Targeting the operational side

What most of the research projects initiated in the environment research lab have in common is the use of training data to launch many hundreds of thousands of simulations, generating predictive metamodels to replace physical models. In the spirit of applied research, the focus is always on operational variations, the aim being to suggest potential projects in line with the technical requirements of each building environment and the contracting authority's budget constraints.



Environmental and energy constraints, investor expectations, and new uses are driving a transformation of aging city buildings and vacant sites into new modular, comfortable, economical spaces.

Having long been neglected in favour of new-build construction, renovation is emerging as a powerful driver of the tertiary property sector in Europe.

The list of projects to modify buildings from their original purpose grows longer every week, including in Belgium, the Netherlands and Sweden, where VINCI Energies business units are increasingly active in this sector.

**SUMMARY.** Renovation: the **new Golden Age of tertiary building**, p. 20...  
Yesterday a tobacco warehouse, today a **school campus**, p. 22...  
**A railway station in Brussels** transformed into a sustainable mini-city, p. 24...  
**An industrial tower** reborn as a place to learn and play, p. 26.

BUILDINGS

TRANSFORMATION

# RENOVATION: THE NEW GOLDEN AGE OF TERTIARY BUILDING

**Renovation is emerging as the primary driver of the European tertiary property sector. Energy constraints, investor expectations and new uses are transforming aging offices into comfortable, modular and economical spaces.**

Having long played second fiddle to new construction, renovation is now emerging as the driving force in European building. With mounting pressure from environmental, economic and land constraints, it is becoming the norm for investors and operators, particularly in tertiary property.

According to the market forecasting network Euroconstruct (2024 report), renovation now represents more than 50% of building activity in Europe – an unprecedented level. In France, the French Federation of Building (FFB) states that the market share for new builds

fell to 43% in 2024, leaving renovation and maintenance to make up the remaining 57% of total building activity. In less than a decade, the trend has reversed, with renovation now preferred over rebuilding.

## Decisive regulatory stimulus

This shift is primarily both structural and regulatory. The new European Directive on the energy performance of buildings (EPBD, 2024) dictates the gradual renovation of existing building stock in order to achieve carbon neutrality by 2050. The text requires 16% of the tertiary building stock in member states to be renovated by 2030, and 26% by 2033.

In France, the Tertiary Eco Energy Decree sets ambitious targets: 40% lower energy consumption by 2030, 50% lower by 2040, and 60% lower by 2050. These obligations are encouraging property owners

to reassess their assets or risk seeing them decline in value.

*“In Paris La Défense, close to a million square metres of offices are aging or already obsolete.”*

Financial markets have rapidly absorbed this change. According to the consultancy CBRE (European Real Estate Market Outlook 2024), property funds are now prioritising “core green” assets, often renovated, since these more easily meet ESG criteria and retain higher resale value.

*“In Paris La Défense, close to a million square metres of offices are aging*

*or already obsolete,”* Paris La Défense CEO Pierre-Yves Guice told France Media Business in November 2024. *“The modernisation of these 250,000 sq. metres and their commercial success prove the economic reality of restructuring old building complexes.”*

CAPEB (Cahiers de tendances n° 1) observes that 70% of tertiary building stocks date from before 1980. In a context where land is scarce, the French National Institute of Statistics and Economic Studies (Insee) notes that in half of all cases in dense urban environments, it would be more costly to demolish and rebuild than to renovate. The result is that repositioning or repurposing projects (offices transformed into housing, hotels or community facilities) are proliferating.

## Change driven by use

Another dimension of these changes is that since the Covid 19 crisis, businesses have been reinventing their office spaces. According to the CBRE European Office Occupier Sentiment Survey 2023, 60% of organisations plan to reduce their portfolio of offices and to prioritise modular, collaborative spaces. The market share of individual offices has contracted from 51% in 2021 to 40% in 2024.

*Renovation, reversibility and reuse: these “three Rs” are currently redefining the tertiary property landscape.*

Comfort remains key to attracting employees, with modern amenities and welcoming spaces. Energy efficiency and functional simplicity also guide decision-making, with renovation and repurposing preferred in central areas.

Renovation projects make it possible to incorporate these uses without starting from scratch. Renovation, reversibility and reuse: these “three Rs” are currently redefining the tertiary property landscape. The transformation of tertiary building stocks illustrates the conviction now shared by all stakeholders: that the future of building is no longer about construction but renovation.



# YESTERDAY A TOBACCO WAREHOUSE, TODAY A SCHOOL CAMPUS

**In Molenbeek, Belgium, the former Saint-Michel tobacco warehouse has become a vast Dutch-speaking school campus, in an exemplary transformation that combines circular renovation, technical innovation and urban regeneration.**

In Molenbeek, the former Saint-Michel tobacco warehouse has undergone a spectacular transformation. Where bales of tobacco were once stored, a new school campus has been welcoming over a thousand students since September 1, 2020. The contrast is striking: *"We've gone from a very industrial site to an open and adaptable learning space,"* emphasizes Vito Segers, project manager at Cegelec HVAC Commercial North (VINCI Energies Building Solutions).

This project addresses an urgent need: to create more places for Dutch-language education in Brussels. Located in the heart of the Maritime district, the Tour & Taxis site (a former, vast industrial complex in Brussels that has become a hub for experiences, art,

and discovery) is undergoing a major transformation with projects such as Tivoli Green City and the Suzan Daniel Bridge. The campus contributes to strengthening the social cohesion desired by the VGC (Vlaamse Gemeenschapscommissie, or Flemish Community Commission). Within its approximately 17,000 square meters of renovated space, it houses the GO! Martha Somers High School and the Imelda Institute, offering 80 classrooms, two gymnasiums, laboratories, and even rooftop playgrounds.

## A tight schedule

The transformation is based on a circular renovation approach. The concrete structure of the former factory was preserved,

allowing for the creation of flexible spaces between the existing columns. Cegelec Belgium was responsible for the HVAC and plumbing installations, a significant challenge given the tight deadlines. *"The schedule was very tight: everything had to be operational by August 2020,"* explains Vito Segers. *"We started in August 2019 and had to prepare our construction documents in record time while mobilizing enough technicians to meet the deadlines."*

Energy efficiency was central to the project. The air handling units incorporate natural cooling, while the chillers use R1234ze, *"a fluid with a very low global warming potential (GWP), only 7,"* emphasizes Vito Segers. In the classrooms, perforated ducts ensure even and quiet ventilation, designed

*"From a very industrial site to an open and adaptable learning space"*

to offer optimal comfort for students.

Completed just in time for the start of the academic year 2020, the new campus illustrates how the repurposing of industrial buildings can meet current urban needs while revitalizing a neighborhood. From a tobacco warehouse to a place of learning: a powerful symbol of Brussels' capacity to reinvent itself.

Project on behalf of Vlaamse Gemeenschapscommissie (VGC), GO! Atheneum Caroline Pauwels, Imelda-Instituut

Developer: Kairos – Architect: SumProject, Architecture & Engineering cvba, BURO II & ARCHI+I – Contractor: BAM Interbuild



BUILDINGS

TRANSFORMATION

# A RAILWAY STATION IN BRUSSELS TRANSFORMED INTO A SUSTAINABLE MINI-CITY

A former rail freight station in Brussels, the Gare Maritime has been reborn as a sustainable mini-city offering workplaces, shops and events. This huge wood-built energy-positive building is one of the most ambitious renovation projects in Europe.

At the heart of the Tour & Taxis site, the former Brussels freight station has been reborn as a veritable covered mini-city, energy-neutral and open to the public. 280 meters long, 140 meters wide, and 24 meters high, this iconic railway building, in operation until the 1980s, now houses twelve wooden pavilions dedicated to work, commerce, and events. With their 10,000 m<sup>3</sup> of timber, the pavilions and staircases represent the largest timber construction project in Europe.



## An exemplary approach to sustainability

The complex is organized around a spectacular, light-filled nave punctuated by ten themed gardens. This space hosts cultural events, markets, festivals, and the popular Food Market. Located near the Gare du Nord (North Station), the KANAL Centre Pompidou museum, and the Tour & Taxis park, the Gare Maritime is part of a rapidly transforming neighborhood.

The renovation, led by property developer Nextensa, is distinguished by its exemplary approach to sustainability: BREEAM Outstanding certification, solar facades, 9,750 photovoltaic panels producing 3 million kWh/year, natural ventilation, rainwater harvesting, and geothermal heating/cooling.

## Deep geothermal energy storage

Cegelec HVAC Commercial North (VINCI Energies Building Solutions) played a key role in this transformation. "We started work in December 2018, and provisional acceptance took place in June 2020. We are currently continuing the fit-out work," explains Sebastiaan Smits, Project Manager at Cegelec. The business unit installed all the HVAC systems for the twelve pavilions, as well as the underfloor heating in the Food Market. Integrating a geothermal system, based on deep geothermal energy storage, represented a major challenge. "All the blocks are connected to a closed-loop system, which required very precise programming," emphasizes Sebastiaan Smits.

The goal was to create a net-positive energy site, with the geothermal energy storage system (BTES)

playing a key role in heating and cooling. "Heating is provided by a water-to-water heat pump for each building," explains the Project Manager, "and cooling is entirely passive, via a heat exchanger connected to the BTES system. Heat and cold are distributed through radiant ceilings and floors (low-temperature heating and high-temperature cooling). In addition, the air handling units are equipped with integrated heat pumps, a humidification system, and an adiabatic cooling system using rainwater harvesting."

*"The goal was to create a net-positive energy site, with the geothermal energy storage system playing a key role in heating and cooling."*

The 100% CLT construction also required meticulous preparation, particularly regarding fire safety. The Gare Maritime thus illustrates the convergence of heritage, technical innovation, and climate transition—a demonstration of sustainable architecture in the heart of Brussels.

(1) CLT (Cross Laminated Timber) is a solid, cross-laminated structural panel made up of several layers of softwood.

# AN INDUSTRIAL TOWER REBORN AS A PLACE TO LEARN AND PLAY

**In the former industrial tower at De Noordkade in Veghel, Netherlands, a former feed processing plant has transformed an abandoned site into a technological playground called “the Chocolate Factory”. This fun and educational space brings together schools, students and businesses such as Actemium in a common purpose: to discover the technical talents of tomorrow.**

In Veghel, Netherlands, a disused tower for feed processing in the former Noordkade has begun a second life. Having been abandoned for years, in early 2025, it became the Chocolate Factory, an educational venue

for discovering technology while having fun. But you will find no chocolate production or culinary workshops here: the aim is to awaken technical vocations by immersing young people in an inspiring universe where play, industry and culture combine.

This project came in the wake of the Techniekpact, a 2013 Dutch government initiative with the aim of increasing the numbers of students drawn to technical careers, which brought together local authorities, educational establishments and technology businesses. One of the latter is Actemium, the VINCI Energies industry brand, which became involved from the earliest stages of the site’s renovation and which on the tower’s sixth floor, has installed the “chocolate sprinkles machine”, an automated three-robot installation that allows visitors to create their own virtual recipes.

*“We set the assignments for the students and then provide the accompaniment they need to implement them,” says Peter de Wit, Brand Director at Actemium Nederland. “This allows us to carry out maintenance while developing innovations on the sprinkles machine.”*

## **A place for training and experimentation**

The Chocolate Factory adds to an already-rich training ecosystem based around Actemium’s Industrial Technology Centre and its Edulab in Veghel, where students are given the opportunity to start a job at Actemium after their graduation period.. This also makes the site ideal for further experimentation for courses, projects and apprenticeships. Actemium mobilised a dozen employees during the tower redevelopment works, and three people now run the space it operates.

The ambition is to gradually reach growing numbers of students, thanks to a model that combines immersive visits from Wednesday to Sunday with educational sessions on Mondays and Tuesdays. The students encounter specialists not only from Actemium, but also from partner companies including Mars, FrieslandCampina, Vanderlande Industries and QING.

*“We set the assignments for the students and then provide the accompaniment they need to implement them”*

## **A symbol of successful conversion**

For Peter de Wit, this five-year partnership is part of a long-term vision of offering young people concrete experience in industrial careers while contributing to the site’s development. *“It’s fantastic to see professionals and students working together to maintain, improve and innovate the tower!”*

The first cohort of 20 students arrived in September 2025 and will stay until February 2026. A second group will then take their place until the summer holidays. The Chocolate Factory is already emerging as a symbol of successful conversion – from a forgotten industrial site to a vibrant laboratory where, floor by floor, tomorrow’s technical generation is taking shape.



# CIRCULARITY CONTINUES ITS ECONOMIC BREAKTHROUGH



**The circular economy is increasingly part of the economic conversation and is inspiring numerous initiatives. But it needs to be more convincing if it is to enter the mainstream. To explain and convince is the credo of Nicolas Dumas, Environmental Project Manager at VINCI Energies Building Solutions and Valentine Salomon, Innovation Market Manager at Actemium.**

**How is the circular economy viewed as part of VINCI Energies business activities?**

**Nicolas Dumas.** In the business world in general, the circular economy has long been viewed in terms of regulatory compliance. We initially saw a flurry of initiatives relating to waste collection and recycling. Then, little by little, the spectrum of thinking and solutions widened to include repair, refurbishment, extending the life cycle of materials, sharing capacity and reusing technical equipment.

Today, the regulatory view is more pertinent than ever, and circularity has gained in economic legitimacy. Businesses are increasingly using it explicitly as a lever for value and competitiveness. And that is clearly the case at VINCI Energies.

**What are the levers for boosting the circular economy?**

**Nicolas Dumas.** In the building sector in France, the circular economy will inevitably gain ground, if only to adhere to the increasingly stringent RE2020 environmental regulation roadmap. The construction-sector circular economy has also taken an important stride forward with the PEMD (products, equipment, materials and waste) diagnostic, which has been mandatory since 1 July 2023. This applies to major demolition and renovation projects, and goes further than the waste diagnostic by encouraging the identification of opportunities to recover materials and to prioritise prevention and reuse.

*“Businesses are increasingly using circularity explicitly as a lever for value and competitiveness.”*

Nicolas Dumas

**And where is industry on this?**

**Valentine Salomon.** Progress is being made step by step, more slowly than in other areas of the VINCI environmental policy that VINCI Energies is signed up to. For example, in the “Taking climate action” category, VINCI Energies



has made great strides thanks to its CO<sub>2</sub> emissions reduction actions. Nonetheless, there is significant potential, with numerous solutions that are simple and quick to implement, particularly in relation to circularity loops.

**And what about in building?**

**Nicolas Dumas.** At VINCI Energies Building Solutions, we are seeing more and more initiatives transform into products and services. This commercial scaling-up is playing a key role in accelerating streams that were already well established, such as the reuse of cables with the Circable solution. Our business unit RESO Services offers a similar solution for cable trays, ventilation ducts and sanitary ware.

This transition to the circular economy can also trigger the emergence of new streams, such as for retrofitting fan coil

units and air-handling units, stand-alone emergency lighting units, luminaires, power points and glass partitions. To shape these streams and assemble them into a global solution to galvanise large-scale reuse is the prime objective of our new business unit, Backin.

As these circular models develop, they integrate increasingly naturally with our customers' energy efficiency and decarbonisation plans.

**Can you give some examples of planned or existing applications?**

**Valentine Salomon.** In the area of energy efficiency, we could mention input/output flow auditing and numerous water reclamation projects.

We approached farmers and communities as well

as manufacturers about producing renewable gas from the methanisation of local waste and of sludge from wastewater treatment plants.

*“The various ‘as-a-service’ models are also excellent vehicles for the circular economy.”*

Valentine Salomon

In terms of industrial maintenance, a range of materials, including valves and taps, are being recovered, refurbished, and then resold or reinstalled. In preventive maintenance, AI is helping us prolong the life of equipment.

Circularity is also manifesting in industrial transfer – an item

of equipment no longer required by a customer can be upgraded and installed for another customer. The most difficult part here is overcoming the reluctance of customers to pay new prices or even more for second-hand equipment. Another appealing and effective avenue involves embedding circularity commitments in business deals and performance contracts. The various “as-a-service” models are also excellent vehicles for the circular economy.

#### How can we speed things up?

**Valentine Salomon.** I’m always trying to explain that the circular economy can be found everywhere, that it’s very real, something tangible, that ultimately comes down to common sense. But I also know from experience that even the vocabulary of the circular economy can scare people off, because the meanings are often unclear, and it can be difficult to express what lies behind the words.

For me, in my educational and demonstration work, I like

to talk about the six R’s: recycle, reuse, refuse, reduce, rethink and repair. These words immediately mean something.

**Nicolas Dumas.** It’s essential to raise awareness within operational teams and purchasing networks. Our teams, especially our purchasers, should be familiar – and ideally fully conversant – with environmental assessment tools like LCA (life cycle analysis).

Effectively, we need to constantly explain, demonstrate and champion initiatives and best practices across the board. I recently welcomed a group of around 20 colleagues from other European countries and Morocco for three days in Paris. The intention of this “learning expedition” was to introduce them to a catalogue of solutions designed by and implemented in our French business units. Subsequently, employees from these countries formed a Green Sourcing International club. In terms of innovation, nothing beats practical demonstration and experience sharing.



# #SOLIDARITYEFFECT

Check out the **Instagram [vinci\\_energies](#)** account to keep up to date with the charitable initiatives undertaken by VINCI Energies and its employees.



**VINCI**  
ENERGIES

# THE AUSTERLITZ PROJECT IN PARIS: SYMBOL OF A NEW URBAN FABRIC

**This urban development project centred on the Gare d'Austerlitz and due to be handed over in the first quarter of 2027 will promote a mix of uses while meeting new environmental standards. VINCI Energies is working on this extraordinary project with six of its business units.**

Though the concept of functional hybridisation has increasingly appeared in the vocabulary of tertiary property over the years, major construction projects shaped around mixed uses are still uncommon.

This makes the Austerlitz A7A8 project within the Paris Rive Gauche ZAC (joint development zone) all the more emblematic. VINCI Construction has been entrusted with this large-scale programme backed by the developer Kaufman & Broad.

## Standards and constraints

In early 2027, a new district will rise in Paris: 50,000 sq. metres of offices designed to accommodate

the French Development Agency (AFD); a four-star hotel with 210 beds; more than 220 social, affordable and student housing units; 4,000 sq. metres of SNCF facilities; more than 8,000 sq. metres of green space; 16,000 sq. metres of shops open to the city; a 426 sq. metre community centre; a 195-seat auditorium; a 2,300 sq. metre shared logistics platform for deliveries and waste collection; public parking and drop-off point; and a 3,200 sq. metre solar installation – one of the largest private solar installations in Paris.

In terms of environmental quality, the project will receive Biosourcé labelling for the choice of materials used and BiodiverCity certification thanks to its gardens and planted terraces.

The office buildings will be HQE/ BREEAM certified at Excellent level. The solar panels installed on the roof of the future AFD headquarters will generate renewable energy to power the building, which will consume less energy than most other office blocks built over the past 20 years.

*"This project posed a number of technical challenges, especially due to the proximity of the Seine and existing transport infrastructure," says Marie Laure Canonne, Project Manager at VINCI Energies. "Maintaining continuity of service on the metro and rail lines for the entire duration of the works required some innovative solutions. For example, we had to erect a temporary 40-metre-long and 18-metre-wide structure to ensure safety during construction of the upper storeys of the bridge-building, which overhangs the Metro 5 viaduct."*

## Orchestrating operations and coordinating expertise

The scale of the project and the multidisciplinary work required also posed organisational challenges.

*"This project posed a number of technical challenges, especially due to the proximity of the Seine and existing transport infrastructure."*

VINCI Energies called on the expertise of six of its business units for this project: Tunzini Build'In Smart and Lefort Francheteau Eolys for the HVAC (heating, ventilation

and climate control); SAGA Neo Smart for the plumbing; Phibor Espaces and Santerne Horizon for electrical engineering and fire safety; and Uxello for the sprinkler system.

*"One of the unique features of this project is that it involves a consortium of five firms of architects working on behalf of Kaufman & Broad, who are also collaborating closely with the government architects," explains Marie-Laure Canonne.*

Another atypical feature is that every square metre of land had been purchased before a single drop of concrete was poured. *"Everything was pre-sold through the off-plan sale scheme or a property development contract. This is an uncommon arrangement, which naturally influences the management of reporting and monitoring processes, and makes this project even more unusual,"* says the project manager.



# ECOLOGICAL CORRIDORS: NATURE'S NETWORK

Blue, green and dark corridors are reconnecting natural habitats and enhancing biodiversity across France. These corridors restore the ecological continuity essential for species to move around and survive. Together, these corridors form an integrated network to combat fragmentation and promote climate-change adaptation.

## What is a green corridor?

Green corridors link forests, hedges, fields and parks to protect terrestrial life. It allows land-based species to circulate and reduces isolation between animal populations.

## What is a blue corridor?

Blue corridors connect rivers, wetlands and coastlines to preserve aquatic ecosystems. They protect breeding habitats and allow aquatic species to circulate freely.

## What is a dark corridor?

Dark corridors reduce light pollution to protect sensitive nocturnal species. They help to maintain natural nocturnal behaviour and reduce mortality related to artificial lighting.

# ENHANCED WATER MANAGEMENT IS KEY TO RESILIENCE AND COMPETITIVENESS

**Industry must comprehensively rethink how it manages water – an increasingly scarce and heavily regulated resource. With expert solutions and an eco-responsible approach, Actemium is supporting this transition by transforming a regulatory constraint into a lever for innovation, performance and sustainability.**

All over the world, pressure on water supplies is increasing. In response to widening scarcity of resources, regulations are being tightened, and civil societies are demanding more sustainable water use. In this context, industries that use large quantities of water for production must act quickly to rethink the way they consume, manage and discharge water, and to optimise their processes accordingly. They are supported in this challenge by partners such as Actemium, the VINCI Energies industry brand.



*"What may appear to be a tightening of regulations is actually a fantastic opportunity," says Elnaz Khatami, Business Unit General Manager (BUGM) at Actemium in the Netherlands. "In our view, these changes stimulate innovation, improve efficiency, and offer our customers a real competitive advantage."*

In Europe, these changes are all the more crucial given that, as Elnaz Khatami explains, *"Industrial installations are subject to increasingly strict limits in terms of COD,<sup>(1)</sup> BOD,<sup>(1)</sup> heavy metals, nitrogen, phosphorus and PFAS."* The requirement for enhanced control is accompanied by stronger measures, more frequent sampling, and an obligation to install advanced treatment systems.

There are also ambitious targets for reducing consumption: *"Industrial companies must reduce their drinking water consumption by 20% by 2035,"* explains the BUGM. *"This is a major change, but we see it as the ideal opportunity to adopt smarter, more eco-friendly practices."*

## From constraint to strategic lever

For Elnaz Khatami, far from being a burden, regulation opens up new performance prospects. *"Smart water management enables companies to reduce their consumption, to optimise their cleaning, cooling and steam systems, and to make savings on their operating costs – in one hit."*

*"And even better,"* she adds, *"digital tools offer businesses real-time visibility of their water consumption, helping them to identify minor problems before they get worse. The result is a faster return on investment along with more reliable, more efficient operations."* The returns are quickly visible, with a return on investment in one to three years for medium-cost process improvements.

***"Regulations empower businesses to improve their overall performance."***

Modernisation of installations (heat-exchange pumps, automation systems), real-time monitoring, and closing water loops all contribute to improving process uptime and production reliability. Actemium also supports other, more ambitious initiatives: biological or membrane purification plants, Zero Liquid Discharge projects, and the full digitalisation of water management.

The advantages for manufacturers extend beyond the purely financial. *"Businesses that adapt rapidly get better ESG scores, reduce their risks, and gain access to the most demanding customers and markets,"* says Bert Staal, Business Development Manager at Actemium in the Netherlands. A company's water footprint is becoming a decisive factor for customers and authorities alike.

(1) BOD (biochemical oxygen demand) and COD (chemical oxygen demand) are indicators of water pollution.

# Solutions and completed projects from the Netherlands to Australia

For Actemium, the water problem is not new. *“Optimising water use is in our DNA,”* says Elnaz Khatami, Business Unit General Manager at Actemium Nederland. For many years, her business unit has been helping manufacturers to manage their water flows, improve their efficiency and implement reuse solutions.

Actemium operates across the entire value chain: consulting, engineering, optimisation, digitalisation, and turnkey projects. Its teams create detailed mapping of water flows, identify leaks, calculate potential savings and design custom treatment solutions.

Digital plays a central role. *“Through continuous monitoring of critical parameters (COD, BOD, pH, conductivity, etc.) and SCADA/PLC integration, Actemium provides optimal operational visibility and increased process stability,”* explains Elnaz Khatami. *“Our data analysis allows the implementation of alerts, continuous improvement and predictive maintenance.”*

## Diverse expertise

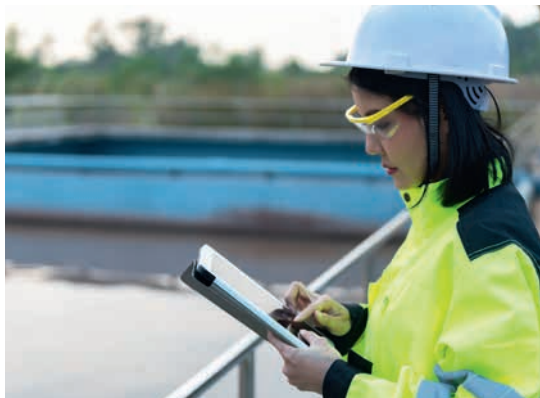
The many projects completed around the world illustrate the diversity of expertise at Actemium. In the Netherlands, as part of a biogas

desulphurisation project for Econvert, a specialist in sustainable wastewater purification and biogas treatment solutions, the business unit supplied a fully integrated and ready-to-use control cabinet housed in a prefabricated process container for an advanced biogas and wastewater treatment installation. The solution was designed and factory-tested in the Netherlands and commissioned on site, ensuring compactness, a rapid rollout and full regulatory compliance.

In Portugal, for quality monitoring in dam reservoirs, Actemium developed and implemented machine-learning models to assess water quality directly from satellite images (AquaSat) combined with IoT sensors, cloud platforms and SCADA integration. This solution is providing many water authorities with an upgrade from manual dam management operations to allow predictive and real-time management of reservoirs at national scale.

In Morocco, in partnership with the engineering firm JESA, Actemium built Africa’s largest seawater desalination plant (Casablanca WAVE II) powered by renewable energies – in a record time of six months. With annual capacity of 200 million cubic metres, the plant supplies drinking and industrial water to the Safi and El Jadida areas, considerably reinforcing water security in the region. Water treatment is fully digital and uses artificial intelligence.

And finally to Australia, where as part of a VINCI Construction consortium, Actemium is modernising Australia’s largest inland wastewater purification plant, Icon Water. The modernised installation will treat 97 million litres of water a day using advanced biological processes, a new PLC/SCADA automation system, and continuous real-time monitoring of water quality. This was a major achievement in sustainable development: 100% recycled water used in construction; 90% reused materials; low-carbon concrete; and 100% renewable electricity used on site.



INDUSTRY

PERFORMANCE

# IN SWEDEN, A BRIDGE BETWEEN HERITAGE AND MODERNITY

**In Stockholm, the famous North Danvik Bridge, witness to a century of history on the Danvik Canal, is undergoing a vast modernisation with help from Actemium. The aim is to renovate and modernise the 100-year-old structure while preserving its architectural identity and heritage value.**

Built in the 1920s, Danviksbron is a bascule bridge linking the Södermalm district to the municipality of Nacka. Its impressive suspended concrete counterweight – a revolutionary lifting system at the time of its construction, and one of the last still in operation in Europe – gives it a unique silhouette. It is an iconic reminder of Stockholm’s industrial heritage and an essential part of its urban memory.

After more than a century of outstanding, loyal service, the bridge required a complete renovation in order to meet modern safety and traffic-flow requirements for road, rail and shipping. The project owner, the Swedish construction and civil engineering company Peab, asked Actemium to contribute its technical expertise.

The project involves the replacement of large sections of the bridge, including concrete and steel structures and its electrical installations. The bus lane will be redeveloped to improve traffic flow, and

the rainwater management system will be adapted to current sustainability standards.

Actemium will supply and install the new control systems, surveillance cameras and power-supply equipment to ensure the bridge functions reliably whether lowered for road traffic or raised to allow ships to pass. One of this project’s core challenges is to modernise the structure while keeping its appearance unchanged to preserve its historical character.

*“Following the success of our bridge project in Vänersborg, we are delighted that Peab has shown renewed confidence in us for a similar project in Stockholm,”* says Peter Granlund, Head of Installations at Actemium. *“We look forward to applying our expertise in electrical engineering, installations and in control and surveillance systems for the technical modernisation of the historical Danvik Bridge.”*

The reconstruction is due for completion in late 2026 and will benefit all bridge users, whether



travelling by road, rail or water. Buses will benefit from a renovated road surface and wider lanes, and trains from safer and more stable infrastructure, while ships and boats will face fewer closures due to technical work and maintenance.

Actemium is also modernising the southern Danvik bridge, which was built in the 1950s to accommodate increasing road and rail traffic toward Nacka and Värmdö. The works have been organised to maximise the availability of the two bridges, which are part of a strategic transport link between central Stockholm and its eastern suburbs.

# MICHELIN CUNEO: AN EFFECTIVE, SUSTAINABLE LOGISTICS 4.0 MODEL



**At its Cuneo site in Italy, Michelin is trialling a new generation of smart logistics in which robotics meets the energy transition. Its electric AGV system, installed by VINCI Energies business unit Giordano & C - Automation., offers a glimpse into the connected, high-performance, low-carbon factory of the future.**

In Cuneo, in the Piedmont region of Italy, one of the Michelin's largest European factory has become a showcase for smart logistics. In collaboration with VINCI Energies business unit Giordano & C - Automation. and Esatroll, a Swiss technological partner, the site introduced a fleet of six fully electric AGVs to provide a 24/7 link between its production areas and logistics centre.

## Automation for enhanced production

The initial objective for Michelin was to reorganise the internal tyre production flow to allow the transportation of pallets from the palletisation robots in Building 5 to logistics warehouse 5L, from which finished products are despatched to customers. The design and installation of the system by Giordano & C. took almost four years (between 2018 and 2021) due to disruption caused by the Covid 19 pandemic.

*"We designed and implemented a comprehensive system, including not only the AGVs and their management software, but also the infrastructure," explains Marco Raimondo, Business Unit General Manager at Giordano & C. "This involved the creation of a 1.5 km reinforced-concrete track, alterations to existing buildings with new entry/exit doors,*

*and the installation of automatic loading and unloading stations."*

## Integrated smart logistics

*"Each AGV is equipped with an inertial navigation system," continues Marco Raimondo. "They learn their routes and move around autonomously between different points on the circuit."* Capable of transporting loads of up to 15 tonnes in two parallel rows of pallets, these vehicles can transfer 40,000 tyres a day, in perfect synchronisation with the production and storage systems thanks to a GPS and Wi Fi system. Automatic modular conveyor stations with Intralox belts ensure the continuity of flows, without human intervention, in a safe and fluid process.

## Performance, safety and sustainability

By eliminating the need for conventional trucks in transfers across the Cuneo site, Michelin has reduced its CO<sub>2</sub> emissions by 50 tonnes a year. But the benefits go beyond the environmental: the elimination of internal heavy-goods traffic enhances operator safety; the motion-sensing system on the AGVs reduces the risk of accidents; and the automated processes ensure operational continuity even at peak times.

*"The project was completed without interrupting production, a challenge we met through the gradual and perfectly controlled integration of the new technologies," says Marco Raimondo. "The main challenge with this project was all the upstream engineering in connection with flow studies and positioning the AGVs along the route."*

## A 4.0 showcase for European industry

Recognised by Michelin as a "4.0 showcase", the Cuneo site is now a reproducible model for the international tyre group's other factories. It demonstrates that the convergence of engineering, automation and energy transition is no industrial utopia, but a practical and profitable reality. *"This type of project certainly requires significant investment, but can be made profitable in three years,"* says Marco Raimondo.

*"This type of project certainly requires significant investment, but can be made profitable in three years."*

The VINCI Energies business unit's other customers should soon be able to draw inspiration from the Cuneo model. Back in 2023, Giordano & C. had already installed a similar system for a car manufacturer in one of its European factories. However, explains Marco Raimondo, *"Every [industrial] site has its own constraints, and the solution must be configured accordingly."*

INDUSTRY

TRANSFORMATION

# THE AUTOMOBILE INDUSTRY IN THE SMART FACTORY ERA

**In the face of stiff competition, the transition to electric, and shrinking margins, automotive manufacturers are accelerating their digital transformation. From cloud technologies to digital twins and artificial intelligence – from Volkswagen to Renault and from Toyota to Ford – the automotive plant is undergoing a quiet but decisive revolution.**

To remain competitive, Volkswagen has chosen to invest massively in cloud and AI technologies. In August 2025, the German group extended its partnership with Amazon Web Services for another five years. The aim is to continue development of its Industrial Cloud project, launched in 2019 with the ambition of connecting the group's 122 factories to a single digital platform. Between 2020 and 2024,

this Digital Production Platform (DPP) has already been rolled out across 43 sites in Europe and North and South America. Through applications such as real-time data analysis, assembly-line optimisation and predictive maintenance, these digital tools are expected to enhance industrial efficiency and generate savings estimated at tens of millions of euros in the medium term. With this proactive strategy, the manufacturer plans to invest close to a billion euros in AI by 2030.

And Volkswagen is not an isolated example. All around the world, car manufacturers are undertaking similar transformations. BMW, for example, with its "iFactory" concept – one of the most advanced smart factory models around. The BMW group uses Google Cloud and digital twin technology to simulate its production lines before rolling them out for real. The outcomes are more flexible workshops,

improved cost control, and an enhanced ability to offer customised vehicles.

*"The cloud platform requires a whole package of fundamental abilities and a suitable business culture"*

But beware: "Cloud platforms are essential but not sufficient," warns Joshua E. Siegel, Assistant Professor,

Computer Science and Engineering at Michigan State University. "They require a whole package of fundamental abilities and a suitable business culture," he explains to The Agility Effect. "Without these prerequisites, these platforms can generate significant costs and complexity for no competitive advantage. For smaller suppliers or manufacturers, on-site solutions or hybrid approaches are often equally effective in generating value in proportion to their cost."

## From lean manufacturing to the smart factory

The lean manufacturing pioneer Toyota is using AI to consolidate this tried and tested approach: collaborative robots, predictive

maintenance, real-time adjustments to production rates, etc. The Japanese giant is launching multiple initiatives to reduce stoppages and waste, with the focus on continuous improvement "augmented" by data.

But it is the American firm Tesla that embodies the most radical model. Its gigafactories operate like software platforms. AI optimises the flows, autonomous robots perform tasks previously entrusted to human beings, and each production phase generates data, which is analysed immediately. This vertical integration enables the manufacturer to break out from conventional production cycles.

At Renault, the 2026 Twingo, developed in China and produced

in Europe, illustrates the French manufacturer's strategy to accelerate its digital transformation by adopting the agile methodology, digital tools, software culture and digital engineering chains of the Chinese leaders in electric vehicle manufacture. The new Twingo was developed in just 21 months at its ACDC centre in Shanghai, with a prototype designed in four weeks, and for a price under €20,000.

In another sphere, the French manufacturer is – with Google Cloud – also pursuing a strategy based on predictive analysis, logistics and operational performance. Ford, with the same partner, is using artificial vision in its production plants to detect assembly defects in real time,



significantly reducing recalls. As for Hyundai, its American factory Metaplant, designed from the outset to incorporate advanced robotics and AI, prefigures the next generation of smart factories.

### Increasing technical complexity

For vehicle manufacturers, the benefits are tangible, with reduced production costs, improved quality, optimised logistics, faster responses to shortages and unexpected events, and greater scope for customisable vehicles.

But the transformation is not without its challenges. The increased number of connected systems makes production facilities more vulnerable to cyberattacks. And change requires new skills. There is a global shortage of talent, from data engineers to experts in industrial AI to cloud architects. To address this, most automotive groups have launched huge internal training programmes.

However, the dependence on the major American cloud providers also poses the question of technological sovereignty, particularly in Europe.

For Joshua E. Siegel, *"Any analysis of ROI [return on investment] must take account of direct efficiency gains and also the value of the ecosystem. The latter, more difficult to quantify, relates to the activation of new functionality such as digital twins, predictive maintenance and real-time supply-chain optimisation."*

*"Significant returns on investment," he adds, "often come from the infrastructure and organisational changes needed rather than from the platform itself. The benefits accrue due to network effects, with partners taking advantage of the shared access to data."*

### Toward "software-defined"

This industrial transformation is paving the way for further upheaval: the advent of the "software-defined vehicle". Future vehicle models will be designed as scalable, constantly updating software platforms, requiring industrial infrastructure capable of managing immense volumes of data and intensely complex software (see below). Production plants themselves are also becoming "software-defined": connected, modular, and capable of adjusting production in real-time and anticipating problems before they occur.

***This ongoing transformation is making the cloud, data and AI central to industrial strategies.***

This ongoing transformation is making the cloud, data and AI

central to industrial strategies. For a sector where every minute of stoppage costs a fortune, these tools are no longer supplementary – they determine a manufacturer's ability to innovate, to produce rapidly at reasonable cost.

One key problem remains to be solved: dependence on a given provider. *"This can lead to a spike in costs,"* explains Joshua E. Siegel, *"and the fragility of integration layers will make continuous maintenance necessary as the APIs evolve and the 'technical debt' accumulates. Operational dependency creates single points of failure, while concerns over sovereignty and data management are only increasing with the tightening of regulations."*

In this global race, the leaders will not necessarily be those who sell the best vehicles or the most advanced driver-assistance systems. It will also be those, and perhaps mostly those, who succeed in transforming their factories into true digital ecosystems. This is a colossal undertaking, but essential to building the car of tomorrow.

### Actemium: a key player in Industry 4.0

VINCI Energies is playing a key role in the automotive industry revolution and Industry 4.0 more generally. Its industry brand, Actemium, is rolling out the solutions at the heart of Industry 4.0. Actemium's teams are embedding AI into existing robots to improve quality control and predictive maintenance. They are also modernising energy efficiency in factories, including at Aluminium Duffel in Belgium, thanks to energy-recovery drives and engines. Actemium is also developing digital twins and virtual-reality tools for designing and optimising assembly lines. It is also automating robotic cells, including welding units, for the Spanish equipment supplier Gestamp, highlighting the role it can play in smart automotive plants. Meanwhile Axians, the VINCI Energies ICT brand, is working to strengthen cybersecurity for industrial systems.

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# A PASSION FOR KNOWLEDGE-SHARING

**An administration and finance manager for Tunzini and Cegelec (VINCI Energies Building Solutions), Anne Tartar has transformed her financial diligence into a driver of collective learning. As a trainer for the QUARTZ programme, she combines her passion for sharing VINCI Energies values and methods with her active involvement in community projects.**

For the past three years, Anne Tartar, an administration and finance manager for Tunzini and Cegelec (VINCI Energies Centre Ouest), has been devoting part of her time to the QUARTZ programme, the VINCI Energies management system to embed the Group's values in all its operations.

Initially uncomfortable with public speaking, through the Académie Vinci Energies trainers' days, she soon discovered a real passion for sharing knowledge. She now runs QUARTZ M1 sessions focused on Group values (primarily aimed at new recruits), and M2 sessions on management and budgeting, aimed at people such as business development managers, project managers and executive assistants.

In these sessions, she shares the Group's values, methods and practices, forging links and opening up people's career prospects in the process.

***"QUARTZ training is a real breath of fresh air and adds another dimension to my role."***

*"QUARTZ training is a real breath of fresh air and adds another*

*dimension to my role. It's fascinating because it touches on every area: finance, HR, tax, CSR, etc."*

Arriving at Axians in 2011 after a career in accounting and business, she climbed the ranks to assume administrative and financial responsibility at Tunzini Centre-Val de Loire (in 2016) and then also Cegelec Val de Loire (2023). Her role has been enriched with managerial, HR and communications duties. She is highly committed to CSR and community action, including her sponsorship of Unis Cité and involvement in a sports challenge for an inclusive cause. At 45, she personifies a career built on diligence, openness and sharing in true VINCI Energies spirit.





# FROM STORE TO SITE: THE ESSENCE OF A SUCCESSFUL TRANSFORMATION

**After 10 years in clothing retail, Farah Benmihoub radically changed course to become an electrical fitter with Cegelec. She looks back on a journey of determination, accelerated training and adapting to a male-dominated environment, in which passion and perseverance guided her every step.**

After 10 years as a sales assistant in clothes shops, Farah Benmihoub, then aged 31, decided one day that it was time to retrain and rediscover her childhood passion: all things electrical. Encouraged by a friend and convinced after a work-study placement, she trained herself and obtained her electrician's accreditation, then gained her professional competence certification with GRETA-CFA in Brittany.

She then accepted a job with Cegelec Quimper, where she spent two years working on projects, mostly in the medical sector, where she grew in autonomy and confidence. In 2023, feeling the need to spread her wings

in the big city, she joined Cegelec Nantes, where she works to this day.

***"Flipping the switch in a building and seeing the lights come on is very satisfying, because I know it's the end result of my efforts."***

She now deals with fire-safety, power-supply, low-voltage and

access-control systems for office projects: a role that demands communication, patience and adaptability. What inspires her about her job is *"Creating something that will last and be useful. Flipping the switch in a building and seeing the lights come on is very satisfying, because I know it's the end result of my efforts."*

In this male-dominated setting where women are still rarely found, she emphasises the importance of measures to tackle gender bias. Before long, the ambitious Farah Benmihoub sees herself stepping up as a team leader, despite some apprehension about managing mostly all-male teams, confident in the support offered by VINCI Energies.

# A TASTE FOR SHARING, A COLLECTIVE APPETITE

**As a commercial manager for several Actemium Germany business units, Lukas Pflaum has acquired a real taste for learning – and for passing on knowledge. A QUARTZ trainer, he has embraced a business culture based on trust and responsibility.**

At Actemium Germany, Lukas Pflaum, Divisionskaufmann (Divisional Commercial Manager), embodies a management style based on trust, sharing and meticulous execution. A technician by training become a commercial expert, he combines technical sense with strategic vision. *“This combination of two disciplines helps me take an overarching view of the projects I supervise,”* he explains.

In 14 years with the VINCI Energies industry brand, he has learned to lead by promoting individual talent and team spirit. A QUARTZ trainer since 2018, he runs

***“Trust is the cornerstone of everything else – it allows open communication, mutual support and sincere cooperation.”***

sessions on the Group’s values and methods and is convinced that *“Sharing knowledge is also self-improvement”*.

Guided by trust – *“The cornerstone of everything else, which allows open communication, mutual support and sincere cooperation”* – Lukas Pflaum encourages his team members to learn, share and question.

He is also committed to training young people and works with Actemium’s apprenticeship centre in Munich. Looking to the future, he sees digitalisation in the sector as an opportunity to strengthen cooperation and firmly embed the QUARTZ culture in his teams.



# DATA CENTERS: BETWEEN HYPERGROWTH AND ENVIRONMENTAL RESPONSIBILITY

**Data centers have become the beating heart of the digital transformation. However, their strong, extremely rapid growth poses a number of performance, sustainability and security challenges. These challenges must be addressed not only in operation but from the design phase of these unconventional buildings.**

The explosion in data volumes, the rise of cloud computing and the internet of things, now artificial intelligence and sovereignty, have massively increased the need for digital infrastructure. At the heart of this movement are data centers – digital cathedrals in which the entire world's information is stored and processed.

Cathedrals they may be, but they are springing up like mushrooms! According to Emergen Research, the value of the data center market, estimated to be 386.5 billion dollars in 2024,

is expected to reach 1,004.9 billion dollars by 2034, with an annual growth rate of 11.2%.

What is behind this boom? *"Businesses are looking for flexible and scalable computing environments capable of adapting to their business needs,"* explains Célia Martins Cerdeira, Global Expertise Manager Cloud & Datacenter Infrastructure at Axians. *"Many are opting for private or hybrid cloud solutions and are seeking providers able to securely host their infrastructure. This evolution is stimulating construction of increasingly vast data centers in close proximity to users to ensure high performance and high availability."*

Facing significant costs and technical complexity, many organizations are adopting "as-a-Service" models. The expert adds: *"This gives them enhanced budgetary control and provides the expertise they need to manage increasingly complex hybrid and multicloud environments. Outsourcing not only offers*

*hosting capabilities, but also consulting and managed services."*

European regulatory constraints (NIS2 and DORA directives) and digital sovereignty concerns are strengthening the positions of local players, as businesses seek to reduce their dependence on providers subject to the U.S. Cloud Act.

## From storage to intensive processing

In this context, artificial intelligence is a major catalyst. The massive computing capacities and high-performance infrastructure required by AI workloads are profoundly transforming the design and management of data centers. *"Sites are evolving from a simple hosting model toward being more powerful and more energy-intensive,"* observes Marc Fischer, Business Unit Manager at Cegelec Data Center Île-de-France (VINCI Energies Building Solutions).

In order to bring computing power closer to users, the massive cloud computing providers, or hyperscalers – Microsoft, Amazon and Google – are increasing their local installations even as on-premises data centers proliferate.

## Environmental and energy issues

The extremely rapid expansion of data centers pose numerous questions. *"Sustainability and cost optimization are currently the top two issues,"* says Célia Martins Cerdeira.

Operating at approximately 50% capacity, a 15 MW data centre – comparable to a small hyperscaler – can consume as much power as a European town

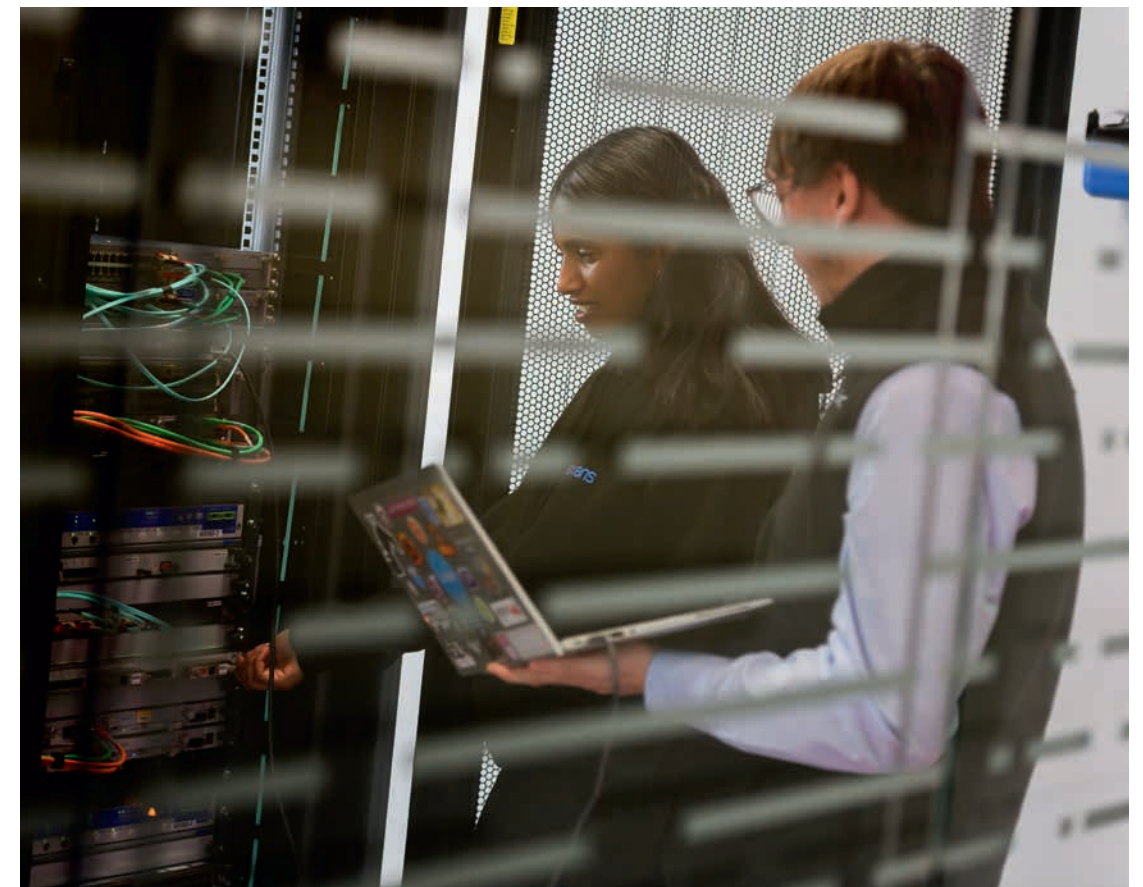
with a population of 30,000. Construction of the building, fabrication of the servers, cooling (which is both energy and water-intensive), and equipment end-of-life all contribute to a large overall environmental footprint.

*"Sustainability and cost optimization are currently the top two issues"*

*"It's essential to install this infrastructure where energy*

*is less carbon-intensive in order to reduce the sector's carbon footprint,"* says Marc Fischer. *"A data center in France is markedly more sustainable thanks to the low-carbon energy mix, emitting far less CO<sub>2</sub> than an equivalent facility in Germany or the United States."*

New approaches are emerging, such as GreenOps, which combines the optimization of cloud-related and infrastructure costs (FinOps) with environmental performance. *"Every IT operation has a financial and environmental cost,"* says Célia Martins Cerdeira. *"GreenOps is about precisely managing the use of IT resources to reduce the ecological footprint and optimize financial costs, by maximising energy efficiency."*





ENERGY

PERFORMANCE

# BATTERY STORAGE TO OPTIMISE POWER SUPPLY NETWORK USAGE

**In Scotland, Omexom UK created one of the United Kingdom's largest energy storage systems on behalf of Zenobē. The Kilmarnock South BESS will help to stabilise the power supply network, reduce CO<sub>2</sub> emissions and facilitate the massive-scale integration of renewable energies.**

In support of the energy transition, battery storage is emerging as a vital component in modern electricity networks. In Scotland, the Kilmarnock South BESS (battery energy storage system), designed and built by Omexom UK on behalf of Zenobē, a leading developer and operator of large scale battery energy storage systems, perfectly exemplifies this evolution.

With the country committed to carbon neutrality, the massive development of renewable energies will require improved network flexibility. Batteries can be used to store surplus electricity produced by wind farms when demand is low and restore it when production decreases. This ability to balance supply and demand in real time is key to the stability of the British energy system.

The Kilmarnock South BESS with 300 MW of power and a capacity of 600 MWh is one of the United Kingdom's largest energy storage systems. It will contribute to the elimination of approximately 3.4 million tonnes of CO<sub>2</sub> during its first 15 years of operation. Connected to the 400 kV Scottish

Power substation, it will play a strategic role in optimising the transmission of Scottish renewable electricity to the highest-consuming regions of England.

## Large-scale engineering project

Omexom UK is the general contractor and lead designer for the project. *"We were selected for the design, provision, installation and commissioning of the storage system to be connected to the national network,"* says Jose Ignacio Garcia Saenz, Business Unit General Manager at Omexom UK Renewables Scotland. The business unit is responsible for the civil engineering work, horizontal directional drilling, cabling and electrical installation for the BESS complex and the 400 kV customer substation.

The project posed numerous technical challenges. *"Completing earthworks in winter, managing the unexpected ground features, and coordinating with the multiple stakeholders were major challenges,"* explains Jose Ignacio Garcia Saenz. Despite an ambitious schedule,

the teams maintained the highest technical standards and adapted well to the project's environmental constraints. All excavated earth was reused to create a new local habitat, in line with Omexom's determination to manage the project in a sustainable way.

## Sustainable commitment

Following the construction phase, Omexom will fulfil a long-term service and maintenance contract. *"This preventive and corrective contract, covering an initial five-year period, may be extended for up to 15 years,"* says Jose Ignacio Garcia Saenz. The aim of this follow-up is to guarantee the installation's continuing performance and network security over many decades.

The installation entered commercial service in December 2025 and will be operational for around 40 years with reduced maintenance requirements. It will add to the resilience of the British network while facilitating the large-scale integration of renewable energies.

# HELPING HYDROELECTRIC PLANTS DEMONSTRATE THEIR PERFORMANCE AND IMPROVE THEIR REVENUE



**To ensure transparency, reliability and fairness for hydroelectric power producers: this is the aim of the unavailability measurement system developed by Omexom in Brazil. By transforming a regulatory constraint into a performance lever, the VINCI Energies energy infrastructure brand is contributing to the sustainable modernisation of Brazil's electricity assets.**

Small hydroelectric power plants have an important role in the Brazilian electricity matrix. Therefore, their automation, supervision, and measurement need attention and make the Omexom's Unavailability Measurement System \*UMS) so essential.

In creating transparency, reliability and fairness, it is becoming a strategic tool for the energy reallocation mechanism, which is key to sharing hydrological risk between producers.

Previously, small hydroelectric plants and non-centralised hydroelectric generation facilities faced a major difficulty in that their physical guarantee (the quantity of energy considered "guaranteed") did not always reflect their actual production. The gaps between theoretical data and real-world hydrological conditions can trigger unjustified penalties.

A Normative Resolution (ANEEL no. 1.085/2024) by Brazil's National Electrical Energy Agency has now corrected this distortion by offering two methods for calculating unavailability: one based on weighted average production; the other, more precise, based on physical measurements recorded by the UMS.

## Complete and integrated solution

In response to this new legislation, Omexom Brazil has developed a system capable of measuring the power lost in a plant in accordance with the Brazilian regulator's requirements. *"The advantage for our customers is obvious,"* says André Xaia, Hydro Business Manager at Omexom Brazil. *"If this power is not measured, the new regulations may penalise a power plant by attributing a loss unrelated to its actual performance."*

Eight plants operated by ELERA (Ivan Botelho I, II & III; Túlio Cordeiro; Ormeo Junqueira; Guary; Cristina; Zé Tunin) and one plant by HYBRAZIL (São Luiz) are already equipped with a full Omexom's UMS.

This solution combines hydraulic sensors and electrical panels with a proprietary calculation algorithm and automated data acquisition system. *"We offer a complete solution: design, instrumentation, automation, panel fabrication, assembly and commissioning,"* says André Xaia.

## Transforming a constraint into an opportunity

This integrated approach relies on multidisciplinary expertise. *"The UMS requires detailed understanding of hydroelectric concepts combined with instrumentation and automation applications,"* explains André Xaia. *"We have been active in this market for a long time, which means we can combine technical expertise with regulatory compliance."*

In line with the criteria defined by the electrical energy regulator ANEEL and the Brazilian clean energy production association ABRAGEL – relating to automation, traceability, redundancy, security and data encryption – the Omexom system provides measurement independently of the human factor.

*"Our solution is fully compliant with the concepts the regulator has established,"* explains André Xaia. *"As it's new legislation, there may yet be adjustments, but we think our systems will be those least in need of modifications."*

As well as helping with compliance, the UMS enables producers to defend themselves against the effects of an unfair assessment of their energy availability. In other words, this technology redresses the balance: it measures what operators are actually responsible for and avoids penalising them for hydrological factors beyond their control.

***"Our aim is not only to apply the standard, but also to give our customers peace of mind with a fair measurement, promoting this clean and renewable energy source."***

The mission carried out by Omexom Brazil follows this logic to transform a regulatory constraint into an opportunity to boost performance and reliability. André Xaia concludes: *"Our aim is not only to apply the standard, but also to give our customers peace of mind with a fair measurement, promoting this clean and renewable energy source."*

This makes the UMS more than a regulatory tool – it is above all a strategic technology for a rapidly evolving sector seeking to reconcile fairness, efficiency and sustainability. And it helps Omexom consolidate its role as a key player in the modernisation of Brazil's electricity assets.

# A PILOT PROJECT FOR ACCELERATED ELECTRIFICATION IN THE NETHERLANDS

**In The Netherlands, an accelerating energy transition has prompted TenneT, the electricity transmission network operator, to modernise at full speed. With the Bay Replacement Programme and the Goor pilot project being managed by Omexom, the objective is clear: to build more quickly, more safely and more sustainably in support of the country's electrification.**

In The Netherlands, the energy transition is gathering pace, requiring rapid adaptation of the high-voltage network. In the face of constantly growing demand for electricity, the electricity transmission network operator TenneT has launched the Bay Replacement Programme (BRP). The aim is to renovate obsolete electricity substations as quickly, safely and sustainably as possible while maintaining supply continuity.

To manage projects in this innovative programme – the Goor substation in the east of the country – TenneT appointed Omexom, the VINCI Energies energy infrastructure brand. This project is a fundamental

step illustrating the method based on standardisation, digitalisation and integration.

## Building faster and smarter

The BRP is based on a fundamentally industrial approach: to design modular, standardised substations with prefabricated components

installed on skids. This method considerably reduces the installation time, minimises substation shutdowns and makes optimal use of human resources at a time marked by a shortage of qualified technicians.

As Eddy Barelds, the BRP programme manager at Omexom, explains: *“Omexom is reducing execution times*

*and personnel requirements through the standardisation of substation design, integration of the engineering and execution phases, and the use of digital tools for planning and training. This rationalises workflows, reduces complexity, and allows the efficient allocation of resources across multiple BRP sites.”*

## Integrated method

But the Omexom approach is about more than operational efficiency. It is based on an integrated vision of project management, combining technical expertise and close collaboration with all stakeholders. This philosophy is enshrined in a framework agreement governing the replacement of 145 high-voltage substations by five companies, including Omexom, selected by TenneT.

Eddy Barelds highlights the added value from this organisational model: *“Standardisation simplifies the design, provision and execution, reduces delays and improves the predictability*

*of these projects. Omexom is applying this standardised BRP concept to the 110 kV Goor and Nijverdal substations, largely thanks to consistent arrangements such as the twin-GIS<sup>(1)</sup> configurations and centralised service buildings. Extremely close collaboration with the other partners [in the framework agreement] and TenneT teams encourages communication and the sharing of responsibilities, which maximise the lessons learned from each project.”*

This cooperative dynamic accelerates innovation and helps to establish a process of continuous improvement: *“This approach enables us to build more quickly and remain flexible. We will apply the lessons learned from Goor to future BRP projects. This creates a process of continuous improvement.”*

## Sustainable commitment

The BRP is not just a response to technical imperatives. It is also contributing to far-reaching environmental ambitions. By reducing on-site traffic thanks to prefabrication, replacing diesel with electrical power, and optimising the use of materials, Omexom is helping to limit the carbon footprints of these projects when possible.

*“Omexom’s BRP strategy supports sustainable development by proactively aligning with changing legal requirements for environmental permits,” says Eddy Barelds. “We are also pioneers in terms of construction methods, challenging our customers in these areas.”*

## A pioneering project

Work commenced on the Goor substation in May 2025, with the new station due for handover in late 2026. The final phase, which includes the modification of the old installation and transfer of the lines, will be completed in May 2028.

This tight timescale illustrates the technical and organisational challenge facing Omexom as it works to a, for the client and Omexom, new international standard (CEI 61850) while managing a time-limited network outage and training its teams to apply these innovative new methods.

Despite these constraints, Omexom has the ability to meet the project deadlines and consolidate its role as a strategic partner to TenneT. As Stefan Biesheuvel, the BRP Goor project manager at TenneT, puts it: *“The approach based on these Omexom solutions and their excellent collaboration, from the efficient construction to the digital preparation, will enable us to complete the Goor project more quickly without compromising reliability. This makes Omexom a valuable partner for this project, the BRP and the energy transition.”* <sup>(2)</sup>

## Long-term vision

In The Netherlands, the Goor project is an initial milestone: over the next 10 years, 145 substations will be modernised under the BRP. Omexom expects to complete around three substations a year for TenneT, making a crucial contribution to the evolution of the Dutch electricity network. With this innovative method combining standardisation, digitalisation, sustainability and collaboration, Omexom is showing that it is possible to meet the challenges of energy transition with reliable and responsible construction.

- (1) High or medium-voltage electrical installations with a gas-insulated switchgear housed in a sealed metal enclosure configured in a dual system (Twin-GIS) for a more reliable substation solution thanks to the two GIS available in parallel.
- (2) <https://www.omexom.nl/nieuws/omexom-moderniseert-station-goor-eerste-brp-project-in-opdracht-van-tennet/>



# OFFSHORE WIND: THE KEY TO A LESS ENERGY-INTENSIVE FUTURE?



**New strategies are emerging to mitigate the losses linked to the transmission of electricity from offshore wind: offshore hydrogen production, the establishment of coastal industries and conversion to heat. These solutions promise to reduce costs, stabilise networks and revitalise regions.**

Integrating energy from offshore wind into national electricity networks is one of the major challenges posed by the energy transition. Offshore wind farms generate substantial quantities of electricity, which has to be transmitted over long distances to energy consumption centres. Notwithstanding the progress made in high-voltage direct current, these transfers come with heavy losses, often dissipated in the form of heat. These losses reduce efficiency across the supply chain and increase costs.

Using the electricity directly in situ for coastal industries, hydrogen production or to supply

heat networks would go a long way toward addressing the problem.

## **Option 1: directly produce hydrogen offshore**

The "Power to X" strategy involves the transformation of renewable electricity into another energy vector. In the case of offshore wind, this can mean producing green hydrogen from water electrolysis to avoid the losses inherent in electricity transmission. Alkaline electrolyzers (AEL) are an economical and proven solution, proton-exchange membranes (PEM) are more flexible and can

adapt to variable wind conditions, and high-temperature solid oxide electrolyser cells (SOEC) offer superior yields thanks to the use of residual heat.

One challenge here lies in making installations resistant to extreme maritime conditions – corrosion, airborne salt, waves, etc. The water must be desalinated to obtain the purity needed for electrolysis, in a process that itself consumes energy. The hydrogen produced can then be stored in pressurised containers, liquefied at minus 253 °C to increase its energy density, or transported through dedicated pipelines.

## **Option 2: bring industry closer to offshore wind farms**

Another solution consists in establishing highly energy-intensive industries directly on the coastline. Chemical plants, steelworks and data centres could use electricity from offshore wind without the long-distance transmission, and with the added benefit of stable, competitively priced power.

An iconic example of this is the third Northvolt gigafactory, currently planned and under development on the North Sea coast of Germany. This highly automated battery factory will be powered using local wind energy to produce batteries with an extremely small carbon footprint.

The coastal location offers several advantages: reduced CO<sub>2</sub> emissions, lower logistical costs due to the proximity of raw materials and ports, the creation of skilled jobs, and a boost to the region's economy. It also allows surplus electricity to be absorbed when winds are stronger and reduces the need for heavy transport infrastructure.

## **Option 3: convert the electricity into heat**

"Power-to-Heat" technology offers a third possibility. This involves transforming surplus electricity into heat, which is then injected into urban heat networks. In Neubrandenburg, VINCI Energies has installed three 10 MW electrode boilers in the local gas and

steam turbine generation facility. Surplus electricity from wind production is used to heat water for supply direct to the urban network or storage in a heat accumulator.

*"The future of offshore wind lies in its intelligent integration into energy systems."*

This flexibility makes it possible to avoid overloading the power supply network, to provide continuous heating, and to reduce fossil fuel consumption and CO<sub>2</sub> emissions. It perfectly illustrates the added value of combining the electricity and heat sectors.

The benefits of using offshore wind power directly are numerous:

- Significant reduction in the losses inherent in long-distance transmission.
- Improved efficiency thanks to local consumption and a minimum of energy conversions.
- Reduced pressure on interregional networks, with less congestion and more stability.
- Lower costs due to simplified infrastructure and optimised energy use.

- Enhanced safety through the storage, flexibility and use of hydrogen.
- Development in coastal regions with the establishment of industries and creation of skilled jobs.

The future of offshore wind lies in its intelligent integration into energy systems. Offshore hydrogen production, energy-intensive industries sited on the coast and the conversion of surplus electricity into heat are some of the solutions for reducing losses, lowering costs and ensuring a reliable power supply. These strategies also enhance the sustainability of industrial production and sustain regional competitiveness. Using electricity where it is generated transforms offshore wind into a powerful driver of the energy transition.



**Uwe Jäger**, Director Business Area Transformation, VINCI Energies Deutschland Industry & Infrastructure GmbH

# HVAC: ADAPTING TO A CHALLENGING CLIMATE

**Climate change is radically transforming heating, ventilation and climate control (HVAC) needs in buildings. In the face of heatwaves, increased energy consumption and new environmental regulations, HVAC technologies must become more efficient, more resilient and more sustainable than ever.**

Climate change is upsetting the balances on which building design used to rely. In particular, HVAC (heating, ventilation and climate control) systems are at centre-stage in this change. Previously built for relatively stable climate conditions, they must now be adapted to a world where heatwaves, mild winters and extreme weather events are becoming the norm.

Just a quarter-century ago, Belgian engineers were designing cooling systems based on an exterior temperature of 30 °C and relative humidity of 50%. Today, calculations assume 35 °C and 40% respectively. This five-degree slippage illustrates the scale of the challenge: the cooling load for buildings has increased considerably alongside growing demand for climate-control equipment.

## **Resilience remains an imperative**

This change has a double impact. On one hand, it means increased



energy consumption, which equates to more expensive bills and a larger carbon footprint. On the other hand, it is also accelerating technical transformation in the HVAC sector.

To meet this growing demand while also lowering emissions, buildings are now having to use highly energy-efficient systems: variable-speed compressors, geothermal heat pumps, energy-recovery systems, building management

systems, and real-time energy monitoring. These solutions make it possible to optimise performance while reducing overall consumption.

But efficiency alone is not enough – resilience has become an imperative. Building owners and managers have to anticipate extreme conditions such as power cuts, floods and long spells of hot weather. In data centres, hospitals and critical industrial sites,

operators are installing emergency power supplies and huge backup wells equipped with rainwater pumps to ensure continuity of service.

## **The quiet revolution in refrigerants**

The fight against overheating in summer poses another major challenge. Modern buildings are

being fitted with planted roof spaces, solar facades acting as sunshades, and rainwater collection systems, with landscaping designed to provide natural shade. These so-called “passive” methods complement the technological solutions and help to maintain comfort indoors without additional energy consumption.

*In the face of climate change, the building sector can no longer be content to tweak its parameters – it must rethink its whole outlook.*

potential (GWP). A few years from now, the use of refrigerants with GWP higher than 150 will no longer be permitted. The sector is therefore turning to far more environmentally friendly natural alternatives such as propane or CO<sub>2</sub>.

In the face of climate change, the building sector can no longer be content to tweak its parameters – it must rethink its whole outlook. HVAC technologies are becoming more intelligent, more energy-efficient and more robust. They embody the convergence of energy efficiency, adaptation to climate change, and environmental responsibility.

This transformation represents an opportunity to design buildings that are truly sustainable and able to offer comfort, safety and performance in a changing climate.



**Bart Schurmans,**  
Business Development Manager  
chez Cegelec HVAC Public North  
(VINCI Energies Building Solutions)

## AGILITY **PICTURE**

# MORE TECH, LESS LIGHT POLLUTION

Scientists estimate that around 80% of the world's population is living under light-polluted skies. Technology offers the opportunity to reduce this pollution, thanks largely to lighting that incorporates LEDs. Lighting is high on the agenda in a number of cities, including in Canberra, where Omexom was awarded the lighting network contract as part of the Australian Capital Territory (ACT) Smart Lighting project. The VINCI Energies infrastructure brand is rolling out various "smart" solutions based on the principle of adaptive lighting across the Australian capital. These have made it possible to reduce lighting intensity from 100% to 70% between 11 p.m. and 5 a.m., reducing annual energy consumption and CO<sub>2</sub> emissions by 15%.



VINCI ENERGIES  
ACCELERATOR OF ENVIRONMENTAL  
TRANSITION

In a world undergoing constant change, VINCI Energies contributes to the environmental transition by helping bring about major trends in the digital landscape and energy sector. VINCI Energies’ teams roll out technologies and integrate customised multi-technical solutions, from design to implementation, operation and maintenance. With their strong local roots and agile and innovative structure, VINCI Energies’ 2,200 business units have positioned themselves at the heart of the energy choices of their customers, boosting the reliability, efficiency and sustainability of their infrastructure and processes. VINCI Energies strives for global performance, caring for the planet, useful to people and committed to local communities.

The Agility Effect explores everything that drives acceleration and transformation, with a focus on the energy transition and digital transformation. Through analyses, testimonials, and reports, it highlights the expertise of VINCI Energies and its brands, as well as exemplary and/or significant topics and initiatives. The Agility Effect is both a [www.theagilityeffect.com](http://www.theagilityeffect.com) web content platform and a magazine published twice a year.

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