

NO. 101 - SUMMER 2023

Le Minorange

BOUYGUES GROUP INTERNAL MAGAZINE



COMPAGNONS
60 ANS

THE GUILD: HONORING
WORKERS FOR 60 YEARS

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Find the Minorange bonuses on ByLink, the Bouygues group intranet portal: <https://bylink.bouygues.com> and on youtube.com/GroupeBouygues - playlist #BOUYGUESINSIDE



Download the magazine: <https://bylink.bouygues.com>



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"We must get to the point where we no longer notice any differences on television."





This year, we are celebrating the sixtieth anniversary of the Minorange Guild and marking this event with a special feature in this 101st edition of *Le Minorange*. On 9 and 10 June, we shared on this occasion friendly and moving moments with Martin Bouygues, his family, and Guild members in the Sologne region. These two days will remain etched in our memories.

When Francis Bouygues created the Minorange Guild in 1963, he wanted to reward the Group's best workers, strengthen their loyalty, and bring them

something more: pride in their work. He gave them the mission of ensuring Bouygues' excellence and training the next generation of workers. There were a few dozen members at the beginning. Sixty years later, they number 1,500 in the orders created in the Group's Business Segments. The Minorange Guild remains one of the Bouygues group's greatest successes and a unique institution that makes us the envy of many. The Group's reputation has been built largely thanks to their work in difficult projects like the Parc des Princes stadium, the Paris Philharmonic, and the Mahanakhon Tower in Thailand,

to name but a few. I am pleased to be able to pay well-deserved tribute to them here. The economic, geopolitical, and climate context in which we are living and working remains tense and uncertain: an escalating war in Ukraine, stubborn inflation, rising interest rates, exchange rate volatility...

In these circumstances, the backlog in **Bouygues Construction** is up, offering a good outlook for the future. Several significant contracts in the international market have been signed, like the metro in Abidjan, hospitals in the UK and Morocco,

“ *The Minorange Guild, one of Bouygues’ greatest successes*”

and the tallest apartment tower in Greece, as well as in France, with a package for a new metro line in Toulouse. In the property sector, the situation is more complicated, with customers in both the residential and commercial markets adopting a wait-and-see attitude owing to inflation, rising interest rates, and greater difficulties obtaining financing from banks. This is the reason for the sharp decline in the backlog of **Bouygues Immobilier**, compared with 2022. On the other hand **Colas** is seeing tangible growth in its backlog. As part of its bitumen strategy, it has taken delivery of two bitumen tankers for the European market this summer, each with a capacity of 20,000 tons, to be operational across the entire bitumen value chain and to secure its supplies.

The integration of **Equans** into the Group is proceeding at a rapid pace. The reasons for our decision in 2021 to move ahead with major expansion in the energies and services sector appear sounder today than ever in view of the growing needs of businesses and public authorities in the energy, digital and industrial transition. The performance improvement plan, called “Perform,” whose aim is to boost Equans’ profitability, has been launched in most of the operational units. I have personally spent a lot of time meeting Equans teams in the field, both in France and abroad, and talking to them and their customers to gain a better understanding of the challenges they are facing. I am particularly impressed by their

professionalism, their enthusiasm, and their satisfaction with having joined the Bouygues group.

In April, **TFI** signed an agreement with the French regulator, Arcom, renewing its TNT frequency for a ten-year period. Rodolphe Belmer, TFI’s new chairman and CEO, is working actively with his teams to reinvent the company’s business model to make TFI the leader in free streaming in France and thus meet the challenge of the growing competition from the international digital platforms.

Bouygues Telecom continues to enjoy sustained growth in fibre customers and is ranked No. 1 for the quality of its WiFi according to the nPerf¹ survey. It continues to grow on the back of an increase in its average billing per user (ABPU)

The Group’s financial situation is solid. To meet the Group’s general financing requirements, Bouygues carried out a successful bond issue for an amount of 1 billion euros with a maturity of eight years under very good conditions. The positive response to this operation from bond investors confirms the market’s confidence in the creditworthiness of the Group, which has received good scores from international credit rating agencies.

1. Best overall performance in broadband internet (fibre, xDSL) according to the nPerf surveys for 2021, 2022 and the first half of 2023.

Implementation of our climate strategy must advance at a steady pace in all our business segments if we want to achieve the objectives in our roadmap. The organization and measurement of decarbonization are being closely monitored by the Group’s management. I know that I can count on each of you to accomplish this mission, which is crucial for Bouygues and for the common good. We face many other issues as well, such as the challenges from artificial intelligence, which we must understand and deal with to seize the opportunities they offer and gauge the dangers they represent. This is a subject that we are working on and that we discussed with Edward Bouygues at the Viva Technology event in Paris. We will have the occasion to talk more about this in the coming months. Thanks to all of you for your commitment, your quickness to react, and your ability to adapt! ●

Olivier Roussat

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**MINORANGE
BONUS**

 Watch videos
of the event:


BOUYGUES' USEFUL INNOVATIONS AT VIVATECH

EVENT. Since its creation in 2016, VivaTech has become an essential gathering for the world of technological innovation and start-ups. This was the Group's sixth consecutive participation in the event, where it unveiled new innovations and its vision for the future of its six business segments on one single stand.

This seventh edition took place from 14 to 17 June at the Parc des Expositions, Porte de Versailles, Paris. The impressive attendance of 150,000 visitors means that VivaTech this year overtook the Consumer Electronics Show (CES) in Las Vegas to become the

world's biggest showcase for new technology. Within a vast hall with 2,800 exhibitors, Bouygues' stand was designed as a forum where Group experts presented the public with new solutions developed to address the new challenges raised by environment and energy issues, digital technology and new lifestyles. Significant space was also given to speakers from Equans, which became part of the Group in 2022.

Whether it was a virtual reality visit of an apartment or of the future Olympic Aquatics Centre, a connected crane cab that allows the operator to communicate directly with a supervisor on the ground via video conference, 5G router solutions to improve connections on worksites or smart dynamic luminous road markings. In all the stand saw 18 different demonstrations.

No fewer than 30 conferences were given by senior Group executives and over 100 in-house experts. This rich and varied programme attracted delegations from blue chip companies like TotalEnergies, IBM and BNP Paribas, as well as political figures like France's Prime Minister Elisabeth Borne.

ARTIFICIAL INTELLIGENCE: A CENTRAL THEME

AI was omnipresent at this 2023 edition, from the conference given by Elon Musk, CEO of Tesla and SpaceX, to the speech by Emmanuel Macron, President of France, who announced the setting up of an AI stimulus plan with a budget of €500 million. Edward Bouygues, the Group's Deputy CEO and Chairman of Bouygues Telecom, gave several examples of how AI is already

used across the Group' business segments: to improve construction project planning, for the predictive maintenance of certain energy and services installations, or to develop new content and optimise the resulting media coverage. This technology should be used "wherever it can be useful and bring real benefits to Group employees," he said.

Because of concerns about the ethical use of AI, the Group has become a member of the Impact AI community, which works to promote the responsible use of AI. Representatives from Impact AI were invited to talk on the Bouygues stand.

START-UPS REWARDED

On Saturday 17 June, a day that was open to the public, the Bouygues stand showcased some of its employees with inspiring career paths: women who have successfully switched direction into the energy and construction sectors with the help of the Gustave

Eiffel apprentice training centre, Minorange Guild members, in-house technology experts, grant-holders helped by the Francis Bouygues Corporate Foundation and Group employees who take part in top-level sport. Members of the Group's HR teams took the opportunity to present job vacancies to the numerous candidates who visited the stand.

As an essential part of the Bouygues ecosystem, start-ups were also given an opportunity to shine. Group CEO Olivier Roussat singled out six of them for their beneficial collaboration with the Group's business segments: Ampd Energy, which develops energy storage batteries that are used on

worksites; Alice Technologies Inc., which promotes optimised use of AI for the planning of construction projects; Inveniam, which provides expertise in image recognition and AI; Purple Alternative Surface, which provides eco-responsible road surfaces; Equium, which supplies homes with its thermo-acoustic heat pump and Facil'iti, which helps make digital technology more accessible. "At Bouygues, we believe that major groups have a key role to play in helping the most relevant start-ups to grow. These partnerships benefit our customers with their dynamism, their creativity and their ability to innovate rapidly," said Olivier Roussat. ●

“
It is our responsibility to ensure that AI is used in a way that respects our values and the law. In order for its impact to be positive, we are investing to train our employees to be able to use this new technology.

EDWARD BOUYGUES
Deputy CEO of the Group and
Chairman of Bouygues Telecom

↓
Olivier Roussat, Chief Executive Officer of Group, accompanied by Yoann Cuynat and Guillaume Gérard, representatives of the start-up Alice Technologies Inc.



↓
A conference dedicated to the future of sport with employees who are also top-level athletes.



←
Presentation of a self-driving delivery vehicle tested within the framework of Bouygues Telecom's 5G Open Road project.

IN FIGURES

- 30 conferences
- 100 speakers
- 18 demonstrations
- 1,000 Group employees came to the stand



The Riviera Tower unveiled

 Together with its Greek partner Intrakat, Bouygues Bâtiment International has been chosen to build The Riviera Tower, the tallest building in Greece, on the Athens seafront. The 50-storey building will comprise 169 luxury flats and will feature a large amount of green spaces. It was designed by British architect Norman Foster, winner of the Pritzker Architecture Prize. The Riviera Tower is part of The Ellinikon, Europe's largest urban regeneration programme. It aims to put a new face on the site of Athens' former international airport and several adjacent sites that were used during the 2004 Olympic Games. Futuristic aesthetics are a signature feature of Sir Norman Foster's design of the tower and it will reserve much space for nature so as to reconcile well-being and respect of biodiversity. At peak periods up to 1,000 people will be working at the site and it will create 500 local direct jobs. The €300-million project is scheduled to be handed over early in 2026.

TRAINING PROGRAMME BY DTP MINING

For 12 years, the Mining division of Bouygues Travaux Publics in Africa, DTP Mining, has been running training sessions for employees working in its Equipment division. A total of 800 employees across four mines in Goukoto (Mali), Tongon (Ivory Coast), Kibali (Democratic Republic of Congo) and Tinguilinta (Republic of Guinea) are involved in this training programme. Between 2017 and 2023, 26 intakes (317 interns) have received training. 66 of these were recruited.



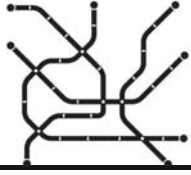
A NEW 5G ROUTER

Bouygues Telecom's latest innovation is its cutting-edge 5G router that is WiFi 6 compatible and offers optimum performance and coverage.

It is designed for easy re-use and is made from 95% recycled plastic.


The 5G router offer retails at €40.99 per month with no minimum term.

It includes the B.tv app, which provides unlimited Wi-fi access to 70 live TV and 25 catch-up channels on smartphones and tablets.



CONTRACT

COLAS RAIL HOPS ON BOARD THE PHILIPPINES

 Colas has won a new contract as part of the consortium led by Alstom and chosen by Mitsubishi to design and build the electrical and mechanical systems, as well as the track works for the extension of the NSCR (North South Commuter Railway) line in Manila. This new line will link outlying districts to the capital's metro lines. The project involves the construction of almost 110 kilometres of line, serving 27 new stations.



MAJOR PROJECT

A NEW LEASE OF LIFE FOR SEGUIN ISLAND

31 years after Renault ceased producing cars there, Seguin Island, located on the River Seine between Boulogne-Billancourt and Meudon, is to be given a new lease of life thanks to the Vivaldi project. Bouygues Immobilier has signed a memorandum of understanding for the construction of two packages comprising five office buildings and street-level retail outlets, covering a total surface area of 100,000 m². Bouygues Telecom will set up its new headquarters there. Work will start in 2024.



START-UP

A FUND TO FINANCE TECH

The Bouygues group has launched a fund called Isai Build Venture with €80 million with the aim of investing in start-ups. It will be managed by Isai, a recognised investor in the world of digital technologies. With this new vehicle, Bouygues will have the means to support start-ups that can transform and decarbonise the fields of construction, property development, transport infrastructure and energy & services. The aim is to build up a portfolio of 15 to 20 start-ups over the next five years, primarily in Europe and in the United States.



A NEW VOCATION FOR THE COLAS FOUNDATION

 After thirty years of working in the field of contemporary art, the Colas Foundation is changing course. Driven by the Colas values of caring, sharing and daring, and renamed the Colas Foundation, it now supports initiatives that promote the social and professional integration of children and young people through education, economic activity, sport and culture.

WIND IN THE SAILS

Equans France's specialist business entity Axima Marine has signed a contract with Turkish shipyard RMK Marine for the HVAC package for the very first wind-powered cargo ship to be built for Nantes-based ship owner Neoline. Christened "Neoliner", the transatlantic cargo vessel, which is scheduled to be sailing in 2025, is a step in the direction of decarbonisation of sea freight: as a result of its 3,000 m² of sails, it is expected to use 80 to 90% less fuel than a conventional ship of equivalent size.



“ OUR STRATEGY IS TO DEVELOP ONE OF THE WORLD’S TOP FREE STREAMING SERVICES

INTERVIEW. Rodolphe Belmer was named chairman and chief executive officer of TF1 on 13 February 2023. Here he speaks with *Le Minorange* about his vision for the company and his strategy to prepare the media group for the changes to come.

Interview by Céline de Buttet and Matthieu Durand on 30 May 2023

You became chairman and CEO of TF1 at the beginning of the year. What is your impression of the company and its employees?

Since 27 October 2022, when I was appointed CEO, I have had the opportunity to get a complete overview of the activities and to meet an enormous number of employees. I have a long career in media behind me and as a result, many bases for comparisons. I've observed a very high level of professional expertise at TF1 and employees with a strong attachment to the company, genuinely committed to doing what is best for it, and with a healthy and attentive attitude.

The audience for traditional, or linear, television has been shrinking, while viewership of non-linear television on digital media has been expanding. What does this mean for the future of the TF1 TV channel?

In all countries with high-quality Internet service, we are witnessing an erosion of TV channel audiences of about 10 percent per year in terms of what is called individual viewing time, with a corresponding increase

in the consumption of on-demand programming, which viewers can watch when and as many times as they want. The decline is even steeper for people under sixty, who have been very rapid adopters of on-demand viewing. In France, the erosion of the linear audience is slightly smaller – about 5 to 7 percent annually for under-60 viewers, who are our commercial targets. Does this mean linear television is going to disappear and there will no longer be television channels? I don't believe so. I think that today, television is an ultra-dominant medium that fills up virtually all the time households spend on entertainment. Linear television will remain important for entertainment because of live broadcasts of sporting events, newscasts, and popular cultural events like Miss France, the finale of *The Voice*, the 14th of July celebrations, and other things like that.

You want to make TF1 the “free streaming leader in France.” How do you plan to go about that? Is there a viable business model?

To keep up with the progressive shift of linear television viewers to on-demand

consumption, the TF1 Group's strategy is to develop one of the world's top free streaming services. Today, viewers must pay for the on-demand programming of platforms like Netflix, Disney+, and Prime Video. Video on demand consumption has become so massive that we can envisage monetizing this consumption through advertising. Is that going to be profitable? The answer is yes. Digital advertising shown with on-demand content and targeted to particular households using data we have on these households sells at a much higher price to advertisers than linear advertising does.

What is your takeaway from the abandoned M6 merger?

I do not at all think the merger was essential to the ultimate survival of the TF1 Group. A defensive merger in a market under pressure is obviously very useful. It provides synergies that can be partially reinvested to transform and accelerate the business model. Concretely, the planned TF1-M6 merger was supposed to result in a group that would be bigger, more solid, and above all, capable of accelerating ...

INTERVIEW

•••

the development of the paid SVOD model, that is, Subscription Video On Demand, and thus the development of Salto¹. SVOD is very capital intensive. An enormous amount of money must be invested to build a very large portfolio of distinctive and exclusive programs that will drive demand. We are talking about billions of dollars. Today, we think there is a strategic option more interesting than Salto: free streaming. It is a new service that players in the US have not yet developed on a massive scale. TFI possesses undeniable factors of differentiation and superiority, including programs that will attract very large audiences and one of France's largest advertising space marketers.

Where do you want to focus the TFI Group's development?

Our strategy has three pillars: linear TV, non-linear TV, and Newen Studios. We have a defensive strategy in linear TV aimed, first, at trying to retain our

1. *Salto* was a French Subscription Video on Demand service owned by France Télévisions, TFI, and M6. Launched on 20 October 2020, it ceased operating on 27 March 2023.



BIO EXPRESS

1969: Born in Rennes

1992: Graduate of HEC

1992: Procter & Gamble France

1998: Management consultant at McKinsey

2003: CEO of Canal+

2008: Deputy CEO of Canal+ Group in charge of pay TV and free-to-air channels

2012: CEO of Canal+ Group

2016: CEO of satellite operator Eutelsat Communications

2022: CEO of Atos until July 2022

2022: CEO of TFI

2023: Chairman and CEO of TFI

audience for as long as possible by airing major events that will appeal to a broad and diverse public, and second, at protecting our revenues by capitalizing on our advertising space. The second path of development is an offensive strategy: the launch of free streaming, which should get us solidly positioned in the digital advertising market with on-demand consumption of our programs. The third pillar is Newen Studios. We want to expand the TFI Group's production branch, a business that dovetails with our broadcasting activities.

What big production projects do you have planned?

Right now, Newen is producing two series that air daily on TFI, *Demain nous appartient* and *Ici tout commence*, and

developing another called *Mademoiselle Holmes*, in which Lola Dewaere will play a female version of the famous detective. The last one points to our general aim of updating French drama by creating contemporary, somewhat disruptive heroes that appear regularly. Newen is also producing season 2 of *Marie-Antoinette* for Canal+ and the BBC as well as *Cassandra*, one of France Télévisions' most popular police shows. Newen is producing more shows outside of France too. A leader in Flemish- and Dutch-language series, it produces *Nemesis* in the Netherlands for Disney+. In Scandinavia, it produces the series *How to Cook a Bear* for Disney, in Spain, *Memento mori* for Prime Video, and in Belgium, *Ferry* for Netflix. As you can see, Newen is turning out programs for all the major subscription platforms and helping

them to expand in Europe. It is very valuable know-how.

What are TFI's CSR policies?

We are totally in line with the trajectory defined and validated by the Bouygues group, which is a 30-percent reduction in our carbon footprint by 2030. What is specific to TFI and not contained within the framework of CSR policy and commitments is our role as a media entity. I am not being presumptuous when I say that we want to inform and educate French people about climate issues in a positive way. We seek an approach that does not provoke fear but that does promote solutions that will help limit global warming. I am thinking, for example, of our reports in TFI newscasts, presented under the tab *Notre planète*, or our channel Ushuaïa TV [see p. 46]. It is an extremely important investment and commitment of ours, and a place where our impact far exceeds our carbon footprint.

What is your notion of management?

I don't have a personal philosophy on this subject. I try to do the best I can, and that's a good start. What I have tried to do since arriving at TFI is to base management on analytics; that is, to try to make quantitative decisions. When one understands things, when one measures them, it leads to more innovation and less risk-taking. Decisions are fact-based, so everyone understands them. I also try to see that we work in a collegial manner as much as possible in the company and not just in the management. It is a way to get everyone involved and to ensure that decisions are made for the right reasons and in the company's interest. I also like transparency. I talk a lot with the people in the company. I provide them with as much information as possible because I think that if people are well informed about the company's operations, about its objectives and strategy, and if they have a good understanding of how the company works, they will be able to perform at their best and find fulfillment

in their work. There are some things I insist on very strongly: respect for ethical principles – compliance – and respect for processes. Transparency and compliance with processes are essential if everyone is to achieve their full potential and work with mutual trust and autonomy. Ethical principles are those in relation to the standards, rules, and practices of the Bouygues group and those in relation to each person in the company. There is a very rigid framework, which means that within this framework, there is greater autonomy. I wouldn't say that this technique is original with me. These are things I've picked up during my career, empirically, from my experiences in senior management over a period of twenty years.

Have Martin Bouygues or Olivier Roussat said things that have made an impression on you?

The reason I joined this group, apart from professional interest in the TFI strategy, is because Bouygues is a group with strong commitments regarding important subjects and values strong ethical commitments. I think that respect for others, trust in others, and openness in one's behavior are firmly held values in the group. Olivier Roussat has expressed this very well, and Martin Bouygues is a powerful embodiment of it. Many employees in the Bouygues group and at TFI have worked here for a very long time. I don't know if they realize how exceptional and valuable these things are. ●

+ A PERSONAL NOTE



Which famous person would you like to meet on the set of a television program?

If Mr. Putin wanted to come on and declare to Darius Rochebin that hostilities in Ukraine were ending, I would be quite happy. I would also note that in addition to the fantastic job the TFI news teams are doing on this subject, I think LCI has succeeded in becoming a prime news source for geopolitical events and particularly the conflict in Ukraine. The reporting and commentary aired each day is broad in scope, and statements from world leaders are often broadcast on LCI too. That's very encouraging for the channel.



Where do you like to go to recharge your batteries?

My family is originally from Rennes, and people from Rennes go on holiday in Dinard. I've spent my holidays there for 54 years, and I have a house there. That does indeed recharge my batteries.

What maxim are you guided by?

It is line from René Char: "Act as a primitive, plan as a strategist." I think there is a time for thinking and a time for acting. When a group decision has been made, it must not always be called into question; otherwise, nothing gets done.



If you had to participate in a TV program, would it be *Koh-Lanta* or *The Voice*?

Not a chance it would be *The Voice*. I like the show a lot, but unfortunately, my artistic talents are quite limited. I adore *Koh-Lanta*, apart from the part where you have to eat insects or fisheyes. That's something I might not manage to do, but a little scouting in the sun could be fun.

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CHILE

MISSION INVISIBLE

ENERGY. Equans Chile supplies the maintenance for the high-voltage lines of Transelec, the country's leading power transmission company. Here we look at a complex activity that demands the highest degree of safety while remaining "invisible" to users.

By Laura Franchet

The maintenance technician Oscar Laine Rocha works on a pylon more than 30 meters above the ground.





↑
The technicians who work on the high-voltage lines cover their bodies to avoid sunburn.

←
Frédéric Castillo, prevention and sustainability manager at Transelec, and Fernando Gomez, Energy division director at Equans Chile.



EQUANS CHILE IN FIGURES

- 4,000 employees
- 77 customers
- 30 years of experience

Besides a hard hat, large sunglasses, and a layer of index 50 sunscreen, Oscar Laime Rocha is shielded by a hood similar to those worn by Formula 1 race car drivers. It is ten o'clock in the morning, and here in the Atacama Desert the temperature has climbed to 35°C. The air is so dry that the body does not sweat, but protection from the scorching hot sun, whose ultraviolet rays are intense in this region at the Tropic of Capricorn, is essential. Not a drop of rain has fallen here in five months. Oscar and his five coworkers, part of Equans Chile's technical operations department, are currently working on the *María Elena Frontera* high-voltage line, located at a three-hour drive from the nearest town, Antofagasta. "We're cleaning the insulators on a 220,000-volt line," explains foreman Luis Gutiérrez Ituarra. "This operation eliminates the impurities caused by pollution, sand, and dust that can prevent the installations from working

properly." Rocha puts on his safety harness and climbs more than 30 meters up the pylon. His fellow workers on the ground watch to see that he remains safe. They are all wearing insulated overalls, gloves, and boots because the cleaning is done without shutting off the current. "We have very strict safety rules for this work, and they must be followed to avoid putting oneself or others in danger," says QHSE¹ manager Patricia Calderón.

A rigorous approach that has paid off: no accidents have been reported since the contract began in July 2022.

ANONYMOUS OPERATIONS

At the top of the pylon, Rocha sprays the insulators with demineralized water under high pressure. The glass or polymer tubes, which look like stacks of discs, prevent the current from passing between the cables and the pylons. The team is made up of

1. Quality, Health, Safety & Environment.





At the foot of the pylon, technicians watch to see that the operation goes smoothly and safely.



Oscar L. Jaime Rocha puts on his safety harness before climbing to the top of the pylon.



Demineralized water is sprayed under high pressure on the insulators to clean them.

six *lineros*, or linemen. These are specialists in high-voltage lines who can do multiple jobs: predictive maintenance (inspection of installations); cleaning; and repairs to deal with network failures and replace equipment. It takes a lineman, who must be in good physical shape, 15 minutes to clean a pylon. At three o'clock each day, work comes to a halt when strong winds begin blowing in from the Pacific Ocean.

In July 2022, Equans Chile signed a five-year maintenance contract for 5,500 kilometers of high-voltage lines and 51 substations owned by Transelec. This company supplies electricity to 98 percent of the population between Arica, in the north of the country, and Chiloé, 3,500 kilometers to the south. "Under this contract, 200 employees will be on the job at six of the customer's sites in northern Chile," says Patricio Varas, Equans' operations director in the north zone. "The linemen's work is essential to keep people supplied with power, but it must remain anonymous ...

... because if they talk about us in the press, it means we have not done our job right!” Frédéric Castillo, prevention and sustainability manager at Transelec, agrees: “We have the technical know-how and the installations, but without the linemen, we are helpless. We are very satisfied with this first contract with Equans, which is proving to be a win-win partnership.”

A STRATEGIC SITE

On arriving at Buin, in the outskirts of Santiago, the contrast is striking: the land is covered with vineyards and cornfields, with high humidity added to the heat. A team from Equans is getting ready to work on the Alto Jahuel substation, which has the highest capacity of any on the national electrical grid. All voltages in Chile, from 500 volts to 13.2 kilovolts, are found here. “Electricity produced in the south with photovoltaic systems and hydropower plants arrives at Alto Jahuel, where it is



↑ Inspection of the electrical installations at Alto Jahuel.



→ Paul Reynaud, QHSE director; Mauricio Retamal, assistant manager, electrical maintenance projects, and Patricia Calderón, QHSE manager.



“
We have very strict safety rules for these maintenance operations on high-voltage lines. No accidents have been reported since the contract began in July 2022.
 PATRICIA CALDERÓN
 QHSE Manager



The Alto Jahuel substation's capacity is the highest in the national electrical grid.



The contract between Transelec and Equans Chile provides for the maintenance of 51 substations.



A COMMITMENT TO DIVERSITY

Equans works with the local population in every country where it has operations. While 87 percent of its employees in Chile are natives of the country, there are fifteen other nationalities on the workforce. In 2023, the general management established a company policy of promoting diversity and inclusion, equal opportunity, gender equality, and work-life balance. A Diversity Committee was also created, with its 21 members asked to take initiatives that will bring about equality between women and men.

converted to lower voltages,” explains Mauricio Retamal, deputy manager of electrical maintenance projects. “It is then distributed to homes, industrial sites, and mines in the north of the country.” Notes QHSE manager Paul Reynaud: “We are inspecting the installations today specifically to make sure there is no electrical contact with the ground.” The aim is to protect the people who work in the substation. “The installations must be checked so that there are no electrical discharges in the event of a malfunction.” At this strategic location, Equans also provides Transelec with emergency services 24 hours a day, 7 days a week.

CAPITALIZING ON EXPERIENCE

In his office looking out on the skyscrapers of the Providencia district and, in the distance, the snow-capped peaks of the Andes, Christian Díaz, CEO of Equans Chile, states

his aims: “The Equans brand has existed here for only a year, but our company already has 30 years of experience in the Chilean market. Our goal is to become the acknowledged leader in services for the energy, mining, industrial, and municipal sectors.” Proof of its strong positioning is the subsidiary’s 15-year maintenance contract for the public lighting in Santiago, one of South America’s largest cities, where one in three Chileans, or 7 million people, live. Owing to an ambitious environmental policy, the energy and services market is getting a boost from substantial private-sector investment in infrastructure. To win new business, Equans Chile has a key competitive advantage: It can provide an array of specialized services not commonly available in the country. To increase its market share, the company has a strategic plan with four objectives: become the leader in its activities in its ...



CHRISTIAN DÍAZ
CEO, Equans Chile



PATRICIA CALDERÓN
Quality, Health, Safety & Environment Manager

... territory; make employee development and customer satisfaction priorities; win new contracts with an emphasis on safety and profitability; and achieve excellence in its operations. The company can also draw on the experiences of the Equans subsidiaries in Peru and Colombia. “In addition to our recognized know-how, we benefit from our reputation for excellent safety and gender equality policies [see p. 17],” says Pierre Hourcade, CEO of Equans LatAm. “And we share Bouygues’ primary value: respect.” Becoming part of the Group is inspiring a lot of hopes and ambitions here. Projects that could be undertaken jointly with Colas subsidiaries in Chile are now being explored. ●

THE EXPANDING NORTHERN MARKET

Chile is the world’s leading producer of copper and possesses 40 percent of its lithium reserves. The mining sector is growing in the country’s north. In March, Equans Chile became the principal sponsor of Expomin, an international congress dedicated to mining where participants discuss topics such as productivity and innovation in the industry.

↗
The Providencia district of Santiago is home to skyscrapers, residential buildings, and the headquarters of Equans Chile.

→
To support its expansion, Equans opened new offices in Santiago, where 500 operations and support function employees have worked since last autumn.

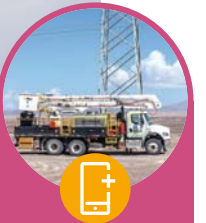
↘
Equans has a 15-year maintenance contract for the public lighting in Chile’s capital, where one in three Chileans, or 7 million people, live.





PIERRE HOURCADE
CEO, Equans LatAm

“In addition to our recognized know-how, we benefit from our reputation for excellent safety and gender equality policies. And we share Bouygues’ primary value: respect.”



MINORANGE BONUS

View videos about Equans Chile’s projects:

youtube.com/GroupeBouygues
playlist
#BOUYGUESINSIDE



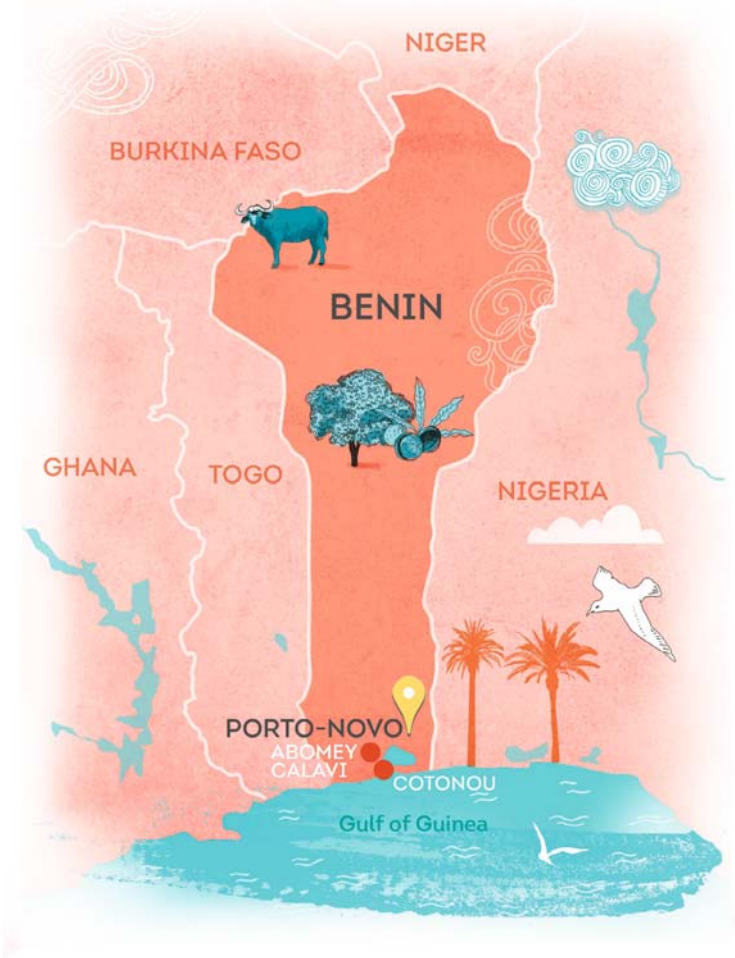
A NEW STANDARD FOR HOSPITALS IN AFRICA

HEALTH. Bouygues Bâtiment International is constructing an international hospital center in a design-build project at Abomey Calavi, Benin.

By Benoît Dhomps

The new international hospital center at Calavi is a 20-minute drive from Cotonou, the economic capital of Benin.





THE PROJECT AT A GLANCE

- 45,000 m² of floor area on two levels
- 1,200 employees
- 175 million euros: contract amount



KHALID OUAHIDI
Project Director

A short way from Benin’s economic capital Cotonou, a city plagued by incessant traffic and backfiring *zemidjans* (motorcycle taxis), is the peaceful town of Abomey Calavi. Here, on a 16-hectare tract, where the green of century-old trees blends with the red ochre of the soil, construction of the future Centre Hospitalier International de Calavi (CHIC) is underway. Part of the government’s *Bénin révélé*’ action plan, this university hospital center “will set the standard here in Benin and across all of West Africa,” says a pleased health minister Benjamin Hounkpatin. Bouygues Bâtiment International is the lead contractor in the design-build consortium, while project management is in the hands

1. *Bénin révélé* calls for development and investment in nine key sectors: tourism, agriculture, infrastructures, digital, electricity, living conditions, the international center for innovation and know-how, drinking water, and social protection.

of the architecture firm Michel Beauvais Associés. The Paris public hospital administration (AP-HP) is providing its expertise and recommendations as a technical advisor to the project owner (see p. 25).

EXPERIENCE AND DIGITAL MODELING

Built on two levels, the facility will have an overall floor area of 45,000 sq. meters and a capacity of 434 beds. The technical platform, nerve center of the CHIC, consists of three day hospitals, a hemodialysis center, an emergency room, a medical imaging and radiotherapy center, and nine operating theaters. The care offered at this multidisciplinary complex will range from simple consultations to radiation therapy for the treatment of cancers and other serious pathologies. “Experience is crucial to success in the construction of hospital facilities,” says Khalid Ouahidi, project director and formerly the construction manager in



A VIP IN THE GRAND INTERNATIONAL

The CHIC in Abomey Calavi is what is called a Very Important Project (the contract is worth 175 million euros) in the Grand International market, meaning that it is carried out in a country where the entity is organized in project mode. For these exceptional projects, the Bouygues Construction subsidiary proposes a turnkey solution encompassing the design, financing, construction, and sometimes even the operation of the facility. "We are currently doing two projects of this kind a year, but within the framework of Greenlight, the new Bouygues Construction strategy, we are hoping to make it a growth driver and increase the number to five or six in the coming years," says Christophe Petit, deputy CEO of Bouygues Bâtiment International. "In line with the Greenlight strategy, we are structuring a Health Business Line to offer our customers around the globe the best services possible in this very specific market."



- ← *The century-old trees around the site have been preserved.*
- ← *The air conditioning ducts were made on the site.*
- ↓ *Ninety-one percent of the site workers are Beninese.*



The roof of the CHUR was designed by architects at Michel Beauvais Associés. Its shape allows optimal air circulation to combat the heat.


the hospital project at Bouskoura, Morocco, which was handed over in 2019. Some examples of how he is right, during the design phase, people from the technical trades worked with 3D modeling software in the BIM 360² platform, a tool previously used at Bouskoura. And skilled site workers from the Atlas de Bymaro guild at the Moroccan subsidiary of Bouygues Bâtiment International were added to the local teams that are building the main structures. The project offers opportunities to transmit know-how that have led to some wonderful personal experiences, like that of Gloria Ahouanse. This young Beninese woman began her career in the CHIC project as a production assistant, before being promoted two years later to site supervisor. "One day my manager ...

2. BIM 360 is a 3D construction management platform that reduces rework by preventing errors, proactively manages quality, facilitates project design, and keeps projects on schedule.

... proposed that I leave my document management job and go to work directly on the site. Thanks to his support and my coworkers' advice, I received training in a new occupation. It's a source of great pride for a Beninese to take part in this program, which is going to allow my compatriots to get medical care in excellent conditions."

COORDINATING TWENTY NATIONALITIES

Rachid Sikkou, Quality-Health-Environment manager hammers the safety rules into the workers on the site. "Ninety-one percent of the people are Beninese. It's their first time working in a Bouygues Construction project and with the strict health and safety rules that go with it. So, they need to be reminded of those rules every day. And it's working. We've now done more the four million hours without a single serious accident." That's a real challenge in a project where as many as 1,200 workers of 20 nationalities are on the job. To coordinate this diverse group, Khalid Ouahidi has



MINORANGE BONUS
View videos of the project:
youtube.com/GroupeBouygues
playlist
#BOUYGUESINSIDE

“
One day, my manager proposed that I leave my document management job and go to work directly on the site. Thanks to his support and my coworkers' advice, I received training in a new occupation. It's a source of great pride for a Beninese to take part in this program, which is going to allow my compatriots to get medical care in excellent conditions.
”

GLORIA AHOUANSE
Site Supervisor



←
Rachid Sikkou, Quality-Health-Environment manager, and Gloria Ahouanse, site supervisor, consult the application designed in-house for worksite management.

→
Rachid Sikkou, Quality-Health-Environment manager, goes over the safety rules with the site workers.





↑
*The work is 80% finished,
 with the handover scheduled
 for February 2024.*

←
*TopSite Innovation is the
 Bouygues Construction award
 given to projects for their
 social and societal practices.*



CHRISTOPHE PETIT
 Deputy CEO,
 Bouygues Bâtiment International

**ADVICE AND SUPERVISION:
 THE ROLE OF THE AP-HP**

The Paris hospital administration's international branch (AP-HP International) is participating in the CHIC project in Abomey Calavi as an advisor to the project owner, the Beninese government, regarding the design and equipment of the hospital. It drew up the required preparatory documents concerning the medical program and functional and technical planning. It will continue to play a role during the construction phase through regular supervision of the work and equipment and, when the time comes, verification of operations prior to the opening. A review of hospital management is also planned.




relied not only on his experience in other hospital projects, but also on an application developed specifically for health sector projects in collaboration with the IT teams at Bouygues Construction. “Thanks to this tool, we can track in real time the overall safety indicator, management of poor workmanship, and the testing and commissioning reports.” Technological innovations like this one combined with teamwork have helped the project earn ISO 9001, I4001, and 45001³ certifications as well as Bouygues Construction’s TopSite Innovation award, given in recognition of best social and societal practices. To

improve employees’ daily life, Bouygues Bâtiment International provides good living conditions by making available things like showers, lockers, and a canteen. Now that the main structures, utility installations, and core and shell (waterproofing, roofing, exterior fittings...) are done, work is underway on the partitions, floors, doors, and other finishings. Next step: the connections in the technical rooms before the critical phase of equipment testing and commissioning begins. Delivery of the CHIC, slated for February 2024, will bring a big improvement to the daily lives of 13 million Beninese. ●

3. These are certification standards for management systems in the areas of quality, environment, and safety.





Spaghetti Junction, the nickname of the well-known Gravelly Hill Interchange at Birmingham, is part of the Area 9 road network for which Colas Ltd has been awarded an eight-year maintenance contract.

ON THE ROAD TO LOW CARBON

ROADS MARKET. Colas has been present in the UK for more than a century. Here are some examples of its road and bitumen activities in three major projects: a road maintenance, repair, and emergency services contract at Birmingham, a new bitumen terminal at Bristol, and the first zero-emission bus service at Dover. Its future target? Carbon neutrality by 2050.

By Céline de Buttet



THE TARGET: CARBON
NEUTRALITY BY
2050

COLAS LTD
AT A GLANCE

- 1,386 employees
- 20 branches across the UK
- Sales in 2022: £285 million

**FAÏÇAL
LAHMAMSI**
CEO of
Colas Ltd



Brexit, the pandemic, high inflation... multiple difficulties have plagued the UK in recent years. The construction market, however, has remained strong owing to support from certain government policies. Under British law, all companies in this sector must take steps to achieve carbon neutrality by 2050. In practice, this means that any contract worth more than 5 million pounds (about 5.6 million euros) must include a carbon reduction plan. "That's why in each of our operations we commit to implementing from the start of the project a plan to reduce greenhouse gas emissions. Decarbonization, circular economy, on-site recycling... our customers benefit from Colas' innovations and know-how", says Faïçal Lahmamsi, chief executive officer of Colas Ltd, the cross-channel subsidiary of the Colas Group. These practices are perfectly in line with the low-carbon and biodiversity roadmap laid out in 2020 by Colas to achieve its greenhouse gases reduction goals for

2030, which are consistent with the Paris Agreement. Besides its differentiating low-carbon solutions, Colas Ltd, unlike its local competitors, operates across the entire value chain in the highway sector, with the particularity of working on both the motorway and the local road networks, which are highly segmented. Here are some examples in central, eastern, and southern England.

**HIGHWAY MAINTENANCE
AT BIRMINGHAM**

Eighteen routes served, four kilometres of slip roads, five levels, 21.7 kilometres of elevated motorway to span two railway lines, three canals, and two rivers – "Spaghetti Junction" is the nickname given to the Gravelly Hill Interchange at Birmingham. It also suggests the variety of work Colas Ltd is doing under the major contract awarded in January 2022 by National Highways, the government-owned company in charge of the British highway network. Valued at 328 million pounds (377 million euros),



Under British law, all companies in this sector must aim for carbon neutrality by 2050. Any contract worth more than £5 million (about €5.6 million) must include a carbon reduction plan.



ANDREW GILLBANKS
General Manager, Area 9, Colas Ltd



↑
Steve Lote (left) and Callam Wilkes, two Colas Ltd maintenance workers on the Area 9 road network.



Sand, salt, and equipment are stored at 13 depots across the counties. This one is at Telford.

the eight-year contract starting in July 2022 includes cyclical and winter maintenance of the highway network in Area 9 as well as reactive maintenance to deal with degradations caused by incidents and accidents. Area 9 comprises the main highway network in several counties of the West Midlands region, in central England, including 3,760 kilometres of motorways and highways around Birmingham.

A car catches fire, two cars collide, a cow escapes onto the road... Colas Ltd provides maintenance and repairs, services in the event of emergencies or bad weather, and other types of work, all in close cooperation with National Highways. “Twenty-four hours a day, seven days a week, we are ready to respond within a half hour to clean up the pavement if we get a call from National Highways, which monitors the roads with surveillance cameras”, says Andrew Gillbanks, general manager of Area 9 at Colas Ltd. “When the temperature falls below freezing, our job is to maintain good road conditions, which ...



RICHARD HARRIS

Director of Continental Bitumen's
Avonmouth terminal

**MINORANGE
BONUS**

View a video about
Colas' activities
in the UK:

[youtube.com/
GroupeBouygues](https://youtube.com/GroupeBouygues)

playlist
#BOUYGUESINSIDE



... we do by salting, for example. 'Keep it safe', as we say here – that's a big part of our contract." This is especially important since this region, which is enjoying strong economic growth and is the location of a large construction site for the HS2¹ high-speed rail line, is very densely populated, with 6 million inhabitants. Sand and salt are stored at thirteen depots around the counties, and equipment is stationed at the largest ones. The Telford depot even has a scanner to identify live animals so they can be returned to their owner.

"We won this contract thanks to the excellent low-carbon and innovation content of our proposal", points out Lahmamsi. "One hundred per cent of our response vehicles run on alternative fuels, hydrated vegetable oil, to be precise, which is a low-carbon, low-emission fuel. It's a first for a large contract in the UK." Colas Ltd has also begun using a digital tool called Anais,

an innovative solution that improves preventive management of highway infrastructure by identifying potentially dangerous areas from data supplied by vehicle-mounted sensors. Tested for the first time outside France and on motorways, Anais provides customers with a decision-support system for equipping and maintaining high-risk areas.

To carry out this contract, Colas Ltd hired 300 new employees, which, of course, involved an onboarding process. A particularity of English law is that personnel can be transferred from one contract to another, so a large share of the new hires worked for the company that had the contract in the past. At the end of eight years, they can choose either to stay at Colas Ltd or move to the new contract operator.

**A NEW BITUMEN TERMINAL
AT BRISTOL**

A light drizzle is falling on the docks at Avonmouth, a port town on the outskirts of Bristol. A team of workers is busy on the





Workers at the Telford depot store salt in the spring in preparation for the next winter.

site of the future bitumen terminal being constructed here by Continental Bitumen, a Colas supplier of bitumen to Europe, Africa, the Middle East, and Latin America. “Over the past decade, the number of refineries² worldwide has shrunk by one half,” notes David Giles, general manager of Continental Bitumen. “In the UK, there is only one left, which is not enough to supply the market.” Colas purchases 5.4 million tonnes of bitumen a year, making it the world’s biggest buyer, so developing a network of terminals to import, store, and market a material that is essential for road construction and maintenance is a strategic issue. For several years, Colas has managed its bitumen supplies globally through its subsidiaries Continental Bitumen, TipCo Asphalt, in Asia, Sami, in Australia, and McAsphalt, in North America. It also has its own fleet of ships to transport it.

2. *The plants in which crude oil is transformed into bitumen.*

There are five tanks with a total capacity of 22,000 tonnes at the Avonmouth terminal, where two bitumen tankers can dock at the same time. The objective: sell 150,000 tonnes of bitumen a year to Colas companies in Europe and to external customers in the UK market. The facility features a high degree of automation and digitalization, enabling customers to place and track their orders online. It is also designed to have minimal carbon impact with high-performance insulation materials and a heat recovery system that reduces the quantity of liquified natural gas (LNG) needed to fuel the heaters. Continental Bitumen has also invested in two, 20,000-tonne tankers, the first such ships propelled by LNG, which reduces CO₂ emissions by up to 90 per cent compared with conventional tankers. “Most of the bitumen we purchase comes from refineries in France, Belgium, Netherlands, Turkey, and Greece, but having our ●●●



Five tanks with a total capacity of 22,000 tonnes are now under construction at the Avonmouth terminal. Two bitumen tankers will be able to dock here simultaneously.



The future bitumen terminal worksite.



NICHOLAS DOBBIE

Director of the Fastrack project



... own tankers gives us a lot of flexibility to buy in many other countries”, says Richard Harris, director of the Avonmouth facility at Continental Bitumen. The site, which will be open six days a week and employ eight people, is slated to go into operation at the end of the year.

FIRST ZERO-EMISSION BUS SERVICE AT DOVER

Six kilometres from the white cliffs of Dover and the city’s busy port, the village of Whitfield is growing with the construction of new housing. The dynamic county of Kent, with its 1.5 million inhabitants and annual budget of 1.7 billion pounds, has awarded Colas Ltd a contract valued at 18 million pounds (20 million euros) for the Dover Fastrack project, its first zero-emission bus service. ‘It will connect Whitfield

with Dover town centre and give the region’s many residents who work in London a faster trip to the Priory train station’, says Nick Dobbie, director of the Dover Fastrack project at Colas Ltd. ‘The project’s aim is to improve public transport options and provide an alternative to travel by car.’ With the delivery of the project in autumn 2023, a fleet of electric buses will operate on Dover Fastrack, with service every 20 minutes.

Since February 2022, teams from Colas Ltd have been building 2.1 kilometres of connecting roads, widening another 700 metres, and constructing a 32-metre bus, cycle, and pedestrian bridge, support walls, and earthen embankments. There have been a few hurdles specific to this project like the archaeological digs required before work can begin, the





↑
The village of Whitfield has been growing rapidly.

←
The port of Dover.

→
The new headquarters of Colas Ltd in Birmingham.

←
The team in the Dover Fastrack project.



A 100-YEAR HISTORY

In 2022, Colas Ltd celebrated the 100th anniversary of activity in the United Kingdom. It was in 1922 that the business started under the name Asphalt Cold Mix Ltd and the first patents for the asphalt spraying process were registered in the country. In 1995, the company joined the Colas Group and gained access to its global network of experts. Proposing innovative products for highway infrastructure maintenance is in its genes. Long based in southern England, Colas Ltd transferred its headquarters to Birmingham and a more central region in 2021.



discovery of a few bombs dating from World War II, and the clayey soil that quickly makes work impracticable in wet weather.

The project also features a large CSR component, with Colas planting more than 10,000 new trees, shrubs, and hedges along the route. It has created jobs locally, too, as 95 per cent of the 60-strong workforce is from the region. Michelle Penn, communications officer at Colas Ltd, also points out that “British law requires that the equivalent of 10 per cent of the project’s value be paid back for social initiatives that benefit the local community.” Repair of the entrance to a primary school, highway safety workshops, cleaning in the Dover town centre, and toys for needy families at Christmas are just a few of Colas Ltd’s initiatives at Dover. ●



HIGH MARKS FOR A NEW METRO DOWN UNDER

MOBILITY. Bouygues Construction Australia and its partners are building an underground metro line and five stations in the heart of Melbourne. Here we descend 40 metres into the depths of the city to explore an ambitious project that will make life easier for its 5 million inhabitants.

By Émilie Dupas

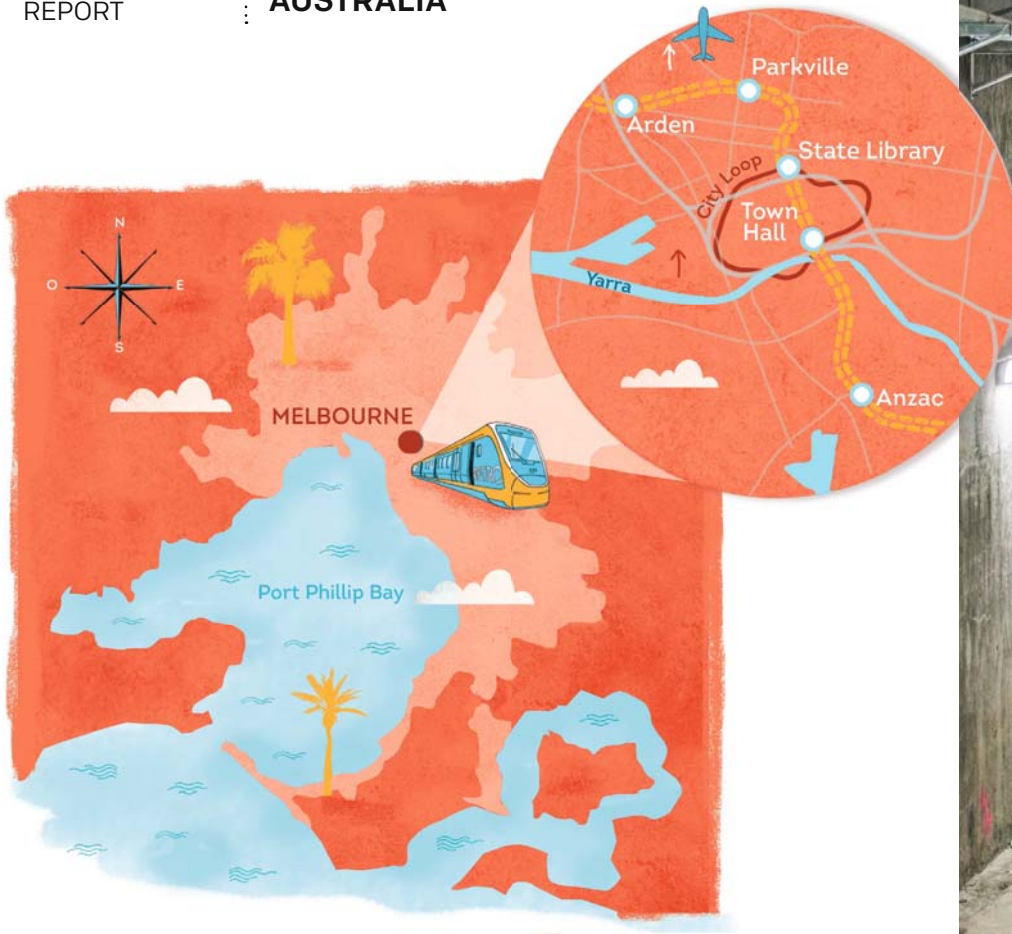


Life goes on at the Town Hall Station construction site in the heart of the city.



We're building a new underground station right here

More trains, more often



THE PROJECT
AT A GLANCE

- 3,000 workers in the project
- Over 750 staff employed by consortium members (approx. 250 by Bouygues Construction Australia)
- 45 months of work
- More than one billion euros: Bouygues Construction Australia's share of the project

NICOLAS CAILLE
Project Director



It's April and autumn has arrived in the Southern Hemisphere. On this early evening in Melbourne, the skyscrapers are reflecting the golden light of Indian Summer. Tomorrow's a holiday, but the streets are still bustling with a cosmopolitan crowd. Melbourne is the Australian city whose population has grown the fastest in recent decades. It now has slightly more than five million inhabitants, close on the heels of Sydney, and that number is expected to double by 2050. Although the public transport system is relatively dense, signs of congestion are starting to appear. The State of Victoria has therefore decided to invest in the construction of a new metro line running across the city. Included in the project is a nine-kilometre twin tunnel and five stations. Numerous benefits are expected. The metro will increase capacity by up to 39,000 passengers at rush hours, reduce travel times, and lighten the load

on the "city loop", the circle line serving the city centre. It will also link up to a train line slated to open in 2029, providing a 10-minute connection to the airport from the central business district. Thirty-three trains, each with a capacity of 1,100 passengers, will operate on the line when it opens in 2025. However, the project has been scaled in relation to the projected population growth to the year 2050. The trains are thus designed to be lengthened to 220 meters, and 70 more trainsets will be purchased. The financing, design, and construction of the tunnel as well as its maintenance for 25 years have been awarded to Cross Yarra Partnership, a consortium comprising Bouygues Construction Australia, John Holland, and Lendlease. "A solid proposal, our international references, the Sydney metro, and the excellent reputations of our two local partners were all important factors in



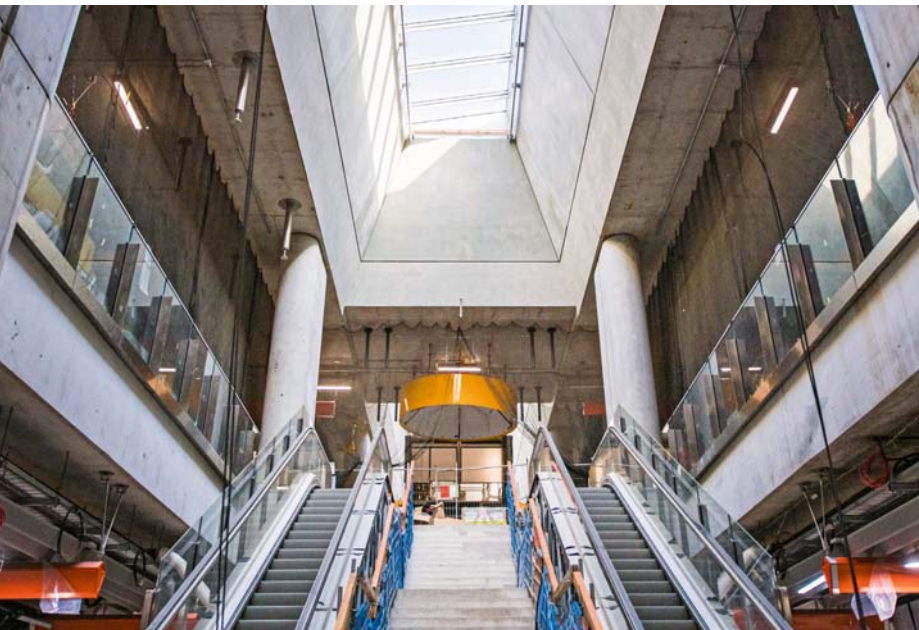
Busy Federation Square, a cultural hub in the city centre, will be served by nearby Town Hall Station.



At the Arden Station, workers are completing the last connections before trials begin in the second half of 2023.



Rod Kerr, construction manager at Arden Station, and Maryse Latourre, installations manager.



Each station has been designed to reflect the history and architecture of its neighbourhood. Large skylights are a distinctive feature of State Library Station.

winning this contract”, says Seved Robin, CEO of Bouygues Construction Australia. “We have an integrated approach to the project. We’re not splitting up the activities by consortium partners”, comments Danny Agnoletto, the consortium’s Chief Financial Officer. “Everyone is working first for Cross Yara Partnership, not just for their own company.” An integrated approach that is giving Bouygues new experience. “This metro is one of Bouygues’ biggest projects right now after the Hinkley Point C nuclear plant in the UK”, says Project Director Nicolas Caille. “Unlike other infrastructure projects of this kind where we supply only the main structures, here we are doing the station installations and works related to the rail system, electrical networks and mechanical equipment. We are leaving our comfort zone.” Which means there will be some swapping of notes with the Bouygues ...

Construction teams in the Grand Paris Express project (see *Le Minorange* no. 100).

HUSTLE AND BUSTLE BELOW

More than 2,000 workers have been hard at it 40 meters under the ground since construction got underway in 2018. Their job is now about 75 percent completed. All that is visible on the surface are large panels marking the entrance of a station. “These are like icebergs. The public is currently seeing only 10% of what we are doing, and they are going to be blown away when they discover the extent of the underground stations”, says Design Delivery Director Frédérique Noirault. The next target is trials to be carried out during the second half of 2023, with trains running at slower and then normal speeds to test the signalling and the landing doors, which are being used for the first time in Victoria. In the stations, teams are laying the floors,

installing the lights and glass doors, and doing other finishing works. “The architecture firm RHSP have designed each station with a different concept and materials, providing a unique identity to each station”, says Noirault. The stations are very spacious, like the ones found in cities like Moscow. From the platform of the Arden Station, in northern Melbourne, the entrance to the nearly completed tunnel is visible. The last systems are being installed, the last rails are being concreted, and the catenaries are being strung in certain sections. The tunnelling began in August 2019 and ended in May 2021. It was done using four tunnel boring machines (TBMs), each named after a famous woman in Victoria: *Joan* (Kirner), *Meg* (Lanning), *Alice* (Appleford), and *Millie* (Peacock). “The Arden station is where the first concrete in the project was poured, and it’s where we launched the first two TBMs towards the



FRÉDÉRIQUE NOIRAULT
Design Delivery Director



DANNY AGNOLETTA
Chief Financial Officer



←
In early 2022, fifteen arches made of 104,000 locally manufactured bricks were erected at the entrance to Arden Station, in northern Melbourne.

↑
Installation of the 60 landing doors at Arden Station.



← Finishing works are underway at State Library Station.

↓ Construction of Anzac Station, located in a residential quarter; required adjusting working hours and communicating regularly with residents.



9 KILOMETRES OF METRO LINE

5 STATIONS

4 TUNNEL BORING MACHINES

500 KM OF WIRE AND FIBRE ELECTRIC CABLE

western portal at Kensington, then towards Parkville Station, in Melbourne’s medical precinct,” recalls station construction manager Rod Kerr. The two other TBMs then began their drives from the Anzac Station, the one furthest south. These underground “factories” were adapted to deal with the relatively friable soil lying beneath the city. Consisting of basalt, clay, rock, and silt, it presented some challenges. Difficulties were also encountered in certain places digging under the Yarra River.

CHALLENGING DIG

State Library Station is in the north of the business district. “We are 40 metres below Swanston Street, which is a bit like our Champs-Élysées”, says Caille. The project director’s tone is relaxed, but he admits that this undertaking is complex. Digging directly beneath a city, the existing Metro line, and the surrounding buildings is not so simple. Building this station and the one at Town Hall required an excavation

phase method using a road header¹. “First, the central tunnel for the passenger access platforms is excavated and consolidated by structural elements execution. Then, the two outside lateral tunnels for the tracks are excavated”, explains station construction manager Vincent Jauze. To minimize the project’s impact on traffic, business activities, and the lives of the city’s residents, access shafts were dug out in the adjacent streets to transport workers, equipment, and machinery under ground. They will be kept after commissioning. These shafts are also covered with enormous sheds to reduce noise, dust emission, and to protect against inclement weather.

At the Parkville Station, in the northern business district, the metro passes by a hospital that performs laser treatments, ●●●

1. A self-propelled machine on tyres or crawler tracks equipped with a boom-mounted excavation head (e.g., excavator buckets, jackhammer-type spikes, or slicer head in line or perpendicular to the boom).



↑ Anzac Station, with its “canopy” architecture, in southern Melbourne. It is strategically located to relieve pressure on the St. Kilda Road-Swanston Street tramway corridor, the busiest in the world.

→ Anzac Station was designed to blend into the neighborhood and evoke the parks around it.

... which are sensitive to vibrations and electromagnetic disturbances. Tests and modelling were done before work began, and a system to dampen noise and vibrations was then installed on the tracks. “Technical expertise like this calls for highly qualified people. But the Covid-19 crisis, which came about two years after the project got underway, led to some difficulties in the supply chain and in managing personnel, right when we needed the world’s top experts”, notes Danny Agnoletto. It was necessary to step up the pace to make up for lost time. Today, the end of the tunnel is in sight: “We are on schedule and on track thanks to tremendous teamwork. We have a right to be proud”, he says with satisfaction. “Since Bouygues has been involved in several areas having to do with design and methods, we have been able to maintain the delivery date by modifying the planning, moving up some of the works while delaying others”, points out Robin. “That has enabled us to stick to the original calendar.”

FIVE-STAR METRO

Sustainability was the other challenge facing the consortium in the project. “Our aim was to adopt a global approach and take into account all environmental, economic, and social externalities to obtain a five-star Green Star rating from the certification agency *Green Building Council of Australia*, as our customer wanted”, says CSR officer Mick Lo Monaco. For example, drinking water is replaced by non-potable water for 30 percent of the utility consumption and some other operations. Renewable energies are a priority too. At the Arden Station, solar panels on the roof will supply 16 percent of the station building’s electricity. Energy efficiency measures will indeed deliver a 51-percent reduction in greenhouse gas emissions at Arden Station. “With 670,000 cubic metres of concrete being poured, reducing cement was seen from the start of the project as a means of significantly lowering embodied greenhouse gas emissions. So, we worked with our partners to find solutions”, recalls Lo Monaco.



VINCENT JAUZE
Construction Manager
for State Library Station




ROB MAIR
Stakeholder Relations Director
in the project





More trains, more often



MINORANGE BONUS

Go behind the scenes in the project:

youtube.com/GroupeBouygues
playlist
#BOUYGUESINSIDE

Up to now, the target of 44 percent Portland cement reduction has been exceeded by eight percent, which is unheard of in a project of this size in Australia. A total of 144,000 tonnes of greenhouse gas emissions will thus be avoided.

Looking ahead, Bouygues Construction Australia is financing the doctoral studies of Melanie Langlois, an engineer and specialist in concrete who is doing her thesis on this subject at Swinburne University of Technology: “The next step would be the possibility of totally replacing cement with, for example, clay from the residue left in ceramics manufacturing,” she says. “Then we would fully be in a circular economy model. The objective, however, is to find the right formula and carry out tests to be sure that the performance is the same as with classic concrete.” Her work thus consists of determining the best formulation and studying the behaviour of this type of concrete.

CREATING BONDS

Close attention is paid to stakeholder relations in the project too. Located near the “Shrine of Remembrance”, a monument dedicated to soldiers who died during the First World War, Anzac Station stands out like a tree surrounded by apartment buildings owing to its distinctive architecture. “It’s an influential and highly

engaged neighbourhood. The school here is quite prestigious. Three former Prime Ministers of Australia and four State Premiers of Victoria attended the school”, notes Rob Mair, the consortium’s head of stakeholder engagement. The hours when there is activity at the site have been adapted accordingly, and works have been spread out. “It’s the strength of a group like Bouygues. We come with a methodology. We have good relations with stakeholders because we give them a good understanding of the process. There are community reference groups for each station, and we hold meetings every six weeks to keep people informed of the progress in the work and get their feedback.” Involvement and information: it is a policy pursued in every way possible.

Nestled in the heart of Melbourne, opposite City Hall, is a public information centre, and it is always busy. Each day, 200 to 300 visitors come in to learn about the new metro line. “People are curious. They want to understand the project and know where their taxes are going”, whispers one of the staff. Besides improved mobility, there are numerous other benefits for the region. The project will have created about 7,000 jobs, some 400 of which have gone to young people in difficulty. Another objective was to reserve 2.5 percent of the jobs for people from Aboriginal communities. Even before the metro goes into service, the project will have helped create bonds and transform the city. ●



←
The entrance to State Library Station, in the north of Melbourne’s business district.



↓
Frescos were done at the Arden Station site to promote Aborigenes art on National Reconciliation Day in 2022.

PARTNERING IN THE SOUTHERN HEMISPHERE

COOPERATION. In Australia, Equans is exploring ways to partner with other Bouygues' subsidiaries, including AW Edwards, and identifying opportunities to pool their skills and enter new markets together.

By *Émilie Dupas*

The view of Sydney Harbour Bridge from the twelfth floor of a building in the big, new business complex in northern Sydney may be splendid, but it is not distracting the Equans team as they install audio-visual equipment in the new headquarters of AW Edwards, a subsidiary of Bouygues Bâtiment International. "This first common project is a good opportunity to get to know each other and to test developing business together", says Patrick Guedel, director of Equans Australia and New Zealand (ANZ). Since Equans joined the Bouygues group, the two companies, who had little to do with each other, have

identified ways their activities are complementary. "The construction of data centres is an important market for us, and it can be good for Equans' audio-visual business", notes Greg D'Arcy, CEO of AW Edwards. On the other hand, new markets could open up for Rintoul's joinery and fitout business and AW Edwards' plumbing division through Equans' fire safety division. Commenting on the outlook for Equans in the Australia-New Zealand region, Ana Giros, Equans Deputy Managing Director in charge of Strategy, Development and CSR, and Executive President of the Belgium-Luxembourg and ANZ regions, points out: "The Australian economy is picking up, and there is a desire to develop renewable energies and energy efficiency in buildings. Our businesses make sense in this context". As a player in electrical and HVAC engineering, but also in telecommunications, Equans is able to offer integrated solutions to its Australian customers. Equans relies on its teams' sense of customer service, and on long-term partnerships such as that with the Sydney Opera House, to become a major player in the design, installation and maintenance of increasingly high-performance, low-carbon solutions. The development of renewable energies is one of them, and integration into the Bouygues group is accelerating existing prospects such as the construction of major solar farm projects with Bouygues Construction. ●

NEARLY 1,000 EMPLOYEES

20 SITES in Australia and New Zealand

€200 MILLION in turnover

ACTIVITIES: multi-technical services, heating, ventilation and air conditioning, fire protection, audiovisual, electricity and communications



ANA GIROS
Deputy Managing Director of Equans and Executive President of the Australia and New Zealand region



PATRICK GUEDEL
Director of Equans Australia and New Zealand



GREG D'ARCY
CEO of AW Edwards





SYDNEY OPERA HOUSE: STAYING IN TUNE

With its iconic silhouette, the Sydney Opera House has been unfurling its concrete sails across the harbour for 50 years. It welcomes nearly 11 million visitors every year. Committed to a ten-year partnership, since 2016 a team of nine Equans employees has been working daily with the site's management services, operating and maintaining the ventilation and air-conditioning system. The technical equipment uses seawater from the bay for cooling: a rare and innovative system for the era in which the building was constructed. Stewart Joyce, chief operating officer for Equans ANZ, explains: "The artists who perform here are at the top of their game. They are demanding: for example, a dancer requires a temperature of 21°C and an opera singer, 20°C. They can easily identify if the temperature isn't quite optimal or if there are fluctuations in humidity, which can have an impact on their performance or the tone of their instruments."



At the Sydney Opera House, the Equans team is on the job every day operating and maintaining the ventilation and air conditioning systems.



At Marvel Stadium, Equans technicians are renovating the audiovisual installations.



Marvel Stadium can seat up to 55,000 spectators for sporting events and 80,000 for concerts.



MARVEL STADIUM, TOPPING UP THE TECH

In Melbourne, Australia's sporting capital, Marvel Stadium is getting a makeover. Opened in 2000, the stadium hosts world-class sporting events and concerts. Just over twenty Equans technicians are working under the leadership of John Holland to renovate the audiovisual installations and integrate the management of all screens, speakers and lighting on a single digital platform. The work will be completed in August 2023. "Our challenge is to integrate new technologies with existing ones, all in an operating stadium that hosts three events a week with up to 80,000 spectators", explains Kathy Winters, Head of Audiovisual at Equans Australia and New Zealand. "It's a great responsibility for us because this equipment contributes to the spectators' live experience."





FIFTEEN YEARS IN THE SCRUM

ANNIVERSARY. Since its first acquisition in Australia in 2018, Colas has steadily “advanced the ball,” rugby-like, and become a leader in the bitumen and road construction markets there.

By *Émilie Dupas*

In a country with a rugby tradition like Australia’s, the number 15 resonates in a special way. Colas Australia is marking its fifteenth anniversary this year in June 2023, with Frédéric Gardès, CEO of Colas, and Frédéric Roussel, executive vice president Asia/Pacific, all on hand for the celebration.

Over the past fifteen years, the team at Colas has progressively built a nationwide company, doing so with application, determination, and on a scale matching the size of this island continent. It all began in 2008 when Colas bought Sami Bitumen Technologies, a bitumen marketer and binders manufacturer. This successful “try” was soon followed in the “match” by the development of road construction

activities. Several companies were bought out, others became joint-venture partners (see sidebar). Like the players on a rugby team, each has a specialty – road construction and maintenance, for example, or the production of coatings and asphalt mixes. The third advance down the field, again with the support of local companies (should we say “props”?), took Colas into the new territory of quarries..

The playing field for Colas Australia and its 700-strong workforce now stretches across Australia’s seven states. Teamwork and agility are important values, as are a capacity for innovation and a commitment to sustainability. The goal is always the same: to do its best to meet the needs of Australians. Fifteen years... Cheers, mates! ●



THIERRY MADELON
CEO, Colas Australia

“Respect is one of the Group’s fundamental values. We owe it to our employees, who are on the front lines, and the communities that we serve. In addition to our activities, which bring people together, we want to have a positive impact on society through innovation and responsible development.”

MAJOR PROJECTS IN AUSTRALIA

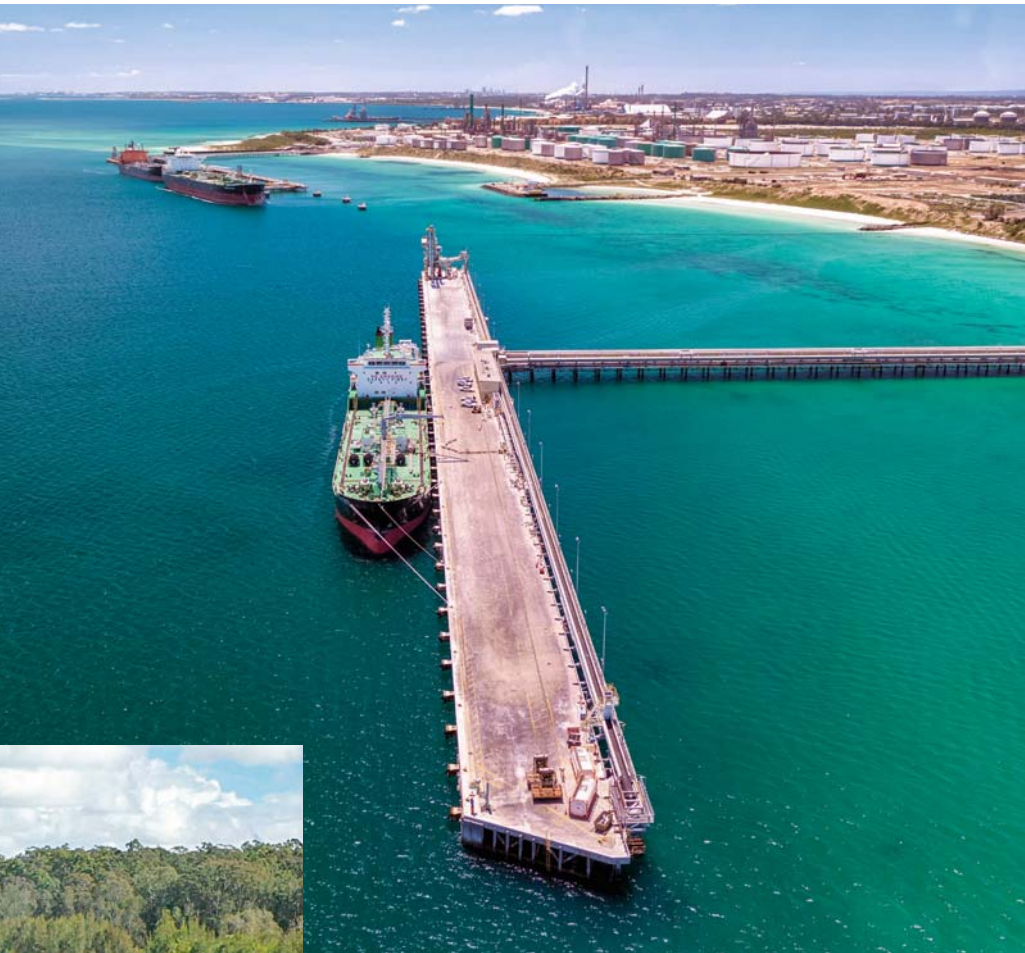
• 2019-2020:

Renovation of a 5-kilometre section of the Golden Highway in New South Wales. This heavily travelled road crosses the Great Dividing Range without going through the Blue Mountains.

• 2021-2022:

Widening of a section of the Pacific M1 motorway south of Brisbane.





The Kwinana bitumen terminal near Perth. Thirty percent of the bitumen and modified binders coming through here go to Colas and 70 percent to other companies in the sector.



Maintenance and repair of the Pacific Highway in New South Wales in 2022.



The Caloundra asphalt plant in Queensland.

COLAS AUSTRALIA IN FIGURES

- **700 employees** (1,000 in Oceania).
- **15 sites in 6 States** (Queensland, New South Wales, Victoria, South Australia, Western Australia, and Tasmania).
- **8 subsidiaries and joint ventures** in Australia:

→ **Sami Bitumen Technologies**

(wholly owned, acquired in 2008): marketing of bitumen and production of bitumen binders.

→ **Colas New South Wales**

(wholly owned, acquired in 2008): previously, SRS Roads (coatings, 2008) and Tropic Asphalts (asphalt mixes, 2013); roadworks.

→ **Colas Queensland** (wholly owned, acquired in 2014): previously, Sunstate Road Services; roadworks.

→ **Colas Western Australia** (wholly owned, acquired in 2008): roadworks.

→ **Colas Solutions** (wholly owned, acquired in 2017): founded in 2017; pavement protection (crack sealing, cold mixes, water protection); operates across the entire country.

→ **VSA Group** (50% owned, stake acquired in 2009): roadworks; a JV with the Bartlett Family Trust; owns Inroads and Primal Surfacing (coatings), Centre State Asphalting (asphalt mixes), Western Quarries (quarry), and Topcoat (asphalt mixes); operates in Victoria and South Australia.

→ **Sunstate Asphalt** (50% owned, stake acquired in 2014): production of asphalt mixes in a JV with Barro Group; based at Maryborough, Queensland.

→ **Hutchison Quarries** (wholly owned, acquired in 2022): the quarries supply a wide range of aggregates and top-quality road products.

STRATEGY



Évelyne Dhélat and Fanny Agostini talk about sustainable fishing during the shooting of *En terre ferme* at the port of Ciboure.



PROGRAMS FOR THE PLANET

MEDIA. Ushuaïa TV, the world's only television channel devoted exclusively to the environment, has been on the air for eighteen years. Its programs continue to raise viewers' awareness of environmental issues as they issue a call for action by concerned citizens.

By Benoît Dhomps

After Ushuaïa Nature¹ debuted on 11 November 1998, its images captivated millions of viewers during the show's 14-year run on TFI. It was a landmark on French television, an invitation not just to travel, but also to protect the environment. And it was the inspiration for creating Ushuaïa TV. Flashback to 2005. The effects of climate change were becoming increasingly visible at the time, and the notion of sustainable development had taken root. "Ecology was treated and perceived as something that aroused anxiety and feelings of guilt," recalls Christophe Sommet, director of theme channels at TFI. "We decided to approach this subject from a positive angle by highlighting initiatives and solutions. Being the heirs of Ushuaïa Nature gave us credibility, and we launched the first TV channel wholly dedicated to the environment."

HOW TO TALK ABOUT ECOLOGY?

A broadcaster and occasionally a coproducer, Ushuaïa TV features documentaries and original magazines that deal with subjects like the environment, nature and animals, adventure and escape, cultures and traditions, and earth sciences. To assemble a compelling program lineup that will get viewers engaged, the channel highlights events organized by activist groups, non-governmental organizations (NGOs), and the like to spur action on issues affecting the planet. Ushuaïa TV is also a partner of the Deauville Green Awards, an ...

1. Ushuaïa is the capital of the Argentine province Tierra del Fuego.

STRATÉGIE

•••

international film festival focused on sustainability and eco-innovation. “The main objective there is to discover and source content that matches the editorial line of the channel,” says Sommet. “It is also an opportunity to meet and talk with partners, whether producers, directors, activists, or NGOs.”

Available over cable, satellite, ADSL, and fiber, Ushuaïa TV is also a platform for information about the ecological transition and the safeguarding of biodiversity. It has developed an entire ecosystem of content and media, like *Ensemble pour la planète* (Together for the Planet), a new, on-demand TV program created in partnership with Bouygues Telecom. It presents a selection of Ushuaïa TV content, offered exclusively and free of charge to Bouygues Telecom subscribers over the mobile operator’s digital network.

Génération Ushuaïa is another program aired by the channel to raise awareness of environmental values as widely as possible. Presented by Fanny Agostini, also the host of *En terre ferme* (On Solid Ground) on Ushuaïa TV (see p. 50), this program, which is broadcast on TFI every Saturday morning at 10:40, spotlights documentaries shown on the theme channel. “These documentaries really make you want to roll up your sleeves and get moving,” says Fanny. Action for the planet – a core mission of Ushuaïa TV for nearly 20 years.

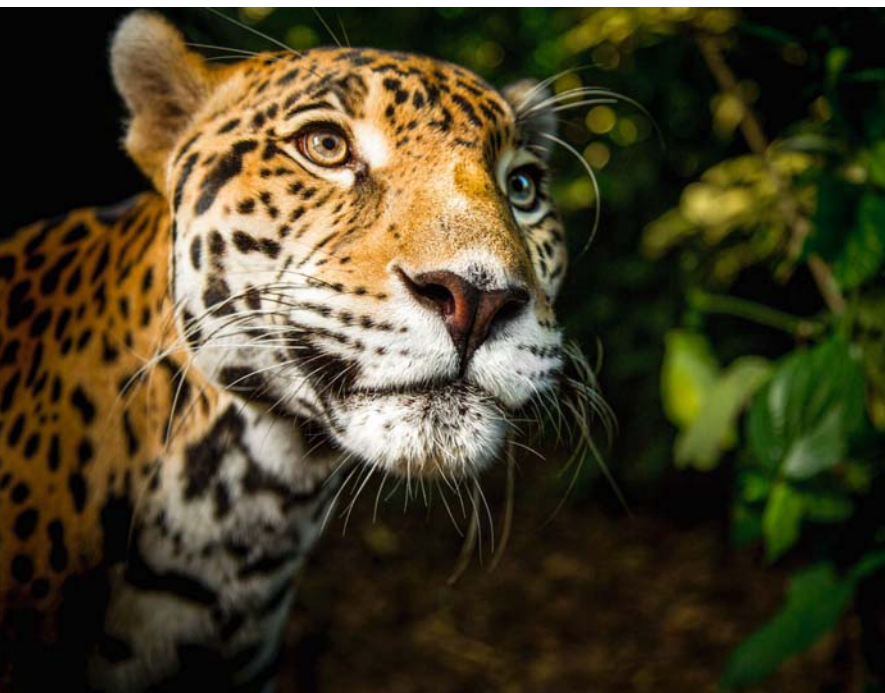


Ushuaïa TV

400 HOURS
OF NEW PROGRAMS
each year

BROADCAST IN
30 FRENCH-
SPEAKING
COUNTRIES

3.1 MILLION
VIEWERS
each month in France





*In the documentary *Arktic*, 62 jours en solitaire, the French explorer Alban Michon recounts sailing through the Arctic Northwest Passage – he is the first to do it solo – in 2018.*



*Guy Lagache presents *Terres d'urgence*, the channel's new documentary series.*



“
We wanted to show how, despite the difficulties, these very resilient people are finding good solutions.”
GUY LAGACHE
Journalist

FACES OF RESILIENCE

In the documentary series *Terres d'urgence* (Endangered Lands), Guy Lagache travels to Congo and India to show viewers first-hand some of the direct consequences of climate change on the local populations. “I went to meet people so they could tell me about their daily lives, but I always remained positioned as a journalist, with no preconceptions or judgments about how they are dealing with this crisis,” says Lagache. “We wanted to show how, despite the difficulties, these very resilient people are finding good solutions.” To capture the largest audience, he adds that “the documentary was conceived as an adventure story.” Three 70-minute episodes have already been commissioned by Ushuaïa TV.



*Ushuaïa TV has a big lineup of animal documentaries like the series *Aventures en terre féline*.*



*Celebrities like the comedian Guillaume Meurice appear as guests on *Génération Ushuaïa*, a program broadcast on Ushuaïa TV as well as on Saturday mornings on TFI.*

ON SOLID GROUND

“En terre ferme” (On Solid Ground) is a monthly prime-time program on Ushuaïa TV where Fanny Agostini meets with well-known personalities to talk about major environmental issues and concrete ways they are being addressed.

“Camera. Action!” On Place Louis XIV in Saint-Jean-de-Luz, passers-by are intrigued by the cameras and even more fascinated by the woman standing in front of them, who happens to be France’s most famous weather presenter, Évelyne Dhéliat. “I agreed right away to appear on this show because the environment and sustainability are issues that I am very interested in. And when the team asked me

where I wanted to do the show, I thought of Saint-Jean-de-Luz, where I spent my vacations when I was younger,” says the woman who has been presenting the weather report on TF1 for more than 30 years.

LOCAL AND PERSONAL

As she strolls through Saint-Jean-de-Luz along streets lined with red and green half-timbered houses typical of the Basque region, walks in the little fishing port of Ciboure, and hikes through the rolling hills of the back country, Dhéliat talks openly about her views on the consequences of climate change. “Évelyne is very involved in environmental issues,” says Agostini. “She

“
Public figures
are totally climate-
conscious, just like us.

FANNY AGOSTINI
Host of En terre ferme



↑
Speaking to a livestock raiser who describes the impact of climate change on his farming.

→
The opening sequence of the show being shot on Place Louis XIV in Saint-Jean-de-Luz.

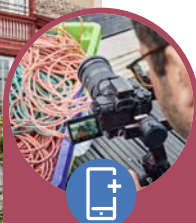




CHRISTOPHE SOMMET
 Director of Theme Channels at TF1

“Being the heirs of Ushuaïa Nature gave us credibility, and we launched the first TV channel wholly dedicated to the environment.”

On the program En terre ferme, well-known personalities talk about ecological issues and the concrete ways they are being addressed.



MINORANGE BONUS
 Go behind the scenes of the program:
[youtube.com/GroupeBouygues](https://www.youtube.com/playlist?list=PLB0YUgUeSj8)
 playlist
 #BOUYGUESINSIDE

is the one who decided to include ecological messages in her weather reports. She enjoys a very close relationship with viewers. People know her and listen to her, which gives the messages extra force.” Previous guests on the program include the Michelin-star chef Thierry Marx, the singer Zazie, and the tennis player Jo-Wilfried Tsonga. “In the early shows, I met them on a farm in Auvergne, in central France. I took them to meet people who worked the land or to view a particular situation somewhere. That gave us a basis for the discussion,” recall Agostini. “For the third season, we decided to let the guest choose where the show would be shot so they could open the doors to their world and thus make it more personal.” These

intimate moments are an opportunity for viewers to identify with the guests and hear their questions and fears regarding ecological issues. “We sometimes tend to think that public figures don’t worry about the state of our planet, that they live in a kind of bubble. But when we hear them talk, we realize they are totally climate-conscious, just like us,” says Agostini. Well-known and engaging people with compelling views on the environment – an effective formula to encourage everyone to take better care of our planet. ●

SPECIAL FEATURE

BOUYGUES





Compagnons 60 ANS

THE GUILD: HONORING WORKERS FOR 60 YEARS

*

EXCELLENCE. Created in 1963 by Francis Bouygues, the *Ordre des Compagnons du Minorange* – the Minorange Guild – is celebrating its sixtieth anniversary this year. Its members are ambassadors of the Group's values and the elite of the workers on Bouygues Construction's worksites. An initiative that has been copied at Colas, Bouygues Telecom, and now, Equans.

By Céline de Buttet and Émilie Dupas



THE FLAME STILL BURNS

On Friday, 9 June, spirits were high at a vacation center in Sologne that had been taken over for a big private event. Five hundred Minorange Guild members – the *Compagnons* – from France, Morocco, Thailand... indeed, from all over the world, posed proudly for a photographer perched high above in a cherry-picker. For this historic photo and the party that would follow, they were joined by Martin Bouygues, accompanied by his wife Melissa and their three children, Edward Bouygues, deputy CEO of the Group, William Bouygues, director and senior VP–Strategic Projects at Bouygues Immobilier, and Charlotte Bouygues, director of Strategy and Development at SCDM. Olivier Bouygues, a director of the Group, and his son, Cyril Bouygues, CEO of Heling, were also there, along with Olivier Roussat, the Group’s CEO, Pascal Grangé, deputy CEO and chief financial officer, Jean-Manuel Soussan, senior vice president and human resources director, and Pascal Minault, chairman and CEO of Bouygues Construction. Everyone was there for this three-day celebration marking the sixtieth anniversary

of the Minorange Guild. Once the official family photo had been taken, a lighthearted session of selfies with Martin Bouygues and the Group’s senior executives ensued. All the guests then assembled in a big tent, and the delegations, each carrying flags and banners, were called on stage in a ceremony a bit reminiscent of the opening of the Olympic Games.

“AVEC UN MINORANGE, TOUT S’ARRANGE”

Guild members took turns at the microphone recalling some of the major projects that are the pride of the Group and telling their own stories as *Compagnons*, the workers who combine “a warm heart and a tough work ethic”, who possess a strong sense of service, and who are the Group’s key resource. As they say in the Group, “avec un Minorange, tout s’arrange” (with a Guild worker, things always work out)! In France as elsewhere in the world, these outstanding employees transmit Bouygues’ values as well as essential know-how and standards of conduct. Martin Bouygues brought the opening of the celebrations to



The delegations carried flags and banners when they came up on stage.



← Five hundred *Compagnons* got together in Sologne between 9 and 11 June.



↑
On Saturday morning, all the Compagnons took part in workshops on strategic subjects.

←
Olivier Roussat, CEO of the Group.

↑
Pascal Minault, Chairman and CEO of Bouygues Construction.

↑
Martin Bouygues, accompanied by his wife, Melissa, with a handshake for the Compagnons on his arrival.

a close by coming back to the success of the organization: “For sixty years, the values of the Guild have remained intact. Let’s be true to those values. Let’s believe in the power of example, of helping one another, of hard work, and above all, of respect.” And then adding, with a clamor from the audience: “Wherever he is, Francis Bouygues is proud of you.” After a night of festivities, the morning came early, and as they do on their worksites, the *Compagnons* began their day by doing warm-up exercises together. Then came the workshops, where the four major strategic themes were discussed: climate, the digital transition, new construction methods, and health and safety. Often the

approach was playful. For example, participants had to assemble a giant model of Challenger, the headquarters of Bouygues Construction, from 17,000 Lego pieces, first from instructions on paper and then with a tablet indicating the series of steps to follow, which allowed them to appreciate how digitalization can facilitate processes. The afternoon was devoted to sports contests for the benefit of the Francis Bouygues Foundation. Solidarity, transmission, generosity – these are not empty words for the *Compagnons du Minorange*. ●

SPECIAL FEATURE



← Francis Bouygues and the Compagnons at the 25th anniversary celebration in 1987.

→ Maurice Poisson was one of the first Compagnons, becoming a member in 1964. He embodied the spirit of the Minorange Guild for many long years.



MINORANGE BONUS
View videos of the event:

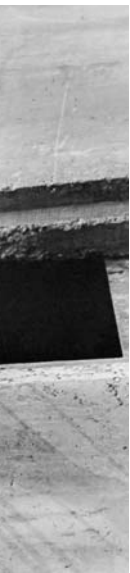


↑ Monique Bouygues meets members of the Guild on its 50th anniversary.

→ A Compagnon during the construction of the Croix des Mèches apartments at Créteil in 1972.



THE COMPAGNONS, A STORY OF VALUES



↑
Compagnons snap photos with Martin Bouygues at the 50th anniversary of the Minorange Guild at Vittel in 2013.

→
The 40th anniversary of the Guild.

“The Minorange Guild has just been created. Its members are our best workers. They meet with one another, they manage the organization themselves, and through their excellence, both professional and moral, they will demonstrate the character of the entire company.” It was with these words that Francis Bouygues’ initiative, in 1963 was described in the first issue of *Le Minorange* in October of that same year. It was a period of full employment, and construction companies were scrambling to hire highly skilled workers. Modeled on the craftsmen’s guilds founded in the Middle Ages (see p. 59), the Minorange Guild is a means of developing the loyalty of experienced workers centered on the values of professional know-how and good conduct – values

and a culture they are called on to transmit to their coworkers along with pride in belonging to the group and respect for safety rules. With forty-three members at its founding, the Guild had become a kind of little company five years later, with statutes, a budget, a general meeting, a board, and a president, vice president, and secretary. With their firsthand knowledge of sentiments in the company and problems in the field, Guild members serve as representatives to the general management. Workers are nominated for membership by their supervisors, and promotions to higher ranks are reviewed each year by the Guild’s board. There are three ranks in the

Guild, and the honorary title of “Champion du Minorange” is given to the best Compagnons. ●

“
Let’s believe in the power of example, of helping one another, of hard work, and above all, of respect. Let’s show that these are modern values and transmit them to the younger workers. It is up to you as members of the Minorange Guild to welcome these young people into the building trades. Share your know-how and your values with them because they represent the company of the future.

MARTIN BOUYGUES



THEY SAID...

“Of all the things I have undertaken in my career as a builder, the Minorange Guild is the initiative and the organization that I consider the most successful and of which I am most proud. I take immense satisfaction in having served the cause of these workers. Like me, they are happy and proud builders to the core. A great and sincere friendship unites us.”

FRANCIS BOUYGUES

“The Minorange spirit resonates in all languages, in all countries. It is a reflection of Bouygues Construction: multicultural and international.”

PASCAL MINAULT

Chairman and CEO of Bouygues Construction

“My goal in creating the Club des Ambassadeurs is to see that the powerful values embodied by Minorange Guild members are transmitted to our sales force at Bouygues Telecom. For sixty years, the Compagnons have been the pride of our Group and have promoted basic values that are perfectly applicable in all of Bouygues’ business segments.”

EDWARD BOUYGUES

Deputy CEO of the Bouygues group and President of Bouygues Telecom

“The Minorange, it’s something in your heart. When one of our guys does something good, it’s the Group that has done something good.”

RACHID KRICHE

Secretary of the Minorange Guild at Bouygues Bâtiment Ile-de-France and Bouygues Construction Matériel

1990

THE ENERGY GUILD, EVOLVING WITH THE TIMES

The Energy Guild (*Ordre des Compagnons des Energies*), the new name since 2023 of the Energy & Services Guild, which was founded in 1990, is one of the oldest in the Group after the Minorange Guild. It is based on the same principles, with a few special rules adapted to its activities. The workers and technicians who are members of the Energy Guild are identified and nominated by their supervisors or coworkers. They must have been with their company for at least two years, and 80 percent of their work must be in the field. The

Guild is supervised and coordinated at the national level and led at the local level by Regional Secretaries, who are operational employees. The integration of Bouygues Energies & Services into Equans in 2023 is going to bring changes to the Guild as it expands into the structures of Bouygues’ sixth business segment and adapts its rules, procedures, and organization. Since its creation, the Energy Guild has had 20 Champions, including seven who are still members.

171

ENERGY GUILD MEMBERS

→ 1 woman

→ Average age: 43.5

1993

THE ROAD AND RAIL GUILD AT COLAS

Taking the Minorange Guild as its model, Colas founded the Road Guild (*Ordre des Compagnons de la Route*) in 1993 to distinguish the best workers in its road construction activities. To represent all of Colas’ businesses (road, rail, water distribution, power transmission, industry), the guild’s name was changed in 2023 to the *Ordre des Compagnons du Losange d’Or*. Nominated by the heads of the branches, all are trained in first aid and identifiable by the insignia they wear. Eleven subsidiaries and regions in metropolitan France, Réunion, Belgium, Canada, and, as of this year,

New Caledonia participate in the Losange d’Or Guild. Expansion into other countries is under review. To energize the Guild by lowering the average age of members, lifetime membership has been replaced by three-year terms, which may be renewed as many times as the two parties wish. This year, Guild members are going to elementary, middle, and high schools to talk about their jobs and attract young people to their trades.

638

LOSANGE D’OR GUILD MEMBERS

→ 2 women

→ Average age: 52

2005

A CERCLE AND A CLUB AT BOUYGUES TELECOM

In 2005, Bouygues Telecom created the *Cercle* for its customer relations staff to highlight the work of this key profession and recognize its most deserving employees. Candidacies are submitted by the advisors' direct supervisors and reviewed by the *Cercle*'s officers. The qualities required for membership: excellence in dealing with customers, a positive attitude, team spirit, helpfulness to coworkers, and a taste and aptitude for transmitting skills. In 2018, Edward Bouygues, then CEO of RCBT (the Clubs Bouygues Telecom store network), created the *Club des conseillers de vente Ambassadeurs*. Intended to recognize the best sales advisors in stores based on

their technical knowledge and soft skills, the Club has the same missions as the *Cercle* in promoting the Bouygues Telecom brand and similar methods of selecting members and operating. A minimum of two years with the company is required for membership.

92

CUSTOMER ADVISORS

- 50% women
- Average age: 36

41

AMBASSEDEURS SALES ADVISORS

- 39% women
- Average age: 33

DID YOU KNOW?



The Minorange Guild was inspired by the *Compagnons du Devoir*, a French organization with a long tradition of training and apprenticeship in the manual arts and crafts. It takes its name from the contraction of the words *minium* and *orange*, referring to the orange pigment in the antirust paint used on Bouygues worksites.



AN INCUBATOR TO GROW AND LEARN

Created in 1992, the incubator might be described as the waiting room of the Minorange Guild. Participants do not have the status of *Compagnon*, but they hope to become one by entering the incubator program, where they will receive training for one to three years. They will not all automatically become Guild members.

THE GUILD AT A GLANCE

1963 → creation of the Minorange Guild by Francis Bouygues

Approx. 600 → the number of members worldwide in 2023

44 → average age

12 → number of guilds

3 → number of ranks in the guilds

9 → number of shared values: respect, setting an example, passion for work well done, availability, pride in membership, teamwork, transmission of knowledge and know-how, professional skills, and company spirit

Bouygues Travaux Publics

- created in 1963 – 90 members

Bouygues Bâtiment Ile-de-France and Bouygues Construction Matériel

- created in 1963 – 201 members

Bouygues Bâtiment Grand-Ouest

- created in 1968 – 40 members

Bouygues Bâtiment Sud-Est

- created in 1972 – 44 members

Bouygues Bâtiment Nord-Est

- created in 1979 – 38 members

Bouygues Bâtiment Centre-Sud-Ouest

- created in 1981 – 15 members

Dragages Hong Kong

- created in 2001 – 14 members of the Guild of the Dragon

Dragages Singapore (Singapore)

- created in 2014 – 13 members of the Guild of the Lion

Bouygues Thai (Thailand)

- created in 2015 – 23 members of the Guild of the Chaang

Losinger Marazzi (Switzerland)

- created in 2004 – 15 members of the *Compagnons du Cervin*

Bymaro (Morocco)

- created in 2005 – 49 members of the *Compagnons de l'Atlas*

Bouygues Turkmén (Turkmenistan)

- created in 2010 – 14 members of the Order of the Kopet-Dag

NOW A WORD FROM THE COMPAGNONS!



“ Thanks to my work, know-how, and dedication, I was asked to become a *Compagnon du Cervin* – the order is named after the highest peak in Switzerland. As a member, I feel honored and proud to represent this Minorange family. It is also a recognition of our work. Our profession is interesting, and it is changing. Young people do not necessarily have a fair picture of this profession. It is satisfying to finish a project and to see the result.

Magnificent! We need to transmit this so that it continues. It would be great to bring younger people into the Guild.”

VERISSIMO OLIVEIRA DOS SANTOS
Masonry Foreman,
Losinger Marazzi (Switzerland)

24 YEARS IN THE GROUP
Guild member since 2005,
Vice President of the *Ordre des Compagnons du Cervin*

“ The MTR Express Rail Link, the Ocean Park Redevelopment, the Liang Tang tunnel, the undersea road tunnel on the Tuen Mun-Chek Lap Kok Link, and the Central Kowloon Route – those are some of the projects in Hong Kong that I’ve worked on over the past 20 years. Now that I’m a *Compagnon*, I have a duty to promote the values of safety and quality. I feel

I am an ambassador for these values, especially to the younger generations to whom I’m happy to transmit my know-how.”

PRADIG GURUNG
Foreman, *Dragages Hong Kong*
20 YEARS IN THE GROUP
Guild of the Dragon member since 2022



“ My father was the reason I took a job at Bouygues as an assistant rebar worker. He talked to me about the Compagnons, explaining to me that they were the elite, the best. From then on, I promised myself that I would tell him one day that I was becoming a Guild member. Then it happened, and he was proud; I could see it in his look. Being a Compagnon means getting up each morning and going to our worksites with a sole aim: to do our best to make the projects a success

and give the company a good image. You also have the satisfaction of telling yourself that there is the possibility for career advancement, even if you start at a very low level.”

MEHDI AICH
Assistant site manager,
Bouygues Construction Habitat Social
13 YEARS IN THE GROUP
Minorange Guild member since 2019
and an officer since 2022





“ After installing formworks and then working as a foreman, I am now an assistant site manager. I worked in the Calais port extension project for five years, and today I’m working on the construction of a bridge at Avesnelles, also in northern France. To be a *Compagnon* is to have close bonds with the other workers, to watch out for them, and to be a leader. A memory to illustrate this: one day, during a big storm, all the work of the previous three weeks was swallowed up by a tidal wave. We had to start over, and

the deadlines were tight. Thanks to the solidarity of everyone in the project, we did it! I want the Guild to always maintain high values, without ever lowering the bar.”

THOMAS FLAHAUT
*Assistant site manager,
Bouygues Travaux Publics*

7 YEARS IN THE GROUP
Guild member since 2019; he held 1st and 2nd level rankings and today is an officer

“ In the last few years, I’ve learned an enormous amount about construction methods, especially in the presidential Conference Hall and the Arkadag Hotel projects. As a Minorange Guild member, I feel responsible for the new workers. I’m happy to share my experience and give them the possibility to develop, and happy too to transmit the values of respect, honesty, and team spirit that motivate us. An event like this

anniversary brings us closer to each other and gives us a glimpse of the different construction methods around the world.”

MURAD ALTAYEV
*Electronics Technician Supervisor,
Bouygues Turkmen*

10 YEARS IN THE GROUP
Order of the Kopet-Dag member since 2018



“ I joined the Bouygues group in 1994 because it had an excellent reputation owing to its projects, including the construction of the Hassan II Mosque. In addition, the Group gave a lot of importance to its employees’ safety, something not so common at the time, and it offered good wages and social security coverage. I worked on the construction of the Royal Mansour hotel in Marrakech, the University of Benguerir, the Bouskoura hospital, and the Tanger Med port. To be a *Compagnon* is a source of pride, but we also have a responsibility toward other workers to make them safety-conscious and to transmit our


know-how to them. We are also lucky because we have the chance to take part in activities like this event, thanks to which I took a plane for the first time. These activities allow us to meet our colleagues, who have the same mission and the same values. That strengthens our sense of belonging, and I hope to be there for the seventieth anniversary!”

LAHCEN OUMAZOU
*Framework carpenter foreman,
Bymaro (Morocco)*

30 YEARS IN THE GROUP
Compagnons de l’Atlas member since 2017

STRATEGY





Located at a strategic crossroads just one hour from Brussels, 50 minutes from Luxembourg, and an hour and a half from Paris, Metz wants to revitalize its city center.

WELCOME TO A NEW CENTURY

RENOVATION. Bouygues Immobilier has launched a new subsidiary specializing in the rehabilitation of historical, or simply remarkable, buildings. Called Nouveau Siècle (New Century), it will combine heritage preservation with a commitment to ecology. Its first project is at Metz.

By Benoît Dhomps

2022 CREATION OF THE SUBSIDIARY NOUVEAU SIÈCLE

A specialist in the rehabilitation of historically notable buildings

The centers of our cities are home to sleeping beauties, buildings with remarkable architecture in desirable locations, but which no longer match modern-day needs and uses. Mills, barracks, chateaus, mansions, factories... there are more than 45,000 buildings in France classified as historical monuments. In November 2022, Bouygues Immobilier created a subsidiary, Nouveau Siècle (New Century), that would specialize in the renovation of such heritage sites and thus capitalize on its experience in major rehabilitation projects. This new company will team up with local authorities and architects working in the heritage field, including ones from the Ministry of Culture, to give a second life to these iconic sites by transforming them into apartment buildings. “Nouveau Siècle has a threefold mission”, says CEO Yannick Bigéard. “The preservation of our heritage, both the buildings and the craftsmen’s skills that went into their construction; the revitalization of city centers, an effort being supported today with the national program Action Coeur de Ville; and last, protection of the environment.” The customers targeted are investors and people who wish to move back to the central neighborhoods of cities. ...

PRESERVING HISTORY AND THE ENVIRONMENT

Façades, doors, windows, parquet floors, molding, stairs, terracotta, stone, wrought iron...everything that confers prestige on a building is preserved and renovated “with the utmost respect,” says Bigeard. Great care is taken in choosing the materials and the techniques that will be used. Nouveau Siècle relies on a network of craftsmen with special skills who have adapted their methods to make them more environmentally friendly. These partners are also committed to promoting the reuse and recycling of quality materials from old buildings. The Bouygues Immobilier company is already supporting organizations dedicated to preserving skills and know-how from the past. It is also pursuing the idea of developing a guild like Bouygues Construction’s Minorange Guild, which was created sixty years ago (see p. 52). Renovation preserves

not only heritage and know-how, but the planet as well. The carbon footprint of a rehabilitation project is 30 to 70 percent smaller than the one produced by the demolition of a building and the construction of a new one of equivalent size. Another advantage: renovation helps to curb urban sprawl and the artificialization of land. Nouveau Siècle is also aiming for an energy performance rating of at least D¹ in all its property programs. This objective currently exceeds the minimum regulatory standard since a D rating will not be required for historical monuments until 2034. Nouveau Siècle’s ecological approach is seen not only in the reuse of materials, but also in outdoor spaces, parks, and vegetable gardens created with landscape architects and ecologists.



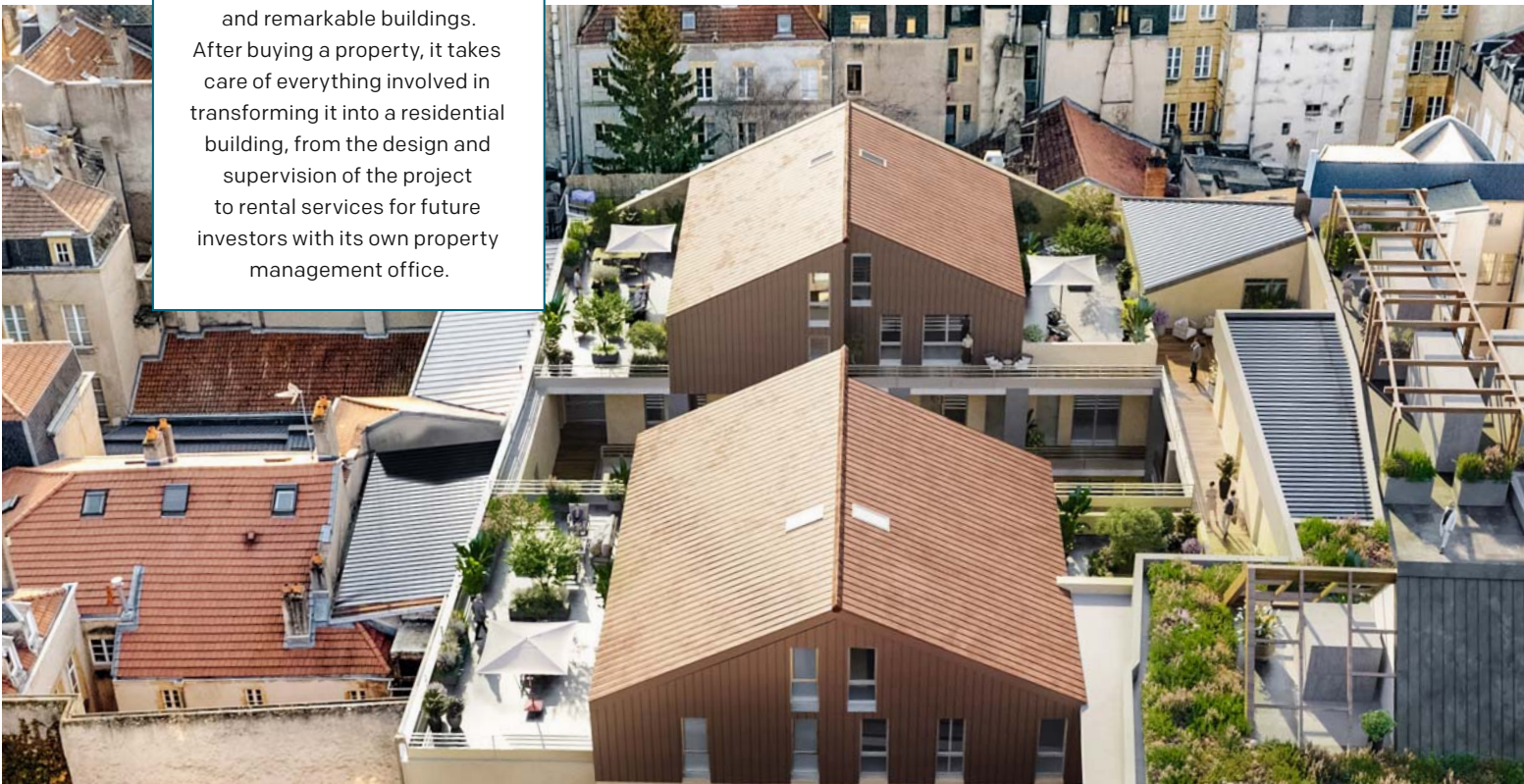
↑
The rehabilitation of a building calls for stonecutters, roofers, carpenters, wrought-iron craftsmen, and other skilled workers.

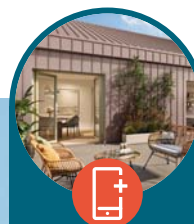
→
This building dating from the 19th century housed Le Printemps department store until October 2021.

TURNKEY OPERATIONS

Nouveau Siècle offers local authorities who wish to revitalize their city center a turnkey service for the rehabilitation of historical and remarkable buildings. After buying a property, it takes care of everything involved in transforming it into a residential building, from the design and supervision of the project to rental services for future investors with its own property management office.

1. Energy Performance Diagnostics (EPD) estimates the energy consumption of a home or building and its impact on greenhouse gas emissions. A rating ranging from A (high performance) to G is assigned based on the EPD.





**MINORANGE
BONUS**

View a film of
the project on:

[www.nouveau-siecle.com/
presentation](http://www.nouveau-siecle.com/presentation)



YANNICK BIGEARD
CEO of Nouveau Siècle

“Our ambition is to renovate according to the needs and uses of our own time while showing the utmost respect for the architecture of the past.”

←
Landscape architects and ecologists were involved in designing 20% of the vegetated surfaces.

↑
The city's main street, rue Serpenoise, is a ten-minute walk from the train station.



BREATHE FRESH LIFE INTO CITY CENTERS

The central or historical districts of many cities have become so expensive, run down, or ill-adapted to modern life that they are left virtually deserted today. Meanwhile, 72 percent of French people say that companies in the property sector should contribute to the preservation of France’s cultural heritage. Nouveau Siècle wants to seize this opportunity: “We are not a property developer. Our business is urban renewal, and our aim is to help local authorities transform the center of their city,” says Bigeard. Nouveau Siècle’s first project perfectly matches that ambition. Located on rue Serpenoise, a pedestrian shopping street thought of as the Champs Élysées of Metz, Le Printemps department

store permanently closed its doors in October 2021. This iconic building has a remarkable façade built with a mixture of Vosges sandstone and Jaumont limestone, materials traditionally used in the Lorraine region. Its superb decorative and architectural elements will be preserved in the rehabilitation work, slated to begin in the last quarter of 2023. The residential develop program will include 89 apartments, 600 sq. meters of commercial space, patios, and even a French garden. Nouveau Siècle thus lays the foundation stone of a business whose goal is to create 800 apartments a year in historical buildings as of 2029 and 1,000 by 2030. ●

89 APARTMENTS

CARBON FOOTPRINT
30% TO 70%
SMALLER

Approximately

1,000 M²
of commercial space



The project includes 89 apartments with one to five rooms having floor areas of 28 to 150 m².



The new façade is being built with Vosges sandstone, a natural, rose-tinged stone typical of the Lorraine region.

IN THE HEART OF OUR CITIES

Action Cœur de Ville is a national program set up by the French government in 2017 to facilitate and support the work of local authorities by encouraging companies in the housing and urban renewal sectors to invest in city centers. Its aim is to maintain or introduce activities in midsize cities through funding for housing, commerce, mobility, heritage sites, and public services.





In the Tokamak reactor, the cryostat is the large stainless-steel structure enclosing the vacuum vessel and the superconductor magnets. In the ultra-cool environment of the vacuum chamber, the electromagnetic field created by massive magnetic coils keeps the plasma, whose temperature is 150 million °C, at a distance from the vessel walls.



ITER IN THE IMAGE OF THE SUN

ENERGY. At Saint-Paul-lez-Durance, a village in the hills of Provence, Equans is taking part in a huge international project to construct an experimental nuclear fusion device. It is hoped that one day this technology will produce carbon-free electricity on a massive scale. A fascinating story to its (nuclear) core.

By *Émilie Dupas*

EQUANS AND NUCLEAR ENERGY

**40 YEARS OF
EXPERIENCE**

**MORE THAN
4,000
EMPLOYEES**

**REFERENCES IN
MORE THAN
20 COUNTRIES**
(construction, waste management,
and operations)

A line of cars winds its way through the Concors, a low mountain range in southern France. The morning fog is still clinging to the trees as we drive on beneath the rising sun toward our destination, a 180-hectare site on which ITER¹, the world's largest experimental nuclear fusion device, is being constructed. It is one of the most daunting energy challenges of our time, a challenge being taken on by 35 countries² and a 2,000-strong workforce from 450 organizations. They are all heirs to a Promethean ambition dating back to 1985, when the idea for international cooperation in the development of nuclear fusion was launched. The aim of the project, which got underway in 2010, is to demonstrate that "solar" energy can be reproduced on Earth and used to generate electricity on a large scale while producing virtually no waste or carbon dioxide emissions. In this colossal undertaking, Equans and its subsidiaries (Ineo and Axima) have now joined the long line of thousands of engineers who have worked to make the dream of fusion power a reality. The overall project is now more than 78 percent completed. Following the design and procurement phase, which began in 2013, about 30 people from Equans have been coordinating the work of some 140 employees of partner companies. Since 2018, they have been installing HVAC systems, electrical equipment and cabling, and the support structures and piping for fluids (water, compressed air, helium, etc.). The contract, worth 400 million euros, is one of Equans' largest in the world in terms of value and workforce. "In this project, we are managing the work of multiple subcontractors," explains Pascal Rauner, project leader in ...

1. ITER ("The Way" in Latin) is the acronym for International Thermonuclear Experimental Reactor.

2. The European Union, United States, China, Japan, South Korea, Russia, and India.

INNOVATION

... charge of construction. “We have put together an international team with a wide range of competencies, but this project has presented some real challenges because of its size.” Adds Hervé Rigaud, head of energy infrastructure markets at Equans: “ITER is a one-of-a-kind research and development project in which we have to continually adapt. It is a project in which everybody involved is gaining experience. We have to be flexible to provide the customer with whatever support is needed.”

SECURITY AT THE CORE

The fusion device, or Tokamak, is an artificial “sun” 120 meters long, 80 meters wide, and 80 meters high. Inside this huge machine, a fusion reaction will take place at a temperature of 150,000,000°C, or ten times the temperature of the Sun’s core. During their daily rounds, the Equans supervisors greet the cosmopolitan workforce in multiple languages. In the Assembly Hall, where the components of the Tokamak are pre-assembled, huge cranes capable of lifting 1,500 tons are attached to the ceiling. High up in the hall workers are installing supports for ventilation ducts. A safety officer is keeping an eye on their work. “We’ve had to provide the partner companies with training in Equans’ security and safety rules,” notes Rauner.

Tanya Meyer, a native of South Africa, is a Quality officer in the project. She too is monitoring the installation of the support brackets for the piping in the area around the Tokamak. “What we are doing here is very important because this equipment is essential to ensuring that the installation functions at an optimal level,” she tells us. Inspections are done at each stage of the work, and when the task is finished, a

8 KM OF VENTILATION

with a power of 800,000 M³/H

70 KM OF CABLE DUCTS

150 KM OF FLUIDS NETWORKS



“
ITER is a one-of-a-kind research and development project in which we have to continually adapt [...]. We have to be flexible to provide the customer with whatever support is needed.

HERVÉ RIGAUD
Head of Infrastructure Markets
at Equans

↑
Overview of the ITER site.

→
Carlos Silva and Jean-Claude Dupont, employees of an Equans partner company, double-check the location of ventilation duct supports.



The electromagnetic test bench installed in the Equans laboratory at Toulouse to test the resistance of materials.

MINORANGE BONUS
 Watch a video about the project on:
[youtube.com/GroupeBouygues](https://www.youtube.com/playlist?list=PLB0UyGuesinside)
 playlist
 #BOUYGUESINSIDE



←
 Tanya Meyer,
 Quality Officer on the
 Equans project team.

↗
 Clément Pfund, an Equans
 project team member, checks
 the draught proofing.

report is sent to the customer. “We are working with about ten customers in the nuclear field around the world. We are one of the leaders in climate and electrical engineering, and we intend to remain one,” insists Rigaud. “That means our work must be flawless in terms of quality and security.” An opinion shared by Laurent Schmieder, buildings and infrastructures project manager at Fusion for Energy³: “In a domain as highly specialized as nuclear energy, it is essential to have confidence in your partners. Bringing activities together under the Equans brand in 2021 clarified the organization and enabled us to attract high-caliber professionals.”

FUSION OF KNOWLEDGE

The qualification process is crucial to guarantee the resistance of equipment to various forces during normal operation and under abnormal conditions. It involves carrying out analyses and laboratory tests. Equans has qualified 25 types of equipment. “At a conventional nuclear plant, the required levels of resistance to earthquakes, radiation, and so on are known, but here, they had to be redefined,” explains Thomas Kujawa, project leader for design, qualification, and procurement. “For example, electromagnetic fields and radiation ten times greater than at a conventional nuclear plant will cause the grease on valves to harden, so we had to find a different type of lubricant,” explains Loïc Lannoy, materials qualification manager. To better understand how materials behave when subjected to electromagnetic fields, Equans ...



3. The EU organization through which Europe is contributing to the ITER project.

INNOVATION

... installed a test bench at its laboratory in Toulouse. As a result, it has developed competence in electromagnetic qualification that will be useful throughout the entire project.

“Our goal is to find the optimum quality-price ratio,” says Kujawa. “We have purchased materials and equipment not designed specifically for nuclear applications and adapted them. We had to get the subcontractors on board with this approach by showing them how they would benefit from it.” For example, Equans and one of its subcontractors developed an air and fire security valve for the ventilation system because none were available on the market. About one hundred of these valves, which were specifically designed for the requirements of this facility, will be delivered here by the end of June 2023. They will be the last equipment that Equans supplies in the project. “This is a demonstration of Equans’ flexibility in understanding and responding to our needs while complying with nuclear security regulations. Our partnership is based on mutual trust,” stresses Giovanni di Giuseppe, a section leader in the construction department of the project integrator and nuclear operator, ITER Organization⁴. The supervisory staff will remain on the site until around 2025, when the first fusion reaction, or “first plasma”⁵, is scheduled to take place. The teams responsible for design, qualification, and procurement will have completed their mission at the end of this year. Some of them will go to work in EPR2, the French government’s program to renew the French nuclear plant fleet. ITER is not designed to produce electricity, but it could well open the way to such production on an industrial scale by 2050 or so. “Thirty-five countries, representing about 80 percent of the world’s population, are involved in this project,” points out Rauner. “We hope electricity can be generated with this technology because it will help stabilize the world’s energy supply.” ●

4. The international organization of participating countries with overall responsibility for the project.
5. When a gas is subjected to extreme temperatures, electrons are separated from the nucleus and the gas is transformed into plasma, the fourth state of matter.



Pascal Rauner, project leader in charge of construction at Equans.

WHAT IS FUSION?

Unlike a conventional reactor, in which a chain reaction is set off by splitting the nucleus of a uranium atom, ITER operates on the fusion principle by reproducing the temperature and pressure at the core of a stellar body. In this environment, hydrogen nuclei (deuterium and tritium) fuse and release large quantities of energy.

Fernando Cardoso, an employee of a partner company, installs cable duct supports in the underground tunnels.



↑
An employee of an Equans partner company welds supports.

↓
Anthony Guilbert, an Equans project leader, in the Equans-designed plant for the production of demineralized water, compressed air for certain types of equipment like valves, and air for oxygen masks.





A section of the vacuum chamber (440 tons), suspended in the Assembly Hall. Nine sections welded together here will form the core of the ITER machine.

“

I want to thank Equans, who is the best partner we could hope for in this project.



SERGIO ORLANDI

Construction Department Director,
ITER Organization

What is the aim of the ITER project?

The aim is to produce a fusion reaction lasting between 400 and 600 seconds, a length of time sufficient to prove that we have mastered this technology. We also want to obtain ten times more energy than was put in to start the process, that is, 500 thermal megawatts.

What is the schedule and cost of the project?

So far, the ITER project has cost about 22 billion euros. The first fusion reaction, or first plasma, should take place shortly after 2025.

What are some of the difficulties you have encountered?

We have encountered technological difficulties. The quality standards for the reactor's components are very high. Magnets had to be designed that were sufficiently powerful to create a magnetic field capable of distancing the reaction from the internal walls of the reactor. To do that, they must be cooled to -269°C . That is a real technological challenge since the temperature at the core of the fusion reaction is 150 million $^{\circ}\text{C}$. But challenges like this are also why it is so exciting. ITER represents the future. We must try our best to do high-quality work and to profit from this experience for the industrial-scale implementation of fusion. I want to thank Equans, who is the best partner we could hope for in this project.



FIBER IN THE RURAL FABRIC

TELECOMMUNICATIONS. In France's ultra high-speed broadband plan launched in 2013, Bouygues Telecom has committed to deploying fiber-optic networks throughout the country, including in the least densely populated areas. Here we see it at work in the Hérault, a département in southwestern France, and in Burgundy.

By Ysée Nicaud





Bouygues Telecom uses mobile shops to introduce residents to its ultra high-speed broadband services.



Bouygues Telecom is helping to accelerate digital inclusion through its presence in small towns and villages in France, as here, in Boisseron.



Located midway between Nimes and Montpellier, Boisseron is a charming village resembling thousands of others across France. It may be a pleasant place to live with a delightfully sunny climate, but that is not enough to attract visitors or keep residents and businesses from leaving. High-speed Internet connections are now indispensable, especially with the advent of teleworking. Determined to preserve his community's appeal while combatting digital illiteracy¹, Boisseron's mayor, Loïc Fataccioli, held a public meeting in February 2023 to discuss access to a fiber network, and he invited representatives of the telecom operators to come and present their proposals.

1. Difficulty or inability to use digital tools.

Élodie Courtial, Bouygues Telecom's local commercial manager for southwestern France, was at the meeting. She reminded attendees of the operator's pledge to local authorities to provide digital services to make rural areas more attractive. "To inform prospective and existing customers of our arrival in their region, we carry out multiple personalized and customized communications campaigns so that everyone has a good understanding of the new technologies," she explains. This is done with advertising on the sacks for bread at bakeries, with posters, and with ads in the local press. "Our preferred method, though, is through human contact, which we get by parking our 'fiber' truck on the village ...

SOCIAL RESPONSIBILITY



Bouygues Telecom parks its fiber trucks at busy spots to arouse the interest of passers-by.

•••

square to present our services to people directly,” adds Courtial. “Our teams also hold press conferences and take part in forums and public meetings like the one in Boisseron. In parallel, we work closely with the physical sales channels of Bouygues Telecom to improve their capabilities and their knowledge of the fiber market and local opportunities for sales.”

These communications initiatives are more intense in rural and sparsely populated areas, where the public authority can call for proposals from competing infrastructure operators for contracts ranging from the construction to the operation of networks. Internet Service Providers (ISPs) use Public Initiative Networks to market their services and offer ultra high-speed broadband to all citizens, businesses, and public institutions.

Fiber to the Home (FTTH) is the technology used to bring the fiber-optic network to the subscriber. The first step is to check that the customer is eligible for a fiber connection. Then a service is proposed (see p. 79) and an appointment is made for a technician to connect the customer’s home to the fiber network free of charge.

THE LONG ROUTE OF FTTH

Some 450 kilometers north of Boisseron, not far from Le Creusot, in Burgundy, a big spool of cable is parked alongside a rural road bordered by pastureland.

Bouygues Telecom has contracted a civil engineering company to dig several trenches 30 cm wide and 60 cm deep along a 215-kilometer section of the future network. Fiber optic cables running through ducts at the bottom of these trenches •••



Anne Clavilier, head of FTTH deployment at Bouygues Telecom.

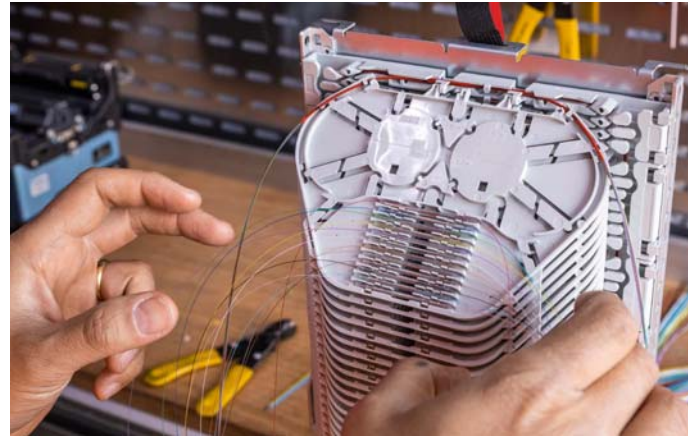


A Bouygues Telecom technician makes a final check of fiber connection at a optical cabinet on the street.





←
Fiber optic cable is pulled by hand over several kilometers.



↑
Each glass fiber is carefully placed in a watertight box.

↓
Often the work is done right beside the road, so great care is taken to ensure everyone's safety.



“
Bouygues Telecom is committed to offering all its customers the same services, with the same quality, and at the same prices, no matter where they live or work.
ANTHONY COLOMBANI
Corporate Director,
Bouygues Telecom



**La fibre à tout
(petit) prix**



SOCIAL RESPONSIBILITY



MINORANGE BONUS

Go behind the scenes in the project:

[youtube.com/GroupeBouygues](https://www.youtube.com/playlist?list=PL1888888888888888)
playlist

#BOUYGUESINSIDE

... will form the future FTTA (Fiber-To-The-Antenna) network constituting the largest share of Bouygues Telecom’s mobile network. With extreme precision, a technician solders each glass fiber – they are as thick as a hair – checks his work and the end-to-end connection, and then places it in a watertight box. This 8-million-euro project being carried out by the Fiber Network Deployment department at Bouygues Telecom is slated to take a year and a half. Once completed, these underground infrastructures will provide the fiber optic links to the radio sites in the FTTA mobile network as well as contain the connection nodes for the FTTH network. These optical connection nodes enclosed in housings six to ten meters long distribute fiber to several towns or neighborhoods via zone mutualization. These housings (there are

approximately 250,000 in France) are themselves connected to optical nodes in exterior or interior cabinets where the fiber is distributed to a building or house.

“SYNCHRO START”

Upstream from the construction of this impressive fiber transmission network and the marketing of these services, the teams of Guillaume Doisy, a transmission network engineering manager, and Frédéric Lasoroski, head of Bouygues Telecom’s fixed access engineering department, perform a variety of studies. The coverage, that is, all the connections reported by building managers, is analyzed. Then, depending on the strategic objectives, expressions of need are communicated to the mobile operator’s operations department, which then implements the required technical solutions.

Bouygues Telecom uses what its teams call a “synchro start” approach, meaning that it is on the ground from the first months that fiber access is available in each area to be able propose services to all residents. Since France’s ultra high-speed broadband plan was launched in 2013, Bouygues Telecom has hooked up 31 million of the 34 million connectable households to the fiber network. In 2030, the market will grow to about 45 million connectable households, prompting Benoît Torloting, CEO of Bouygues Telecom, to affirm that “the deployment of fiber is no doubt the largest industrial project of the decade.” ●



↑
Thomas Chaput and his teams install Bouygues Telecom fiber across France.

↙
Digging a trench 30 cm wide and 60 cm deep to install several kilometers of the network.



45 MILLION
HOUSEHOLDS TO
CONNECT TO FIBER
BY 2030

31 MILLION
CUSTOMERS ALREADY
CONNECTED TO FIBER

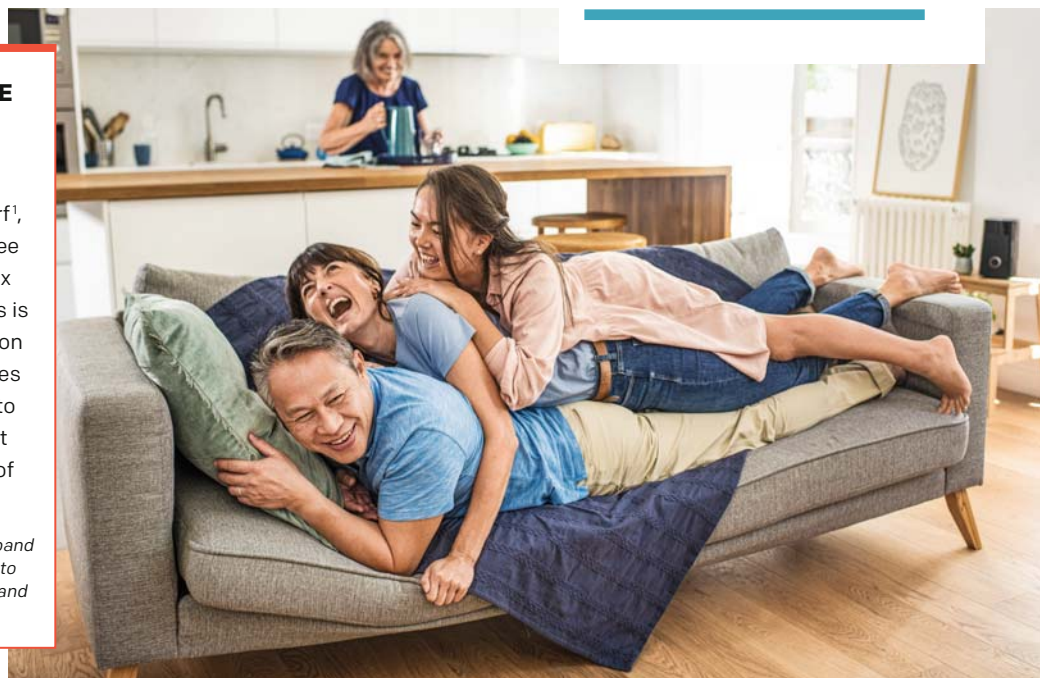
250,000
STREET CABINETS
INSTALLED

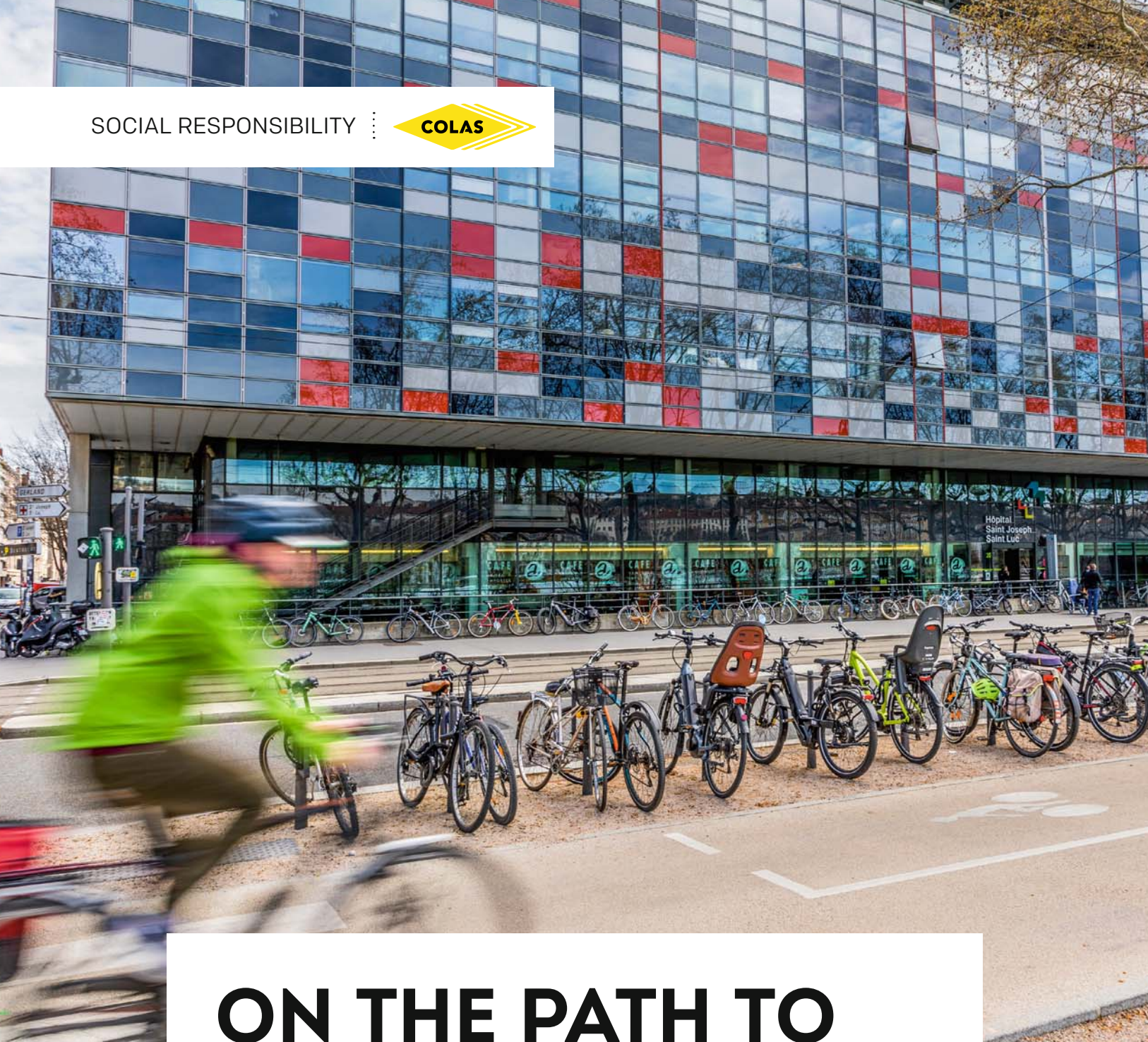
5,000
PUBLIC NETWORK
INITIATIVE ZONES,
including 3,000 already "dealt with"
by the infrastructure operators

**SOCIALLY RESPONSIBLE
TELECOM SERVICES**

No. 1 operator in terms of broadband internet connection according to nPerf¹, Bouygues Telecom offers three fiber services, including Bbox Must, with its Bbox WiFi 6. This is the first eco-designed router on the French market. It illustrates the operator's commitment to reducing its carbon footprint and extending the life cycle of its equipment.

1. Best overall performance in broadband internet (fibre, xDSL) according to the nPerf surveys for 2021, 2022 and the first half of 2023.





ON THE PATH TO ACTIVE MOBILITY

NEW MARKET. Bikes, scooters, Segways... our cities are changing and so are our modes of transport. Lyon is a leader in the development of active mobility in Europe, and Colas is doing its part to support this transition there.

By Benoît Dhomp



With its cycling program, Lyon is aiming to triple the number of trips made by bicycle in the city by 2026.



To help riders find their way, the cycle paths are color-coded and numbered, just like bus and metro lines.



250 KM
OF CYCLE PATHS
IN LYON

On the banks of the Rhône, opposite the Université de Sciences Économiques et de Gestion, the Colas subsidiaries Perrier TP and Aximum have built the first 900 meters of cycle paths in a project undertaken by the city of Lyon. Base course, asphalt surfacing... Colas is capitalizing on know-how gained in previous projects while also implementing multiple innovations here. "Aximum has supplied the signaling for the cycle paths, each of which is numbered and color-coded. Cyclists thus have a map of the paths just like the ones for the metro and buses," explains Marc Michaud, center head at Perrier TP. Designed like a public

transport network, 12 routes with a combined length of 250 kilometers will connect surrounding communities to the city center by around 2026.

GREEN MOBILITY

A few kilometers from there, Colas is using one of its innovations in the construction of the cycle path network. Urbalith is a cold mix pavement with an organic-mineral binder that has a 50-percent smaller carbon footprint than deactivated concrete. Since it is permeable, rainwater can seep through it, thus maintaining the natural water cycle. It also has no impact on plant and wildlife. Another advantage is its translucent binder. Urbalith has...

SOCIAL RESPONSIBILITY

•••
a high albedo¹, so when it is mixed with light-colored aggregate, it absorbs less heat from sunlight during the day than other pavements, thus combatting heat islands. All these characteristics make it a popular solution with architects and developers.

INNOVATION FOR GREATER SAFETY

Université Claude-Bernard Lyon-I, at Villeurbanne, is served by a single-track tramway and a two-way road, creating a transport junction that can prove risky for cyclists. The municipality therefore asked Colas to supply its Flowell system of inter-active light-emitting road markings. Tiles

1. Reflective power.

embedded with high-visibility LED lamps are stuck to the ground and connected to the electrical network. They are also linked to presence detection sensors and synchronized with the cycle of the traffic lights. These markings light up to indicate when pedestrians and cyclists can cross the intersection and then guide them across in complete safety.

By making an investment of 320 million euros over the 2020-2026 period, Lyon is aiming to triple the number of trips made by bicycle on its streets and thus rank among the leading cities in Europe in the promotion of active mobility. Colas is helping it achieve that goal. ●





↑
Marc Michaud, center head at Perrier TP.

←
The number of trips made by bicycle in Lyon tripled between 2015 and 2021, rising to 38 million.



←
The Flowell system has been used in 18 projects so far, three of them outside France, including one in Japan. This one is in Villeurbanne, a Lyon suburb.

↑
Colas has contributed to the development of active mobility on the island of Réunion.

“

Our ambition is to become a global leader in active mobility by 2025.



JULIEN BOURCERIE
 VP, Active Mobility Business Line, Colas

What is active mobility?

Active mobility comprises all forms of mobility involving human physical activity – walking, cycling, skateboarding, scooters, even rowboats! It can be broken down into several types according to how it is used. There is everyday active mobility, when you or I walk or use the cycle path downstairs to go to work. And the mobility we might describe as “tourism,” like nature trails and hiking paths. It is also found in sports, with the creation of facilities like pump tracks¹. Active mobility aids public authorities in their efforts to decarbonize our regions. It also provides a more pleasant living environment by reducing pollution and noise, and it addresses people’s desire for more economical and healthier means of transport.

How can Colas be a player in this market?

It is an interesting market for Colas because it is, in fact, our core business. Cycle paths are roadways, and Colas has been building and maintaining them for a long time. We use the same know-how, we apply asphalt surfacings, we do earthworks, we install networks and signaling, but for different purposes and uses. We have worked with Colas branches all over the world to understand how users function and what they want. Colas also has more than 40 innovative solutions to offer customers, and it can propose all-inclusive services comprising the design, construction, and maintenance of infrastructures. Our ambition is to become a global leader in this sector by 2025 by tripling our business in ten or so key countries.

¹. Short circuit courses with rollers, berms, and banked turns on which scooters, bikes, and skateboards can be ridden.



Construction of La Maillerie on the former site of the company 3 Suisses got underway in 2018.

A TAILOR-MADE NEIGHBORHOOD

URBAN PROJECT. The Maillerie, a project near Lille featuring numerous environmental initiatives and innovations, is welcoming its new residents. A development signed Linkcity and Nhood, with Bouygues Bâtiment Nord-Est as the primary builder, this neighborhood based on solidarity and sustainability demonstrates new ways of living together.

By Laura Franchet



↑ Halles Biltoki has been a popular shopping spot with a variety of merchants since December 2021.

↗ Alexandre Bouvry, head of production at La Maillerie.

10 HECTARES

700 APARTMENTS

3,000 RESIDENTS



La Maillerie is a new neighborhood constructed on a former industrial zone between Croix and Villeneuve-d'Ascq in the heart of the greater Lille area. During the golden age of the textile industry in this region (see p. 88), this land was home to a textile mill and, later, to the mail order giant 3 Suisses. Fifty years on, Linkcity, Nhood, and the urban planners Nicolas Michelin & Associés have evoked this past by weaving a tightly knit social fabric into the 90,000 sq. meters of housing and businesses constructed on this 10-hectare site. Linkcity, the property development subsidiary of Bouygues Construction, and

Nhood, a mixed-use developer, led the project to create this new part of the city in close cooperation with public authorities and local stakeholders. In 2018, Bouygues Bâtiment Nord-Est started deconstruction work with an eye to three objectives at La Maillerie: circular economy, biodiversity, and soft mobility. "We set a target of zero waste and managed to recover 40,000 tons of concrete and 10,000 square meters of oak parquet flooring. These materials were salvaged and reused in the new neighborhood," says Alexandre Bouvry, head of production at La Maillerie. The first buildings began going up in 2019. The goal was to reuse 100 percent of the aggregate

recovered from the deconstruction. "In several of the buildings, 30 percent of the concrete walls were built with recycled aggregate. It's a very worthwhile approach, and everyone took part in it," says Manon Lenhard, chief site supervisor at Bouygues Bâtiment Nord-Est.

SELF-SOURCING

At Maison ZD, residents and visitors can buy ingredients to make their own cosmetics and household products. This zero-waste concept store was founded in 2020 by Audrey Roussel, a traveling saleswoman. "During the Covid pandemic, I couldn't continue my business. They ...

SOCIAL RESPONSIBILITY

... proposed I set up shop in this space, and I found this social and solidarity economy project really interesting. It's going to change consumer habits." Her shop is one of several in a place called La Maison (The Home), where a *ressourcerie*¹, offices of nonprofit associations, and a little café, now a neighborhood landmark, are located. In 2017, a basic model of the future neighborhood was created to unite local people and future residents behind the project. "Thanks to La Maison, a vibrant community spirit was cultivated even before people began moving in," says Lionel Amann, urban projects director at Linkcity. "We worked on a preliminary version of the neighborhood, creating a strong and attractive identity for it. La Maillerie has helped Linkcity to improve its approach to this type of large-scale urban development. It also led to a better structuring of our operations with the creation of the Major Urban Projects entity."

1. A place where second-hand items are collected, restored, and resold.

HAVING FUN

It is late afternoon, and the tables and deck chairs are filling up on the vegetalized roof of La Maillerie, where residents and visitors are enjoying craft beers. The urban agriculture company Growsters is teaming up with residents to cultivate shared vegetable gardens up here too. This rooftop terrace of more than 1,000 sq. meters is perched on Le Compact, the only 3 Suisses building that was not torn down. It now houses a parking silo, food court, restaurants, event spaces, and offices on the ground floor. It is indeed the cornerstone of the project: "By preserving 5,300 cubic meters of concrete in the building structure, we avoided emitting 1,350 tons of carbon dioxide and consuming new resources," points out Caroline Vollmar, sustainable construction manager at Bâtiment Nord-Est.

The paving stones at the foot of the building are made of recycled aggregate and were produced in partnership with the start-up Wasterial. To develop a sense of community in the neighborhood, a cooperative,



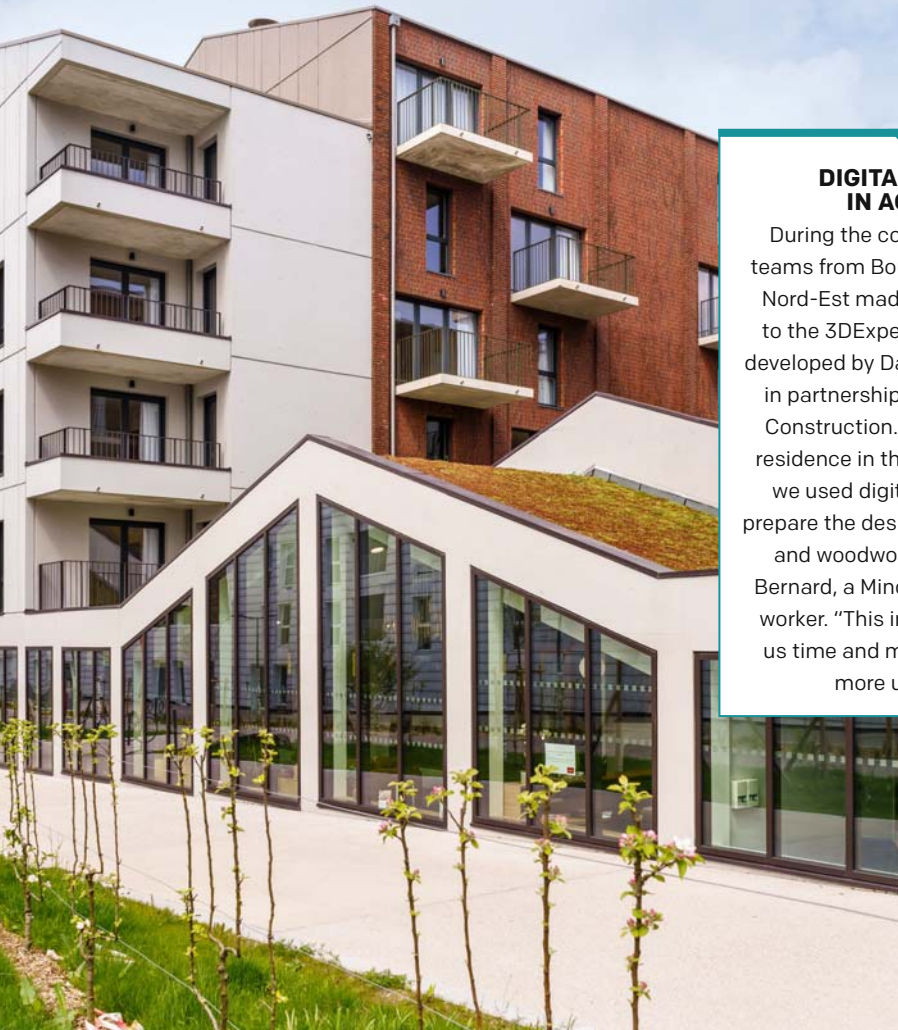
↑
Lionel Amann, urban projects director at Linkcity.

→
Some 40,000 tons of concrete from the deconstruction were reused in the project.



←
Audrey Roussel, a shopkeeper and the founder of Maison Zéro Déchet.

↑
La Maison is home to local shopkeepers, creators, and nonprofits.



DIGITAL TWINS IN ACTION

During the construction, the teams from Bouygues Bâtiment Nord-Est made modifications to the 3DExperience software developed by Dassault Systèmes in partnership with Bouygues Construction. “At the student residence in the neighborhood, we used digital modeling to prepare the designs for the bricks and woodwork,” says Rémy Bernard, a Minorange Guild site worker. “This innovation saved us time and made the façade more uniform.”



↑
La Maillerie is located between Croix and Villeneuve-d'Ascq.

→
Caroline Vollmar, sustainable construction manager at Bouygues Bâtiment Nord-Est.



↓
A selection of foods prepared by local providers in the Lille region is available in the food court.

Scic Maillerie Services, was created “to get municipal bodies and residents involved in the life of the neighborhood. Its legal status allows it to request subsidies to finance its operation,” explains Marie Bonvalet, deputy director of urban projects at Linkcity. When the cooperative was formed, the developers immediately agreed to provide it with office space and a multipurpose room for events.

GETTING INVOLVED

Les Girandières, a residence located at the entrance to the neighborhood, has a pretty, well-appointed reception area. The first senior residents began arriving here on February 1st. “We offer older people who can still live independently private housing and a range of services,” explains ...



SOCIAL RESPONSIBILITY



Many green spaces are scattered throughout this pedestrians-only neighborhood.



RÉMI BERNARD

A Minorange Guild site worker

DID YOU KNOW?

In the 19th century, the textile industry grew rapidly in the Lille region and was key to the development of cities like Roubaix and Tourcoing. Founded in 1932, 3 Suisses sold textile goods by mail to millions of customers in France and abroad. With consumer habits changing, this declining sector had to reinvent itself. In 2012, CETI, a European research and innovation center for textiles with a focus on eco-design and sustainability, was established at Tourcoing.

...

the residence's director, Adrien Dubois. A concierge, health center, and restaurant are available to residents, who can also ask for assistance at any time day or night. "The people who live here are looking for security and social contact. They also find the vitality of the neighborhood very appealing," adds Dubois. A Linkcity partner in several operations, Groupe Réside Etudes has opened 60 senior living facilities in France. Locating one at La Maillerie promotes the kind of social diversity desired by the developer. Nature has a prominent place in the neighborhood. By reopening a stream, it was possible to design a green corridor that would encourage the return of wildlife. "The creation of green spaces at the centers of the apartment blocks, on the façades and terraces, earned the project the BiodiverCity Ready label," points out Lenhard. Intended for urban development

projects, this certification rewards initiatives that promote biodiversity and satisfy the wishes and expectations of city dwellers. Other environmental measures include the extension of an existing heat network 70-percent fueled with renewable energy that heats all the neighborhood's buildings. And last, during the construction phase, all the wood used to build the workers quarters was sourced in the region for the first time. "Constructed with factory-made 2D elements, they were quick to set up and required less transport," notes Bouvry. "We estimate that 70 percent less energy is used here than in conventional workers quarters because of the better insulation." This installation will be dismantled in early 2024. With some 5,000 people expected to visit and live at La Maillerie, the neighborhood is sure to retain its vitality and social solidarity. ●



↑
*Manon Lenhard, head site supervisor
 at Bouygues Bâtiment Nord-Est.*

←
*The residence Les Girandières has a pleasant
 restaurant for the seniors who live there.*

↓
*Well connected to public transport,
 La Maillerie has many sidewalks
 and cycle paths too.*



↑
*Adrien Dubois,
 director of the
 residence Les
 Girandières.*



IMMERSION



LUXEMBOURG



A QUARTER OF A CENTURY IN THE GRAND DUCHY

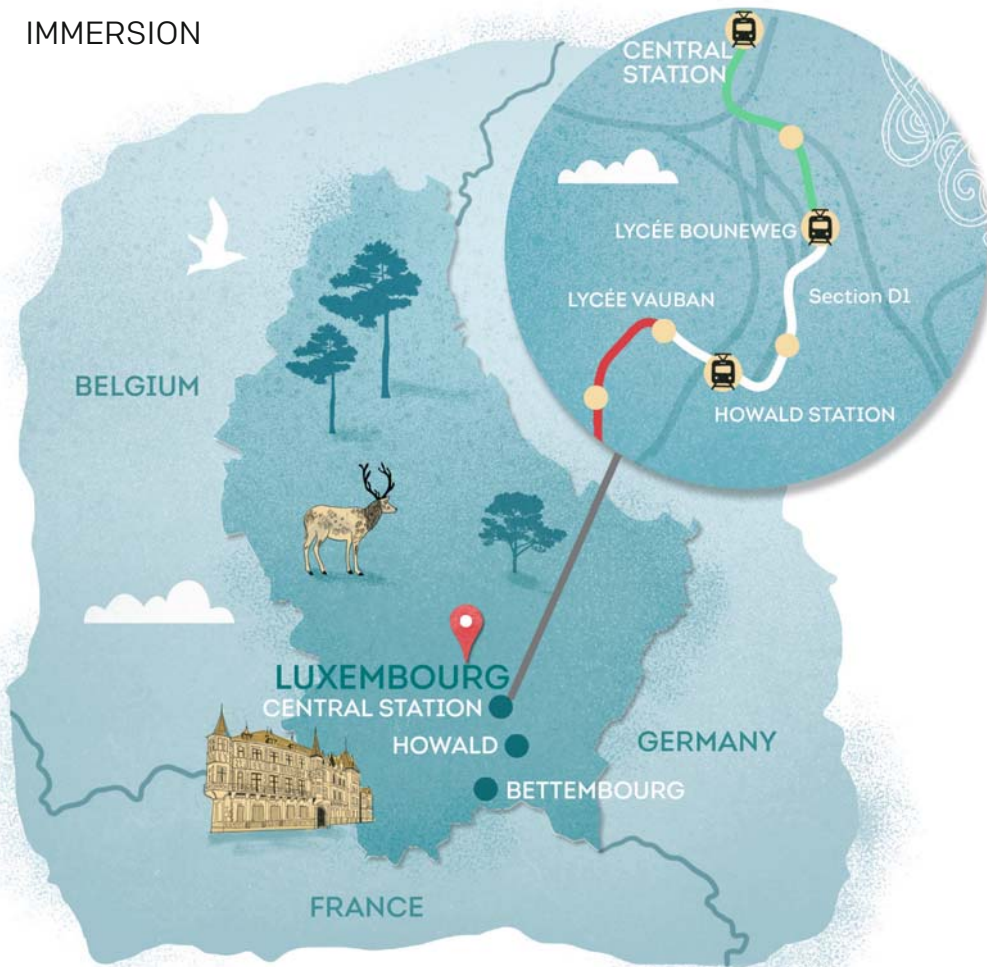
Colas Rail dismantled and replaced the catenary installations on two new tracks in the Luxembourg central station.



LUXEMBOURG. For the last 25 years, Colas Rail has partnered with the Luxembourg national railway in projects to modernize its totally free-of-charge transport network. Teams with long experience in catenary installation have begun work on the extension of the tramway in the center of the country.

By Laura Franchet

IMMERSION



EXTENSION OF THE LUXEMBOURG TRAMWAY (SECTION D1)

1.7 KILOMETERS

2 PASSENGER STATIONS

1.4 MILLION EUROS FOR CATENARIES

A short way from the Luxembourg Centre station, ten workers from Colas strap on their safety harnesses and climb aboard their machine – an unwinder truck, mobile basket, and an Elan (an elevator platform), which will lift them 5.50 meters in the air. Their task is to install 180 meters of electrical cables, commonly called catenaries, to supply power to the trains. “We are doing this in a project to expand the train storage depot of our customer, Luxembourg National Railways,” says Michael Gonzalez, manager of the Île-de-France and Grand Est-Luxembourg sectors at Colas’ regional catenary branch. “We do the installation, trials, and commissioning of the catenaries after Equans has carried out execution studies.” Starting in September 2023, thirty-four new trains will be in operation on the 600 kilometers of local tracks, offering

riders faster service on a more up-to-date railway network.

OPEN-HEART OPERATION

Travelers rush to board the tram that stops beneath the baroque clock tower of Luxembourg’s central station. Inside, people wait patiently on the platforms under brand new canopies made of exotic wood. In spring 2020, Luxembourg’s national railway company (CFL) began construction of two new platforms in the central station of the Grand Duchy in expectation of strong growth in cross-border traffic owing to the country’s financial appeal. Each day, many trains operated by the railways of France, Belgium, and Germany have Luxembourg as their final destination. “The highway into the city is congested. The new station platforms will allow 200,000 additional travelers to come to the center by train,” says Frédéric Schiltz, head of catenary



Michael Gonzalez, Île-de-France and Grand Est-Luxembourg sectors manager, Alfred Krämer, catenary projects supervisor for CFL, and Armenio Monteiro, Colas Rail works supervisor.



projects at CFL. In this project, the customer wanted to modify the path of the tracks, and it awarded Colas Rail a 3.5-million-euro contract to dismantle and reinstall the equipment. These were referred to as “open heart” operations because they required closing the central station for two months during the summer. “We had our teams work three eight-hour shifts to finish the work on time,” recalls Armenio Monteiro, a works supervisor at Colas Rail. The French company has been involved in renewal and upgrade projects at the central station in Luxembourg for a quarter of a century. This collaboration is facilitated by the fact that employees like Monteiro have years of experience working

here. He started out in 2000 as a catenary installer at Spie Rail (a company that Colas bought in 2007), then became a foreman, and finally a works supervisor. “Colas Rail employs about 30 people in Luxembourg and is doing more and more one-off projects that last about six months,” says Gonzalez. “Sales in the Grand Est-Luxembourg sector were 4 million euros last year.” Its long-time relationship with CFL (the railway is the country’s largest employer, with a workforce of 4,700) has established Colas Rail as a leading supplier in the catenary market.

“
We are totally
satisfied with the quality
of the work Colas Rail has
delivered in Luxembourg
over many years.

FRÉDÉRIC SCHILTZ
Head of catenary projects
at CFL

TRAM EXTENSION

Poles, beams, insulators, and reels of copper cable are stored near the Colas ●●

IMMERSION

•••

Rail living quarters. Jean-Claude Boivin and Fabrice Canitrot are busy preparing the materials that will be transported by truck to the worksites. Daphné Bartos, chief works supervisor, directs the operations. A catenary studies engineer, Daphné began her career 10 years ago at Colas Rail. She has also worked on major projects like the Nîmes-Montpellier bypass, the Valenciennes tramway, and more recently, line 15 in the Grand Paris Express program. “In January, Colas Rail was awarded two contracts by LuxTram S.A., a local group of operators, for the extension of the Luxembourg tramway,” she says. “The new section, the 1.7-kilometer DI, is being built so that fewer people need to rely on their car and travel is easier in Luxembourg at a time of soaring fuel prices.” Colas Rail is doing the catenary work as well as the installation of high-voltage equipment at

a new substation. For the first time here in Luxembourg, it will be working in a consortium as the lead contractor for the station platform and track packages. Its tasks will include the earthworks for the railway platform, track laying, and construction of two passenger stations. When the project is finished – delivery is slated for autumn 2023 – the tram will be able to travel on to the new multimodal hub (train, tram, and bus) in Howald, a district south of Luxembourg city center. Between 2024 and 2026, CFL also plans to open a new line between Luxembourg and Bettembourg, near the French border. So, there are new prospects on the horizon for Colas Rail in the Grand Duchy, as Frédéric Schiltz explains: “We’re going to need to electrify this new, nine-kilometer line, which is a major passenger and freight route. That’s another opportunity for our partner Colas Rail.” ●



The two new platforms will increase the capacity of the Luxembourg Centre station by 200,000 passengers.



Catenary installers Marco Martins Dias, Christophe Weidmann, and Mamadou Barry.





Colas Rail is working in the project to extend the tramway from Luxembourg Centre station to the south of the canton.



Unwinding catenary electrical cable near Luxembourg Centre station.



CATENARIES AND INTEGRATION

Colas' regional catenary branch has 270 employees and works in four geographic sectors¹ in France and Luxembourg. Its services include catenary modifications to public and private rail networks in Luxembourg; electrification of new high-speed, conventional, tramway and trolley bus lines; and maintenance of stationary electrical traction infrastructures. A workshop at Ambérieu-en-Bugey (east-central France) produces equipment and materials for Colas Rail and other companies in the railway sector. The branch manager, Yohan Perrat, notes that at the present time, "there is a surge in demand for rail and urban transport infrastructures as a consequence of environmental policies in France and Luxembourg." Since 2014, this regional catenary branch has also participated in an employment integration program with GEIQs in the Isère-Drôme-Ardèche and Ain-Pays de Savoie regions. The GEIQs are groups of companies that organize training for people who are having difficulty re-entering the workforce or who need to learn a new occupation. "We are currently helping to train four catenary installers a year," says Yohan Perrat. "This program has proven to be a dependable recruitment tool for the company."

¹ Île-de-France-Normandie, Grand Est-Luxembourg, Sud-Ouest, and Sud-Est.



DAPHNÉ BARTOS
Head works supervisor



ARMENIO MONTEIRO
Works supervisor

IMMERSION



SWEDEN



A GIGAFACTORY IN SUBARCTIC SWEDEN

ELECTRIC BATTERIES. In northern Sweden, the Equans subsidiary Axima is helping to build Europe's first gigafactory to produce lithium-ion batteries for the electric vehicle market. Here's a look at this groundbreaking project for the company.

By Céline de Buttet



GUILLAUME REGNAULT
Axima site director



CHARLÈNE ODIN
Axima Business France
coordinator (VIE)



JÉRÉMY GURIEC
Axima site commissioning
manager

Axima has designed and built the clean and dry rooms as well as supplied their filtration, dehumidification, and air conditioning systems in the three production buildings DSI, FA1 and DS2. DSI (Downstream 1) and DS2 (Downstream 2) are the buildings where the batteries are manufactured. Building FA1 (Forming and Aging 1) is where the batteries are charged and discharged multiple times before being tested, packaged, and shipped to customers.

IMMERSION



3 PRODUCTION BUILDINGS

300,000 VEHICLES EQUIPPED PER YEAR

52,000 M² OF CLEAN AND DRY ROOMS

In 2015, two former Tesla managers founded a company to supply electric vehicle batteries to the automotive industry and challenge competition from Asian manufacturers. They located the headquarters of the Swedish company, which was renamed Northvolt in 2017, in Stockholm, but chose to build their first – and immense – production plant, which has a total surface area of 650,000 sq. meters, at Skellefteå. This little mining town¹ lying between the sea and forests 775 kilometers north of the capital, offered two advantages – cheap land and an ample supply of renewable and inexpensive hydroelectric power (30 times less expensive than in the rest of the country), making this northern region attractive.

1. Skellefteå began growing in the early 20th century when gold was discovered there.

The project was launched in 2017, and construction began in 2019. Axima has been contracted to supply Clean Concept installations, that is, to design and construct the clean and dry rooms (see sidebar, p. 100) in the production buildings DSI, FA1 and DS2, including the filtering, dehumidification, and HVAC systems.

“CONTROLLED” ATMOSPHERE

The operators don their Tyvek overalls, mobcaps, overshoes, gloves, and mask in an airlock before entering the clean and dry room, a tightly sealed space in which the concentration of particles suspended in the air is rigorously controlled. Dust, temperature, air pressure, and hygrometry: everything is more strictly regulated here than in a pharmaceutical laboratory or an operating theater. “We create positive



Jérémy Guriec, Guillaume Regnault, and Charlene Odin in front of the factory.



The combination of enormous structures and highly technical installations made this project exceptional.



WHAT IS A CLEAN AND DRY ROOM?

The manufacture of electric batteries calls for the handling of substances that are highly sensitive to dust and humidity. To guarantee an environment that is clean and dry, Equans designs and supplies rooms that are perfectly sealed and dry, in which the air is continuously filtered and dehydrated.

pressure² and cleanliness conditions to prevent particles from getting into the room,” explains Jérémy Guriec, Axima’s commissioning manager for the installations. “The tiniest particle that finds its way inside a battery can cause a fire when the battery is used.”

2. Pressure higher than normal.

So, that’s the reason for a *clean* room. As for a *dry* room, the humidity must be kept to an absolute minimum because it can react with materials in a battery and reduce performance. The humidity in these rooms is thus maintained close to zero, with homogenous sweeping of the air throughout the room so that the dew point, the temperature below which the water vapor in air condenses, is always below -40°C (that is, the temperature would have to fall below this exceptionally low -40°C for condensation to form, as it does at the North Pole). In this large-scale production plant, however, these rooms are packed with a lot of equipment and staff, far more than is the case in ordinary dry rooms. These parameters can have an impact on the atmosphere and must be taken into account. Once the installations are completed, Axima

technicians monitor the operation of the dry rooms and perform fine-tuning, which takes several weeks.

250 KILOMETERS FROM THE ARCTIC CIRCLE

Pine and birch forests as far as the eye can see, a few Falun red³ houses, and a thick blanket of immaculate snow – the county of Västerbotten checks all the boxes to appear on a Swedish postcard. It was in this setting, where temperatures regularly plunge to -20°C during the long winter months, that 20-odd French people arrived during the summer and autumn of 2020. They are all getting accustomed ...

3. Falun red is a paint color whose pigment is made with slag from the copper mine at the city of Falun. It is a common color for traditional wooden houses in Sweden.

IMMERSION



The clean and dry rooms are tightly enclosed spaces in which the concentration of suspended particles in the air is strictly controlled.

DID YOU KNOW?

The American physicist Willis Whitfield came up with the idea of clean rooms in 1960. Employed at the time by Sandia Laboratories, he noticed that what happened during his experiments could vary significantly depending on unexpected air movements.



...
to life here, just 250 kilometers from the Arctic Circle. Several come from the Axima branches at Lyon and Jarrie, in the French Alps, and were involved in the project's initial stages. "The fact that some of the people who helped design the project were also here during the construction was an asset," notes Guillaume Regnault, the Axima site manager. "It was an advantage because we had the full history of the technical decisions, which gives us great flexibility in reacting to the many modifications that were made during the work.

This was particularly important because of the extremely tight scheduling." There are 150 workers from about ten subcontractors working for Axima. "They come from different backgrounds and have their own customs and ways of doing things," says Charlène Odin, Business France VIE⁴ coordinator at Axima. The unemployment rate in Skellefteå is just 3.7 percent, one of

4. Volontariat international en entreprise. A program that enables young people between the ages of 18 and 28 to work abroad in a Business France-approved company.

the lowest in Sweden, so finding workers locally who were qualified to do this type of work promised to be difficult.

What made this project so exceptional is the combination of enormous structures and highly technical installations. The buildings DS1 and DS2 are 300 meters long and 100 meters wide, meaning that the site manager has been walking about 15 kilometers every day during the project. In spring 2023, Axima's work is nearly finished. All that remains of the original team is a handful of diehards who are gradually



↑
The town of Skellefteå offers the advantages of cheap land and energy that is almost totally supplied by renewable and inexpensive hydroelectric power.

being replaced by the maintenance staff that will have the task of keeping the rooms in perfect running order over the next two to five years while coping with the frigid winters under the Northern Lights. ●

NB: The strategic nature of the project calls for strict confidentiality and prohibits any photographing of the interior of the gigafactory.

“

By 2035, the sale of new cars with thermal engines will be prohibited.



JACQUES MARNEAU
Project director at Equans

In what way is the gigafactory market strategic for Equans?

High-performance climate control for technical facilities is our core business. Most of the customers in this market are in a hurry and want to have a plant that is immediately operational with a minimum of resources. And that is precisely what Equans sells with its Design and Build Clean Concept. The European market for automobile batteries is booming, with a projected demand of about 400 GWh by 2030. The sale of new cars with thermal engines will be prohibited by 2035. There is talk of building 15 or so plants in Europe.

Is the Northvolt gigafactory the first plant of its kind?

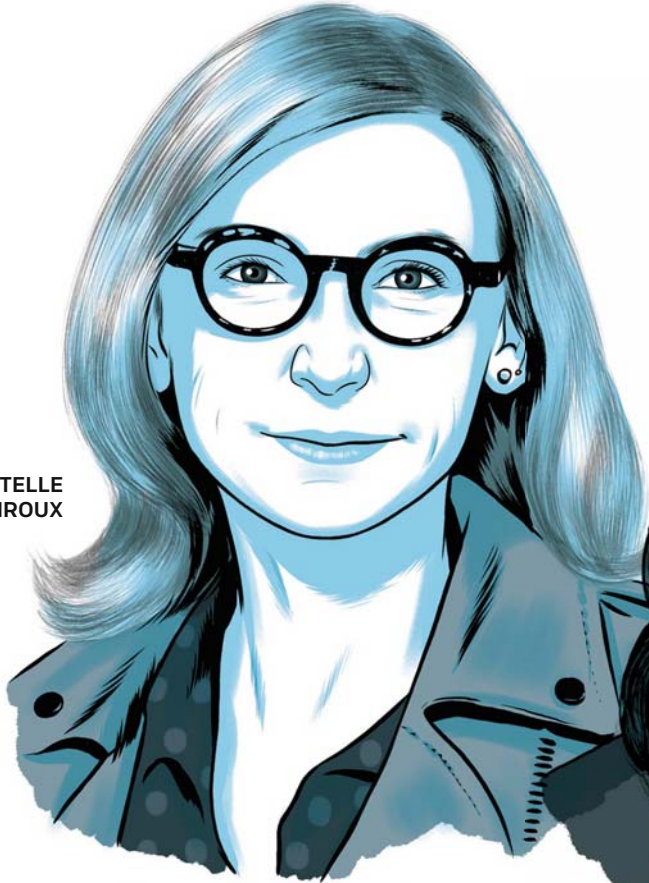
It was the first in Europe and the first for Equans. The story is that back in 2019, nobody believed in it. Northvolt was just a start-up with 15 or so employees that wanted to build a plant in the north of Sweden. Let's just say that not all lights were flashing green. But our sales team, led by Sandrine Cheminaud and Christian Perrier, did believe in it, and so did the top management. The

project went very well, and we were on our way.

What other projects like this one is Equans doing?

We are currently doing a Clean Concept installation for a battery production plant at Douvrin, in northern France, for ACC – Automotive Cells Company – a subsidiary of Stellantis. We are also working in Norway on a 10,000-sq.-meter factory being built for a start-up that has developed a new battery process. And at Douai, also in northern France, we are working in the Envision project. This is a Chinese-Japanese company that will manufacture batteries for Renault. In this case, we are involved in the building of the plant too, working in a consortium with a construction company. In this project, a 100,000-sq.-meter facility is being built in a year and a half, including six months of studies. As many as 500 people will be working on it. We are also in discussions concerning other projects in several European countries.

CHRISTELLE
CHIROUX



NORA
LAKHEAL

MEDIAS

“We must get to the point where we no longer notice any differences on television.”

GENDER EQUALITY. With its “Expertes à la Une” initiative, TF1 is giving women more visibility as experts on its newscasts. Here Christelle Chiroux, deputy news director in charge of mediation and CSR, and Nora Lakheal, one of this year’s group of experts, give us their impressions of the program.

Interview by Émilie Dupas

What are your thoughts on the visibility of women in televised news programs?

Christelle Chiroux: Women are still not appearing often enough in newscasts. Working with Thierry Thuillier, the executive vice president of news, we are using more monthly quantitative indicators to increase awareness and help our editorial teams improve this situation. The results have been very positive. In 2022, women made up 53 percent of the experts invited on our news programs. We have pursued action plans in the TFI Group since 2016 to give women a larger role, whether as journalists or as guests on our shows. It is a priority of ours and our duty as a major channel. TFI must reflect the society in all its diversity. Let’s not forget that 52 percent of the French population is women. The newscasts on TFI are presented by two women and one man: Anne-Claire Coudray on the weekend, Marie-Sophie Lacarrau at one p.m., and Gilles Bouleau at eight in the evening. Female journalists make up 52 percent of the editorial staff. LCI has made great progress over the past two-plus years. It now has equal numbers of men and women as internal and external presenters and commentators. At the management level, the proportion of women on the Management Committee has gone up from 28 to 48 percent in six years under the leadership of Gilles Pélisson, and coinciding with the arrival of the new CEO, Rodolphe Belmer, the Executive Committee has reached parity.

In a large group like TFI, it is essential to have senior executives who are involved in these issues, who support gender equality, and who believe it will improve our performance.

Nora Lakheal: There is not total parity between women and men in television, and I don’t really know the reasons why. Television viewers like me do not know what goes on behind the scenes, how news programs are produced, and so on. Still, I have the impression that TFI has been a groundbreaker on the issue of gender parity and even diversity in the broader sense. I remember being impressed when a child by Nadia Samir, a woman of North African origin who was a presenter on the channel in the 1980s. She was among the first that we saw. TFI is making a big effort, and the Expertes initiative is remarkable. A lot of the media could take inspiration from it. It shows us that TFI is trying to take into consideration its viewers and the changing world.

What do you see as the obstacle to more women in news? Is it related to the nature of the work in journalism? Or to women themselves? And what does the Expertes à la Une program bring them?

N.L.: The moment they proposed that I participate in the Expertes à la Une program, I said yes. I was pleased and honored, but I was also very surprised. Sometimes women tend to exclude themselves on their own volition, maybe because of barriers they have internalized all their lives.

Appearing in a televised newscast is an impressive experience. But the more often you do it, the more you feel that your expertise does indeed justify your presence there. It boosts your self-confidence. You must seize opportunities. The first news program I was interviewed on was on BFMTV. The presenter was Sarah-Lou Cohen. She has since joined TFI, and she’s my “godmother” now in Expertes à la Une. This initiative is reinforcing my feeling that I am indeed an authority, and it is increasing my

THE THIRD GROUP OF EXPERTES À LA UNE

Expertes à la Une is an initiative of the TFI news department to increase the number of women with expertise in a specific field who appear on its news programs. Over the course of a year, the 15 women in the third group of experts will be mentored by male and female journalists, editors, and presenters on the TFI and LCI new staffs.

confidence in myself. It is also going to improve the talks on radicalization that I give at research institute conferences, and it will help me when I’m speaking with young people out in the community. I want to feel useful and help young people to know when they are hearing extremists speak. I can’t have taken all those risks in the domestic intelligence service as a specialist in jihadist terrorism without making good use of that experience. After Expertes à la Une, I will be even more capable of doing that. This program also has an important human dimension. By spending time with other experts, you realize that gender discrimination transcends social classes. We come from different backgrounds, but we feel the same way about our place in society as women. That is something I am very interested in.

C.C.: The obstacles come from journalists and from the experts themselves. Journalists have a share of the responsibility, even if today a TFI journalist is as likely to look for a woman as a man to interview as an expert. It’s true that we tended to be content with our address book and the usual authorities, who were usually men and easy to contact. And then there was the effect of repetition. For example, if an expert appeared on one channel, he could quickly find himself invited by other channels. Another factor was a ...

VIEWPOINT

BIOS EXPRESS

CHRISTELLE CHIROUX



Deputy news director of the TFI Group in charge of mediation and CSR, Christelle Chiroux has also done an *Expertes à la Une* podcast since 2020 on TF1info.fr. A 1995 graduate of the Centre universitaire d'enseignement du journalisme, she has spent her entire career at TF1, first as a reporter, then as editor-in-chief and presenter of the program "Reportages," as a bureau chief in the TF1 editorial department, and editor-in-chief of the evening news program "20H Le Mag."

NORA LAKHEAL



In the early 2000s, Nora Lakheal became the first woman to join the elite unit in the French domestic intelligence service specializing in the fight against Islamic terrorism. She is the author of *Agente d'élite: le récit inspirant d'une enfant de Barbès* (*Special agent: the inspiring story of a child of Barbès*; the Barbès neighborhood in Paris is home to a large Arab population), published by Max Milo in 2020.



The third group of *Expertes à la Une* along with Christelle Chiroux, Deputy news director of the TFI group in charge of mediation and CRS, and Thierry Thuillier, executive vice president of news for the TFI Group.

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reluctance to choose someone who was not well known in the media. Beyond the choice of experts, journalists were not necessarily aware that women lacked visibility in general. I remember a report on the death of a famous film director where we did sidewalk interviews. The seven people questioned were all men, while there was nothing preventing us from speaking to women. The health crisis really opened a lot of eyes in the media. Most of the specialists on the subject who were guests on the TV channels were men. All that was needed to understand why was to look at who was on the scientific council: out of eleven people, only two were women! It was at this period we decided to work with Thierry Thuillier and Sophie Danis, Communications director for Programs, CSR, Business, Innovation & Digital to create the first *Expertes à la Une* group to serve as a source of new experts and, just as important, to assist them with media training and coaching. Obstacles also come from female experts. Often, they feel they lack legitimacy. They lack confidence, and they regularly bring up "imposter syndrome." They need time before agreeing to be interviewed, while their male counterparts say yes immediately. That's a real advantage for a journalist who must do a report at 1 p.m. or 8 p.m. the same day.

Has there been a woman on television who has had an impact on you, and if so, why?

N.L.: The leading female reporters have always made me dream because their courage is inspiring. But I have always

been fascinated by women who could communicate about medicine or the sciences to the average person. That has been true since I was small. I told myself that I would like to do studies of that kind and know lots of things. I also watched "Temps X", with the Bogdanov brothers, and I said to myself, "Why don't they do that show with a girl?" Yes, I do remember having that thought.

C.C.: The top female reporters, of course. When I was a student, I was impressed by the ones who went to conflict areas where few women were being sent: Marine Jacquemin, Catherine Jentile de Canecaude, Isabelle Baillancourt, and many others. At that time, they had to fight twice as hard to carve out a place for themselves in a still male-dominated milieu, and they no doubt had to make great sacrifices in their personal lives. "What courage, what audacity," I thought to myself. "They are risking their lives to keep us informed."

Do you think it is necessary to go even further to promote gender equality? For example, by setting quotas?

C.C.: It doesn't seem to me that it would be useful to impose additional obligations. Our thinking in the TFI Group is to get on with our work, make progress together, and keep pushing the boundaries. Nowadays, young people expect companies to have an impact, and that's one of the criteria they consider when deciding whether to take a job or not. Companies are aware of that. My job as deputy news director in charge of mediation and CSR did not exist two years ago. Thierry Thuillier's

decision to create it shows to what extent societal and environmental issues have become priorities in the newsroom. Thierry also attaches great importance to the recruitment of journalists with original profiles. We are working with the association “La Chance,” which helps students who receive financial aid to pass the entrance exams for journalism schools. We need to attract young people from a variety of social and cultural backgrounds to our editorial staff. Thanks to the TFI Foundation, we also have young people on our editorial teams at TFI, LCI, and TFIInfo who come from disadvantaged backgrounds and who often go on to become talented journalists. We find this commitment to diversity and inclusion in the content of TFI’s programming too, notably in dramas that have compelling and inspiring female roles, and in female directors like Fanny Riedberger, the showrunner of the series “Lycée Toulouse-Lautrec,” which deals with the subject of young people with disabilities. We must get to the point where we no longer notice any differences on television, where it is so natural that the question of the representation of women is no longer asked. And that should also be true for diversity in general.

N.L.: I agree with Christelle. I think a lot of progress has been made, but there is still work to be done, especially for younger people. For example, when students are 14 or 15 years old, as part of their school program they are supposed to spend some time in a company observing how it operates. But for some segments of the population, it’s very hard to find companies where they can do this work experience. So why not make it easier for them in the media industry. It would be an opportunity for them to discover a new world, to become motivated and gain self-confidence, and to think that this might be a sector in which they would like to work. It would be good to move the boundaries in this way. ●

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It is a great idea to give a few women the opportunity to become a bit more self-assured and assertive about who they are and what they know.



DOMINIQUE BONA

Author, member of the French Academy, and honorary godmother of the 2023 group of experts

Why did you agree to become a godmother of this year’s group of experts?

This program created by TFI is fantastic. It gives a group of women the opportunity to gain a bit more self-confidence to express their personalities and their capabilities. Women are reluctant to step up and be assertive. We need to combat this. I’m looking forward to having warm and frank conversations with them to better understand our feelings and ambitions.

Isn’t it of secondary importance to give feminine forms to the names of occupations?

I fought at the French Academy to have feminine nouns for occupations. I was a member of the commission that was set up, and the institution revised its positions. It is said that what counts is parity, equal pay. But if the vocabulary lags, progress will be slower. Language should be wedded to changes in customs and thus reflect the new status of women in French society.

Prominent women are subjects of your books. How did you choose them?

No doubt because they were artists. And they were cut off from many things. Berthe Morisot wanted to be a painter, but the Beaux-Arts [the French school of fine arts] was closed to women. The same for Camille Claudel, though the reaction was different... Their lives answered questions I have about life. Books are an excellent source of information, a source of strength. One is never alone, whether a man or a woman. Through the lives of others, by looking in a mirror this way to gain a better understanding of ourselves, we are uplifted and comforted.



RUGBY WORLD CUP

France will host the Rugby World Cup between 8 September and 28 October. TF1 will broadcast the top 20 matches in prime time, including most of the French team's. Marie-Sophie Lacarrau, presenter of the midday newscast, poses here with the Webb Ellis Cup, which will be awarded to the winning team.