The Paprec Group's magazine for a green planet

paprec mag

n°46
April 2021

STRATEGY
Paprec: 25 years building an industrial and technological leader

FEATURE
Pipes and tubing made from plastic milk bottles

SPONSORSHIP
Paprec and cerebral research

FOCUS

Paprec, France's leader in recycling and waste management

PAPREC GROUP

Paprec entered the incineration market in 2018 by taking a 50% stake in Inova Operations.
Three years later, the French leader in recycling became France's third-largest player in energy recovery.
The energy recovery unit at Noyelles-sous-Lens (62), managed by the Inova Operations teams, has been in operation since 1974. In a series of upgrades, the plant has been equipped with the technologies it needs to pursue its waste recovery mission while complying with the most stringent emissions standards.
26 employees are responsible for operations in the plant, which has an annual capacity of 100,000 tonnes of waste recovery, in 3x8 shifts. It produces 50,000 megawatt hours of electricity, equivalent to the annual consumption of 12,000 homes.

“We’re coming out of the crisis even stronger”

SÉBASTIEN PETITHUGUENIN,
GENERAL MANAGER
PAPREC GROUP

Our business was impacted by the crisis in 2020 with the first lockdown leading to a 50% drop in volumes of industrial waste collected. Mindful of the role they play at the economic and sanitary level, our teams were especially reactive in responding to customer needs. Not one of our sites or factories was closed. We know that our recycled raw materials play a crucial role in packaging for the food and pharmaceutical industries. Without the paper, cardboard and plastic needed to pack food and medicine, the life of the nation would quite simply come to a halt. The government clearly recognised that when it classified our activity as essential. Crises reveal a group’s real DNA: we confirmed our reactivity and engagement during this period, as we did in the 2008 crisis. In the end, we’re coming out of the crisis even stronger.

“Our teams were especially reactive in responding to customer needs.”

In this unprecedented period that saw Paprec demonstrate its resilience, the editorial board of *L’Usine Nouvelle* named my father “Industrialist of the Year” as part of its annual Industry Conference. It’s the first time this prestigious award has gone to the head of a family-owned business. The award recognises the value of the industrial group we created 25 years ago, our command of new technologies (robotisation, digitisation, plastic recycling, sorting, etc.), but also our strong and special relationship with you, our industrial customers, municipalities and financial institutions, since the beginning of Paprec’s history. Above all, this award recognises the key role played by the green economy in today’s world. Through your engagement at our side, you are also playing a crucial role in achieving a crucial objective: that of a greener planet.

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selection

HIGHLIGHTS
THIS QUARTER

FINANCE

2020 results: Paprec holds firm in the storm

2020, an unprecedented year marked by the pandemic and long months of lockdown. Throughout this period, the Paprec Group has maintained all of its activities. All around France, the Group's teams have continued to serve their industrial customers and local authorities in collecting and recycling their waste into the new raw materials that are a crucial necessity for packaging in the food and pharmaceutical industries. The engagement, adaptability and responsiveness of the Group's employees made it possible to offset the drop in activity and volumes. And to meet its budgetary targets at a time when the competition faced serious difficulties.

COMMUNICATION

Paprec's new website

Clean and airy lines, more photos and videos, an improved user experience. As of early December, Internet users have been able to access the Group's brand new site.
The site is available in a responsive version, perfectly adapted to mobile use on smartphones and tablets. As the leader in recycling in France, Paprec now has a more comprehensive website covering the full range of its activities and innovative solutions. It is also a showcase for the Group's humanistic values and a strong driver for the recruitment of its future employees.

PAPREC IN FIGURES

1994
Creation of the Paprec Group

N°1
in recycling in France
and N°3 in waste treatment
after Veolia and Suez

10,000 employees
in 220 sites around France

€1.5 billion
in revenues in 2020

€1.7 billion
invested in its industrial facilities
in 25 years

STRATEGY

Paprec makes its mark in energy recovery

Paprec has just concluded negotiations with Cnim for the acquisition of its energy recovery unit maintenance division. The entity manages close to 10 plants in France, the United Kingdom and Azerbaijan. At the end of March, France's leading recycling company also announced it had entered into exclusive negotiations with Dalkia for Dalkia Wastenergy (formerly Tiru), its subsidiary dedicated to energy recovery. To date, Paprec managed only 3 plants through its subsidiary Inova Operations, owned since 2018 in equal shares with Altawest. "With these two companies, Cnim O&M and Tiru, Paprec will be responsible for the management of 29 energy recovery plants – including 21 in France – thus becoming the third largest French player in the sector," enthuses Stéphane Leterrier, Paprec's Deputy Managing Director, who will be in charge of this new "Energy Recovery" division.

SOCIAL TRENDS

Putting a stop to "recycling bashing"!

"Recycling is not as ecological as we were led to believe." A reproach heard in recent months from NGOs, politicians and the media. An unjustified attack, according to Jean-Luc Petithuguenin, Paprec's CEO and Founder, who has already refuted such claims in the press: "Recyclers are not responsible for waste production." On the contrary, this industry invests more than 2 billion euros each year in increasingly efficient technologies. And transforms 100 million tonnes of annual waste into new raw materials. That circular economy avoids the emission of 21 million tonnes of CO_2, the equivalent of emissions generated by air transport in France.

KEY ACCOUNTS

Attractive contracts for delegated management

With 24 million euros in revenues from industrial contracts, Paprec's 2020 results were extremely positive. The Group has signed several delegated management contracts or concessions, notably in the transportation sector. Sales teams have won contracts with Air France, SNCF Île-de-France, RATP and the PSA plant in Caen. Its contract with the ADP group has been renewed for a period of 10 years and notably includes France's Roissy-Charles-de-Gaulle and Orly airports.

live

CHRISTINE KERDELLANT,
MANAGING EDITOR,
L'USINE NOUVELLE

"Paprec is now one of the greats of French industry"

Each year, the editorial board of the industry's leading journal, *L'Usine Nouvelle*, confers the "Industrialist of the Year" award. In 2020, a year marked by the pandemic, Paprec's founder, Jean-Luc Petithuguenin, received this distinguished award. Christine Kerdellant, Managing Editor of the magazine, explains the reasons for that choice and describes why the year 2020 is a turning point for industry worldwide.

What does the "Industrialist of the Year" award represent for *L'Usine Nouvelle*?

Christine Kerdellant: The award has a long history and a real legitimacy in the profession. Before voting takes place each year, journalists defend "their" champion to the journal's editorial staff. These are journalists who are experts in their field. This wasn't the first time that Myrtille Delamarche, editor in charge of raw materials and the energy transition, proposed Paprec for the award. But we felt that the company didn't yet have the stature of a major group. That is no longer the case: Paprec's size, reputation and results now position the company among the greats of French industry. And this family-owned business has also performed exceptionally well in a tough economic year.

This year's award breaks with a series of CAC 40 leaders. What reasons led you to choose Jean-Luc Petithuguenin?

C. K.: In Paprec's founder, we're rewarding an industrial vision: 30 years before anyone else, Jean-Luc Petithuguenin saw recycling as a sector of the future for a society that wants to be greener and more autonomous in the production of its raw materials. In 25 years, the Group has invested 1.7 billion euros in its facilities, and its leader's vision has been more than vindicated. One of the other aspects that won over the editorial team in this unprecedented year was the focus on inclusion and the righting of inequalities. Jean-Luc Petithuguenin has shown there is another way forward when •••

A new formula for *L'Usine Nouvelle*

Launched 130 years ago, *L'Usine Nouvelle* is still the reference journal for industry. Usinenouvelle.com is the N°1 B2B site in France with three million individual visitors per month. The paper version will shift from a weekly to a monthly format early this year. A metamorphosis accompanied by an expanded website that provides manufacturers with "real-time information on the trends that will enable them to make business decisions with a head start: that sums up our editorial mission", stresses Christine Kerdellant.

BIO IN BRIEF

1990: Managing editor of *L'Entreprise*

2001: Managing editor of *Figaro magazine*

2006: Deputy managing editor of *L'Express* and Editorial Director of *L'Expansion*

2016: Managing editor of *L'Usine Nouvelle*, *L'Usine Digitale*, *Industrie & Technologies*, *Bip et Enerpresse*

CHRISTINE KERDELLANT,
MANAGING EDITOR,
L'USINE NOUVELLE

••• growing a business, based on two key factors: compassion and performance. I would also add that we never set out to only recognise CAC 40 leaders, but they do tend to be the most prominent.

You say that the year 2020 marks the industry's entry into the 21st century. In what way?

C. K.: You might think that the Y2K bug ushered in the 21st century. But, thanks to our IT specialists, we avoided the bug. September 11 exacerbated global tensions, but it didn't overturn our international values or alliances. Nor did we see a paradigm shift with the subprime crisis of 2008. Covid-19, however, has made 2020 a year of change: the geopolitical, societal and economic developments of recent months have marked a new era.

What societal changes emerged this year that will shape the industry of this century?

C. K.: We're seeing an accelerated awareness of the importance of ecology. This is no longer just about young graduates refusing to join companies that are not seen as socially responsible. Everyone is concerned by ecology today and that will have consequences for all industries, in particular the auto and aviation industries, with a very different relationship to travel. And we have teleworking, which is to the 21st century what Taylorism was to the 20th. Even though it only concerns 30% of employees, it has had a major impact on the digitisation of the economy (with e-education, videoconferencing, telemedicine, and so on). It will also have an impact on real estate and the regions.

You've also said that the crisis is accelerating China's rise relative to the rest of the world. What do you mean by that? What can Europe do in response?

C. K.: This pandemic started in China. And yet that country was the first to recover – through the use of totalitarian measures. Having avoided a second wave, it is gaining market share in exports and posting 2% growth while the rest of the world is in serious decline. Moreover, the country is clearly in the lead in research and development in the fields of the future: data (data science), 5G, artificial intelligence, genetic editing (genome surgery), and so on. For example, last year, China filed 652 patents on deep learning (where machines learn by themselves), compared to 101 for the United States. Almost half of the world's R&D in that branch of artificial intelligence is carried out by the Chinese! Throughout history, we have seen that China's power goes hand-in-hand with its technological leadership.

In all this, China is clearly unconstrained by a certain number of ethical rules. To regain leadership, to protect itself, Europe has an important role to play in setting global standards for a sustainable economy. Its data protection law (the RGPD), the Digital Markets Act, limiting unfair competition by the GAFAM, the giants of digital and online sales, are a step in the right direction. The latter, along with Zoom, Netflix, etc., are enjoying double-digit growth. They're the big winners in this pandemic. In that context, Europe has to hold tight on its introduction of a carbon border tax, to prevent the massive influx of low-cost and environmentally unfriendly products. It has to clearly show that to take advantage of European markets, it's also necessary to respect European standards.

Is the 21st industrial century the century of relocations?

C. K.: The pandemic has highlighted our loss of sovereignty in a number of industries: notably the agri-food and medical industries. While the production of active drug ingredients may return to our shores, we're unlikely to see a massive relocation.

In reality, the move towards offshoring has been on the wane for the past five or

six years. The historical laws of industry are on their way out, and the advantages of the scale effect and very low labour costs have disappeared. Wages in China have increased tenfold. Digital technology makes it possible to do away with gigantic production lines. The trends today are towards predictive maintenance, 3D printing and automated assembly lines. In addition, logistics costs exploded in 2020 and will continue to remain high. All of that means that Europe can be competitive again. It can hope to become home to the new activities emerging in green mobility (electric cars, new generation batteries), in new materials, components, sensors, medical equipment, gene therapies, and so on.

The 20th century was shaped by the oil industry, the automobile industry, and so on, but health, energy and digital technologies will be the pillars of the new century. •

"Everyone is concerned by ecology today and that will have consequences for all industries."

A prestigious honours list

- 2019: Isabelle Kocher (Engie)
- 2018: Patrice Caine (Thales)
- 2017: Emmanuel Faber (Danone)
- 2016: Thierry Breton (Atos)
- 2015: Éric Trappier (Dassault Aviation)
- 2014: Jacques Aschenbroich (Valeo)
- 2013: Jean-Paul Herteman (Safran)
- 2012: Jean-Pierre Clamadieu (Solvay)
- 2011: Olivier Piou (Gemalto)
- 2010: Benoît Potier (Air Liquide)

Paprec: 25 years building an industrial and technological leader

From a small SME, Paprec has become a major industrial group, leader in recycling in France and a key player in waste treatment. At the heart of its success: a total of 1.7 billion euros invested over the past 25 years. A look back at this incredible entrepreneurial adventure.

1.7
billion euros invested in 25 years

Last November, Jean-Luc Petithuguenin was named "Industrialist of the Year" by the magazine *L'Usine Nouvelle*. After winning the Ernst & Young Entrepreneur Award in 2012, this new accolade is highly symbolic for Paprec's CEO and Founder. 25 years ago, he acquired a small SME in La Courneuve. Today, he is at the head of a family-owned group with sales of just over 1.5 billion euros and 10,000 employees in 220 sites in France and Switzerland.

From the start of his adventure in the world of recycling, Jean-Luc Petithuguenin dreamed of *"creating France's industrial leader in recycling, guided by a desire for excellence"*. To achieve that goal, he embarked on an investment programme. A huge investment programme: over the past 25 years, the volume of investments has reached 1.7 billion euros! As a result, the Group boasts world-class industrial facilities equipped with the most modern technologies.

A passion for quality

Before becoming the Group it is today, Paprec began by expanding its core business: wastepaper. Not just any kind of wastepaper: only the best quality paper with the highest added value. *"Right from the beginning, we aimed for premium quality and we've remained faithful to that credo for 25 years,"* emphasises Jean-Luc Petithuguenin.

In 1996, he won his first major contract with Quebecor, one of Europe's largest printing companies. That contract enabled him to invest 5 million euros in 10 trucks and 400 skips. And also to improve the waste sorting line with new extraction systems. It was the beginning of an adventure! •••

Thanks to its investments, Paprec is now France's third-largest player in energy recovery. Technologies (as seen here in Noyelles-sous-Lens, Pas-de-Calais) enable the production of electricity and heat from household waste.

> **Right from the beginning, we aimed for premium quality and we've remained faithful to that credo for 25 years."**

JEAN-LUC PETITHUGUENIN,
FOUNDER AND CEO
OF THE PAPREC GROUP

••• At the same time, Paprec opened its first branch south of Paris (Villeneuve-le-Roi) and created La Corbeille Bleue, specialising in the treatment of waste from the tertiary sector. The company thus became the number one paper recycling company in the Greater Paris region: *"Investing in a detailed coverage of the region, and being as close as possible to our customers was one of the keys to our business,"* explains Erwan Le Meur, Deputy Managing Director for the Greater Paris Region. In parallel, the launch of FCR, its own sales centre for recycled raw materials, reinforced Paprec's business model: complete control of its production chain, from collection to sales, through waste sorting and processing.

The customer at the heart of business

This entrepreneur had a clear vision from the start of his adventure: *"The future belongs to those who succeed in making the most of waste."* At the time, his vision was not shared by any of the competition, who were continuing to rely on the use of waste incineration or storage. But Jean-Luc Petithuguenin was convinced he had the right idea! At the turn of the millennium, he embarked on the plastics recycling market. *"The idea was to sell high quality, high value-added raw materials,"* he explained. *"To that end, we had to make major investments in the plants we acquired, shifting from simple shredding to the complex regeneration of materials."* His gamble paid off, as these recycled plastics

1.5
billion euros in sales

The Paprec group is the leader in plastics recycling in France, le groupe producing 300,000 tonnes of plastics every year. Its plant in Verdun (Meuse) seen here specialises in the manufacture of regenerated polypropylene (rPP).

1994-2021: Paprec becomes a global player in recycling in France

The 3 loops

The material loop

Recycling of materials:
paper, plastics, metals, wood, ordinary industrial and construction site waste, WEEE, bulky items, etc.

- **210 sites (including 120 factories)**
- **12 Mt collected per year:**
  - 8.5 Mt recycled into raw materials
  - 2.5 Mt recovered as energy
  - 1 Mt of end waste in storage
- 1.5 billion invested over 25 years in industrial facilities
- 30 sorting centres for waste from recycling bins
- 3,000 trucks.

The energy loop

Energy recovery:
incineration, capture of gas from non-hazardous storage facilities, methanization, solid recovered fuels, etc.

- 30 storage facilities
- 10 incinerators
- 1 methanizer
- 3 CSR manufacturing plants.

The compost loop

Composting:
biowaste, green waste, sludge, agroforestry, etc.

- 4 Paprec Agro factories
- European Sustainability Prize for it agroforestry project.

are now recognised on the European market for their very high quality. And when he invested in the construction sector with Paprec Chantiers, this entrepreneur understood long before anyone else in the market that he had to offer customers the best possible recovery rates for their waste. The Group thus became a pioneer by introducing the first sorting line in Gennevilliers able to separate ordinary industrial waste (OIW), which until then was only rarely recycled. In Wissous, Marseille and Toulouse, other sorting lines were set up, able to extract more than 75% of recoverable materials (rubble, wood, plastics).

But investments were also made beyond the sorting lines. Continuous improvements were made in the quality of customer service, even if that meant slightly higher prices than those of the competition due to a premium positioning. *"The Group offered 24/7 customer service, as well as remote contract monitoring through digitalisation. The equipment provided also benefited from a high level of quality maintenance,"* stressed Mathieu Petithuguenin, Deputy Managing Director for industrial sales. The investments made financed the innovations that would improve future customer service. They also increased innovation. As demonstrated in the launch of the Paprec Agro subsidiary, located in Dordogne and Gironde. In so doing, the Group developed an innovative agroforestry project. The agricultural engineers at the Saint-Paul-la-Roche site, specialised in compost, set up an initiative that associates field crops with trees on the same land to increase yields naturally and combat climate change. *"We thereby showed that we were ahead of our time,"* notes Olivier Seignarbieux, •••

> “Investing in a detailed coverage of the region, and being as close as possible to our customers was one of the keys to our business.”
>
> **ERWAN LE MEUR,**
> DEPUTY MANAGING DIRECTOR
> FOR THE GREATER PARIS REGION

With its plant in Limay (Yvelines), Paprec has Europe’s finest industrial facility for PET regeneration. It produces over 30,000 tonnes per year, notably used to manufacture new plastic bottles.

• • • compost specialist and General Manager of the Grand Sud region. In 2019, the Group received a European Sustainability Award for this agroforestry project.

Maximum waste recovery

As recycling becomes more industrialised and structured, the technologies have become more advanced, requiring increased investments. By way of example, sorting plants for waste from recycling bins: *“Today, a high-tech sorting centre represents an investment of 25 million euros compared to just over 7 million euros when we entered this niche,”* recalls Stéphane Leterrier, Executive Director for Municipalities. After starting out in Paris and Lens, Paprec now operates 30 high-level sorting centres for waste from recycling bins, with the Group’s flagship plants in Lyon and Rennes capable of processing over 70,000 metric tonnes of waste per year. David Dias, national director of the WEEE division, confirms the growing need for capital: *“The latest plant at Pont-Sainte-Maxence, in France’s Oise region, which recycles mixed small appliances, is equipped with shredders, optical sorters and X-ray sorters. For an investment budget of 10 million euros!”* advised the interested party.

All this would not be possible without the support of investors capable of accompanying this technological evolution. *“I would never have been able to make all these investments without the support of solid partners who share our long-term vision. It can take years before an activity becomes profitable,”* stresses Jean-Luc Petithuguenin. That was the case for construction waste, for example. But hard work and courage are seldom unrewarded! *“All the major French banks have been with me since the beginning of the adventure, as well as major captains of industry like Bernard Arnault. And we’ve always delivered on our promises.”* Today, it’s the French government, via the Public Investment Bank, that is providing support to Paprec in its journey to develop France’s - and tomorrow Europe’s - champion in waste treatment.

10,000
employees

In Saint-Paul-la-Roche (Dordogne), Paprec has set up an eco-farm, equipped with the state-of-the-art technology, able to produce certified compost. This project received the European Commission's Sustainability Award in 2019.

Paprec collects and recycles almost 600,000 tonnes of construction waste each year. Its industrial facilities are able to extract over 75% of recoverable materials. Machine operators at the Wissous branch (Essonne).

The transformation of a recycling leader

With the acquisition of Coved Environnement in 2017, a company specialising in the treatment of municipal waste, Paprec has entered a new dimension: a major player in waste treatment, able to offer its customers recovery solutions for all categories of waste. *"We now master all three loops in the process: material recycling, energy recovery, and compost production,"* explains Sébastien Petithuguenin, the Group's General Manager.

While the Group's growth has been exponential over the last 25 years, Jean-Luc Petithuguenin has no intention of stopping there! The modernisation of its plants continues and the Group is ready to embark on new large-scale projects. That is the case, in particular, in the area of energy recovery. As demonstrated in Paprec's purchase of the incineration branch of the Cnim group, with revenues of 65 million euros and 10 energy recovery units in operation, including 5 abroad (United Kingdom, United Arab Emirates and Azerbaijan). If Veolia's takeover bid for Suez is successful in the coming months, even more new opportunities could emerge. •

Paprec, France's leader in recycling and waste management

One in four of France's recycling bins are sorted in plants owned or managed by Paprec. The Group's policy of investing in state-of-the-art technologies, together with its expertise in materials and processes, means it has the highest recovery rates in the industry. Now that France has extended the range of waste going into recycling bins, local authorities are calling on the Group for new large-scale projects.

30
sorting plants for recyclables

Paprec is pleased to announce the "birth" of two new plants in 2021. Trivalo 34 in Lansargues, near Martigues, and Trivalo 33 in Illats. Designed 21 years ago, this previous generation plant, based near Bordeaux, managed 16,000 tonnes of waste per year. To address the extended range of recyclable items, which will now include the collection and sorting of all plastic packaging (pots, films, trays) in household bins, Paprec has gone beyond a simple facelift. It has completely revised processes to reach a capacity of nearly 40,000 tonnes per year. A first in Gironde. But, above all, the entire site has been remodelled to achieve maximum performance in the collection of recyclable

> "Our expertise in this field is now widely recognised."
>
> **STÉPHANE LETERRIER,**
> DEPUTY MANAGING DIRECTOR OF THE GROUP

materials and optimal working conditions for employees. Cost of the investment: 20 million euros.

The level of financial commitments and the massive scope of the work have set the tone for the extent of modernisation in the sector already underway for several years. By the end of 2023, all French sorting plants •••

MARTIAL LORENZO,
GENERAL MANAGER
OF SERVICES, SYCTOM

Syctom, the metropolitan household waste agency, brings together 85 municipalities including Paris, representing a total of 6 million inhabitants. It processes 2.4 million tonnes of household and similar waste each year. It runs 3 incinerators, 6 sorting centres and a transfer centre.
"Nanterre is Syctom's second centre. We decided to carry out an extensive upgrade as the facility dated back to 2000. We invested 42 million euros with the aim of achieving several objectives: automating the sorting process, adapting the facility to the extended definition of recyclables, accommodating large carriers, increasing processing capacity from 40,000 to 53,000 tonnes, increasing the share of river transport for our paper and cardboard exports and, finally, creating an attractive building that fits perfectly into the urban setting.
We innovated the facilities by equipping our new sorting line with 10 optical sorting machines and two sorting robots that use artificial intelligence for the quality control of plastics.
We selected Paprec because it had the best offer in technical and environmental terms. We really appreciate working with an expert in the field who is also a genuine operator."

2020-2021, 150 million euros invested

- **Trivalo 92, Nanterre**
42 million euros
(financed by the municipality)
(site launch in May 2021)
- **Trivalo 33, Illats**
25 million euros
(launched in December 2020)
- **Trivalo 89**
16 million euros
(works launched in 2021)
- **Trivalo 68**
16 million euros
(works launched in 2021)
- **Paprec Trivalo 63 Echalier, Clermont-Ferrand**
12 million euros
(works launched in 2021)
- **Paprec Trivalo 27, Guichainville**
15 million euros
(works launched in 2021)
- **Paprec Trivalo 34, Lansargues**
10 million euros (in operation since December 2020)
- **Trivalo 70, Noidans-le-Ferroux**
9 million euros financed by the municipality
- **Trivalo 49, Seiches-sur-le-Loir**
5 million euros (2021)
- **Paprec Trivalo 93, Le Blanc-Mesnil**
2.5 million euros invested in an existing site
- **Paprec Trivalo 62, Harnes**
2.5 million euros invested in an existing site
- **Paprec Trivalo 37, La Riche**
1.5 million euros

••• must be able to sort a mixture of paper, cardboard, cans, bottles, flasks, as well as jars, films and plastic packaging trays. Half of all plants have the necessary equipment today. The challenge for local authorities is to make it easier for citizens to sort their waste while improving the collection rate of plastic packaging. Depending on the type of packaging in question, it is either recycled or used for energy generation. Ultimately, this trend is in line with national and European environmental objectives for the reduction of waste storage and the objective of a 100% recovery rate for plastics.

But transforming mixed waste into new raw materials for use in industry is no easy task. It requires a high level of regularity in the quality of finished products starting from a diverse and fluctuating range of incoming waste. *"The nature of the waste in recycling bins has changed dramatically in recent years, particularly with the advent of the pandemic. Recycling bins now contain less paper and newspapers, and more cardboard packaging and lighter plastic waste, which is more difficult to collect and recycle,"* noted Stéphane Leterrier, the Group's Executive Director for Municipalities. It's therefore necessary to constantly deploy new technologies to improve the performance of material capture and to further refine the sorting process. All the more so as the customers using these recycled raw materials are increasingly demanding in their requirements.

The circular economy: the Group's DNA

"With 30 sites in France, collection rates for recyclable material approaching 97%, and an in-depth knowledge of the materials chain, our expertise in this field is now widely recognised," enthuses Stéphane Leterrier.

The circular economy is indeed part of the Group's DNA: its mission is to capture the new raw materials of the 21st century from waste. *"Using recycled raw materials avoids the use of fossil materials and lowers CO_2 emissions. That is the underlying principle of the circular economy, thanks to which we will be able to meet the environmental challenges of this century,"* emphasises Rémy Clenet, Territories Manager and Local Authorities Sales Manager for •••

ANDRÉ MOINGEON,
VICE PRESIDENT,
CCPA

"Putting our trust in a French, family-owned business"

The Combined Municipalities of Plaine de l'Ain (CCPA) was created in 2017 by the merger of 3 existing combined municipalities: Plaine de l'Ain, Vallée de l'Albarine and Rhône-Chartreuse. In total, it combines 53 municipalities and 78,000 inhabitants.
André Moingeon, its Vice President in charge of waste, tells us about the partnership between the two groups.
"We had already been working with Paprec for 6 years, for the sorting of waste from recycling bins and transport to the collection point. We value the proximity, reactivity and sense of service of your teams. When renewing the contract in 2019 and to be able to address the extended range of waste entering recycling bins, we had to bid with a service provider capable of handling that additional waste. Paprec was therefore a natural partner for us in our sector. It's a French, family-owned company, leader in its market, who has been constantly investing in its plants while other, larger groups have done nothing to modernise their sorting facilities. We are very satisfied today with our partnership with Paprec."

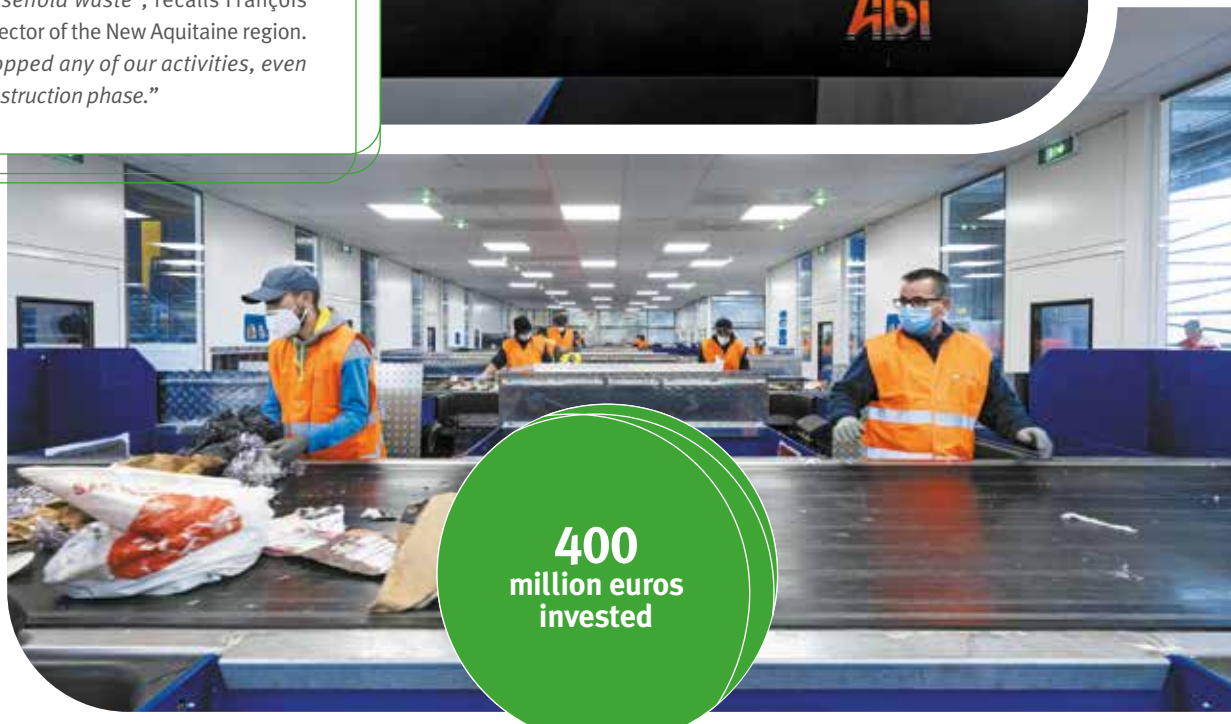
> "Thanks to the circular economy, we will be able to meet the environmental challenges of this century."

RÉMY CLENET,
TERRITORIES MANAGER

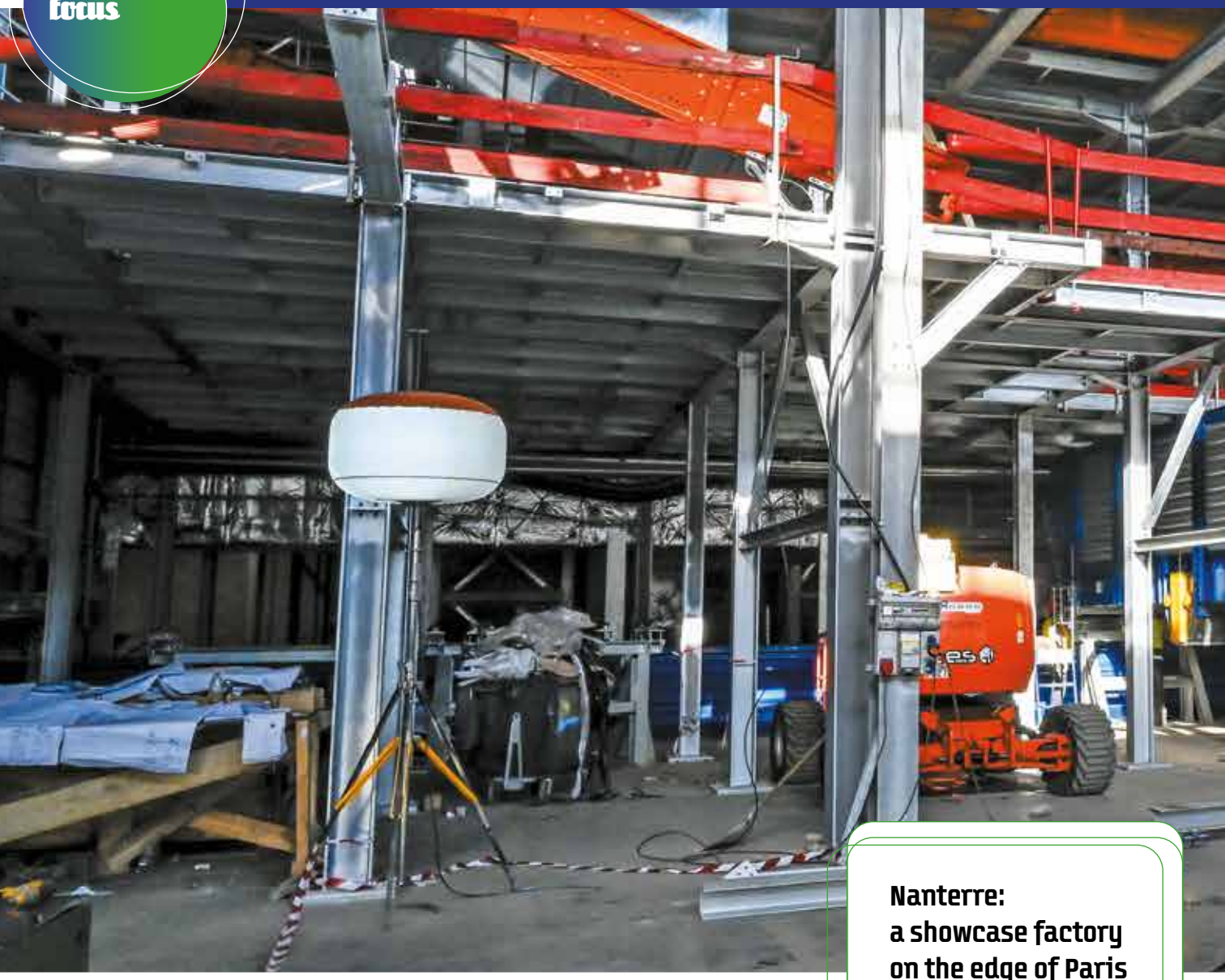
Trivalo 33 gets a makeover

25 million euros invested

Launched in 1999, the Coved Environnement site was renovated in 2013 but its processes were fast becoming obsolete. The extension of the range of waste going into recycling bins was a great opportunity to completely redesign the plant. The works were carried out in 2020, in the midst of the pandemic. *"During the first lockdown, we were the only site in Gironde to continue sorting and recycling household waste"*, recalls François Pouliquen, Director of the New Aquitaine region. *"We never stopped any of our activities, even during the construction phase."*



400
million euros invested



• • • Southern France, where the Lansargues and Martigues plants are located. The group's teams work closely with the consumers of these raw materials. Just one example: the partnership with Polieco, a manufacturer of 100% recycled HDPE pipes made from opaque plastic bottles collected in recycling bins (see the full story on p. 26).

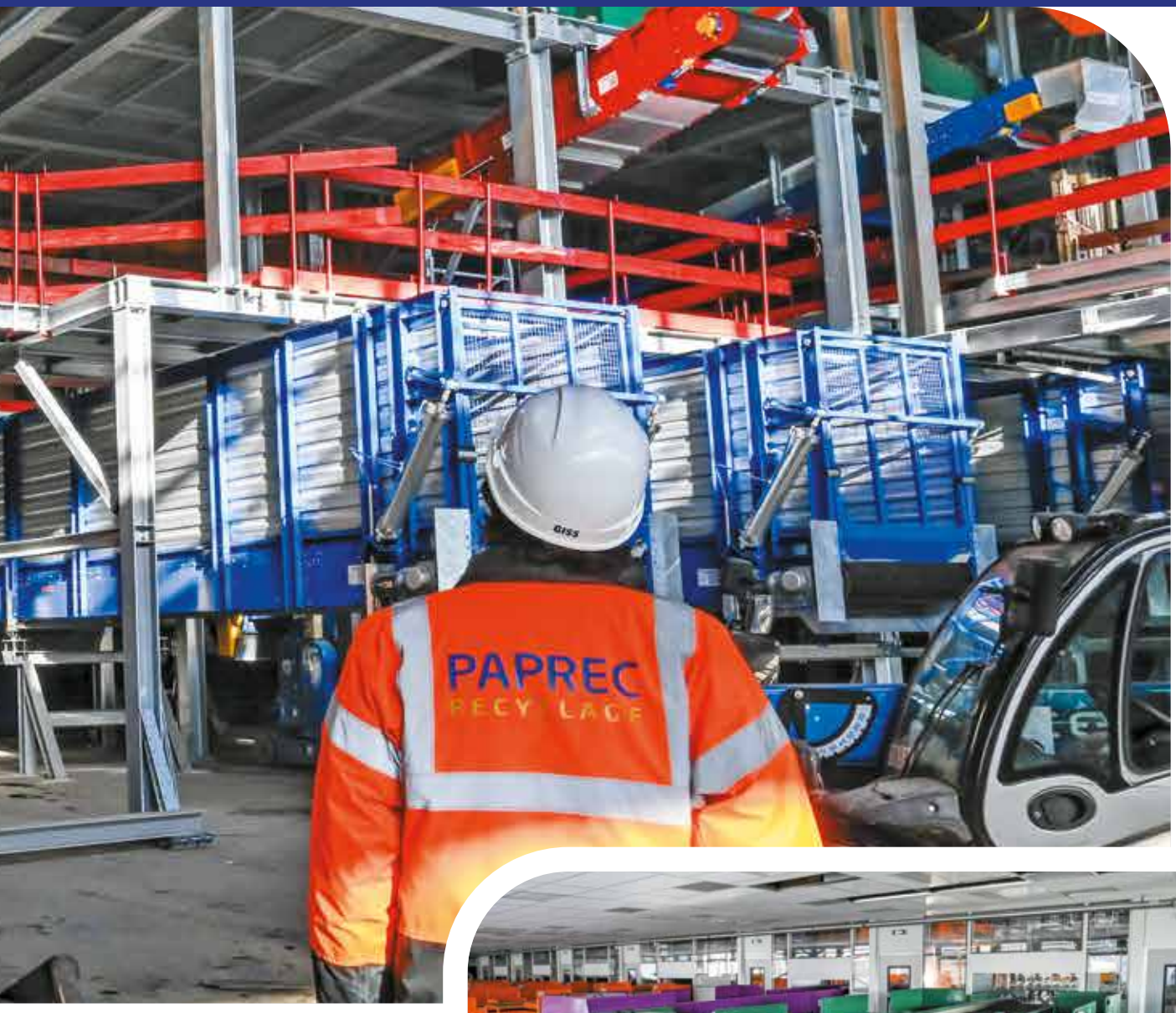
Increased robotisation of processes

To obtain maximum levels of purity at the end of the process, Paprec teams work hand-in-hand with suppliers of sorting equipment to constantly upgrade processes and improve performance. *"With each new plant or renovation, we go right back to the drawing board. As a result, we are able to implement state-of-the-art processes in each case!"* explains Olivier Philippé, Innovation Manager for the design and optimisation of the sorting tools used in recycling. Ballistic separators that distinguish flat items (paper, cardboard) from hollow items, eddy current separators to remove non-ferrous metals (aluminium), overband for ferrous metals, optical sorters that recognise the different resins in plastics, and so on. The list of technological equipment • • •

Nanterre: a showcase factory on the edge of Paris

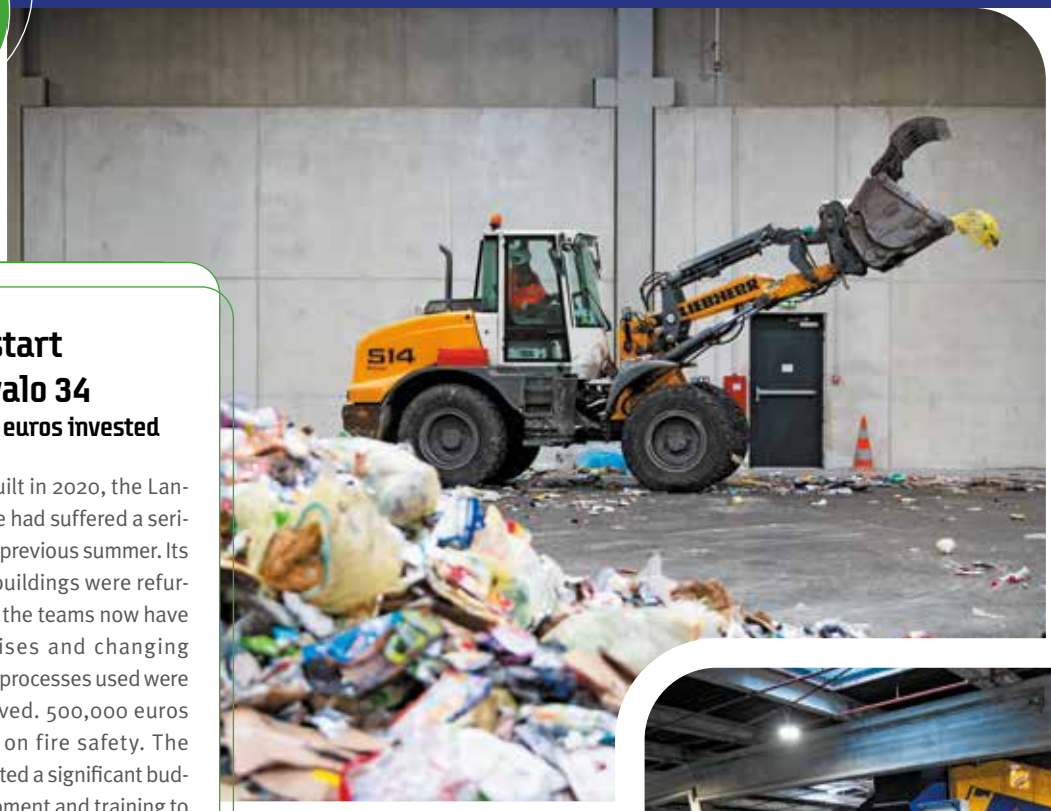
42 million euros invested

Syctom represents 85 municipalities in the Greater Paris region. The agency commissioned Paprec for the design, construction, operation and maintenance of its new plant. With 10 optical sorters, 13 storage silos and a sorting robot that uses artificial intelligence, it benefits from the latest technologies aimed at the best possible material recovery rates.



1 in 4
French recycling bins managed by Paprec

Ten optical sorters, two artificial intelligence sorting robots, a particularly large and light-filled sorting area, the innovations at the Nanterre centre are aimed at optimising processes and employee comfort.

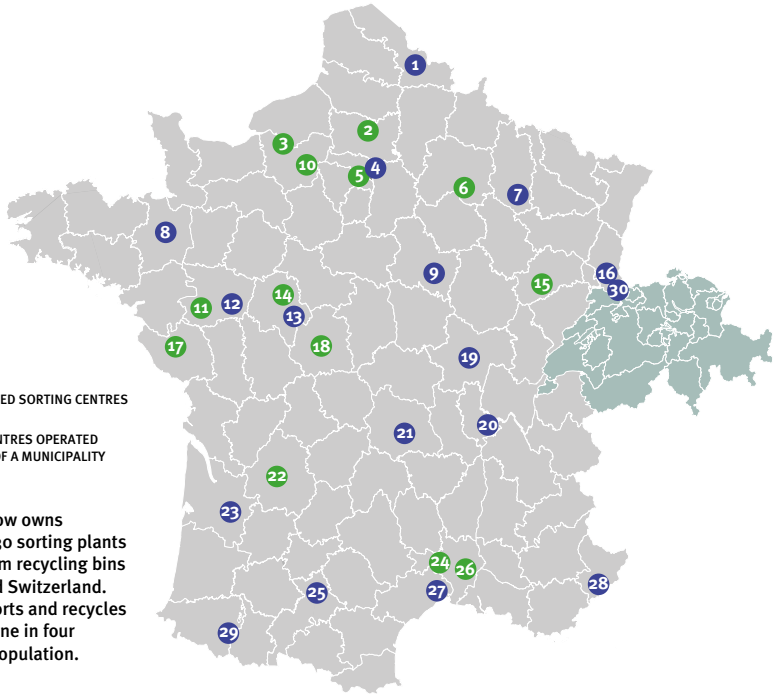


A new start for Trivalo 34

10 million euros invested

Totally rebuilt in 2020, the Lansargues site had suffered a serious fire the previous summer. Its industrial buildings were refurbished and the teams now have new premises and changing rooms. The processes used were also improved. 500,000 euros was spent on fire safety. The Group devoted a significant budget in equipment and training to prevent and fight fires, which represent the major risk in this industry, in particular due to the presence of batteries and flammable objects in waste. The fire safety budget is estimated at 20 million euros over the last two years for the entire Group.

Paprec, leader in recycling in France



PAPREC/COVED SORTING CENTRES

SORTING CENTRES OPERATED ON BEHALF OF A MUNICIPALITY

The Group now owns or operates 30 sorting plants for waste from recycling bins in France and Switzerland. The Group sorts and recycles waste from one in four of France's population.

1 – PAPREC TRIVALO 62 (HARNES)
2 – PAPREC TRIVALO 60 (VILLERS-SAINT-PAUL)
3 – COVED PONT-AUDEMER (27)
4 – PAPREC TRIVALO 93 (LE BLANC-MESNIL)
5 – COVED TRIVALO 92 (NANTERRE)
6 – COVED LA VEUVE (51)
7 – PAPREC TRIVALO 54 (DIEULOUARD)
8 – PAPREC TRIVALO 35 (LE RHEU)
9 – COVED TRIVALO 89 (ORMOY)
10 – PAPREC TRIVALO 27 (GUICHAINVILLE)
11 – VALOR 3E COVED SAINT-LAURENT-DES-AUTELS (49)
12 – PAPREC TRIVALO 49 (SEICHES-SUR-LE-LOIR)
13 – COVED TRIVALO 37 (LOCHES)
14 – PAPREC TOURAINE – COVED LA RICHE (37)
15 – COVED NOIDANS-LE-FERROUX (70)
16 – COVED TRIVALO 68 (ASPACH)
17 – COVED LA FERRIÈRE (85)
18 – COVED CHÂTEAUROUX (36)
19 – PAPREC TRIVALO 71 (CHÂLON-SUR-SAÔNE)
20 – PAPREC TRIVALO 69 (SAINT-PRIEST)
21 – PAPREC TRIVALO 63 (CLERMONT-FERRAND)
22 – PAPREC TRIVALO 24 (PÉRIGUEUX)
23 – COVED TRIVALO 33 (ILLATS)
24 – PAPREC CÉVENNES VIDOURLE (LIOUC)
25 – PAPREC TRIVALO 31 (BRUGUIÈRES)
26 – PAPREC TRIVALO 30 (NÎMES)
27 – PAPREC TRIVALO 34 (LANSARGUES)
28 – PAPREC TRIVALO 06 (CANNES)
29 – PAPREC TRIVALO 64 (MONTARDON)
30 – LOTTNER BASEL

• • • used to obtain 20 or so very distinct materials is more than impressive. The latest example of innovation: a sorting robot that uses artificial intelligence is now at the centre of processes at the Trivalo 69 site in Lyon. Equipped with a vision system, the robot is able to recognise different materials thanks to an extraordinary image database.

Capital-intensive projects

But installing such equipment clearly requires a significant investment capacity. Paprec has already invested over 400 million euros in the past 10 years to become the leader in kerbside recycling. And that pace is continuing in 2020 and 2021, with 120 million euros invested. The Group has its own investment capacity but it can also help local authorities arrange their own financing. A full range of options is available: contractualisation, public service delegation, design, construction, operation and maintenance contracts. Paprec has expertise in all of these areas. In maintenance contracts, the local authority is responsible for the investment but delegates all the work and operation of the plant to an operator.

That was the case, for example, in Nanterre, in the Hauts-de-Seine. Syctom, an alliance of 85 municipalities in the Paris region, chose the Paprec group for its new showcase plant just outside Paris. With a capacity of 55,000 tonnes, Trivalo 92 represents an investment of 42 million euros for Syctom. *"We now have a lot of experience in optimising processes, and we know how to share that know-how. We also know how to manage processes pragmatically, even if that means shaking up existing methods. It's one of our hallmarks,"* says Pascal Coillot, who will manage this plant and Trivalo 93, based in Blanc-Mesnil. A hallmark increasingly sought after by local municipalities. •

750,000
tonnes processed

14,500
tonnes of material processed each year by Polieco

The equivalent of
150
million bottles recycled

The material from Paprec Plastiques 71 is ready to go in production.

Underground pipes made from plastic milk bottles

Opaque plastic bottles and containers from recycling bins in French households are used to manufacture pipes and tubing from 100% recycled material. Spotlight on this fine example of the circular economy, the result of a partnership between Paprec Plastiques and Polieco, a company specialising in double-walled corrugated pipes.

Sorting, washing, drying, quality control: the Paprec Plastiques 71 plant transforms recyclable packaging waste into high quality new materials.

The high density polyethylene (HDPE) bottles come from waste collected in the region's recycling bins.

Who knew? The plastic bottles and containers used for shampoo, milk or washing powder end up in the pipes that carry rainwater and urban effluents. It's a fact! Each single 1.2 metre pipe means a second life for 8,000 bottles of milk!

Polieco, specialist in double-wall corrugated pipes, has committed to supplying 100% recycled and locally sourced materials to its customers. In partnership with Paprec for 20 years, Polieco has created a range of pipes and drains that reflect that mission.

The Chalonnais site of the French leader in plastics recycling is less than 60 km from the flagship Polieco plant. Paprec Plastiques 71 is the French leader in the regeneration of polypropylene (PP) and high density polyethylene (HDPE). This is where the new raw material used by Polieco is manufactured, with one mission in mind: *"producing high-quality materials"*, advised Sylvia Blond, the site manager.

Reinforced tubes for the next 50 years

When bottles arrive at the Paprec Plastiques site in Chalon, they are sorted to remove other plastics or components in order to maximise the level of purity. The materials are then crushed and washed, removing labels and other plastic particles, and dried. The resulting resin can be used directly by processing companies or it can be extruded on site. Finally, the material undergoes stringent quality checks by a high-level laboratory. *"That guarantees the customer the technical characteristics necessary for the production and durability of its product,"* confirms Sylvia Blond.

Stored in silos on the Polieco site, the material then enters directly into the continuous production cycle. The pipes are manufactured according to the co-extrusion principle: two extruders simultaneously form the inner and outer walls of the tube. The final product has an estimated life span of 50 years, and it is of course recyclable once it's disassembled. •

50 YEARS
The life span of the end product

NICOLAS VOLLERIN, TECHNICAL DIRECTOR, POLIECO FRANCE

Why did you opt for the circular economy as a development priority?
Our Group is working to implement low-carbon solutions for our customers. Using recycled plastics from locally collected, sorted and regenerated plastics is a key part of that environmental strategy.
We provide our customers with a "recycled bottle equivalent" certificate, the CEBR, which ensures simple, comprehensible and workable values. Those figures also speak to the general public, demonstrating the benefits of their recycling efforts.

How is Polieco a pioneer in this approach?
We've been committed to the use of recycled materials for the past 20 years. Last year, we were the first French company in the construction sector to be evaluated for its CSR commitments and policies. After our audit by Afnor, we were certified at the "confirmed level" in the Circular Economy evaluation for our project: Ecobox and Flowrain corrugated tubes. It was a rewarding recognition of our commitment. In 2019 and 2020 we also obtained the "More" label ("Mobilised to recycle"), awarded by the Federation of Plastics and Composites for manufacturers using recycled materials.

The material (recycled HDPE resin, in pellet form) arrives in 25-tonne tankers and is stored in silos. In the Feillens site alone, Polieco France transforms 30 tonnes of HDPE every day, the equivalent of 450,000 recycled milk bottles.

Focus on Polieco France

- Located in Feillens and Bellegarde-sur-Valserine (01).
- Subsidiary of an Italian group.
- A European leader in the manufacture and sale of corrugated double-wall tubes made of high density polyethylene.
- 95 employees and revenues of 34 million euros in 2019.

Three production lines in the plant are dedicated to tubes from 300 mm to 1,200 mm in diameter.

The process begins with a call for material by the silos to fill their hoppers. The material enters a heated sheath equipped with a worm drive. The resulting paste is pushed through the extrusion head and passed through a die.

Regular checks are carried out on all parameters: length, diameter, weight per metre and thickness of both walls of the tube.

sponsorship

Paprec and cerebral research

With support from the Paprec Group for almost 10 years, the Brain Institute aims to unravel the secrets of our most fascinating organ. Focus on a Foundation that combines innovation and performance with its Director General, Professor Alexis Brice.

"It would be arrogant to say that the brain is not a mystery that is difficult to unravel," begins Professor Alexis Brice, neurologist and Director General of the Brain Institute. *"In research, the more answers we get, the more new questions we have, despite the fact that we've never made such rapid progress as in the last 10 or 20 years."* The Foundation he has been leading for the past 8 years is no stranger to progress. Set up in 2010, the Brain Institute is quite simply one of a kind. A veritable scientific ecosystem based on a public-private partnership at the heart of the Pitié-Salpêtrière hospital in Paris, it now enables 700 doctors, researchers and engineers to combine their talents in the pursuit of know-

ledge. The experts also benefit from a dozen technological platforms equipped with state-of-the-art equipment. *"The Institute has a dual purpose,"* continues Professor Brice. *"First, understanding the brain. That is, elucidating the mechanisms that are at the origin of its development, its functioning and its aging under normal circumstances."* But that's not all: *"The other side of the coin is understanding diseases of the nervous system, in order to develop preventive therapies or treatments."* These two parallel approaches feed off each other with a single purpose in mind: *"Our objective is to bring together a community of high-level researchers capable of interacting with each other. Some of them work on fundamental mechanisms that are not necessarily linked to a particular pathology. Others work directly on diseases, leading to collaborations based on that multidisciplinarity"*. Because, after all, as the Professor points out, *"in order to treat these diseases, we need to know how the brain works and why it sometimes doesn't"*.

Game-changing discoveries

Although it is relatively young, the Institute has already proven its worth. In only 10 years, its researchers have produced over 4,000 scientific publications. And that work includes some major advances: "*Using artificial intelligence and data analysis, one of our teams has, for example, succeeded in modelling the evolution of Alzheimer's disease at the individual level,"* explains the Professor. *"We can now predict the impact it will have on a given patient, which is a crucial step forward. We are on the path to developing personalised medicine, even though we are still missing an essential building block: treatment."*

In another area, some of the Institute's researchers have shown that deep brain stimulation, a treatment used notably in Parkinson's disease, *"can improve severe forms of obsessive-compulsive disorder, dystonia or Tourette's syndrome. That has made it possible to develop new therapeutic solutions for individuals suffering from very disabling pathologies"*. Patients are indeed at the heart of the Institute's concerns and work: *"That was part of the vision of the founding members. We are working at the heart of a hospital that is an international reference in the field of nervous system diseases. The patients who come here and the clinicians who care for them provide us with in-depth knowledge of the pathologies, and some also participate in research protocols"*.

Constant progress

Recruitment of new teams, acquisition of a high-field MRI (7 Tesla) for advanced analysis of brain activity, an international partnership (CURE-ND) with other European bodies to provide a common response to neurodegenerative diseases: the Brain Institute's development projects are numerous and varied. As is the Foundation that was set up to go beyond pure research: *"We launched the Open Brain School, a training body for future doctors and researchers as well as the general public, and a start-up incubator - iPEPS - that accelerates the development of products or solutions for patients,"* explains Professor Brice.

A final point: in order to make further progress, to maintain a high level of technical expertise, and to surround itself with the best researchers, the Brain Institute must be able to count on the support of its private partners, such as the Paprec Group since 2011: *"Our work requires significant funding, far beyond that provided by our public partners,"* explains the Director General. *"Sponsorship is therefore a major resource for us, representing 30% of our budget. Partnerships such as the one we have with Paprec are vital, both in terms of their scale and their duration. Without that, the Institute would not be what it is today."* And, more than ever, our brain would still be an unfathomable mystery. •

IN FRANCE, TODAY'S WASTE CREATES TOMORROW'S JOBS.

Recycling and recovery of waste into raw materials represent ideal solutions to the environmental challenges of the 21st century. And France is one of the world's most successful countries in the field. This sector requires considerable investment in high-tech industrial equipment.

With 10,000 employees in 220 sites around France, the Paprec Group has been at the heart of the circular economy for 25 years.
As France's leader in recycling, it plays an important role in the country's progress in this field. Paprec has expertise in all areas of the sector, from waste collection to recovery.

The company has created 2,000 skilled jobs over the past three years.

Photo credits: Arthur Joncour / Benjamin Sellier / Getty images

Les Trophées des INDUSTRIELS de l'année
L'USINE NOUVELLE EVENTS

Jean-Luc Petithuguenin, CEO and Founder of the Paprec Group, was named Industrialist of the Year 2020 on 4 November.

GROUPE PAPREC

For a greener planet and a more inclusive society