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Sustainability  
report **2021**

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# Building a passionate CO<sub>2</sub>-free future

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Welcome to Cordeel Group's first sustainability report. It sets out our commitment towards a more sustainable way of operating, the road we have travelled to date in terms of sustainability, and our future plans towards a more environmentally-friendly future.

Under the slogan "Building a Passionate CO<sub>2</sub>-Free Future", this report clearly describes our wish to be part of the next generation of companies working with a sustainable first mentality to improve ecosystems, rebuild communities, and restore nature.

With this commitment, we want to fulfil our responsibility towards our employees and their families, our suppliers and customers, and future generations. In essence, the whole of society. Above all, we want to take care of our people and planet, striving for a CO<sub>2</sub>-free future, and becoming the happiest company to work for and with.

To make a real change in society, and embed sustainability through all our business, we have created a strategy. This strategy is driving our improvements and bringing together all ongoing, realised and future initiatives by establishing shared priorities and clear objectives. It is also providing a framework for us to measure our Environmental, Social and Governance (ESG) performance, and hold ourselves accountable for the coming years and our development on both ESG and the UN's Sustainable Development Goals (SDGs) that help guide us along this path.

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# A business plan for our people and the planet

Our impact on the world starts with each of us. What we do, how we do it and how we treat others. To be a leader in today's world is not possible without prioritizing sustainability. As part of a global network, we have a responsibility and an opportunity to positively contribute to a more sustainable world.

Sustainable entrepreneurship is a continuous improvement process. This is why we at Cordeel started actively focusing on innovation two years ago by developing innovative technologies in the field of energy solutions and circularity.

Through our sustainability strategy Cordeel articulates its responsibility to make sure our own house is in order, to inspire our people to act and to inspire others. We will reduce our own footprint and further expand our capabilities to provide innovative solutions that help customers do the same.

In recent years our Group overcame significant changes and we challenged ourselves in rethinking who we are, what we stand for and how we can contribute to a better world. Our shared values and mission serve as a basis within Cordeel for the decisions and actions we take and determine the impact we want to have. We are therefore determined to build a better world; a passionate and happy CO<sub>2</sub>-free future. The interpretation of that mission

is broader than contributing to beautiful, sustainable, and energy-neutral buildings. It also means making a positive contribution to the well-being of our employees and far beyond. After all, we want to be the happiest company to work for or with.

We have already made the commitment to be among the first companies that operate carbon-free by 2030. Our ambition is to become a leading example in the construction world and to encourage other companies to build a more sustainable world.

We have achieved a lot in this area over the last decade, and I am very proud of the steps we have taken as a company.

By launching our first sustainability strategy, we are putting sustainability at the core of our business. We have come a long way but realise there is still a long way to go. However, we are ready to take on this exciting challenge.

I hope you enjoy reading this sustainability report. But more importantly, I hope that it inspires you to join us as we continue "Building a Passionate CO<sub>2</sub>-Free Future".

Filip Cordeel  
CEO, Cordeel Group



"Our ambition is to become a leading example in the construction world and to encourage other companies to build a more sustainable world."

Filip Cordeel



# About us & **Facts & Figures**



# Cordeel Group: respecting the past, constructing the future

Cordeel Group is an independent family-owned business with roots in Belgium. We have grown to become a major European player in the construction industry, and now oversee a number of companies, alliances and joint ventures. Thanks to a unique combination of knowledge and competences, Cordeel Group has the capacity to serve customers in every aspect of the construction process, from design to construction and maintenance.

Additionally, Cordeel advises on and manages the energy flows of residential and commercial customers, including entire sites. This is another way in which we strive to build a passionate CO<sub>2</sub>-free future together, while saving energy and reducing costs.

At Cordeel, we take a customized approach to each and everyone's specific needs. We want to act as a guide for our customers, to support them in the complex choices they need to make. In this way, we aim to achieve the most beneficial outcome, taking into account all technical, financial and organisational options we have at our disposal.

## A full service provider for the entire construction process

Cordeel's headquarters are based in Temse, Belgium. The Group consists of a large number of different companies divided into five sub-groups: C-construct | C-tech | C-innovation | C-living | C-line.

Every company operating under the Cordeel Group banner excels in its specific area of expertise. We work together or independently to create sustainable, future-proof solutions for our clients' complex requirements

## C-construct

The Cordeel construction division C-construct has a strong presence in Belgium, the Netherlands, Bulgaria and Serbia, and has reference projects in France, Germany, Romania and the UK. It's become renowned for its quality and craftsmanship, and its solution-oriented approach.

C-construct takes on almost any type of project, whether housing, commercial or industrial. Its industrial projects are in areas such as petrochemicals, logistics, offices, civil engineering, and hydraulic engineering. Whatever the project, our highly trained engineers are driven to overcome every challenge and deliver high-quality buildings on schedule and within budget.





As a full-service provider with its own production facilities for prefabricated concrete, reinforcement steel, metalworking and carpentry, C-construct is able to handle the entire construction process from initial idea to after-care and maintenance. In-house production guarantees quality and flexibility. This flexibility positively influences our planning. At the same time, short on-site delivery times ensure faster turnaround of projects.

### C-energy

The mission of C-energy is to shape the future of energy management. We do this by acting as the one-stop-shop answer to a company's energy needs. We cover all aspects of energy management, from energy monitoring to storage, optimisation and trading. We deliver Ener-

gy-as-a-Service, fully tailored to specific needs and a budget, along with a unique, patented concept for energy storage. Our vast network of qualitative partners and the ecosystem of the Cordeel Group allow us to take a pioneering role as we shape the future of energy management.

### C-tech

Under the C-tech banner, Imtech Belgium designs, constructs and operates technical systems for buildings and industrial premises. This includes design, installation, management and maintenance services in electricity, HVAC, sanitation and automation. The company's strength lies in tailor-made solutions and integrated project management. As smart buildings become the norm,

the need for innovative technical installations is increasing. With Imtech's multi-technical expertise, we are well positioned to meet this need.

### C-living

As the real estate division of Cordeel Group, C-living focuses on the purchase or real estate development of projects, ground and buildings, for logistics, manufacturing and residential purposes. Our service covers every aspect of the entire lifecycle, from purchase to permit, through construction and maintenance. C-living thus has the opportunity to take care of the entire lifespan of a real estate project.

### C-line

C-line is engaged in the development and marketing of innovative and sustainable products. These are the result of our mission to build a passionate CO<sub>2</sub>-free future. They are the continuation of extensive R&D and innovation, both through our own C-innovation and C-energy divisions as well as through close partnership with our partners.



FINANCE

HR

BIM

IT

PROCUREMENT

FLEET

MARCOM

INNOVATION

QHSE

ESG

LEGAL



# Corporate Services ensure **operational efficiency & excellence**

Within the Cordeel Group framework, each individual company still has a great deal of operational autonomy. They are responsible for their own budgets, their operational results, and each company has its own management committee.

At Group level, the Group Management Committee oversees a number of Corporate Services which support all the Group's operational services in their daily activities. They enable different areas to be managed centrally

at Group level while the operational services can focus fully on their core activities. This approach has led to far-reaching efficiency improvements in our operations.



The Cordeel Group  
has the following Corporate Services



## Finance

Financial management and corporate finance



## Human Resources

Coordination of our human capital



## BIM - IT

Maintenance of information & communication technology



## Procurement - Fleet

Purchase and fleet management



## Legal

Legal affairs, risk management and insurance



## Innovation

Facilitating and implementing innovative ways of working and projects



## QHSE

Coordination of the QHSE policy: Quality, Health, Safety and Environment



## ESG

Coordination of the sustainability strategy: Environmental, Social and Governance



## MarCom

Defining and implementing the internal and external marketing and communication strategy

# Our values



QUALITY



SAFETY



GROWTH



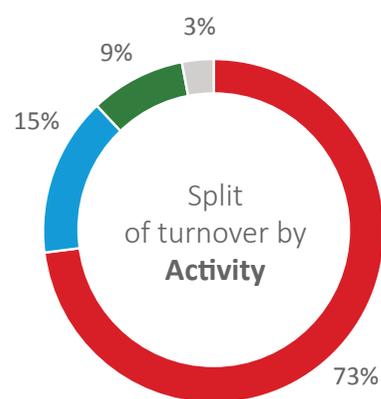
SMART

Cordeel is fully committed to innovation and sustainability, and pursues the values of **Quality, Safety, Growth, and Smart**. These are the guiding principles that form the identity of our company. Our people are indispensable. Together we seek to build a working environment that is excellent, fun, smart and safe. As a family business, Cordeel wants to build strategic continuity for the next generation by making a positive contribution to the development of our world. Through small and large efforts - and mostly by surprising innovations - Cordeel is building a healthy, green world and helping to create a sustainable future. By doing our job smarter, more environment-friendly, and faster, we will become a pioneer amongst companies that care about sustainable building.

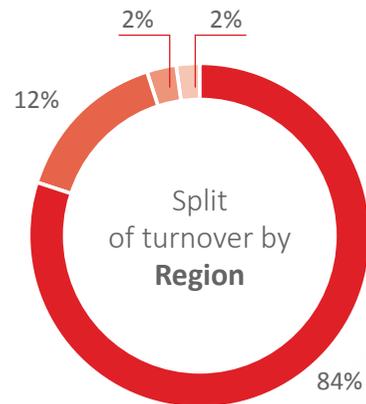
# Facts & Figures

## Financial

Cordeel Group has over 1,600 employees who are jointly responsible for an annual turnover of more than 800 million euros, of which 400 million is realised by Cordeel in Belgium.



- C-construct
- C-tech
- C-living
- Other



- Belgium
- The Netherlands
- Bulgaria
- Serbia
- Poland & Hungary

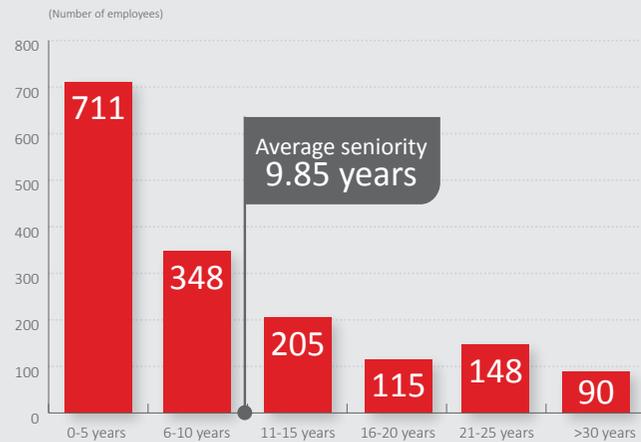
Annual turnover  
**800**  
million €



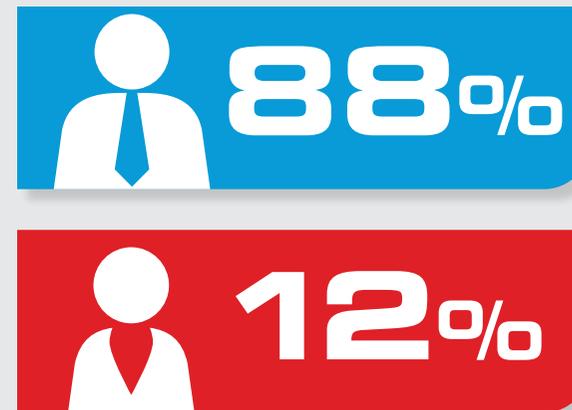


# Facts & Figures: Our people

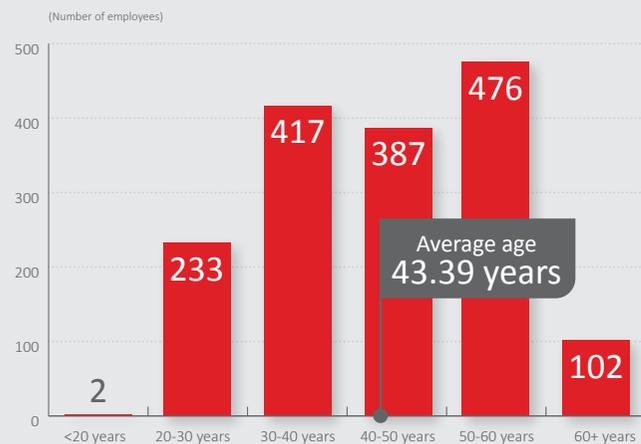
## Employees by seniority



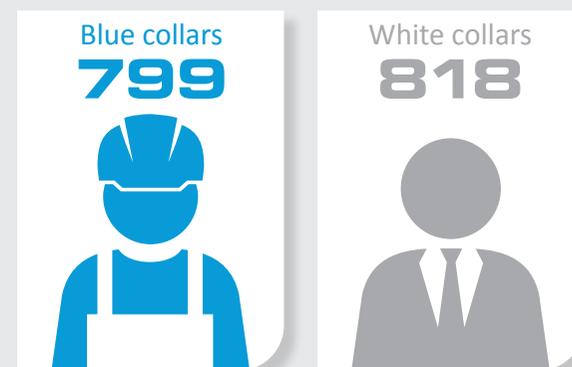
## Employees by gender



## Employees by age

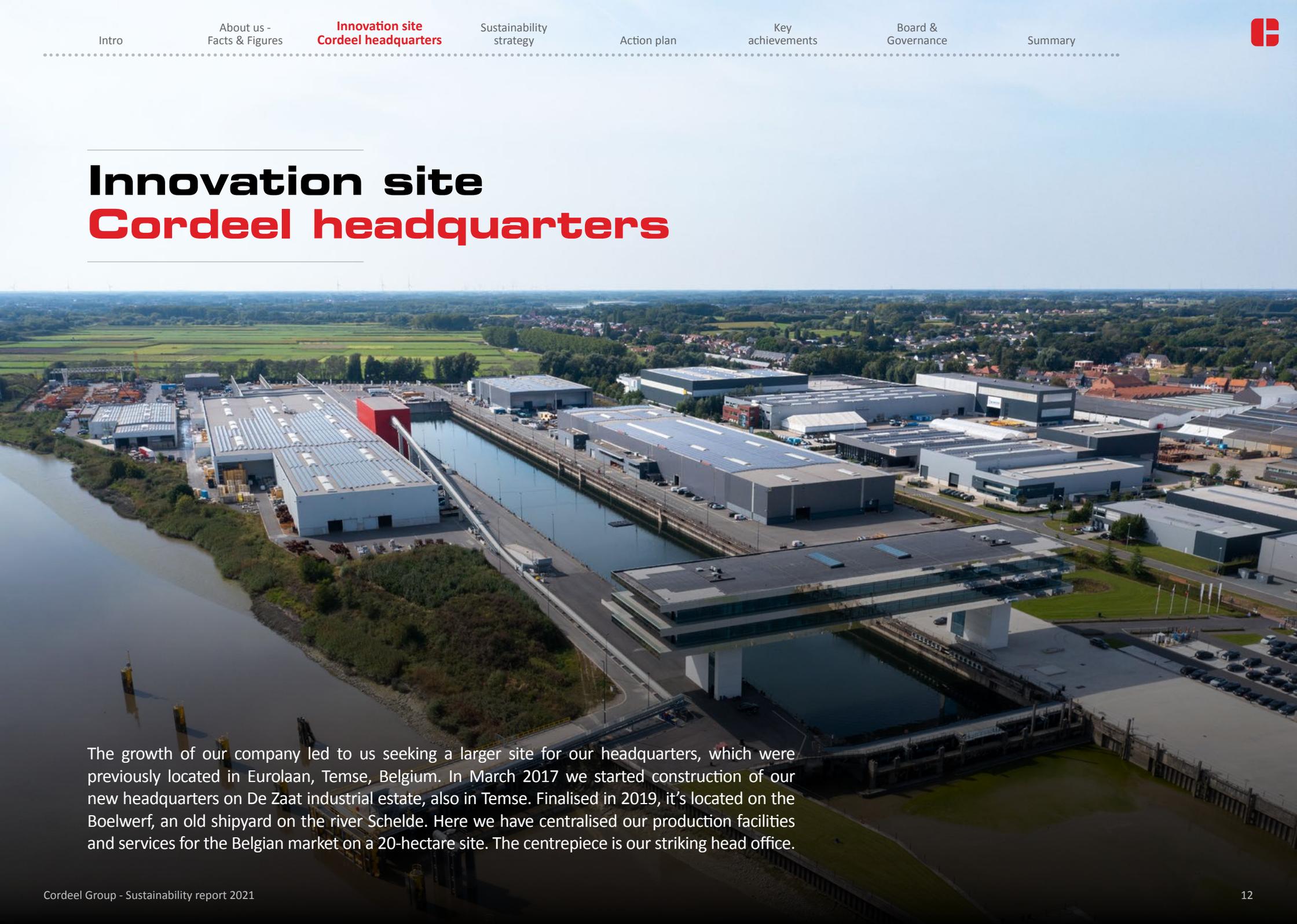


## Employees according to blue or white collars



# Innovation site

## Cordeel headquarters



The growth of our company led to us seeking a larger site for our headquarters, which were previously located in Eurolaan, Temse, Belgium. In March 2017 we started construction of our new headquarters on De Zaat industrial estate, also in Temse. Finalised in 2019, it's located on the Boelwerf, an old shipyard on the river Schelde. Here we have centralised our production facilities and services for the Belgian market on a 20-hectare site. The centrepiece is our striking head office.

# Our new headquarters: innovation hand-in-hand with sustainability

Our new headquarter is a clear statement of our intent. It shows who we are and what we dare to do. As an innovative construction company, we paid a great deal of attention to sustainability and ecology in its design. We opted for borehole energy storage to cool and heat the building with energy from the ground. In all meeting rooms, large TV screens enable meetings to be held paperless. The prefab and metal departments are equipped with sufficient solar panels to meet the energy requirements of the head office. The prefab department can also use the water from the dry dock.

The presence of the dry dock offers opportunities for the transport of raw materials and finished materials to and from the site. To allow activities to proceed smoothly and safely around the dry dock, and still realize 5,000 m<sup>2</sup> of new office space, we built the building over the water. It towers 20 metres above the surface of the water, to allow ships to pass underneath.

## Self-sufficient and zero emissions

We have put maximum efforts into renewable and sustainable energy generation and storage at the Temse site. Our goal is to achieve a zero-emission plant with a CO<sub>2</sub>-neutral certificate. We therefore aim to become fully self-sufficient here regarding energy provision. This is driven both by our memory of the blackouts of 2018, and by our goal to generate our own green energy for

our production processes. As a member of Flux50 and CREATORS, Cordeel has a central role to play in the energy field. We have therefore developed the site as a real-life testing ground to demonstrate innovations of interest to business sites of the future.

## Strategic location

The location of Cordeel Group headquarters, alongside the river Schelde, is a strategic choice. It gives us the opportunity to use the river for much of our transportation requirements. This is not only efficient but also lowers the CO<sub>2</sub> emissions of our activities. The raw materials for our concrete plant are delivered by ship. Most of the components of the radar towers that we built for the Antwerp Port Authority were transported by water and picked up at our dry dock. Reinforcement and structural steel are often supplied and removed by ship.



## Smart energy management

An overall smart energy management system called Darwin allows us to monitor and control all the site's HVAC installations. This ingenious and intelligent system for energy management of the office buildings and sustainable mobility solutions ensures that supply and demand are matched. It connects the entire site, using smart technology to monitor and manage energy use. It enables us to reduce energy consumption by dimming the lights and reducing the temperature of rooms not in use. When there is less energy use, energy can be regulated and saved for when the production departments are running on full capacity. If an employee wants to charge his or her electric car on-site, they enter their expected departure time. Darwin ensures that the car is charged in the most efficient way and is fully charged by time of departure.

## Energy asset management

It's always wise to be smart about energy consumption and locally generated green energy - especially during times of energy price fluctuations. Our energy asset management platform ImPower (created by ImTech Belgium) gathers, monitors and optimises detailed information on how our energy is generated and used. In a clear dashboard, the various assets can be flexibly managed, resulting in significant savings. Furthermore, thanks to ImPower Gateway, various assets such as the wind turbine, photovoltaics installation, combined heat and power plant, vehicle-to-grid charger, heat pump and battery are linked to the Darwin energy management system.



## Safe indoor air

The health and well-being of our people is a top priority. Healthy indoor air is a basic right and should be accessible to all. For this reason, we collaborated with Take Air (part of C-energy) and equipped our headquarters with an innovative solution to ensure clean, healthy air indoors. Take Air is a biospheric ventilation and air management system. Its revolutionary filter catches and kills 99% of viral pathogens. It's therefore effective at stopping COVID transmission through air ducts. With Take Air we strive for the next step in indoor climate enrichment to ensure a safe, healthy, and naturally enriched indoor environment in a sustainable and ecological way.



## C-innovation: putting innovative ideas into practice



In the construction industry, sustainability is one of the biggest challenges for the coming years, and requires extensive innovation. This is why Cordeel started actively focusing on innovation two years ago by researching innovative technologies that are both eco-friendly and people-friendly. Current areas of innovation include circular construction, methods to reduce energy consumption, and fire and personal protection. An umbrella innovation department - C-innovation - accelerates these developments through all companies of the Cordeel Group. It also ensures that innovations get to our customers and onto the market.

<https://kanaalz.knack.be/business-communities/z-energy-energie-innovaties-bij-bouwgroep-cordeel-12-10-21/video-normal-1788885.html>



Dany Bosteels

Out of the box manager

Cordeel Group

## A focus on solar



Currently, 2.07 Megawatts-peak (MWp) of solar panels are installed at our site in Temse. This is sufficient green energy to meet the electricity requirements of all business activities on the site.

Building	kWp
C-concrete building	706
C-metal building	797
C-supply building	260
C-wood building	309
<b>Total Site Temse</b>	<b>2,072</b>

These solar panels reduce our dependence on fossil fuels, cut our carbon footprint, and are a cost-efficient, cost-saving and profitable investment. They are a prime example of how we are promoting renewable energy as the one and only energy source of the future.

We aim to stimulate our operating companies to follow our lead, take measures to reduce their electricity consumption, and make the switch to green energy contracts. All these measures would contribute to significantly reduce the indirect greenhouse gas emissions of our portfolio.

### Floating solar panels

Floating solar panels utilize the natural cooling of water to increase the efficiency of solar energy collection. We have installed a trial of floating solar panels in Temse via ClicFloats. It will generate an additional 415 MWh per year. A further benefit of the ClicFloats solution is that the solar panels are made from recycled material and thus contribute to the circular economy.



## Electric vehicle charging stations



In 2021, we significantly increased the number of charging stations for electric vehicles at our offices. We aim for solar panels to supply the electricity for these charging stations.

Company		Location	
<b>C-construct België</b>			
Cordeel Temse	CHQ	Frank Van Dyckelaan 15, BE-9140 Temse	12
	C-concrete	Frank Van Dyckelaan 19D, BE-9140 Temse	2
	C-wood	Frank Van Dyckelaan 19C, BE-9140 Temse	4
	C-metal	Frank Van Dyckelaan 19A, BE-9140 Temse	2
	C-supply	Frank Van Dyckelaan 17, BE-9140 Temse	4
<b>Cordeel Group C-Tech</b>			
	Imtech België	Koralenhoeve 9, BE-2160 Wommelgem	1
	NLT Pivaco	Frank Van Dyckelaan 14, BE-9140 Temse	4
<b>C-construct Nederland</b>			
	Cordeel Nederland	Lindsedijk 22, NL-3336LE Zwijndrecht	2
	Geelen	Engelmanstraat 49, NL-6086BB Neer	2



Energy consumption 2021  
**31,582 kWh**  
11,763 kWh



Total km 2021  
**157,909 km**  
58,815 km





# Sustainability strategy

At Cordeel we are committed to help make the world a better place for all. To put our commitment into practice, we analysed various sustainability frameworks for the reporting of our sustainability strategy and efforts. The 17 Sustainable Development Goals (SDGs) of the United Nations were chosen as a general guideline. We use the SDGs to help identify where we could make the most impact through our ESG initiatives.



# What makes an effective ESG strategy?

We developed our ESG strategy with input from our employees, company leadership, members of the board as well as our external partners and stakeholders.

At Cordeel we particularly value the opinion of our employees. To increase employee engagement in the ESG story, we conducted a survey to understand their priorities. Their remarks and suggestions gave us a better understanding of their concerns and priorities. We used this input to further develop our sustainability strategy.

Through analysis, the employee survey, and dialogue with our stakeholders, we selected 11 focus SDGs that we can impact the most. Cordeel is already very actively working on some of these.

## How cordeel addresses the UN's sustainable development goals

The United Nations' Sustainable Development Goals (SDGs) are 17 goals to make the world a better place by 2030. They have been agreed by the countries that are members of the United Nations, including Belgium. The SDGs started in 2015 and will run until 2030. They are a global compass for challenges such as poverty, educa-

tion and the climate crisis. They encourage companies to reduce their negative impact and to make a positive contribution to sustainable development.

Cordeel aims to have addressed all 17 SDGs at least once in its day-to-day operations by the end of 2022. We link them to tangible challenges in our organisation and the construction sector. That is why you will come across these SDG icons throughout this report. This way we check all our initiatives and achievements against the global agenda and try to communicate this as clearly as possible to all our stakeholders. At the same time we hope to inspire people and organisations to work actively towards a sustainable future.

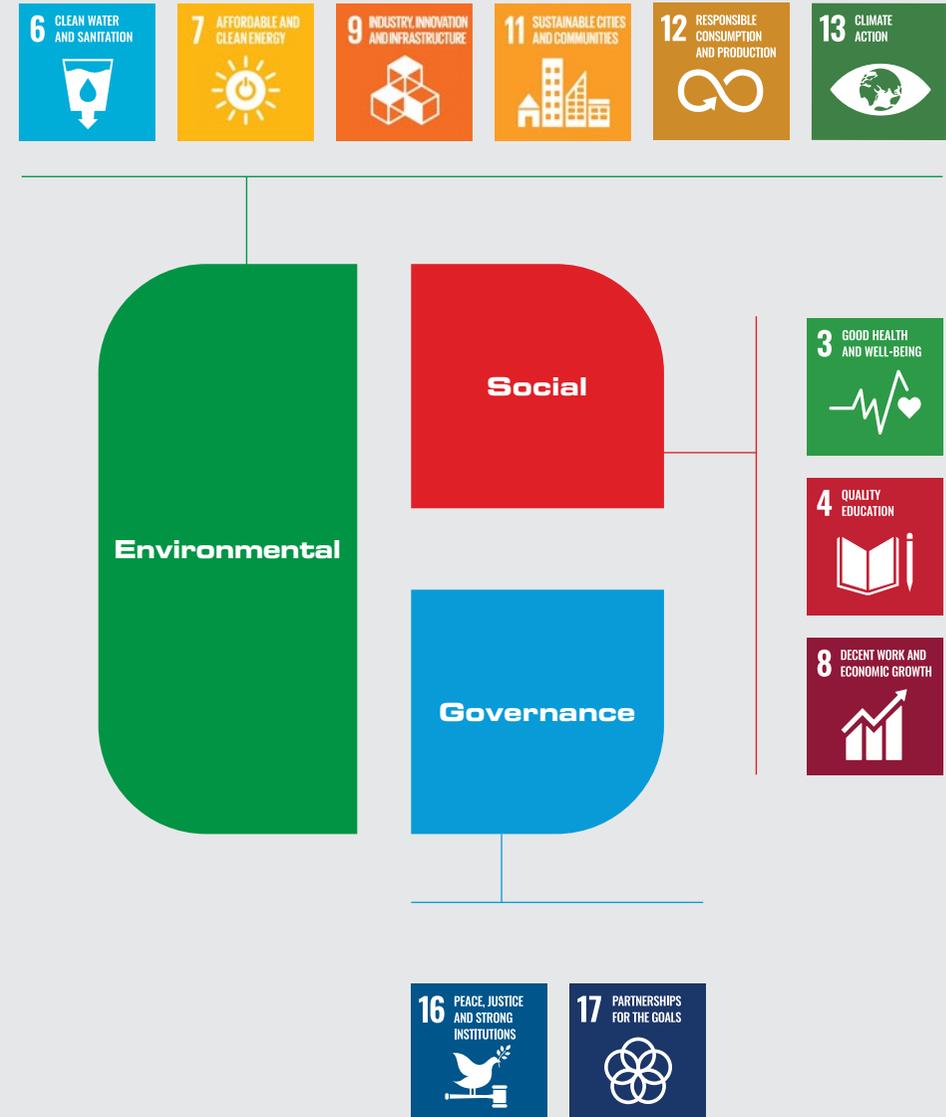
## SUSTAINABLE DEVELOPMENT GOALS



## Our ESG strategy

Our corporate sustainability consists of three pillars: Environmental, Social and Governance. For each pillar, we defined an overall ambition statement as well as several focus areas. Those focus areas, 11 in total, are the sustainability topics we consider important for both our business and our stakeholders. Cordeel's sustainability program is and will always be a continuous journey of learning and improving.

	Environmental	Social	Governance
Ambition	We will lower our environmental footprint by reducing our carbon emissions and waste intensity. We will build a passionate and CO <sub>2</sub> free future by implementing innovative solutions in our organizations and for our customers.	People are the driving force behind a company's success. We will create an environment in which our people can reach their full potential by encouraging them to learn and develop themselves. Investing in a fair and sustainable employability and environment while enhancing their health and safety. Grease the happiest company to work for where people are able and willing to work, now and in the future.	Adequate and agile corporate governance is an essential tool to ensure sustainable growth and profitability. Our governance structures and processes support and enable our people to give their best, achieve highest ethical business standards and secure economic growth. We drive ESG performance through improved transparency and accountability. We help to ensure that more people can participate and benefit from a prospering society regardless of their identity, background and gender.
Focus area	<ul style="list-style-type: none"> <li>• Renewable &amp; smart energy</li> <li>• Sustainable &amp; circular operations</li> <li>• Sustainable &amp; circular infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Employee Personal Development</li> <li>• Promote employee health &amp; engagement</li> <li>• Connection - one family</li> </ul>	<ul style="list-style-type: none"> <li>• Transparant communication</li> <li>• Corporate governance &amp; ethics</li> <li>• Corporate policy's</li> </ul>





# Putting it all into action

Sustainability at Cordeel is all about defining actionable long-term commitments. The Sustainability Committee has developed an action plan of objectives that are to be reached by 2027 at the latest.

Focus Area	Reason	SDG	Actions	Status	Deadline		
<b>Renewable &amp; smart energy</b>	Optimize and reduce the energy consumption of our operations and buildings through monitoring. Reduce the impact of our environmental footprint by switching to renewable energy consumption and storage.		Analyse implementation of hydrogen gas stations on our premises	Ongoing	Q2 2022		
			Install hydrogen electrolyser	Ongoing	Q1 2023		
			Electrify our construction sites	Ongoing	Q4 2022		
			Cordeel Business Park 4.0 - Energy Hill Temse	Ongoing	Q4 2023		
				Cordeel Business Park 4.0 - Turbine Temse	Ongoing	Q4 2022	
			Green energy for all buildings	Done	-		
			Green concrete	Ongoing	Q1 2022		
			Install Vanadium battery Temse	Ongoing	Q4 2023		
			Investigate switch to renewable diesel for road transportation	Ongoing	Q4 2021		
			CO <sub>2</sub> Performance Ladder Belgium - level 4 + ISO50001	Ongoing	Q4 2024		
			Electrify our fleet - cars	Ongoing	Q4 2024		
			Electrify our fleet - freight	Ongoing	Q4 2027		
			Use a mobility management tool	Ongoing	Q1 2022		
			Install C-scan in all building and construction sites	Ongoing	Q2 2022		
			<b>Sustainable and circular operations &amp; products</b>	Have a positive impact on the environment by reducing our waste intensity and carbon emissions of our own production and operations, as well as adapting circular business principles.		Madaster Max / circular index	Ongoing
		C-fire bio products				Ongoing	Q2 2022
					Vademecum 2.0 for building	Continue	-
					Art Coupé	Ongoing	Q3 2022
	Monitor water consumption and use	To be initiated			Q2 2022		
	Start-up and initiatives around dewatering	To be initiated			Q4 2022		
	Reduce waste - measure waste	To be initiated			Q4 2022		
<b>Sustainable work environment &amp; infrastructure</b>	Make our Cordeel work environment green and create a sustainability mindset among all employees.		Create a sustainability mindset	To be initiated	Q4 2022		
			CHQ WELL audit and certification	To be initiated	Q1 2022		
			C-living BREEAM certificate "Excellent"	Continue	-		
			Eliminate plastic bottles	Ongoing	Q4 2022		
			Provide bicycle shed at CHQ	Ongoing	Q2 2022		
			Provide smart charging stations at CHQ	Ongoing	Q4 2022		
			Implement general bicycle policy (part of mobility budget)	Ongoing	Q4 2022		
	CREATORS - Pilot Site Temse	Ongoing	Q3 2023				



Focus Area	Reason	SDG	Actions	Status	Deadline	
Social	<b>Employee learning &amp; development</b>	 	Encourage our employees to learn and develop themselves by providing high-quality training programmes and career opportunities.	Further develop and standardise onboarding process	Ongoing	Q1 2022
			Establish, development and implementation of the C-academy	Ongoing	Q4 2022	
			Generate a continuous feedback culture	Ongoing	Q4 2022	
	<b>Promote employee health, safety &amp; engagement</b>	 	We want our people to come to work with energy and engagement by enhancing their health and safety. We aim to create the happiest company to work for, where people work with energy and enthusiasm, now and in the future.	Unify the homeworking policy	On going	Q1 2022
			Unify annual employee survey	On going	Q2 2022	
			Set up a well-being programme	To be initiated	Q4 2022	
	<b>Cordeel community   One Family</b>	     	Create the happiest company to work for, by building a culture of belonging, and working together as One Family based on corporate values and an increased focus on social engagement.	New website	Ongoing	Q1 2022
			New internal portal	Ongoing	Q1 2022	
			C-WOW - turning values into behaviour	Ongoing	Q1 2022	
Set up actions around diversity and inclusion			To be initiated	Q4 2022		
Define charities in line with the SDGs (1, 2, 14)			Yearly	Q1 2022		
Organise socially responsible action days			Yearly	Q1 2022		
Governance	<b>Transparent communication Corporate governance Ethical standards</b>	  	Good corporate governance is essential to ensure sustainable growth and profitability all the while upholding the highest ethical standards.	Revise and implement revised corporate governance structure	Ongoing	Q4 2022
			List ethical standards	Ongoing	Q4 2022	
			Implement ethical standards in code of ethics	Ongoing	Q4 2022	
			Investigate compliance and risk management tools	Ongoing	Q4 2022	



# Key achievements

In recent years, Cordeel has made the commitment to build a more sustainable future. We are very proud to share some of our recent actions and realisations that illustrate our hard work and efforts for our people and the planet. Most of these key achievements were realised by close cooperation between our departments and of course our partners.

▲ POM Einstein Niel BE  
*Met zich op zee Architecten & Ontwerpers*

# Innovative energy storage technologies

The energy landscape has evolved in recent years from centralised to decentralised generation. More and more people are installing solar panels to reduce their CO<sub>2</sub> footprint. However, they find that for the most part they cannot use this energy themselves. This contributes to grid instability. Consequently there is a need for local energy storage such as batteries. These are necessary to optimize the match between energy consumption and (renewable) energy production.

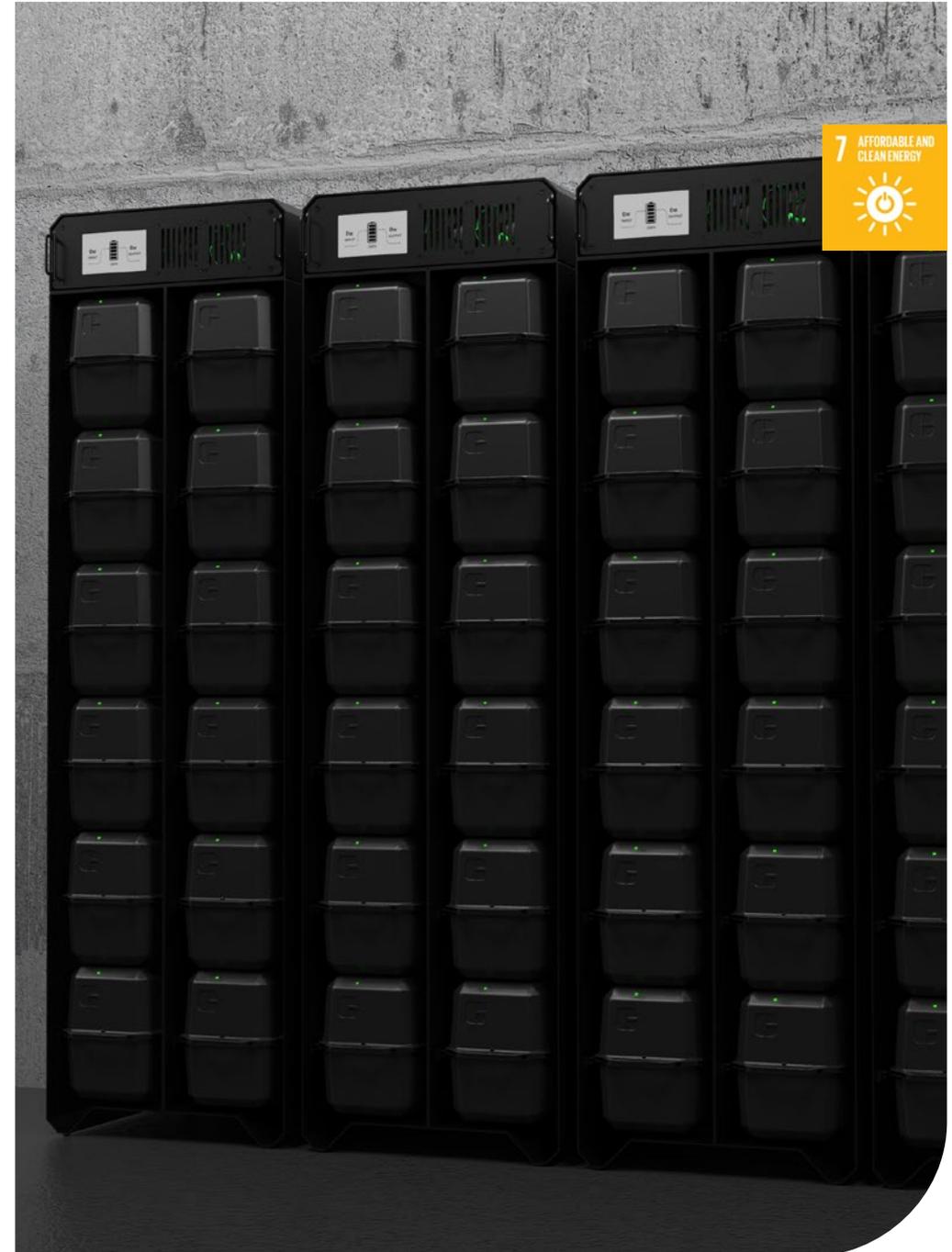
Today, Vanadium RedoxFlow Batteries (VRFBs) offer a promising solution. C-innovation is developing this technology for both the residential and industrial markets.

Another innovative technology that we are working with is Lithium Ion, mainly through C-battery, a new company within the Cordeel Group.

Both technologies have their pros and cons. VRFBs can be higher capacity and slightly larger. The electrolyte is completely green and can be recycled in a very environmentally-friendly way. Cleaning requires little energy, after which the electrolyte can be used again immediately. VRFBs are also non-combustible. Lithium Ion is more power focused and slightly cheaper, but less environmentally friendly and more flammable.

VRFBs are more suited to stationary applications; Lithium Ion batteries are more suitable for more mobile applications.

We are strong believers in using our own site as an innovative example for others. Therefore, we will be implementing our sustainable energy storage solutions at our site in Temse. By using both types of batteries we will be able to store 1300 kW of the energy generated by our solar panels, turbine, and energy hill. To give you an idea of what this means, 300 kW equals 10 car batteries. Our Vanadium RedoxFlow battery will be able to store up to 1000 kW; our Lithium Ion battery will store up to 300 kW. Together, they will give us the opportunity to use our generated energy whenever we want.



# C-energy: Innovating to make truly green energy

Faced with rising energy prices and the challenge of reducing CO<sub>2</sub> emissions, in 2021 Cordeel created a new division, C-energy. Its innovative solutions cover all aspects of energy management, storage, optimisation and trading to deliver Energy-as-a-Service as a sustainable and future-proof energy solution.

Our vast network of qualitative partners and the ecosystem of the Cordeel Group allow us to take a pioneering role and shape the future of energy management today and into the future. We have all the in-house expertise

and solutions to design and implement a pioneering energy management strategy.

C-energy has developed innovative solutions to reduce the CO<sub>2</sub> footprint in the company's activities and far beyond:

## Monitoring

Under the motto 'to measure is to know', C-energy has developed C-scan. It monitors the consumption of water and energy and displays the indoor air quality (e.g. CO<sub>2</sub> concentration, particulate matter), temperature, humidity, light intensity, water leaks and indoor movement. Through analysis of this data we can offer more sustainable solutions and energy-saving measures. These can reduce energy use and consequently lead to a smaller CO<sub>2</sub> footprint.



## Consumption and production

Energy production has been mankind's main challenge for decades and we are still struggling to use our limited raw materials more efficiently. In the search for renewable energy a new challenge arises: maintaining the power balance between production and consumption on the grid.

To maintain this balance, C-energy has looked for a way to use energy more efficiently and optimise the energy used to produce renewable energy. Hydrogen is a sustainable solution that we are looking into. By producing hydrogen in combination with green energy stored in batteries, construction sites and even whole companies can be electrified. Also transport can be completely emission-free with electric or hydrogen fuel-cell vehicles. Cordeel intends to feed power aggregates with green hydrogen to provide real green energy, install solar panels where possible, electrify tower cranes completely, and last but not least design energy hills to generate real green energy.

## Storage

Energy storage will inevitably play a vital role in any future-proof energy management strategy. C-energy is developing innovative solutions to store green energy and use it in the future. These include Lithium Ion, hydro-storage, hydrogen, and Vanadium RedoxFlow batteries. By combining these technologies we can optimise our energy consumption and help shape the future. With an energy storage solution in place, we can set up an AI-driven peak shaving system. Energy storage also facilitates energy trading.

## Our ecosystem

Our vast network of qualitative partners and the ecosystem of the Cordeel Group allow us to take a pioneering role and shape the future of energy management today.



# Our BREEAM dream

The attention for sustainable and circular building is growing all over the world. This is also causing real estate owners, contractors and architects to become increasingly familiar with sustainability labels such as BREEAM. BREEAM is an abbreviation of Building Research Establishment Environmental Assessment Method. It's a sustainability label for realising sustainable buildings with minimal environmental impact. A BREEAM certification is proof that a building or business was built in a sustainable way.

Several of the buildings in the Cordeel portfolio have been realised with BREEAM certification in collaboration with the needs of the customers. Our project development division of Cordeel, C-living, has the dream to realise only BREEAM certified buildings.

## Across-the-board sustainability

BREEAM provides insight into the actual sustainability performance of a project. With a sustainable building, significant savings in operational costs can be made. A building with a BREEAM certificate is also a healthy building. This means that attention is paid to, for example, the indoor climate, ventilation, light, and volatile organic compounds. A healthy work environment is better for the well-being and productivity of users.

## Future-proofed construction projects

With BREEAM you prepare your project for the future. The BREEAM bar is higher than what is legally required. This makes your building resistant to sudden events and gradual changes.

Intervest Green logistics Herentals BE ►  
Architectenbureau Frank Joosen



# Living the circular (construction) economy

Cordeel is aware of the socially responsible role we must play. More than 60% of our CO<sub>2</sub> emissions are related to the materials we use. The circular economy offers solutions to reduce that impact. For the construction sector, this means, among other things, reuse and maximum high-quality recycling of building materials; focusing on change-oriented construction; the optimal use of space; and extending the lifespan of buildings and their materials.

In the philosophy of forward thinking and “timeless design”, circular construction and change-oriented design are the keywords in addition to sustainable use of materials. Change-oriented building leads to the possibility to change the spatial layout of a building with relatively simple interventions. This results in low investment costs and limited waste during these interventions.

## Green Deal Circular Building

In the innovative learning network Green Deal Circular Building, Cordeel is committed to sharing practical experiences with other construction companies, construction material producers, local and regional authorities, private developers, researchers and other organisations. Until 2023, we will set up experiments together, test the circular principles in practice and expose bottlenecks.

Cordeel Temse has signed up to the Green Deal Circular Building with the Multi Brouckère project in Brussels.

This project lends itself to this approach because recycled building materials will be used.

## C-fast

With our systems such as C-fast, we focus on the assembly speed of the site with high-quality products. C-fast is our own innovative building system in precast concrete, with smart couplings for columns and prestressed floor slabs that are produced at C-concrete. The major advantages of this system in comparison with the traditional method are much faster construction time and assembly, lower construction costs, and the modular design which allows later adaptations. C-fast is modular and barless. It can be used in both non-residential construction as well as in buildings with mixed functions such as apartment buildings.



## Madaster

Cordeel is a proud partner of Madaster Max, part of Madaster Belgium. Madaster is a registry for materials. On the Madaster platform, materials, products and elements used in construction objects are registered and documented. All data is easily shared and managed in such a way that owners and/or managers of real estate or infrastructure always have up-to-date information about the financial and circular value, toxicity, reusability and reuse potential of applied materials, products and elements.

## Bim for efficiency improvements

For several years, Cordeel has been working intensively with the innovative idea of Building Information Modeling/Management (BIM). This information system gives us the opportunity to work as efficiently as possible, centralise all data, and most of all have responsible production on our construction sites.

By virtually composing every element in the plans, we can obtain a virtual copy of the building in which we are able to remove any error before we start building. As a result, there is no loss of time and no waste of materials during the construction process. This advanced model is even linked with the Madaster platform, mentioned above, which indicates which specific materials are used and therefore displays the degree of circularity.





# Aiming to be WELL-certified

Our buildings have a profound impact on our health, well-being and productivity. Cordeel has the ambition to work on improving our health and well-being in buildings and in the working environment.

The WELL Building Standard is a guideline devised by the WELL Building Institute in the United States. It's the only standard worldwide that focuses exclusively on the well-being of people in their work environment and is backed by the latest scientific research. It's designed to complement and work seamlessly with green building rating systems, such as LEED®, Living Building Challenge, Three Star, Green Star, and BREEAM.

We are very proud that one of our employees has successfully completed the WELL training. We are only the 23rd company in Belgium - and the very first in the construction sector - to have an employee with this expertise. This is the first step we have taken to make sure our buildings will be WELL-certified in the future.

## WELL is based on 10 concepts:



POM Einstein Niel BE ►  
Met zich op zee Architecten & Ontwerpers



# Climbing the CO<sub>2</sub> Performance Ladder

The CO<sub>2</sub> Performance Ladder is a sustainability tool and certification scheme that helps companies reduce CO<sub>2</sub> emissions by taking practical measures, working on innovation and sharing knowledge. It is actively used as an award criterion for public contracts in the construction sector.

The idea behind the tool is to encourage the entire construction sector to set up a continuous management system for reducing CO<sub>2</sub> emissions, rather than working solely with project-based measures. In practice, the ladder delivers structural energy and cost savings for the company.

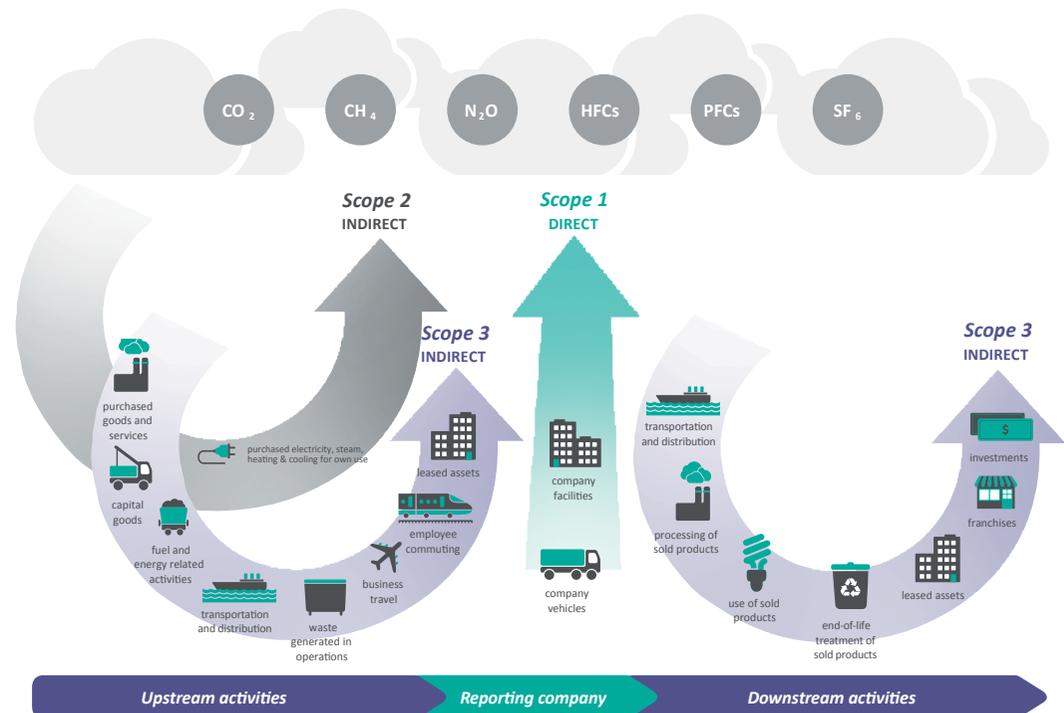
The CO<sub>2</sub> Performance Ladder is a CO<sub>2</sub> management system and has 5 levels, rising from 1 to 5. Up to and including level 3, an organisation works with the emissions of its own organisation (and all projects). From level 4 and 5 onwards, work is also done on the CO<sub>2</sub> emissions in the chain and sector.

Based on our mission of building a passionate CO<sub>2</sub>-free future, Cordeel Group is stepping up its efforts to minimise our carbon footprint. To stimulate actions and to be aware of our CO<sub>2</sub> emissions, the management has decided to use the CO<sub>2</sub> Performance Ladder to structurally work on our CO<sub>2</sub> reduction.

## Already at level 3

At the beginning of 2021, Cordeel made the commitment to become certified at level 3 of the CO<sub>2</sub> Performance Ladder. Since then, we have successfully completed the audit and obtained the CO<sub>2</sub> Performance Ladder level 3.

We are now seeking to achieve zero CO<sub>2</sub> emissions by the end of 2027. In practice this means reducing our emissions by 17% per year in the next three years; a very ambitious goal. We publish our carbon footprint every six months on our website.





# Cordeel: a member of Flux50

Flux50 is a membership organisation between the Flemish government, the research world and industry. It seeks to help Flanders gain international recognition as a Smart Energy Region. Flux50 facilitates cross-sector collaboration between energy, IT and building companies to enhance the competitiveness of the Flemish smart energy industry in the transition towards low carbon systems. It provides its members with project support, networking opportunities and a knowledge-sharing platform.

To bring innovative and fully-integrated energy products and services to the international market, Flux50 sets up and coordinates living labs in five ‘innovator zones’:

As a member of Flux50, Cordeel takes up a central role in the energy field. We are involved in two specific Flux50 projects: Cordeel Business Park 4.0 and City Poles.



Energy Harbors



Microgrids



Multi-energy Solutions



Energy Cloud Platforms



Intelligent Renovation



# Cordeel business park 4.0

Our historic site in Temse (the former Boelwerf shipyard) has centralised all our production facilities since 2009. The final piece was added in 2019 when our new Head Office was opened. Bearing in mind its focus on innovation, the Cordeel Group intends to further develop the site into a real-life testing ground to further develop and demonstrate business sites of the future. We call this Cordeel Business Park 4.0.

The project consists of multiple installations: pumped hydro, floating PV panels, tidal energy, a hydrogen installation, and an ingenious system for the energy management of the office buildings and sustainable mobility solutions. These are all rather uncommon installations in Flanders, so the experience gained in Cordeel Business Park 4.0 will later be shared with external parties interested in such sustainable solutions.

At the heart of Cordeel Business Park 4.0 is an integrated ecosystem built on three pillars:

1. Energy in buildings: Usage-Driven Power Station
2. Innovative energy production: Hydro-Energy Power Station
3. Electro-mobility: Optibids.

## Usage-Driven Power Station

In this project, the needs of users from different buildings and the profiles of energy production are identified and coordinated within a future local energy community. Through in-depth learning, key data are logged and processed such as building occupancy, production processes, the need for energy, and sustainable generation systems. Energy consumption is predicted, visualised and optimally tuned.

## Hydro-Energy Power Station

In this project, innovative energy production processes and storage installations are designed, implemented and tested for further application on other sites: A tidal power station at the entrance of the Schelde dock.

- An energy hill which provides a water basin at a height to which water will be pumped. This can provide a source of renewable electricity via a turbine in case of shortage of other sources.
- Floating solar panels on the dock. These will demonstrate various innovative solutions for the floats and the anchorages.

All these projects are described in detail later in this report.

## Electro-mobility: Optibids

The third pillar concerns electro-mobility, in which the extended vehicle fleet, the charging infrastructure and the renewable energy applications will serve as one of the three pilot sites of the ICON project Optibids. The goals of this project are to achieve 65% self-consumption; reduce the environmental footprint by 65%; and reduce energy costs by 8%. Initial results are already exceeding all these objectives.



## Cordeel's partners in business park 4.0

For the development of project Business Park 4.0 of Flux50, Cordeel is cooperating with an impressive group of partners.

Three companies are part of the Cordeel Group: Cordeel, who is the coordinator for the hydro-energy project; Imtech Belgium as system integrator; and Ecosource, to bring the innovative and ecological products, such as the energy hill, into the marketplace after development.

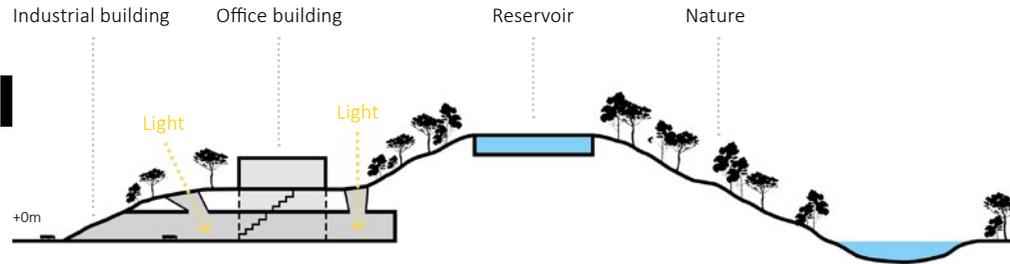
Eoluz will be responsible for installing and developing the floating solar panels. Ileco will take care of the prediction and optimization of the energy. Turbulent will be the main actor in the area of tidal energy. SSD, under the commercial name Darwin, will make the interface with the user, the visualization of the realised optimisations, and the data processing link.

This combination of partners gives an entirely new way of developing sites that have the potential to yield significant added value not only for end clients but also for society and the planet. With this project we aim to make an example of what industry 4.0 can look like; a concept endorsed by the Flemish government.



## Cordeel business park 4.0

# The Cordeel energy hill



Cordeel is looking for strategies that can generate renewable energy in a sustainable and innovative way. In the energy transition we want to draw as much energy as possible from renewable sources and make provisions for peak regulation and energy buffering.

The Cordeel premises already produce green energy from solar panels. We are now creating an energy hill, using excess soil from other building sites. At the base and the top of the hill will be two water basins. To be able to build such an energy hill within the premises of C-ground (part of C-energy) makes this solution even more sustainable. The energy hill, a patented concept, is part of the Flux50 project.

On and around this energy hill, a number of smart energy concepts and a whole ecosystem of energy production and storage projects can be realised, integrated and demonstrated, as part of what we call a “green

battery”. They will all be managed and optimised with a smart energy platform.

## Solar energy: Floating solar panels

On the surfaces of both the upper and lower water basins, floating solar panels will be added. These will lead to an increase in efficiency of solar energy collection through the cooling effect of the water.

## Pumped hydro installation

With this project we will demonstrate how to pump water up the energy hill using zero-energy patented pumps (Metalpecker). This water can then be used to generate hydro-electric energy.

## Hydro-electric power station

With the water in the upper basin which now has a higher potential energy, we are now able to turn this potential energy into electricity. This can then be used to power a variety of traditional and new applications. With this project we will research the different types of turbines and demonstrate the best solution.

## Hydrogen generator

A hydrogen generator will be installed on the energy hill. The principle involves placing two electrodes in water and adding a DC current (from the hydro-electric power station). The reduction reaction  $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$  will take place. In other words, hydrogen will be generated for use in, among other applications, Cordeel’s hydrogen cars.

## Tidal power station

The energy hill is located next to the river Schelde. The next logical step is to add a tidal power station.

## Wind energy

Through smart placement of energy hills, it’s possible to create funnels which direct the wind towards conventional wind turbine generators. These generators will therefore reach a much higher efficiency. This directed wind can also be used to cool solar panels. In this specific pilot project in Temse we are not able to demonstrate this application as the site is located in a bird migration area and it is therefore prohibited to place wind turbines here.

## C-ground

C-ground’s concept of a “green battery”

The conceptual and final design of the exploitation of the energy hill as a “green battery”, is a unique and patented concept within C-energy. While striving towards an energy-efficient tomorrow, C-ground (part of C-energy) is looking for other locations where there is the potential to construct such a “green battery”. Equally important is to integrate this concept into the environment to make it a natural asset for the area. This concept is suitable to redevelop brownfields, abandoned industrial sites, historic landfill locations etc.

## The energy hill as a nature reserve

Besides helping in the energy transition, the energy hill will also make a positive contribution to the visual and natural environment. The hill will be landscaped with trees and shrubs so that it blends in with the surrounding landscape. The hillside biotope will offer a variety of dry and wet habitats for birds, amphibians, insects and wild flowers. It could thus function as a nature reserve.



## Cordeel business park 4.0

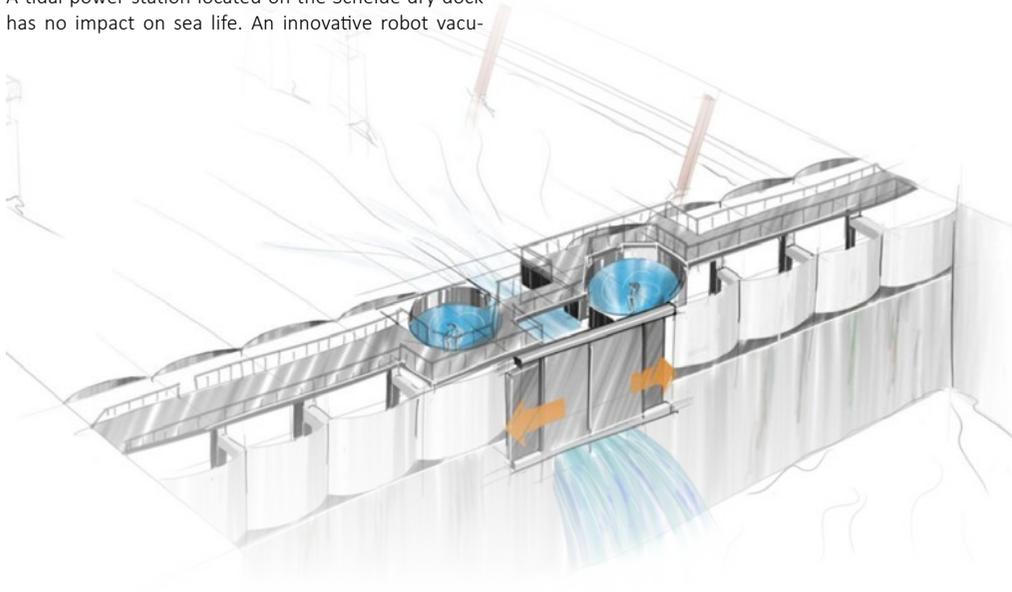
# Tidal power station

By placing the energy hill close to the river Schelde, the next logical step is to add a tidal power station as a means to obtain eco-friendly hydro-electric power.

At our site in Temse, the dry dock on the Schelde has a height difference between ebb and flow of 5.5 meters. Cortex-type turbines will be installed in the floodgate to harness tidal energy, where the intensity of the water from the rise and fall of tides is a form of kinetic energy.

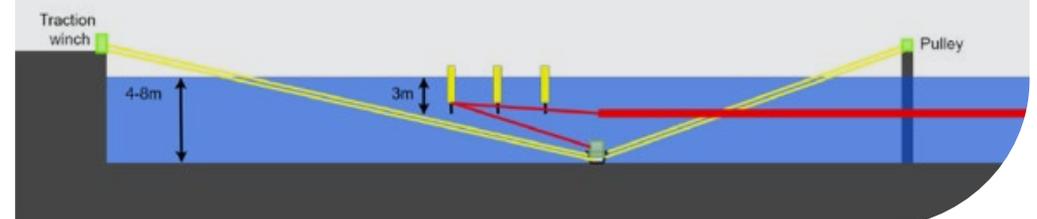
A tidal power station located on the Schelde dry dock has no impact on sea life. An innovative robot vacu-

um cleaner will soak up obstructions due to sand and sludge and return it to the river. A large turbine with additional production of 20% compared to two small turbines will be designed. This design will be implemented and thoroughly tested in real conditions. The turbine will generate 570 MWh of renewable energy.



## Project details

<b>Project reference</b>	Cordeel
<b>Project location</b>	De Zaat, Temse, België
<b>Renewable energy production</b>	570 MWh
<b>Power capacity</b>	180 kW
<b>Plant factor</b>	2821 h/y
<b>Grid type</b>	On-Grid
<b>CO<sub>2</sub> reduction</b>	140983 kg



# Digital city poles

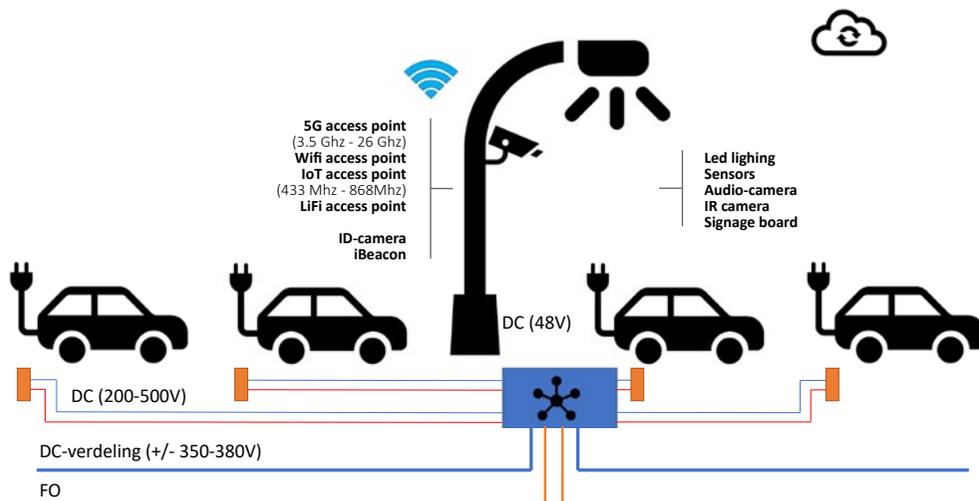
Through Flux50, Imtech has engaged in a co-creation model with a number of partners for the development of digital city poles. They have a variety of functions to optimize city life.

The city poles operate with LED lighting, which immediately cuts energy consumption by 50% and maintenance cost by 40%. They provide charging stations for electric cars, electric bikes and e-steps. The poles incorporate a sound and video camera, a WiFi access point, a LiFi access point, and a 5G access point.

In 2022, a digital city pole will be installed at our site in Temse.

## Electric vehicle charging stations

Our partner PowerStation (now part of the Cordeel Group) is also part of Optibids/Flux50 for the integration of electric mobility into local energy systems. It aims to promote decarbonisation of the Cordeel site in Temse as one of its pilot sites by electrifying our fleet and company buildings in the best way possible.



This includes installing aesthetically pleasing EV charging stations for employees and visitors. The charging stations are equipped with intelligence that can be linked with all other products from PowerStation's ecosystem range such as home batteries, solar panels, and the Alicia energy & mobility management software.

For these projects, Imtech teamed up with young graduates from the Vlerick Business School for the development of a future-proof business model around Smart City solutions.

## Consortium:

Tres, Crescent, Imtech Belgium, Safety-Product and Powerdale

## Technology supporting partners:

Nokia, Arco Information, Citymesh, Fluvius and KBC

# Cordeel hosts Flux50 Outdoor Network Event!



On 28 September 2021, Cordeel Group and Flux50 invited 250 energy professionals to a large networking event at Cordeel's Temse site called ONE! The aim was to meet peers, make new contacts and forge innovative plans with other Flemish companies and give the starting signal for the development of an innovative energy plan for Flemish ports. This plan aims to further develop the Flemish port areas into sustainable international energy hubs that respond to the growing challenge of climate and affordable energy. Sessions addressed topics such as the importance of ports as energy hubs, safety and sustainability in batteries, DC solutions, and alternative energy production.

*Laurence Gacoin, CEO C-innovation and C-energy*  
*Tinne Van Der Straeten, Federal Minister of Energy*

## Erik Groes, CEO Imtech Belgium

"We have first-hand experience here at the Cordeel site as to how challenging and crucial intelligent energy management can be. By putting all these applications into practice we demonstrate that a combination of different renewable energy sources and storage solutions such as solar, hydro and tidal energy are effectively workable in practice. Combined with thorough yet user-friendly reporting, we are convinced we can add value in the energy transition that is now on the table."

## Laurence Gacoin, CEO C-energy

"We at Cordeel Group are strongly committed to innovation as a catalyst for economic and environmental progress. This site shows that you can transform even historic industrial heritage into an innovation site. These initiatives not only fit within our own ideology but are also a demonstration for customers and other stakeholders to use these applications in their own journey towards sustainability and growth."



# Creators in practice

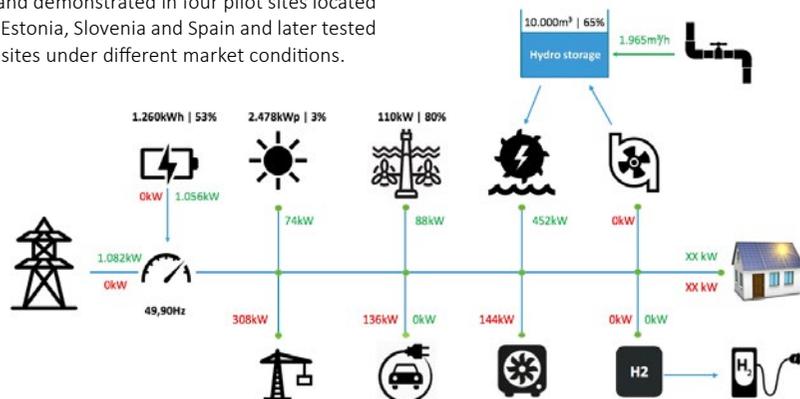


CREATORS enables local initiators to create and operate advanced Community Energy Systems (CES) by supporting technical, financial and social processes in each phase of a CES lifecycle. This Horizon 2020 EU funded project aims to accelerate the integration of CES across Europe by supporting local initiators throughout the entire lifecycle of a project and bring CES-as-a-service model to the market.

The main objectives of CREATORS are:

- Accelerate the integration of CES across Europe
- Enhance commercial readiness of CES
- Unlock over 60% of local renewable energy generation
- Increase flexibility and local grid balancing
- Activate and empower consumers and prosumers

The applications and service packages provided will be developed and demonstrated in four pilot sites located in Belgium, Estonia, Slovenia and Spain and later tested in six other sites under different market conditions.



## What is Cordeel's role in the project?

Cordeel is the proud coordinator of the CREATORS project. It started in September 2020 and will last 38 months. It is the first time that we are taking up this responsibility in such an ambitious, pan-European innovation action. As coordinator, Cordeel is in the driving seat to make sure that the ambition of CREATORS

makes it from the drawing table to reality. As coordinator, we are proud to present the numerous pilot sites where the outcomes of the CREATORS project actually are implemented for the first time. One of those pilot sites is our headquarters and production facilities in Temse, Belgium. Its home to over 2 MW of photovoltaic generation, 1 MWh of battery energy storage, a hydrogen fuelling station, a tidal generator, a hydropower energy hill and a multitude of electric vehicle charging facilities, all pioneered and integrated on-site.

## CREATORS' Temse Community Energy System

CREATORS' pilot site is located in Temse "De Zaat", the headquarters of Cordeel. This community consists of a business park, medium-sized industrial facilities, and residential buildings.

The goal is to create an energy community where individual existing and new technologies are interconnected into a multi-vector future-proofed market, optimising local demand-generation as well as distribution network congestion. Interaction with homeowners will demonstrate energy bill savings and the business case for a mixed ownership model for renewable energy installations.

The pilot combines different generation and storage assets installed in Cordeel's buildings that allow a 70% self-consumption rate, including rooftop and floating PV, battery storage, EV charging points and other assets in the planning phase such as tidal energy for production and storage. Involving industrial and residential consumers with different load profiles shows potential to increase the utilisation of renewable energy on-site and bring environmental benefits.



**CREATORS** is a consortium of 16 partners from eight European countries that include energy, engineering, construction, software and modelling centered firms, as well as site owners, managers and public promoters of Community Energy Systems.

The Temse CES will demonstrate the patented "energy hill": a pumped hydro installation and a zero-energy pump will be integrated: 1) to balance the grid (FCR) and 2) as an innovative way to generate energy. Hydrogen will be also used to store and regenerate energy with a fuel cell as well as to provide services to the grid such as FCR. The hydrogen installation will be used also to compress hydrogen and use this as fuel for heavy-duty transportation.

Cordeel is proud to be part of this project and to build a more sustainable future together.



# C-fire biodegradable fire extinguishers

With our innovative and ecological firefighting equipment and systems, C-fire offers a sustainable solution for firefighting. We have developed extinguishing fluids without fluorine, to reduce harm to the environment while maintaining the quality and efficacy of the fluids. We are therefore striving to make firefighting more sustainable yet just as effective as previous systems.

In the wake of this innovative solution, C-fire has developed a 100% biodegradable fire extinguishing spray for small or early fires, called Control Fire. This product can also be used to extinguish fire on humans as it does not cause irritation and is not harmful if it ends up in the face, mouth or eyes. This product is also fluorine-free and is 100% biodegradable so is extremely environmentally friendly.

At our headquarters in Temse, all extinguishers have been replaced with our own ecological Green Line extinguishers.

## Preventing battery fires

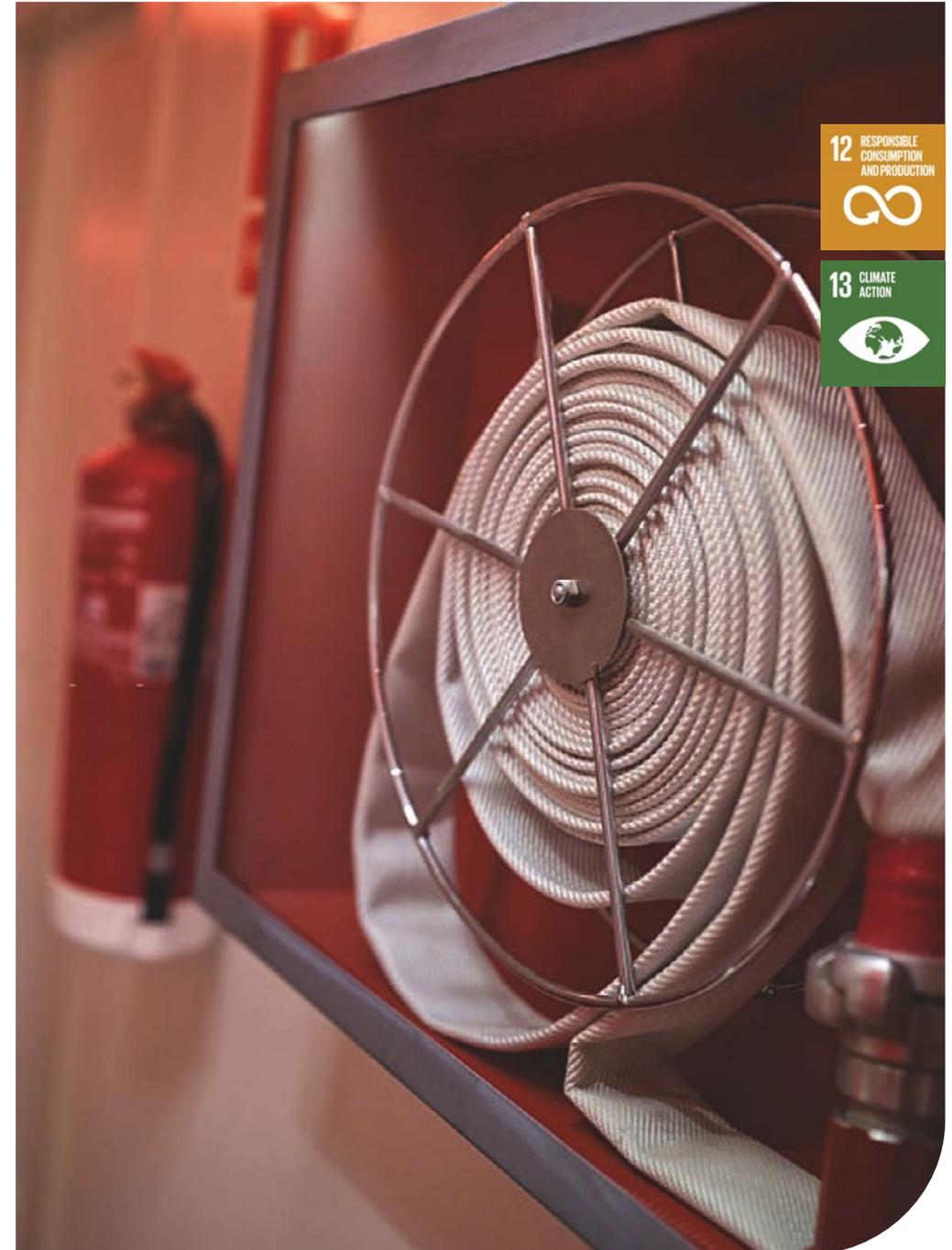
C-fire has developed a way to keep batteries as safe as possible. A fire extinguishing system is integrated into the battery which cools the battery if overheating is detected. This avoids a potential fire.



**5.28 billion**  
people have  
mobile devices today



**6.8 million**  
battery electric  
vehicles in 2020



# Greening the fleet

Several hundred company cars and service vehicles operate within the Cordeel Group. We have developed a strategy and a plan to make our fleet more environmentally friendly. It's our ambition and commitment for the fleet to be CO<sub>2</sub>-free by 2027.

## Car policy

In 2021 Cordeel added five plug-in hybrid cars, three full-electric cars, and four hydrogen cars to its fleet. To limit the impact on the environment, the fleet is also subject to a maximum limit of CO<sub>2</sub> emissions. Currently, employees can still choose between electric, hybrid, and diesel cars. From 2022 the focus will be on electric cars. The impact of a green fleet on the required capacity for green electricity is indicated below:

	MWh
Cars CHQ	504
Trucks CHQ	680

## Bike allowance

Employees who have a company car but come to work by bicycle for a day, receive a bicycle mileage allowance (just like their colleagues without a company car).

## Pool cars

The four hydrogen cars are available as pool cars for employees who have site visits, appointments with customers etc.

## Charging stations

In 2021 we significantly increased the number of charging stations at our offices. The intention is that the electricity for these will be supplied by solar panels.

## Alicia

In cooperation with Powerstation, Cordeel has developed the Alicia platform in which mobility and energy go hand in hand. Alicia collects data from our company cars, bicycles, subscriptions, charging stations and charging cards and gives an overview in a central tool. It also enables us to streamline communication across the company's different services. For example, it's easier for HR to liaise with the fleet to arrange company cars.

## Working from home

To reduce fleet CO<sub>2</sub> emissions and put more effort into the well-being of our employees, a home working policy was introduced within the Cordeel Group in 2021.

## Hydrogen cars

Hydrogen cars are part of the new generation of electrically powered cars. As the technology matures, hydrogen is gaining traction as a replacement for fossil fuels. This is because fuel cells burn no fossil fuels, and emit only clean water. Green hydrogen - hydrogen made with renewable energy - is completely carbon-free.

We are strong believers in hydrogen as an energy carrier. We also see it as an alternative for our bigger vehicles and for longer distances, when batteries won't be sufficient. As part of making our fleet CO<sub>2</sub>-neutral by 2024, we are running a pilot project of hydrogen cars. C-energy has purchased four Toyota Mirai hydrogen cars.

One of the biggest challenges of running hydrogen cars is the limited number of refuelling stations in Belgium, although the network is continually expanding. We want to overcome this challenge by helping to expand the infrastructure ourselves. We have therefore installed our own hydrogen gas station.

7 AFFORDABLE AND CLEAN ENERGY



13 CLIMATE ACTION



# The increasing digitalisation of Cordeel

Digitalisation and sustainability go hand in hand, and digital progress is an integral part of a 21<sup>st</sup> century corporate culture. Cordeel is fully engaged in digitalisation. We are continuously working on further digitalising our working documents and production processes, and are striving to reduce paper consumption as much as possible. The next few years will also see an increased switch to working from a Cloud environment.

## Lean processes

To improve our processes, we are continuously integrating Lean principles as a basis for the daily activities of the departments. The Lean philosophy is widely implemented within our group, and improvements in this area often go hand-in-hand with digitalisation. Lean is not exclusive to the construction site; purchasing and planning in the warehouses and workshops already follow this methodology. Recent investments include pre-printed Lean boards with coloured and writable magnetic post-its.

## Reducing paper consumption

At Cordeel we aim to minimize our paper consumption as much as possible, particularly at the construction sites which are among our heaviest paper consumers. Therefore, we have started to digitalise our construction sites with some innovative alternatives. The construction shed is equipped with a smartboard, avoiding the need to print plans during all meetings with constructors. This is not only good for the environment but also

convenient for the organisation as it facilitates planning of changes. In addition, construction sites are equipped with QR codes, which give every employee on the construction site the opportunity to check the plans and documents whenever necessary, on their phone/tablet.

## Check In At Work

Another form of advanced digitalisation is our internal website Check In At Work (CIAW). This in-house development enables the monitoring, reporting and follow-up of all people present on a site, including subcontractors, completely digitally. Through CIAW, all necessary documents for employment in Belgium are checked, allowing ethical and responsible work.



# Electrification of construction sites

To make our company more sustainable and greener, an important action is the electrification of our construction sites. Since these often only have a limited or even no grid connection, this missing capacity is supplemented by diesel power generators. Unfortunately, these have a negative impact on several environmental aspects such as noise, dust, nitrogen, ineffective fuel use, and high CO<sub>2</sub> emissions.

To measure the energy consumption on our construction sites, we have started a measurement campaign through C-scan. An example is shown below.

We noted that we often use diesel generators with a power higher than required. The main reason is that tower cranes often have a power peak in a very short period of time.

## Rental hubs

Rental Hubs is a new initiative that will allow subcontractors to use our machines (when available) instead of transporting their own machines to and from the site. In this way they will be using green energy and reducing CO<sub>2</sub> emissions of transportation.

## Neighbourhood battery

A battery always has a metal casing. Since metal has no thermal mass, a metal casing results in significant heat loss. For an external project, Cordeel was looking for an innovative solution for a neighbourhood battery. The

metal casing was replaced by insulated and demountable concrete. Such a construction functions better as a buffer against heat and is less subject to temperature fluctuations. This resulted in a thermal and sustainable solution. Moreover, a small recyclable building for batteries was included in the infrastructure. It can be easily disassembled and re-used in other locations, making it a sustainable solution as the batteries move together with it.

## AC to DC

At one of Cordeel's construction sites, a demonstration project is being developed to replace a construction shed with all our innovative alternatives, including the transition from AC to DC voltage. Low-voltage intelligent DC grids can make the world more sustainable. They can ease the switch to fully sustainable electricity generated by wind and sun. Cables can be thinner, and large adapters are no longer required, saving on materials. The energy losses through conversion can be reduced to zero.

## The construction site of tomorrow

Our vision of the future is one of a connected, CO<sub>2</sub>-neutral construction site. Where possible, there will be a grid connection, where we match the right battery with the right power for the tower cranes. We add solar panels where we can and replace the diesel power groups with hydrogen power groups. In addition, we are working on a project to use our hydrogen cars to charge the yard battery. At the same time we are striving to reduce noise pollution.



Grid connection where possible



Battery or Hydrogen Powered electric machinery



Battery for storage, buffering and trading



Hydrogen Fuel Cell for baseline production



PV Production integrated in site offices



Grid connected electric machinery



Hydrogen Car fuels local grid



Rental hub for all machinery



# Green concrete

Concrete is one of the most widely used materials in the construction industry and the cement industry is responsible for a large part of global CO<sub>2</sub> emissions. Within Cordeel we use a lot of concrete, so we consider it our duty to look for more environmentally-friendly alternatives.

Our innovation department is focusing on optimizing our concrete recipes by replacing cement as much as possible. It is also looking at replacing sand and other aggregates with recycled products, such as sand cleaned by C-ground.

## Aggregates

An important way to reduce CO<sub>2</sub> emissions is the use of recycled aggregates for ready-mixed concrete. In Belgium, ready-mixed concrete is certified under the BENOR label. To obtain BENOR-labelled concrete with recycled aggregates, the product must conform to the Belgian concrete standard. In most traditional construction applications, it is now permitted to replace up to 20% of coarse aggregates with high-quality recycled concrete aggregates.

The largest share of concrete's CO<sub>2</sub> emissions arises from the production of cement. It is therefore important to look for alternative binders, such as the use of ground blast furnace slag, fly ash and geopolymers. These alternatives exist, but it's vital to demonstrate that they offer the same quality as current materials.

## Recycling

In our concrete department we try to recycle as much as possible and we continuously review our production process to make it more sustainable. In our search for more responsible consumption and production we have invested in a system that processes the water used in the prefabrication department. We also try to reduce our ecological footprint by filtering and reusing our residual concrete.



# Sustainable projects by Cordeel

## Project 1

### Brouckère - Multi 45,000 m<sup>2</sup> - Brussel (BE)

*Conix RDBM Architects*

- Fossil-free site
- Heat pumps
- 168 solar panels on the roof
- Green roof
- Circularity (89% of existing materials reused)



## Project 2

### DHL - Blue Gate 12,000 m<sup>2</sup> - Antwerp (BE)

*Met zicht op zee architecten & ontwerpers*

- Maximal transport via water
- BIM
- BREEAM certified
- CO<sub>2</sub>-neutral
- Circularity



## Project 3

### Living Tomorrow 12,000 m<sup>2</sup> - Vilvoorde (BE)

- Innovation campus
- Digitalised yard
- Digital twin
- Energy-efficient building
- Recycled isolation
- CO<sub>2</sub>-neutral concrete
- Circularity



## Project 4

### Herlog Investest Logistics 45,000 m<sup>2</sup> - Herentals (BE)

*Architectenbureau Frank Joosen*

- Fossil-free site
- 1.4 MW solar panels on all roofs
- Heat pumps
- Recovery and reuse of rainwater for all toilets
- and outdoor taps
- Energy monitoring and smart grid control
- Charging infrastructure for electric cars
- BREEAM Excellent



# Sustainable projects by Cordeel



## Project 5

### Residential site 32,260 m<sup>2</sup> - Mol (BE)

OA Peter Jannes - a33 architecten

- Fossil-free site
- Heating and sanitary water production from 100% renewable energy
- Rainwater recovery systems
- Primary heat network over entire site - geothermal
- Existing trees and flora were spared during reconstruction



## Project 6

### Children's Centre De Samenstroem 4,600 m<sup>2</sup> - Hellevoetsluis (NL)

De Zwarte Hond, Terberg

- From 3 locations to 1 location for more efficient use of the building
- Reduce CO<sub>2</sub> footprint
- Designed and built-in accordance with the BENG standard

## Project 7

### Distribution Centre Bleizo 46,700 m<sup>2</sup> - Bleiswijk (NL)

Palazzo

- BREEM Very Good
- FSC certificate
- All-electric
- Solar panels
- Heat pump



## Project 8

### Blue City 335 m<sup>2</sup> - Rotterdam (NL)

- Old outdoor pool converted to outdoor terrace, storage and restrooms
- Renovated roof
- Circular materials used as much as possible, including entire steel structure, wooden beams, deck sheeting and wooden furniture



# Our people at “The happiest company to work for”

At Cordeel, our people are the key to our success. Therefore, we strive to create an environment where our employees can be at their best. We want our company to be a happy place to work, where people feel inspired and come to work with energy, enthusiasm and engagement. A place where every employee can have an exciting professional journey with opportunities for development and growth. Where employees feel valued and engaged, and are therefore highly motivated. A workplace that improves their physical and mental health - and where they feel happy.

We want to enable our people to develop themselves and their careers by encouraging them to learn and continue to grow, with clear roles and responsibilities. We offer employment and decent work for all people, including young people and people from different backgrounds, and pay attention to equal opportunities. We work hard at creating a fully inclusive workplace that embraces the diversity of our people. And we encourage them to give back to their communities.

We believe this is a direct investment in sustainable employability and the best guarantee for future success. It is our duty and responsibility to work ethically and make a long-term positive impact on society.

## One family

As Cordeel is a 100% family-owned business we want to embed this culture into our way of working. Starting in January 2022, we want to put extra efforts into this by focusing on transparency and clear communication. With our One Big Family culture, we want to build cohesion between all our entities and employees. Through a new corporate portal and website, information can be shared unambiguously and transparently with all colleagues within the Group so that everyone is aware of what is happening in the company. Each entity can thus share its achievements and updates with the whole group and get feedback from anyone. In this way we really want to grow the connection between all entities and become more closely involved with each other.



## The cordeel way of working (C-WOW)

C-WOW aims to ensure that our core values and mission are followed by every single one of us. The Cordeel DNA is an important contribution to the uniformity and consistency of the group. We want everyone to carry the values that are most important to us and to work together in the happiest company to work for/with and to contribute to our mission of building a CO<sub>2</sub>-free future.

## Personal and talent development

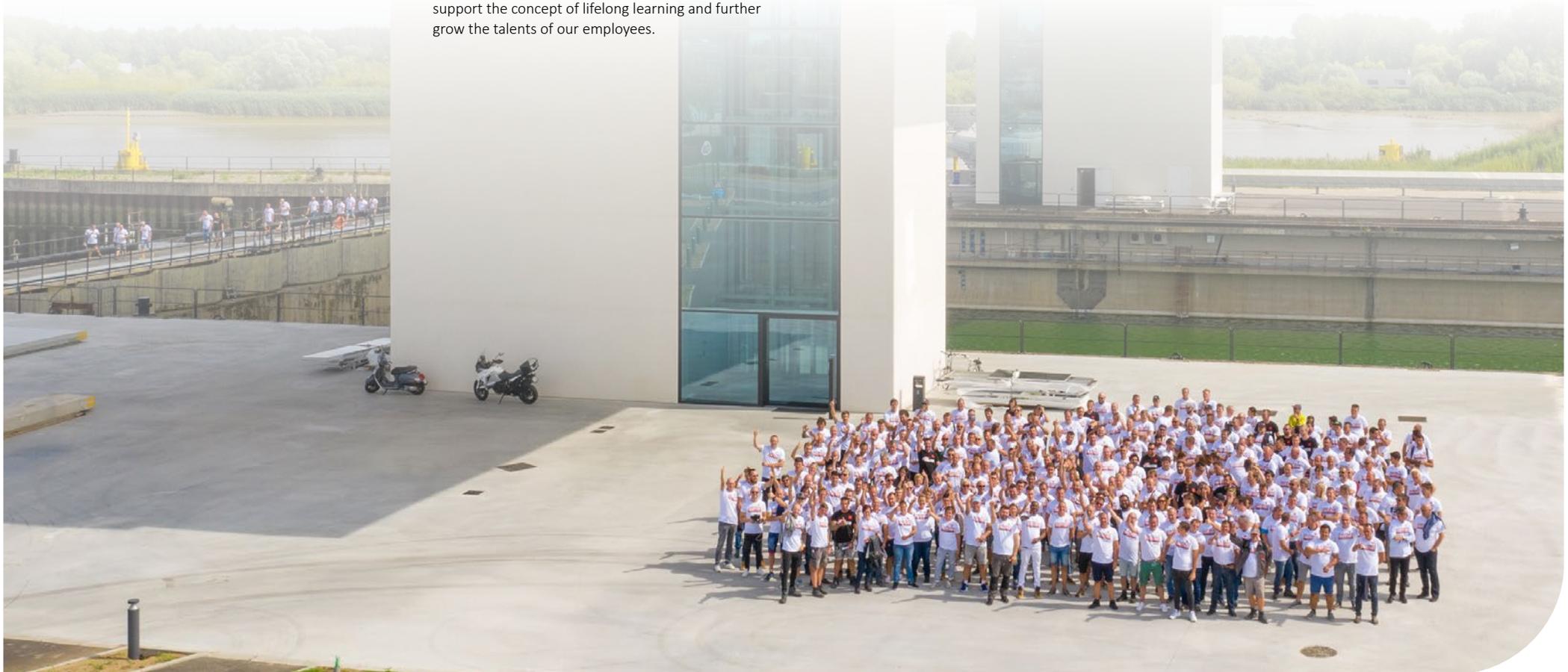
Without the daily efforts and knowledge of management and employees, Cordeel would never be able to achieve its ambitious goals. Strengthening and expanding the knowledge of its employees is therefore an important priority for Cordeel. We want to ensure that newcomers feel at home from the start and are well integrated into their team. During 2022, we will further develop our management model. The Cordeel Academy will be launched: a dedicated training platform where employees of any level can take courses or short workshops. It will support the concept of lifelong learning and further grow the talents of our employees.

The development of our employees is a social responsibility and leads to sustainable growth and greater well-being. We also want to further inform our employees about the SDGs and our ESG strategy - how they can individually contribute to a better world and have an effective impact.

Working on involvement and commitment always involves giving regular and honest, balanced and transparent feedback that emphasizes the future rather than the past. Without an open dialogue we risk not reflecting enough on each other's performance.

Annually, every employee has a formal review. During this conversation, both the manager and the employee have the time to discuss goals and results, as well as growth and career opportunities and needs.

We want to evolve into a culture of continuous, transparent and constructive feedback. Everyone longs to hear from time to time whether they are doing well. It also helps us understand situations and people better.



### eNPS: from happiness at work to business success

Engaged employees are good for business. They are more productive, boost the engagement and satisfaction of those around them, and deliver a better customer experience. It's therefore important to understand how engaged our employees really are. In 2020 we started measuring employee engagement with an Employee Net Promoter Score. The eNPS gives us a solid basis for understanding employee engagement and loyalty in a easy and cost-effective way. We encourage all companies within the Group to make use of this score.

### Diversity

Cordeel employs over 1600 people from different backgrounds, plus hundreds of temporary workers.

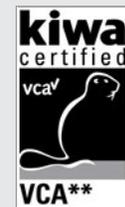
Being active in different countries has also given our diversity in the group a great boost. We have a diversity of approximately 45 nationalities, something Cordeel Group is very proud of and keeps working on to increase, through ensuring diversity of gender, age, education and disabilities. We are determined to give everyone a chance at our company.

### Health & well-being

Keeping our colleagues, visitors and contractors safe is a priority for us. A strong focus on environment, health and safety takes a central role in this effort. We continue to invest in a healthy and ergonomic working environment.

At Cordeel we believe that a healthy mind in a healthy body contributes to happy and productive employees. We therefore do everything we can to improve the physical and mental health of our employees. That is why a well-being programme will be launched in 2022. In addition to the eNPS, the annual mandatory risk assessment is further extended to the psychosocial well-being of colleagues. Under the motto "Every little bit helps" we provide our employees with fresh fruit in the office.

Cordeel works with flexible hours and is increasingly using teleworking as well to meet the wishes of its employees. In line with the COVID pandemic restrictions, and to reduce the CO<sub>2</sub> emissions of cars, a home working policy was introduced within the Cordeel Group in 2021. It offers colleagues the opportunity to occasionally work from home. This form of flexibility contributes to improving the work-life balance and has an impact on the well-being of employees.





# Board & Governance

Governance keeps our corporate sustainability strategy on track, ensures that it remains effective, and that accountability for our results sits right at the top of our company. We want to maintain good governance by demonstrating our core values to reach our goals. Cordeel Group has put innovation as a priority in recent years. Together with our innovative solutions we aim at building a more sustainable world for everyone.



# Board and ESG committee

Cordeel is committed to the highest governance principles and seeks to consistently enhance corporate governance performance, emphasizing transparency and promoting a sustainable culture of long-term value creation. Our board is responsible for the Group's long-term approach, pursuing the vision of our CEO, and implementing the Group's strategy.

The board members have varied and complementary expertise and high-level experience with backgrounds in banking, legal, construction and real estate sectors. With

a balance of men and women, their diversity is a strong asset for the Group.



## Board of Directors

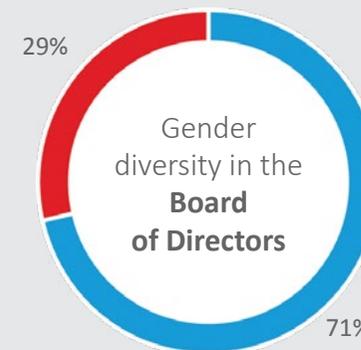
The Board of Directors takes a central position and ensures a good balance between the governance of the company and the governance of the family. The Board of Directors is not only responsible for the economic prosperity of a company, but also gives direction to its future.

### The members of the Board are:

- Filip Cordeel - CEO Cordeel Group (M)
- Dirk Cordeel - Director (M)
- Erik De Bruyn - CEO Cordeel Nederland (M)
- Erik Groes - CEO Imtech (M)
- Hilde Vangilbergen\*\* - CFO (F)
- Laurence Gacoin\* - CEO C-energy and C-innovation (F)
- Benoit Messiaen - CEO C-living (M)

\* Laurence Gacoin (permanent representative of Nova LaGa)

\*\* Hilde Vangilbergen (permanent representative of Tsundoku Ventures)



■ Men ■ Women

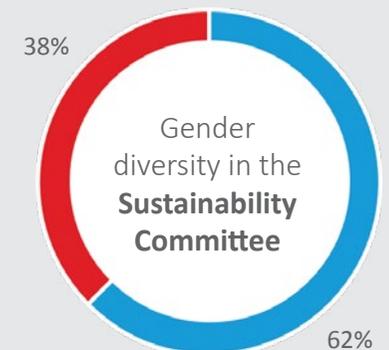
## Sustainability Committee

To increase the support for and commitment to sustainability in our company, in Q2 of 2021 we established a Sustainability Committee which meets quarterly. The working group monitors the ESG policy of the Cordeel Group, analyses potential risks and opportunities, and enters into dialogue with stakeholders. The committee aims to continue implementing and strengthening Cordeel's sustainability strategy and reporting.

### The members of the Sustainability Committee are:

- Filip Cordeel - CEO Cordeel Group (M)
- Laurence Gacoin\* - CEO C-energy and C-innovation (F)
- Erik Groes - CEO Imtech (M)
- Maaïke Pots - HR Director (F)
- Kevin Van Hoe - QESH Manager (M)
- Stijn Rynwalt\*\*\* - Group Legal Consultant (M)
- Simon Maillet - Group Sustainability Officer (M)
- Aurélie Cordeel - Strategic Change Manager (F)

\*\*\* Stijn Rynwalt (permanent representative of BV SRL)





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# Let's build a passionate CO<sub>2</sub>-free future, together!

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## Summary

This document describes the first sustainability strategy of Cordeel. It puts sustainability firmly at the heart of what we do, how we do it, and how we treat others and the planet. It details how we are reducing our own environmental footprint and expanding our capabilities to provide innovative solutions that help our customers do the same.

Building a passionate and happy CO<sub>2</sub>-free future is not an easy task. It's a continuous process that we will constantly refine through the years ahead. But we will not flinch away from this challenge. We will continue to strive towards constructing beautiful, sustainable, and energy-neutral buildings while making positive contributions to the well-being of our employees and those beyond our own circles.

We would be delighted if you would join us in our sustainability journey.



### Think before you print

Please consider reading this document online rather than printing it. This will save water, ink, toner, paper, and electricity, resulting in fewer CO<sub>2</sub> emissions. It's a tiny step, and the savings are small. But every journey starts with a small first step.

**[www.cordeel.eu](http://www.cordeel.eu)**