Creating a zero emissions future

Embracing the challenge of decarbonised power

At Cummins, our mission demands that we power a more prosperous world. Our communities and business depend on a healthier planet.

Through our PLANET 2050 strategy, we actively embrace the challenge as the world transitions to decarbonised power. By 2050, Cummins' aspirational targets include carbon neutrality, to waste nothing and have a netpositive impact in every community in which we operate. Our next generation environmental sustainability strategy looks out to 2050, setting quantifiable goals for 2030 along with visionary longer-term aspirations to 2050. The strategy includes:

- Reducing greenhouse gas and air emissions in line with experts' recommendations
- Using natural resources in the most sustainable way possible
- Helping communities address their major environmental challenges
- Several of our goals align with the Paris Agreement

Partnering to solve complex problems

Cummins' partnerships and policy advocacy efforts play key roles in the company's environmental strategy and performance. They help Cummins meet product emission goals, use energy more efficiently and bring environmental solutions to the marketplace. Our key environmental sustainability principles focus on partnerships with legislative and regulatory entities to develop sound public policy that reduces Cummins' impact on the environment. We partner in order to develop the right infrastructure, research ambitions and technological neutrality to consolidate the path to zero transition.

OUR SUSTAINABILITY PRINCIPLES:

- Help develop responsible regulations
- Promote technology development
- Advocate for incentives to accelerate progress
- Support a balanced global approach

We actively work towards the frameworks of the EU Green Deal and the European Hydrogen Strategy.

About Cummins

Cummins is a technology leader that provides power solutions to customers around the world, delivering a mix of power systems for commercial applications, from city buses to mining trucks, to power-generation sets for critical infrastructure.

A Fortune 150 company, headquartered in Columbus, Indiana, USA, we employ over 57,800 people globally and have been pioneers of innovation for over 100 years.

EUROPEAN FOCUS

Cummins opened its first site in Europe in 1956. Today it has 8 manufacturing sites – and more than 6,700 employees in the region. Cummins works hard to provide advanced technologies supported by a long-established service network across Europe.

On average Cummins invests €80m in Research and Technology each year in Europe, ensuring Cummins' technical experts are developing innovations of the future.

Responsibility

Sustainability is a priority at Cummins and we have concise environmental goals. In Europe, we currently have seven of our sites with a zero-waste-to-landfill record. In the effort to help build prosperous communities, employees in the region typically volunteer 70,000 hours in one year, working with community partners and charities. Cummins was named on Ethisphere's 2021 list of the world's most ethical companies for the 14th consecutive year. Cummins is passionate about diversity and inclusion, with a clear commitment to gender balance across the company.

"One of Cummins' principles is that we demand that everything we do leads to a cleaner, healthier and safer environment."

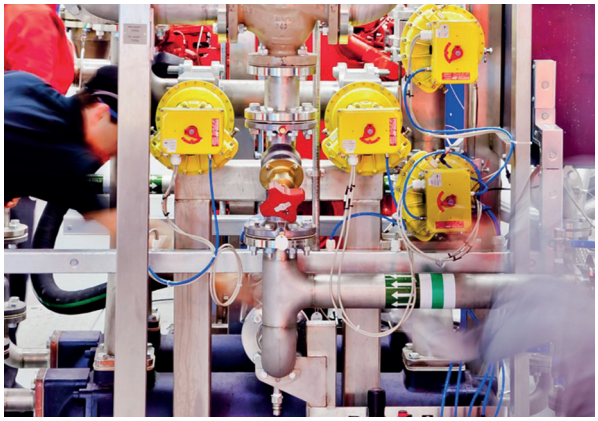
A portfolio of power

Cummins is at its best when the industry is changing. We take advantage of opportunities to innovate and differentiate ourselves from the competition. We've done that for the last 100 years and will continue in the future. As a technology leader, Cummins believes through its broad power portfolio, it will bring clean diesel power and alternative power solutions to all markets and regions, where and when it makes sense to do so.

ENERGY TRANSITION

Transitioning to advanced diesel or new power technologies today in markets and regions where this is feasible will result in reductions to carbon and improvements to criteria air emissions now. We continue to invest in new technologies to meet customer and environmental needs across the world, including:

- Advanced Diesel technology
- Alternative fuels
- Electrolyser technology
- Electrification
- Fuel cells



EU EMISSIONS UNDERSTANDING

Cummins has a broad portfolio of advanced clean diesel engines meeting the most stringent emission standards in Europe – Euro VI for automotive and Stage V for industrial. Cummins has a strong history globally of innovating to meet emission legislation and is looking forward to working with the EU and other stakeholders on future tough, clear and enforceable environmental regulations, such as the upcoming Euro VII legislation. Cummins has vast experience in diesel engine optimisation, along with reducing emissions through combustion and aftertreatment solutions, and hybrid technologies.

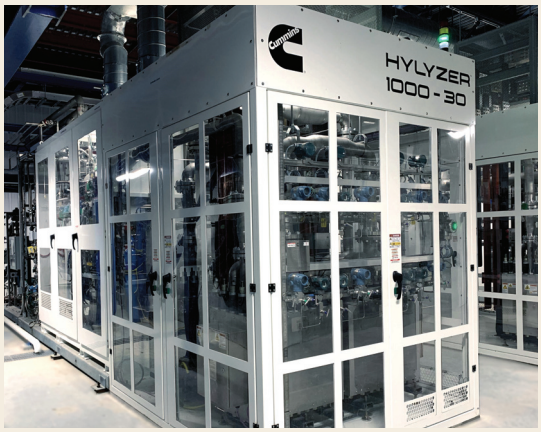
Hydrogen generation

A key part of our portfolio

Hydrogen power is key part of our portfolio today and builds on a focus on sustainability that has endured for many years already. Cummins, as one of many high-profile members of the Hydrogen Council (co-chaired by our CEO Tom Linebarger) and the European Clean Hydrogen Alliance, has developed and accelerated its capabilities in the hydrogen space, particularly since the acquisition of Hydrogenics in 2019.

When it comes to expertise in hydrogen, this spans fuel cell technologies and both PEM (proton exchange membrane) and alkaline electrolysers. Owning these key capabilities enables Cummins to offer a full differentiated solution, from start to finish seamlessly integrated for customers.

We've also invested in the development of solid oxide fuel cells to expand our stationary power capabilities. And recently, we began offering hydrogen storage tanks through a joint venture, NPROXX, a leader in hydrogen storage and transportation.



"Cummins technology powers the largest PEM electrolyser in operation in the world. Installed at the Air Liquide hydrogen production facility in Becancour, Quebec, the 20 MW Cummins electrolyser system can produce over 3,000 tons of hydrogen annually using clean hydropower. The modular and scalable electrolyser platform addresses utility-scale hydrogen production."

ALWAYS INVESTING

Cummins recently announced its intended investment in a new gigagwatt electrolyser manufacturing plant in Spain. This state of the art facility will be one of the world's largest electrolyser plants for the production of green hydrogen.

This investment in Spain comes on the heels of Iberdrola and Cummins' decision to partner together on large-scale hydrogen production projects in Spain and Portugal.

Cummins continues to invest in its facility in Oevel, Belgium, responsible for the assembly and integration of both PEM and alkaline electrolysers.

Hydrogen fuel cells

Cummins now has more than 2,000 fuel cell installations across a variety of on and off highway applications, as well as more than 600 electrolyser installations. We have provided fuel cells for some of the first licensed and commercially operational fuel cell refuse trucks in Europe, including FAUN, a leader in waste collection vehicles and sweepers in Europe. We have also worked with ASKO, Norway's largest grocery wholesaler, to supply PEM fuel cells as they pilot four fuel cell electric trucks as part of their alternative fuel and powertrain solutions for their fleet.

Cummins is also working with French railway manufacturer, Alstom, to power the world's first hydrogen fuel cell passenger trains. The first two trains carrying passengers went into service in September 2018 in Germany. After more than 180,000km driven in the first pilot, the programme was deemed a success and the project has now moved into phase two which provides fuel cells for the serial production of 14 trains to start operating in 2021 in Lower Saxony, and 27 by the end of 2022 for operation in the Rhine-Maine region.

Cummins will provide hydrogen fuel cell electric powertrains integrated into selected OEM partners' heavy-duty trucks for Air Products, as Air Products begins the process of converting its global fleet of distribution vehicles to hydrogen fuel cell vehicles.

Cummins will open a new facility in Herten, Germany, which will allow it to continue growing and delivering for its customers. The facility will initially focus on the assembly of fuel cell systems for Alstom's hydrogen trains.

WATCH CUMMINS TRANSFORMING TRANSPORT IN TRONDHEIM, NORWAY

Cummins powered eco-hybrid trambuses operate on HVO renewable diesel fuel to reduce net GHG carbon emissions by up to 90%. Also making an appearance is the zero-emissions ASKO truck, powered by Cummins hydrogen fuel cell technology.

Hydrogen fuelled internal combustion engine

Cummins has taken another step forward in advancing zero carbon technology as the company began testing a hydrogen-fuelled internal combustion engine. The proof-of-concept test is building on Cummins' existing technology leadership in gaseous-fuel applications and powertrain leadership to create new power solutions that help customers meet the energy and environmental needs of the future.

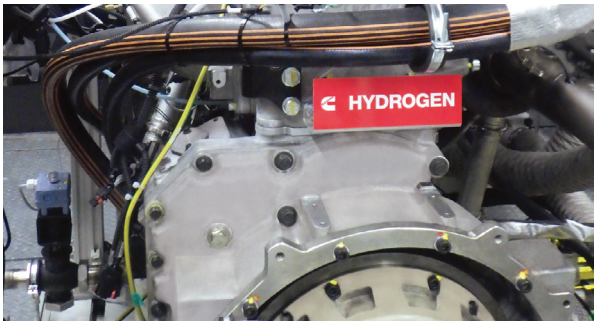
Cummins Darlington in the UK are leading the development of this work through the Advanced Propulsion Centre's BRUNEL Project – with a total £14.6m project investment.

Electrification

Cummins designs and manufactures battery modules, packs and systems for commercial, industrial and material handling applications. Cummins is able to use a range of cell chemistries, suitable for pure electric, hybrid and plugin hybrid applications.

Cummins acquired one of Europe's leading battery pack designers in 2018 and is an active member of the European Battery Alliance.

The Milton Keynes Electrochemistry Team is part of a global team of chemists that are innovating through chemistry. At their lab based at New Power's site in Milton Keynes, UK, the team works closely with cell suppliers on new innovations in lithium-ion cell technology to develop Cummins' next generation of batteries. Their goal is to better understand the cell capabilities in terms of energy, power, lifespan and re-charge behaviour in order to identify the right cell for the right application.



Alternative Fuels

Natural gas engines and generator sets offer distinct benefits now and in the future, meeting the latest stringent emissions standards, they are well positioned to meet future potential standards. When paired with renewable natural gas these technologies can even be considered carbon negative.

BIOGAS

Cummins is investing in enabling its engines and generator sets to utilise fuel sources that would otherwise be considered waste products, delivering robust power even with very aggressive fuels, including landfill and digester gases, with minimal derating. Capturing landfill gas or biogas for processing into fuel suitable for vehicles or gensets has significant benefits.

FUEL FLEXIBILITY

Cummins is investing and researching into development projects to build capability to develop products utilising a wide range of fuels. The Research and Technology department continues to investigate alternative bio-fuels and synthetic fuels to build on our existing B20 and HVO compatible on-highway products, creating products that will be the new standard when it comes to fuel flexibility.

CELEBRATING A CENTENNIAL AND LOOKING AHEAD TO THE NEXT 100 YEARS

Cummins recently celebrated its centennial year with a simple message: “Challenge the Impossible.”

That’s what the company has been doing since it was founded in a former warehouse in Columbus, Indiana, USA in February 1919, employing just four people. And it will be the mindset the now global company of more than 57,800 men and women embraces for the next 100 years.

The founders’ innovative and entrepreneurial spirit can be seen time and time again throughout company’s history and today through the advances Cummins is making in clean diesel and natural gas technology and in the exciting potential of hydrogen technology, electrification and other low-carbon alternatives.

This is a future looking document. Cummins operates in an ever-changing environment, and we recognise outcomes may change.

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