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PRESS RELEASE

DATE 15.06.2023

SUBJECT **Fives and Hydro partner to produce the world's first batch of hydrogen-fueled recycled aluminium**

Worldwide industry leaders Fives and Hydro have partnered to tackle carbon emissions in the aluminium sector. With the expertise of Fives, Hydro has produced the world's first batch of recycled aluminium using hydrogen, on an industrial scale. The successful test at the Hydro Extrusion plant in Navarra, Spain, is a key step towards aluminium production completely free of carbon emissions.

The first successful hydrogen test in aluminium production on an industrial scale

Green hydrogen is one of the most promising emission-free fuels to address the environmental challenges of heavy polluting industries, including aluminium. The test in Hydro Extrusion's plant is **the world's first on an industrial scale**. The natural gas was **successfully replaced with green hydrogen in the recycling of aluminium, a key step towards decarbonization of Industry**.

Indeed, once matured, **the fuel-switch technology of hydrogen can be extended to other high-heat processes, such as in glass or cement.**

"As a pioneer of the decarbonization of industry, Fives has been at the forefront of hydrogen for decades. We are excited to work with Hydro on this common ambition to produce carbon-free aluminum through more than 100 years of expertise in industrial combustion and a large range of state-of-the-art burners, combustion systems and digital tools." says Stephan Paech, CEO at Fives North American Combustion Inc.

"This test is part of developing commercial fuel switch solutions and to demonstrate that hydrogen can be used in aluminium production. Green hydrogen can remove hard to abate emissions from fossil fuels, in processes where electricity is not an alternative, both in the aluminium industry and in other heavy industries," says Per Christian Eriksen, Head of Hydro Havrand – Hydro's green hydrogen production company.

A whole range of technologies and a century of expertise in aluminium melting



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With over 100 years of expertise in combustion and the largest range of hydrogen compatible burner portfolio on the market, Fives was the right partner to work with Hydro on this ambitious project.

To carry out the test, Fives first upgraded the existing high efficiency North American TwinBed™ II combustion system (regenerative low-NOx burner manufactured by Fives) as well as designed and supplied the hydrogen and natural gas mixing station, and all controls needed to operate the system safely and effectively. Always one innovation ahead, Fives also provided the computational fluid dynamic (CFD) analysis and the data acquisition solution to monitor the performance of the combustion system and ran additional testing in its newly hydrogen equipped laboratory in Cleveland, Ohio, United States.

The aluminium produced in the test will be used in mass-production of recycled aluminium from Hydro Extrusion Navarra, creating the world's first hydrogen fueled aluminium billets for extruded products such as car parts and window frames.

A final report from the test is expected to be ready in the fall.





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About Fives

Fives, a pivotal player in the hydrogen industrial ecosystem

From the first railway lines to the Eiffel Tower lifts and factory 4.0, for over 200 years, Fives has been designing the disruptive solutions and technologies that make up industry. As a pioneer of decarbonization and digitalization, Fives is always one innovation ahead thanks to its ability to anticipate customer needs. By responding to the specificities of each market locally, Fives combines economic and environmental performance in 25 countries thanks to its 8,500 employees.

With more than 40 years of experience burning high hydrogen content fuels, Fives strongly invests in R&D and offers the largest range of hydrogen-compatible burners on the market.

For more information visit www.fivesgroup.com/energy-combustion

About Hydro Havrand

Hydro Havrand offers green hydrogen solutions to help bring the world to net-zero emissions. We will develop, own and operate green hydrogen facilities, and provide expertise to enable our customers' transition to renewable energy. Hydro Havrand is an industrial venture with global ambitions, building on over 115 years of Hydro's experience within renewable energy, green hydrogen production and industrial development. Hydro Havrand is maturing projects across the aluminium value chain in the Hydro portfolio, as well as pursuing external partnerships.

About Hydro Extrusions

Hydro Extrusions is a world-leading aluminium extrusion business counting around 100 production sites in 40 countries and employing 20,000 people. Through our unique combination of local expertise, global network, and unmatched R&D capabilities, we can offer everything from standard profiles, to advanced development and manufacturing for most industries.

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