Sulzer and Crosstown H2R Redefine the Future of Energy with Advanced Hydrogen Combustion Technology

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Sulzer, a leading independent service provider (ISP) and Crosstown H2R Ltd, an innovation-focused Swiss technology firm, have joined forces to develop the next generation of hydrogen combustion systems to solve today's global energy challenges. Together, their modernization technology will play a key role in eliminating CO2 emissions from existing gas turbines across Europe that they can continue to operate reliably for decades.

Original gas turbine manufacturers often prioritize new installations, providing opportunities for service providers like Sulzer to invest in engineering technology to offer viable alternatives for operators. To develop advanced service offerings for gas turbine upgrades, Sulzer works with specialist innovators such as Crosstown H2R.

During October 2023, in partnership with Crosstown H2R, Sulzer unveiled revolutionary hydrogen combustion technology designed for the aeroderivative, industrial, and power generation gas turbine fleet, positioning the installed gas turbines for a sustainable, emission-free future. In a paper presented at a conference at the ETN's 11th International Gas Turbine Conference (IGTC), the companies described this innovation, which attracted great interest. This joint initiative between Sulzer and Crosstown H2R not only addresses the urgent need for decarbonization but also offers a cost-effective, reliable, and environmentally friendly solution.

By integrating an advanced micromixer into the existing combustion system, this technology represents a step forward from conventional burner types. The upgrade,

which can be carried out during scheduled overhauls, involves replacing the existing burner and preparing the entire combustion system to accommodate the new component, making the turbine capable of flexibly using multiple fuels e.g. from 100% natural gas to 100% hydrogen. Hydrogen, with a combustion flame speed around seven times faster than natural gas, necessitates a combustion system upgrade. A key technology is the burner, which ensures seamless handling of any level of hydrogen fuel. The overall upgrade integrating the new burner ensures reliable and efficient operation.

"At Sulzer, we are committed to providing cutting-edge alternatives for gas turbine operators. Our collaboration with a specialized technology company, like Crosstown H2R, underscores our dedication to pushing the boundaries of technology," stated Tim Schulten, Division President of Sulzer Services. "By leading this development, we empower our customers to transition to zero carbon operations, without the need for complete and expensive engine replacements."

"Crosstown H2R is thrilled to collaborate with Sulzer, the leading ISP in the sector, renowned for their innovative solutions and we are poised to introduce the H2R® burner to their large customer base," said Dr. S. Prith Harasgama, Co-CEO & Founder of Crosstown H2R. "Together, we are making a meaningful contribution to decarbonizing Europe's existing gas turbine fleet. It is an exciting time for us to collaborate on a sustainable energy future, and we look forward to making a positive impact."

The innovative hydrogen combustion technology, slated for its first commercial implementation in the second half of 2024, is a testament to both companies' commitment to advancing greener energy solutions. Sulzer's expertise in gas turbine retrofitting, coupled with Crosstown H2R's proprietary burner technology, is revolutionizing the industry by transforming existing gas turbines into essential, future-proof infrastructure.

Notes:

As an advocate of greener solutions, Sulzer understands the importance of supporting the growth of renewable energy. The transition to fully sustainable energy solutions is vital, and this transition will require a variety of solutions. Gas turbines, with their reliability and flexibility, serve as a crucial and dependable source of power for system integration and for drives embedded into industrial processes. Recognizing the urgent need to reduce greenhouse gas emissions, Sulzer underscores the essential role of upgrading the existing gas turbine fleet, to use non-CO2 emitting fuels such as Hydrogen. This strategic move aligns with environmental goals but also offers a pragmatic approach. Upgrading existing gas turbines can be both cost-effective and faster than installing new assets, making it a viable solution for meeting emission reduction targets swiftly and efficiently. In addition, Sulzer recognizes that the gradual decarbonization of the gas network will unfold over the coming years. Renewable and low-carbon gases, particularly hydrogen, can be increasingly integrated into the system with upgrades and retrofits, a vital step towards CO2 emissions-free operations.

Image captions:

Image 1: An Avon Gas Turbine in the final phase of testing.

About Sulzer

Sulzer is a global leader in fluid engineering. We specialize in pumping, agitation, mixing, separation and purification technologies for fluids of all types. Our customers benefit from our commitment to innovation, performance and quality and from our responsive network of 180 world-class production facilities and service centers across the globe. Sulzer has been headquartered in Winterthur, Switzerland, since 1834. In 2021, our 13’800 employees delivered revenues of CHF 3.2 billion. Our shares are traded on the SIX Swiss Exchange (SIX: SUN).

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