

Emerson to automate electrification of catalyst reactor

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Emerson has been chosen by Syzygy Plasmonics to automate its innovative catalyst reactor technology, which uses light instead of thermal energy for chemical manufacturing. The all-electric production method is designed to replace fossil fuel-based combustion, helping reduce industrial greenhouse gas emissions and operational costs while advancing global sustainability goals. Syzygy estimates its reactor systems could eliminate one gigaton of CO₂ emissions by 2040.

The Syzygy catalyst reactor technology will advance decarbonisation in a cost-effective way by electrifying carbon-intensive activities, such as chemical manufacturing, and reducing the carbon intensity of hydrogen, methanol and fuel production. Rather than rely on thermal energy, the Syzygy reactor harnesses the power of light to energise chemical reactions and reduce the carbon footprint in transportation fuels.

"We are excited to advance this opportunity with Emerson, not only for its automation technologies and software but also for its sustainability leadership and domain expertise in chemical engineering, electrification and hydrogen production," said Syzygy Chief Executive Officer Trevor Best. "As we expand beyond traditional paradigms of reactor technology and launch a new way to electrify chemical manufacturing, we want a technology partner who can help us scale our technology efficiently, safely and reliably."

"Emerson is excited to collaborate with Syzygy Plasmonics on promising technology which could have a significant impact on industries that are among the most challenging to decarbonise," said Peter Zornio, chief technology officer at Emerson. "This aligns with Emerson's culture of innovation that takes on our customers' biggest challenges."

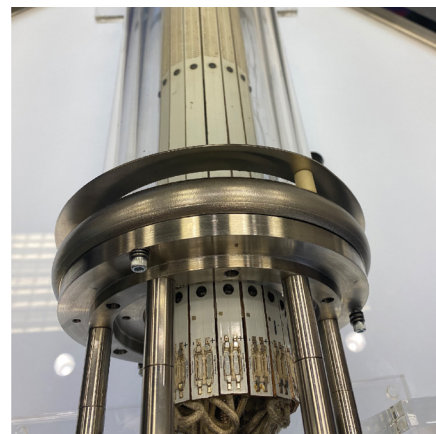
Syzygy has developed, scaled and integrated its core technologies, incubated at Rice University, into a universal photocatalytic reactor platform, which includes the Rigel™ photoreactor and the proprietary photocatalyst that enables light-driven chemical reactions at unprecedented efficiency.

For the Syzygy modular reactors, Emerson will provide hardware, software, and services, including its DeltaV™ distributed control system; industrial software for process simulation

and data analytics; Rosemount instrumentation to measure pressure, temperature, level and flow; and Fisher™ valves to control pressure and improve safety.

Syzygy has received funding from the US Department of Energy and the National Science Foundation and investments from Aramco Ventures, BP, Chevron Technology Ventures, Equinor Ventures, EVOK Innovations, Goose Capital, Horizons Ventures, LOTTE Chemical, LOTTE Fine Chemical, Pan American Energy, Sumitomo Corporation of Americas, The Engine, and Toyota Ventures.

Syzygy has three field trials planned for 2023. Leading global partners are driving strong market interest with trials located in North Carolina, California and South Korea. □



Syzygy Plasmonics' pioneering technology uses light to decarbonize chemical production, helping manufacturers reduce both emissions and operational costs.



Syzygy Plasmonics' co-founders sign an agreement with Emerson to automate the electrification of chemical production processes. Bottom row from left: Suman Khatiwada, Syzygy CTO; Trevor Best, Syzygy CEO; Mike Train, Emerson chief sustainability officer; Peter Zornio, Emerson CTO. Top row from left: Jim Cahill; Arif Mustafa; Mosta El-Haw; Liam Hurley; Denka Wangdi; Ben Chilton; LeEtta McDowell; Sean Hosseini, Puffer-Sweiven; and Carlos Garza, all members of the Emerson team.

