

Modcon Unveils Breakthrough Technologies for Safer, Smarter and Greener Process Industries

Photonics-based and AI-enabled technologies are enhancing safety, efficiency and sustainability in hydrogen and hydrocarbon process industries.

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/EINPresswire.com/ -- As the global industrial sector intensifies its focus on sustainability and digitalisation, [Modcon Systems Ltd.](#), a pioneer in process analysis and optimisation, is redefining industry standards with advanced technologies that seamlessly integrate safety, efficiency, and environmental responsibility.

Headquartered in London and backed by over five decades of expertise, Modcon has emerged as a technology leader by aligning its solutions with the United Nations Sustainable Development Goals (SDGs). Through strategic investment in Artificial Intelligence (AI), Machine Learning (ML), and photonics-based technologies, the company is paving the way for a more sustainable and intelligent industrial future.

"We believe that the intersection of innovation and responsibility defines the next era of industrial progress," said Gregory Shahnovsky, CEO of Modcon. "Our latest solutions are designed to ensure that safety, operational excellence and environmental sustainability are not trade-offs—but outcomes delivered together."



Many process industries—including [hydrocarbon refining](#) and [hydrogen production](#)—operate in explosion-hazardous and flammable environments where traditional analyser deployment methods often fall short. Conventional systems require direct installation in hazardous zones, demanding explosion-proof shelters and extensive safety infrastructure, which inflates costs and puts service personnel at risk.

Modcon's photonics-based remote sensor technology presents a game-changing alternative. By allowing analysers to be installed in safe control rooms while monitoring remote processes via fiber optic links, Modcon eliminates the need for heavy protective enclosures in danger zones—cutting installation and maintenance costs and reducing health and safety risks.

Fiber optics serve dual purposes: either as intrinsic sensors or as data transmission channels, enabling precise and real-time analysis even in corrosive or high-pressure environments. Recent advances now allow in-situ optical measurements, bolstered by AI-powered software that dynamically compensates for process variations and interference.

Beyond hardware, Modcon's vision for the future is driven by the intelligent use of real-time data. The company's proprietary Modcon.AI platform incorporates artificial neural networks and deep reinforcement learning to mimic human learning behavior—continuously improving process control without relying on static historical datasets.

This system employs digital twin modeling to simulate and predict product quality across different process streams in real time. Updated continuously via sensor inputs and lab data, it proposes optimal setpoints, tracks performance through KPIs and drives operations towards maximum efficiency at minimal cost.

The result is a holistic optimisation framework where AI, photonics, and chemometrics work in unison—empowering industries to adapt instantly to process fluctuations, maintain product quality, and minimize environmental impact.

Modcon's approach is not a reaction to global trends, but a proactive roadmap for industrial transformation. By fusing next-generation sensing, advanced computation and remote monitoring, Modcon is enabling its customers to meet present operational goals while preserving the resources and integrity needed for future generations.

As industries worldwide navigate the dual imperatives of decarbonisation and digitalisation, Modcon stands at the forefront—providing the technological foundation for safer, smarter, and greener operations.

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