

Leveraging Digital Process Twins

Efficient and flexible hydrogen production: From design to operation

Hydrogen has become a vital clean energy source amid global efforts to decarbonize industries and enhance energy security. However, the dynamic nature of renewable energy sources like solar and wind, often used in hydrogen production, presents significant challenges. To address these challenges, it is imperative to design hydrogen production facilities for flexibility rather than around a single operating point. Additionally, once operational, maximizing cost-efficiency hinges on factors such as renewable energy availability, grid pricing, and hydrogen demands.

Digital process twins, driven by high-fidelity process models, prove indispensable throughout this journey. During the design phase, these digital twins empower engineers to explore the design space, assess risks, and make informed decisions. In the operational phase, they serve as the foundation for a hydrogen energy management system. This system empowers operators to monitor the state of their hydrogen production assets, accurately model production efficiency, and leverage forecasts for renewable energy availability, grid pricing, and hydrogen demands to determine the optimal production schedule.

In this webinar, we will highlight the significant benefits of adopting a consistent modeling approach throughout all project phases. This approach facilitates seamless knowledge transfer among project teams and ensures that deep process understanding gained during design can be seamlessly deployed to operations for real-time monitoring and optimization. By doing so, it not only streamlines project development but also contributes to the industry's pursuit of efficient, flexible, and sustainable hydrogen production.

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