

Model-based engineering of carbon capture, utilization and storage systems

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The decarbonization of advanced economies requires fundamental changes in the chemical process industry. With many of the transformative technologies required still in their infancy, there is a need for solutions that support a reduction in GHG emissions in the immediate future. Carbon capture, utilization and storage (CCUS) can help reduce emissions from today's fossil-based production methods.

By their very nature, CCUS facilities need to be tightly integrated into other process systems. This raises questions on how best to maximise efficiency of the overall system, what impact the CCUS process has on process dynamics and control, and how best to reduce capital and operating expenditure. Questions like these require sufficiently accurate representation of the process, in order to accurately predict plant performance, and operate close to true limits.

In this presentation, we present how digital design techniques are used to map system interactions, predict process responses in highly transient scenarios, optimize equipment and system designs, and ultimately provide reassurance to all stakeholders in the carbon chain to confidently navigate the road to decarbonization.