Bioprocessing digital twins: From process development to online decision support systems

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Science-based data-calibrated digital twins based on mechanistic models use process understanding combined with targeted experimentation to describe and predict the quantitative behaviour of processes for process design and optimisation, risk assessment, design space exploration and scale up/tech transfer. The formulated products industries are increasingly using bioreactor and chromatography digital twins to address challenges described above, bringing value to their businesses across R&D, engineering, and manufacturing functions.

In this presentation, we will show examples where model-based solutions for bioreactors and chromatography have provided value to industry, including enabling R&D efficiency in process design and optimization, and de-risking the move from batch to continuous processes. We will finish with SPSE's vision on how model-based solutions can bring value in manufacturing via the deployment of digital twin solutions for online decision support.