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INTEGRATION OF SCHEDULING AND CONTROL UNDER UNCERTAINTIES: REVIEW AND CHALLENGES

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Highlights

- The literature on process control and scheduling of production under process uncertainties is reviewed
- The integration of scheduling and control as an alternative to approaches handling each one of these areas independently is presented
- The literature on integrated process control and scheduling under process uncertainties is reviewed
- The remaining challenges in the integration of process control and scheduling under process uncertainties are described

Abstract

In order to achieve optimal operational conditions, the integration of decision-making across different layers of a company and the consideration of uncertain parameters in view of dynamic market conditions are essential. In this article, we review some of the efforts done by the process system engineering and process control communities aiming to optimize performance in a process industry, specifically in the areas of control, scheduling and their integration under process uncertainties. First, uncertainties in process scheduling and control are analyzed, and the different mathematical approaches to describe and optimize problems under uncertainty are described. Recent advances and relevant frameworks for scheduling and control under uncertainties are presented, and efforts for the integration of scheduling and control are reviewed.

Keywords

Process control, production scheduling, process uncertainties, integration of scheduling and control

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