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Manufacturing process analysis with support of workflow modelling and simulation.

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Summary: Process analysis is recognized as a major stage in business process reengineering that has developed over the last two decades. Manufacturing process analysis (MPA) is defined as performance analysis of the production process. A manufacturing process analysis framework is outlined with emphasis on linking a company's strategy to operational process. Two issues, namely process modelling and simulation based analysis, are investigated. A compound workflow model (CWM) is proposed to provide graphic presentation of the production process that can be easily understood. Also it can be used directly by simulation to study the impacts of scheduling policy and analyse the process performance. A two-stage simulation analysis method is provided to quantitatively and efficiently define cause-and-effect relations to identify drivers for improvement. The manufacturing environment, PSC (production planning, scheduling and control) factors and the process structure are three main concerns considered in the simulation. An example is discussed in the final part of the paper.

Keywords: manufacturing process; performance analysis; modelling; simulation
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