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Impact of product design on agile production

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Since some years, industrial companies must deal with an increasing volatility and uncertainty. In operations they main challenges are fast demand and product mix changes in this environment. To react to this trend, the concept of agile production was developed. Agile production means to prepare proactively for uncertainties to react fast on changes and therefore to optimize the economic situation of an industrial company. Agile production can be distinguished from the concepts of flexibility and transformability. Levers to increase agility in a company exist on different levels. They can be described on a strategic, organizational or operational level. In operations, one category of levers focuses on the influence of product design on the agility level of an industrial company. This means, how the product design can increase the agility in production. This publication focuses on this area to find relevant concepts in product design to positively influence an agile production. The starting point is a literature summary of different design-to-X catalogues and methods to optimize manufacturing and assembly. The next step had been five case studies with different companies in the automotive supplier industry to evaluate the different methods on their impact on an agile production. In the end, a suggestion for a design-for-agility catalogue is presented as a result of this publication. Furthermore, the methods are separated for demand and product mix changes.

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