

Dissertation title:

A systematic for continuous, long-term oriented planning of technological and capacity related factory developments

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Apart from having to successfully manage, in the short-term, the turbulences of their operative business, factories are also facing the enormous challenge of responding effectively to changes in capacity and technology, which on account of long-term, slow-reacting adaptive measures, need to be detected as early as possible. A pragmatic and project based approach, widely encountered in practice due to significant time pressures, reaches its limits due to the increasing complexity and dynamics of the subject matter. Customizing technological and capacity related plant development requires a forward looking and systematic approach capable of immediately taking into account changes in underlying conditions.

For this reason, this dissertation developed a continuous planning method which models a plant's specific development processes on an on-going, long-term basis, in order to promptly detect the effects of changing conditions and increase their adaptive capacity in a systematic manner.

Taking into account the strategic goals of the company's business plans, standardized criteria were inferred for evaluating development concepts. These, in turn, permit a quantitative analysis of changes in technology and capacity and can serve as aids in a decision making process. Alternative factory development concepts are simulated by varying initial parameters in a software-planning tool (PLANT DEVELOPMENT PLANNER) developed as part of this study, then compared to one another and analysed according to the evaluation criteria.

The practicability of this method of plant development planning was investigated and verified in the field in the industrial production of axial piston engines.