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DynReAct –An open-source production planning software

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We present the open-source planning software DynReAct, which grew out of a research project on dynamic production planning and scheduling in the steel industry. The software implements a three-stage approach to the flexible flow-shop planning problem, comprising modules for long-term, mid-term and short-term planning. Long-term planning implements an order-less planning approach based on working shifts, whereas mid-term planning is responsible for lot creation and scheduling. The short-term planning module incorporates real-time information and enables quick responses in the case of unexpected events, such as machine outages or re-prioritisations. The three planning levels are addressed by means of different optimization algorithms. DynReAct leverages so-called plant performance models for the integration of real-time plant status information into the planning process. Furthermore, it includes a module for allocation of raw materials to customer orders.

The DynReAct software comes with a set of configuration options and pluggable interfaces that enable adaptations to different use cases. A flat steel sample use case is included in the open-source package and will be used to showcase the features of the software and the interaction between the different planning levels.

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