


Product report: Tackle interactions with Qualicision®

KPI-driven optimisation of production processes

Qualicision® technology is based on fuzzy logic which has been extended to complementary effect and helps to incorporate decision-making expertise into business processes in the form of software. Fuzziness in business processes is not only the result of inaccuracy regarding the process planning data used. It also results, in particular, from the variety of interactions between the options for controlling these processes and the process goals; the "key performance indicators" (KPIs) in other words.

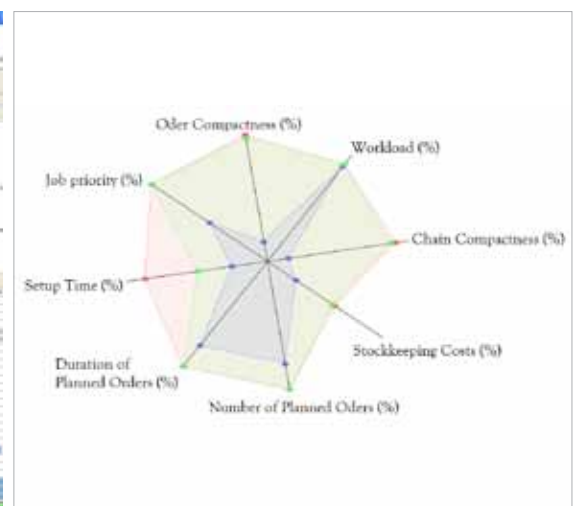
When business processes are optimised on the basis of Qualicision®, such interaction is captured in the form of matrices (impact matrices) using the process data. These impact matrices are combined with mathematical conflict and compatibility analysis to calculate which alternatives should be selected for decision-making to come as close as possible to the process goals. In technical terms, conflict and compatibility analysis allows the so-called combinatorial variety of control options to be managed in relation to optimisation of the KPIs. Examples include optimisations of production sequences in the automotive industry and in production companies in general.

The Qualicision® Functional Decision Scheduling Engine (QFDDS) is a Qualicision®-based support for shop floor planning and is integrated within an ERP system. Work orders for the production process are managed in the ERP system and are made available to the QFDDS Engine for detailed planning. QFDDS generates an occupation plan according to the desired optimisation priorities or key performance indicators (KPIs) such as maximum usage, minimum stock, short lead time, minimum setup times, preference for job priorities and approaching delivery dates and makes these available to the surrounding systems for further processing at a BDE terminal, for example. To help planners find suitable priority settings for KPIs,

a learning algorithm is integrated into the QFDDS, which permutes different priority settings and thus analyses optimised occupation plans according to different KPIs in order to maximise the key data generated by the system. The results of KPI optimisation can be visualised as a spider web diagram in an additional explanation facility (see red area in figure 2). The maximum characteristics (utopia points) that can be achieved for each KPI during the learning phase are shown in the red area. To help select a particular priority setting the planner can enter a preference pattern (blue area on the diagram) and is then automatically shown the best priority setting (green area on the diagram). 

► Information

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(1) Planning of incoming orders: occupation plan using KPIs. (2) Results of KPI optimisation as a spider web diagram.

Source: FLS