Contents

New areas of application for Qualicision® technology

Optimisation for the process industry

The Qualicision® product family portfolio has grown recently through the addition of the production planning system PSI*aps,* and the staff planning system PSI*pep.* These solutions are based on reference applications used in the chemicals and pharmaceutical industry and offer comprehensive optimisation and simulation facilities for the process industry, thereby enabling the planner to implement an automated KPI-oriented process optimisation. Interactive planning tables and a comprehensive reporting system round off the portfolio.

Planners responsible for planning and controlling production processes in the process industry face significant challenges. Consider, for instance, some of the complex formulas used in the production of active medical substances or special chemicals. Alternative bills of materials and the cyclic use of by-products are by no means rare occurrences. It soon becomes apparent that only the targeted use of efficient planning and optimisation software allows the planner to determine feasible start solutions in consideration of all technical restrictions and constraints and followed by an optimisa-

PSI

News ticker

Editorial

Dear readers,

Recognising conflicting objectives and dealing with them appropriately is a core competence of any optimisation. It is the only way to improve the stability and quality of business processes. This ultimately saves the customer time and money by optimizing his business processes.

In previous editions of production manager, you have seen how the Qualicision® optimisation software helps to balance conflicting objectives in business processes in varying industries and what the underlying mathematical method is.

In this issue we report on an extension of the portfolio for Qualicision® in the form of the modules PSI*aps* (Advanced Planning and Scheduling) and PSI*pep* (Personnel Planning). Both modules are used in the fields of production planning, optimisation and simulation in the process industry.

In conjunction with Qualicision®, both tools represent a further step towards automated KPI-oriented software for business process optimisation. You can find out more about the benefits of PSI*aps* and PSI*pep* in this issue. Reports on how the software works together with Qualicision® are in the pipeline.

In other articles, find out how the use of the PSI*penta* MES solution has brought new impetus to production at Karosseriewerken Dresden and how the Tender Management System has automated processes for Hellmann Worldwide Logistics. We also show how logistics service provider Eheim processes orders three times faster thanks to the help of PSI*wms*. You can also read about how the Tuning Dashboard for planning in PSI*metals*—also in conjunction with Qualicision®—makes planning as intuitive as driving.

I hope you enjoy reading this edition.
Regards,

Dr Rudolf Felix
Managing Director
F/L/S Fuzzy Logik Systeme GmbH

tion process with regard to different key performance indicators (KPIs).

It is not uncommon for the various indicators to be contradictory in practice. Think about factors such as efficient machine utilisation versus on-time delivery for individual orders, or also the trade-off between the cost of changeovers and storage associated with batch size optimisation. A holistic modelling approach, such as the one realized in PSI*aps*, can help.

Holistic and flexible production planning

PSI*aps* allows forward-looking planning and optimisation of production and logistics processes along the entire inter-company value chain. The abbreviation aps stands for Advanced Planning and Scheduling, a name befitting the design of the module as it is intended to determine practicable production plans, even for the complex process constellations that often occur in practice. Industry-specific optimisation techniques allow planning times to be minimised, resource consumption to be reduced and the utilisation of equipment to be optimised. The approach is always holistic, taking into account all restrictions and conditions. To this end, the relevant value chain information is mapped from BOMs through production alternatives, setup times and operating time models to detailed cost models. All relevant cost factors, such as production costs, material costs, changeover and storage costs, transport costs or penalties for delays are taken into consideration. Modelling with PSI*aps* supports all multi-stage production processes. It also enables products whose production comprises many process steps to be re-
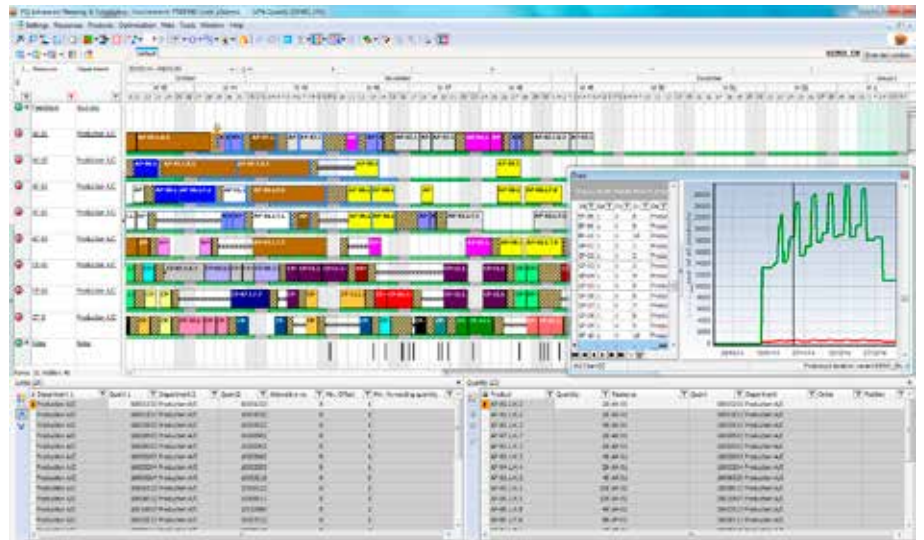
alistically mapped and successfully optimised. Based on an integrated data model, PSI*aps* has interfaces to the ERP world. Modelling is a one-off process, whilst data synchronisation in day-to-day business occurs on a continuous basis. All-in-all, the module accompanies the full planning cycle from sales and capacity planning to detailed planning and scheduling.

Production planning from a strategic and operational perspective: from capacity planning to detailed planning

Long-term and medium-term planning are an integral part of the planning tasks in the production environment of the process industry. This is because they de-

Optimised planning in the process industry.

termine the long-term structural conditions for cleverly exploiting consolidation effects, as well as reaching decisions on inventory management and achievable service levels. The time period to which these considerations apply often covers several months or even years. PSI*aps* is ideal for calculating the best possible assignments of product lines to plants or local facilities, whereby site-specific sales forecasts and logistical restrictions

are taken into account in the long term. Long-term capacity requirements can also be determined, for instance by comparing seasonal shift frequencies with the anticipated inventory flow. It also enables the verification of corresponding strategies for the range of coverage. Very often it is necessary to compare these and other related issues ad-hoc in example simulations in order to make the right long-term decisions on the basis of a quantitatively accurate evaluation.

In addition, PSI*aps* offers a range of functions for the optimisation of short-term, daily or weekly production planning and production control. This can be performed both for rough production and campaign planning with a mid-term horizon as well as for the short-term focus of detailed production planning.

Both planning levels can be linked, as the use of the PSI*aps* ensures data and model integrity and enables links. The plan obtained is visualized in the form of a Gantt chart; the PSI*aps* Visual Planning Assistant allows interactive intervention in the planning process and visualizes the process flow according to the desired level of detail. Extensive tabu-
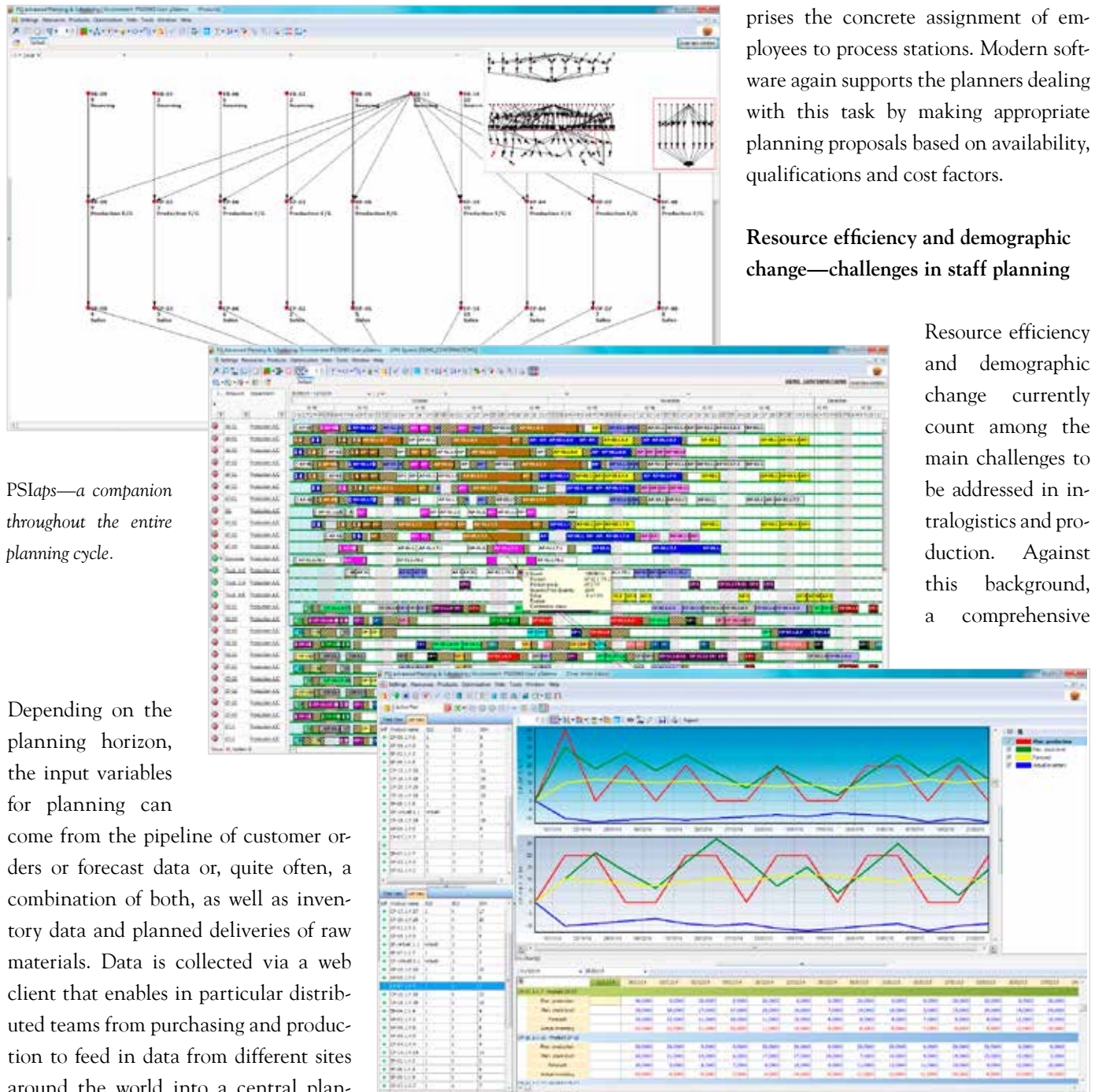
lar and graphical analyses for each scenario provide transparency with regard to costs, resource utilisation and inventory flow. Thus, all planning information required for organizing day-to-day business is available.

mations from current production also flows into the model.

This is the only way to ensure that the basic conditions for scheduling new orders are set correctly. Advanced concepts such as Available-to-Promise and Vendor Man-

The availability of qualified personnel for individual process steps is a significant factor in the determination of feasible production schedules. Initially, planning may still be anonymous and only consider the number of employees available at any given time. The second step comprises the concrete assignment of employees to process stations. Modern software again supports the planners dealing with this task by making appropriate planning proposals based on availability, qualifications and cost factors.

Resource efficiency and demographic change—challenges in staff planning

PSIaps—a companion throughout the entire planning cycle.

Resource efficiency and demographic change currently count among the main challenges to be addressed in intralogistics and production. Against this background, a comprehensive

Depending on the planning horizon, the input variables for planning can come from the pipeline of customer orders or forecast data or, quite often, a combination of both, as well as inventory data and planned deliveries of raw materials. Data is collected via a web client that enables in particular distributed teams from purchasing and production to feed in data from different sites around the world into a central planning process. Statistical functions that allow an interpolation on the basis of historical developments are also available to the planner for forecasting purposes. Last but not least, status confir-

aged Inventory are supported. PSIaps ensures that inventory and demand are always well-balanced—at the lowest possible cost.

staff management is becoming increasingly more important in the process industry as well. The forward-looking, de-

mand-based staff planning of the PSI*pep* software enables a far-reaching automation of staff planning processes—both for short-term planning on a daily basis as well as for long-term, utilisation-based strategic budget and capacity planning. The efficient use of internal and external staff is based firstly on the workload and, secondly, on the specific utilisation of individual employees. Making the best use of existing staff resources, means avoiding bottlenecks and reducing excess capacity. Operational staff deployment planning is based on previously determined staff requirements that specify the required staff capacities for all time units and workspaces. It is converted to individual employees and shifts and is therefore used mainly by shift supervisors and team leaders. Comparing the required staff capacities, e. g. on the basis of feedback from production and incoming orders with the associ-
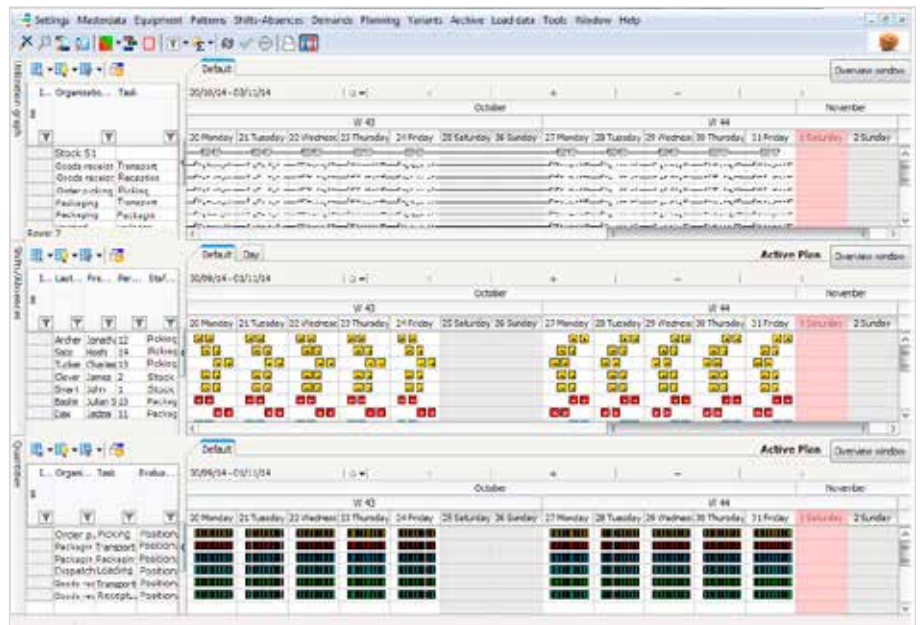

PSI*pep*—strategic and operational staff planning.

Medium- and long-term plans are of importance not only for machinery and inventory planning. In particular, forward-looking staff planning as part of management and controlling focuses

ious sources of information such as projected planned sales or marketing figures or seasonal campaigns. Requirements for external staff can be determined by comparing the available staff resources with forecasts for future demand. Recurring shortages of specific skills can lead to the introduction of recruitment or training measures at an early stage.

The PSI*pep* and PSI*aps* solutions described here give the planner powerful tools that enable him to determine and evaluate viable alternatives for the respective planning task at any time and thus derive the best plan for the underlying process. ◉
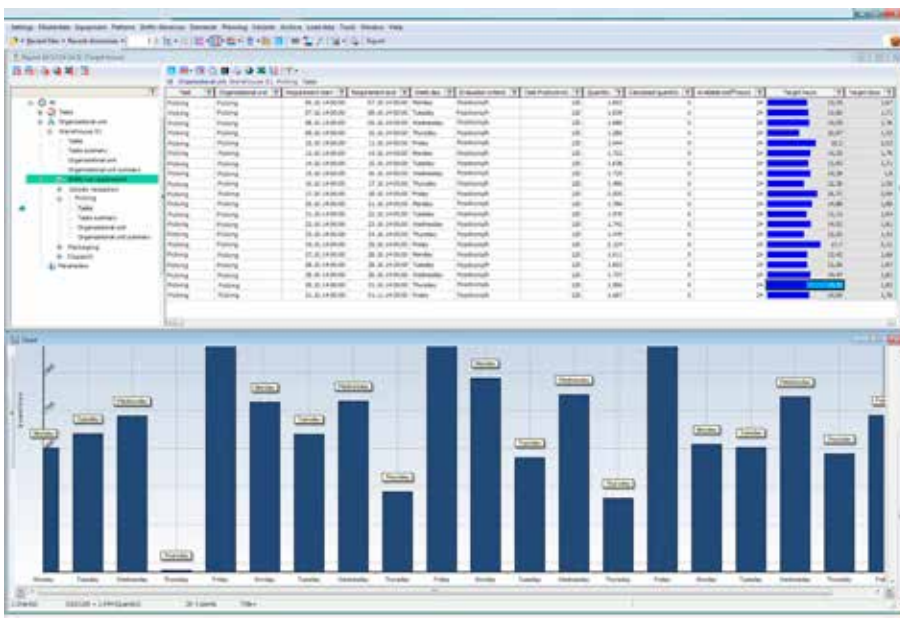
PSI*pep*—detailed reporting.

ated activities, against the available employee resources creates transparency for planning and therefore allows the early detection of potential bottlenecks, congestion and even idle times.

on long-term budget and capacity planning with a planning horizon based on quarterly or fiscal year requirements. This is based on forecasts for future demand which in turn are based on var-

▶*Your contact*

Dr. Tobias Gerken
Manager Key Accounts
Planning and Process Optimisation
F/L/S Fuzzy Logik Systeme GmbH, Munich, Germany
Phone: +49 89 148184-90
tgerken@psi.de
www.fuzzy.de