

PRODUCTION manager

Journal for logistics & production



A tool for improved competitive capacity

HAVLAT Präzisionstechnik GmbH optimises manufacturing processes using PSIpenta

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From the pegboard to multi-criteria optimisation

EDITORIAL

Dear readers,

All of us are confronted with the ideas and concepts of the fourth industrial revolution on a daily basis. However, it is also becoming increasingly clear that the backbone of smart factories will be formed by ERP systems and the quality of their data. We will be presenting the release 9 preliminary version of our ERP and MES suite PSIPenta at CeBIT in Hanover (hall 5/stand E16). This suite already fulfils many central IT requirements connected to Industrial Internet. These include a number of functional developments, including a new, Java-based user interface (GUI). You can read more about this on page 17. At this year's Hannover Messe trade fair (hall 7/stand A26), everything, or at least much, will revolve around the fourth industrial revolution. Come and visit our exhibition stand—we will be happy to support

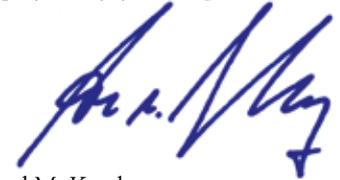


you as an IT supplier in the implementation of smart factory scenarios.

As ever, many companies are particularly likely to choose software if they have experienced the product live within a similar industrial company and have seen how it proves itself in everyday use. For this reason, we would like to present a few further success stories in this edition.

For instance, the cover story concerns our customer HAVLAT Präzisionstechnik GmbH and how companies can improve manufacturing processes using the PSIPenta ERP suite. On page 10, you can learn about how PSIPenta/finite capacity scheduling optimises sequences in conjunction with the Qualicision® decision support software. Further articles on process optimisation from the metals and logistics sectors complete this issue.

I hope you enjoy reading this issue.



Alfred M. Keseberg
Managing Director
PSIPENTA Software Systems GmbH

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A tool for improved competitive capacity

HAVLAT Präzisionstechnik GmbH optimises manufacturing processes using PSIpenta

If the philosophy of HAVLAT GmbH were to be summarised with a single word, that word would probably be “precision”. “We have not carried any simple products for many years. To hold our own in the market, we focus on complex precision products that allow us to set ourselves apart from our competitors”, explains Managing Director Konrad Havlat.

Konrad Havlat was born in the Upper Lusatia region, located in the border triangle between Germany, the Czech Republic and Poland. In 1980, he founded HAVLAT as a one-man operation in Großschönau, Germany, and has developed it into an international company with approximately 300 employees and multimillion turnover.

HAVLAT produces precision parts to order for mechanical and plant engineering as well as components for energy and power plant technology. Additionally, a separate department supplies high-precision small parts and microparts in the micrometre range for applications in medical technology, the watchmaking industry, the automotive sector and sensor technology.

An ERP system that grows with the company

Consistent growth created a need for space: In 2002 HAVLAT purchased new, modern manufacturing buildings in nearby Zittau, that then became the company’s headquarters. Here, first contacts were also made with the mechanical engineering department of Zittau/Görlitz University of Applied Sciences, that has worked closely with HAVLAT ever since. HAVLAT’s first MRP system was also developed in collaboration with university staff—custom software tailored precisely to the processes of what was then a mechanical engineering company.

However, the advantages of a custom, individual solution soon became a disadvantage, as HAVLAT continue to grow and the require-

ments changed. The energy industry division was created: The company began with the production of turbine blades for the energy industry; turbine housings and other components were added later. The range of parts grew, as did the need for resources. “We experienced more and more bottlenecks when accessing the database”, recalls Dipl.-Wirtsch.-Ing. (University of Applied Sciences) Karsten Keller-Sefrin, a project engineer responsible for ERP-related projects at HAVLAT. “We had an urgent need for a flexible, scalable system that could grow with our needs and would also fulfil future hardware and software requirements. Additionally, we wanted a seamlessly integrated solution for all relevant business processes from procurement to production planning and control, human resources, bookkeeping and cost accounting.” The old system also lacked an interface to bookkeeping software—as a result, master data for customers and suppliers had to be entered twice and synchronised manually between the systems.

PSI*penta* impresses customers with its functional range and flexibility

At the beginning of 2008, the Upper Lusatia plant therefore began looking for a future-proof ERP system. The new solution was expected to handle the special requirements of a con-

tract manufacturer regarding, for instance, order management, machinery utilisation, quality management or material and batch tracing. In particular, it was required to cope with HAVLAT's enormous diversity of parts and batch sizes. By this time, the product range had grown to include made-to-order power plant and turbine parts with component weights of up to 45 tonnes, machine components and turbine blades in small and medium-sized batch production and minuscule watch components weighing less than one tenth of a gram in five-figure batch sizes. After thorough market analysis, five ERP suppliers were invited to live presentations. In April 2008, the decision was made to use the PSI*penta* system made by PSIPENTA Software Systems GmbH of Berlin. "We were impressed with the solution's range of functions and great flexibility—we can adjust it to suit our processes and do not have to subject ourselves to the system's structures", explains Karsten Keller-Sefrin. "Furthermore, PSIPENTA is a trustworthy partner

that has been established on the ERP market for decades. Our visits to reference customers were also a great help in making our decision." The introduction of the new solution began in 2008 and was remarkably smooth and swift. "Of course, we faced a few challenges, for example the difficult migration of master data and variable data from the old system to the new solution," comments Project Manager Keller-Sefrin. "But thanks to streamlined project organisation and excellent support from PSIPENTA, we were able to go live on schedule on 1 January 2009."

Data redundancies are a thing of the past, internal and external communication runs much more efficiently and many processes are now largely automated. For example, data from personnel time management is now also transmitted to payroll accounting completely automatically; order data is immediately available in the accounting system without employees first having to laboriously type out delivery slips. The new solution also enables barcode scanners to be easily connected. This has already led to significant reductions in personnel costs and time expenditure, particularly in inventory management and stocktaking.

"We were impressed with the solution's range of functions and great flexibility—we can adjust it to suit our processes and do not have to subject ourselves to the system's structures."

Karsten Keller-Sefrin

Project Engineer for ERP-related projects, HAVLAT

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More efficient, less complex

Since then, PSI*penta* has proven its worth time and again in everyday use.

Expert support

Furthermore, HAVLAT now has the benefit of round-the-clock expert support from PSIPENTA. In the past, an instructor from Zittau/Görlitz University of Applied Sciences was responsible for this and was often only able to react to urgent queries after some time.

"Now, the reverse is more or less true", says Karsten Keller-Sefrin, smiling.



Havlat has opted for PSI*penta*/ERP, a system that grows along with its needs.



Havlat was founded as a one-man operation and is now an international company with headquarters in Zittau, Germany.

“The university used to use the old ERP system as a demo system for student training. Now, at our recommendation, they also use *PSIpenta* for this purpose—and we support them in doing so.” Cooperation within the user community *PSIng* is also very important for Karsten Keller-Sefrin. “*PSIng* gives us access to valuable information and user experience”, he reports enthusiastically. “We see how other people use the system and receive suggestions for solving our own problems. We can now also exchange information with other online users directly in *PSIpenta*.”

Systematic process optimisation

In 2013, HAVLAT began gradually optimising organisational structures and manufacturing processes to improve their competitive capacity. A separate project management working group was created in Zittau for this purpose. “Our job is to recognise

problematic processes, develop solutions for improvements in collaboration with the specialist departments and to define and supervise the required actions”, says Dipl.-Ing. (University of Applied Sciences) Anne Heinrich, Director of the working group. “*PSIpenta* features options for automated information exchange and workflow control and plays an important role in these tasks.” For example, colleagues in production previously had no real overview of inventory in the warehouse. This made systematic production planning difficult; production orders were only processed once a message had been received from the warehouse stating that the required materials had been delivered. Using *PSIpenta*, production can be planned and controlled flexibly depending on urgency, machine utilisation and inventory. Once a work order has been completed, an automated completion message is sent from quality assurance to material logistics—another

step towards the “paperless office”. The entire workforce is included in the optimisation process within the framework of the operational suggestion system: The use of barcode scanners and the automated generation of completion messages were initiated by employees.

“*PSIpenta* is a suitable tool for systematically increasing our competitive capacity”, summarise Anne Heinrich and Karsten Keller-Sefrin. “We are currently planning to expand the use of the ERP system to other business processes, including capacity planning, resource management, maintenance and document management.”

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User report: *PSIairport* solutions at Cologne/Bonn Airport

Optimised processes, efficient data processing

At Cologne/Bonn Airport, IT systems by PSI Logistics GmbH ensure the highest levels of availability, transparency, efficiency and security for the processes from check-in to aircraft. International security standards are ensured from controlling baggage handling and sorting systems to reconciling passenger and baggage data.

Every minute, aircraft start and land at Cologne/Bonn Airport. With more than nine million passengers and approximately 120 000 aircraft movements per year, this second largest airport in North Rhine-Westphalia is among the top ten in Germany. In 1998, the air-

port operator, Flughafen Köln/Bonn GmbH, began optimising the processes behind check-in using additional automation and aligning them for future viability. Since the summer of 2001, *PSIairport* Solutions by PSI Logistics has formed the information technology backbone for these improvements. "In view of the increasing passenger numbers in the previous decade, we have continuously

improved and adapted both hardware and software", explains Klaus Geißler, Project Manager of Cologne/Bonn Airport. "In addition to implementing additional standard systems from the *PSIairport* portfolio, the existing PSI systems can be easily expanded in the process."

establishing a second control station", explains Geißler. "The idea was to control and monitor fully automated baggage sorting in Terminal II and baggage carousels in Terminal I and the Alpha Hall using a single system." This required multisite-capable finite capacity scheduling, as PSI Logistics has implemented in numerous projects for multisite process management, for example, in warehouse management.

Transparent control of the conveyor system

At Cologne/Bonn Airport, multisite finite capacity scheduling provides planners with all information on the current functional status of the baggage handling and sorting systems and the connections between the processes. Using flight plans, check-in systems and loading planning, the software automatically calculates the respective work positions. It then makes an appropriate suggestion via a graphic representation on the multisite finite capacity scheduling display modules. "The details can be surveyed quickly and flexibly and changed if necessary", says Geißler.

The sorting and conveying system belts are 3.5 kilometres long and



The highest international security standards also apply at Cologne/Bonn Airport.

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The Baggage Handling System (*PSIairport*/BHS) of the fully automated handling and sorting system, including corresponding hardware components, was first implemented in Terminal II of Cologne/Bonn Airport in 2001. "Alpha Hall" processes were integrated into visualisation and control in 2007 in the course of airport expansion. "We wanted high transparency, but we also wanted to avoid



More than 9 million passengers use Cologne/Bonn Airport every year.

transport up to 5000 suitcases every hour. Transport orders controlled by PS*airport*/BHS ensure that all pieces of baggage arrive at the correct sorting destination. Baggage barcodes are identified by scanners in the conveyor system.

Two separate baggage handling systems have been installed in Terminals I and II of Cologne/Bonn Airport. Baggage is transported from the 26 separate check-in counters in Terminal I by the Alpha Hall using a multi-stage baggage control system and a sorting carousel with 24 loading workstations. The second handling system has been installed in Terminal II. It guides baggage from the 20 check-in counters in the “Charly” area and from the 20 check-in counters in the “Delta” area to a vertical lift system. This transfers the suitcases to a conveyor system in the airport basement. There, baggage from the 60 check-in counters also runs through an x-ray



Despite automation, the manual effort involved in baggage handling is still very high.

the terminals independently of each other”, says Geißler enthusiastically.

Security and efficiency

The system was updated in 2010 and its user interface simplified. The entire system was also integrated into

point and in which container the corresponding baggage item is stored and where the container is stored in the aircraft fuselage. PS*airport*/BRS also follows optimisation strategies, according to which transfer passengers’ baggage is distributed in the transport container in such a way that as little operative handling as possible is required during reloading at transfer airports. “PS*airport*/BRS supports both security aspects in the seamless monitoring of baggage loading and the subsequent, IT-supported processes in equal measure”, says Geißler.

In Germany alone, ten of the twelve largest commercial airports now use airport solutions from PSI Logistics. “Simpler, faster, more secure”, summarises Geißler. “A reliable system for optimised processes and efficient data processing.”

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*PS*airport*/BRS supports both security aspects in the seamless monitoring of baggage loading and the subsequent, IT-supported processes in equal measure.*

Klaus Geißler

Project Manager of Cologne/Bonn Airport

check and is then guided onto a sorter with more than 300 trays. The sorter has a sorting capacity of up to 5000 baggage items per hour. It distributes the suitcases to 51 final destination chutes. At the destinations, suitcases are recorded using hand-held scanners and sorted on baggage carts. PS*airport*/BHS reconciles the information again and then releases the baggage items for loading. “An IT system reliably controls the two sorting systems in

the 100% baggage screening strategy. According to applicable safety regulations, no aircraft can take off if there is a baggage item without an associated passenger on board the plane. The PS*airport*/BRS baggage reconciliation system ensures optimum integration of x-ray check results and automatic reconciliation of the required baggage and passenger data within the airlines. If any baggage needs to be unloaded, just a few clicks show at which

Product report: PSImetals for manufacturers of long products

Cut optimisation reduces scrap

Operating a section mill in a cost efficient way is quite challenging: Produce exact quantities of sections to customer specifications in exact length and small tolerances on time. Rolling bars slightly shorter than planned might result in losing whole saleable sections. Using PSImetals, producers of long products can now plan and control their orders and material demands across all production lines, create optimised cutting plans and thus increase the resulting yield and overall performance. To compensate for deviations in production, re-optimisation creates adjusted cutting plans and line schedules that guarantee production in line with customer specifications.

Section mills roll beam blanks, blooms or slabs to a variety of different output shapes as I-beams, wide flange beams, column sections, channels and sheet piles just to name a few. Each of these products comes in different dimensions that require different machine setups, especially at the rolling stands and the straightener. To reduce retooling times, section mills are operated in campaigns. Campaigns group orders by product families and outer cross section geometry. Customer orders are assigned to

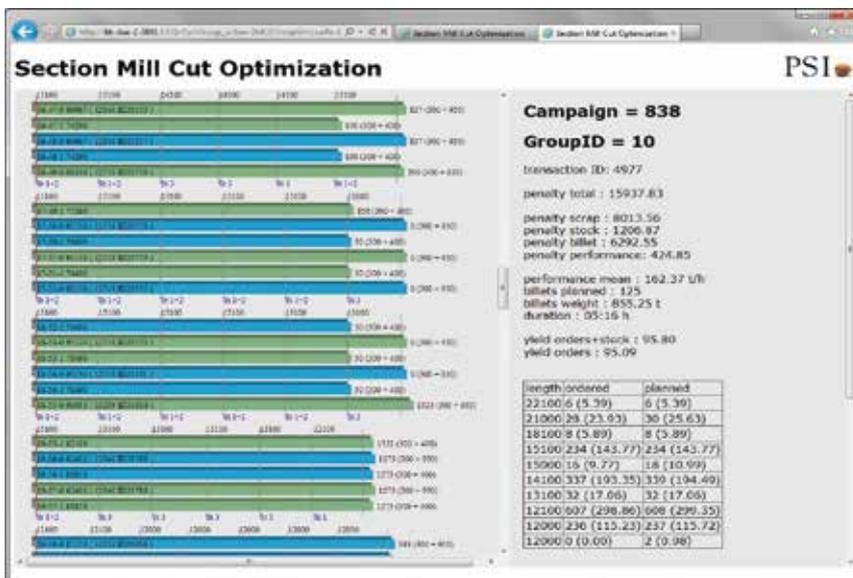
production lots within a campaign. Each production lot contains exactly one cross section geometry and one steel grade. It can be run from the same input material specification but contains a variety of customer lengths. From a production point of view, small customer orders with short lead times conflict with large batch sizes of raw materials for certain sections and steel grades. The input materials are therefore often produced in standard lengths by an upstream melt shop or in some cases purchased from third parties.

Smooth production flow

The typical production route is reheating, rolling in a break down or roughing mill and then in a finish mill, hot cutting, cooling, straightening and cold cutting up to stacking and bundling. The whole process chain is an in-line process without stocking points in between and typically without any possibility to re-schedule the materials that have entered the production process at the reheat furnace. The principal aim of building cutting plans and scheduling is to utilise the lines to capacity, run at a high throughput rate with high machine efficiency and simultaneously to minimise scrap and produce as little stock material as possible. Customer orders must therefore be combined into rolling and cutting batches so that the best possible use can be made of available input materials.

Control bottlenecks by planning

Various potential bottlenecks influence the production flow: The finishing stand becomes a bottleneck particularly when producing light sections as these must be rolled longer to achieve the target thickness of flange and web, therefore slowing down the rolling process. In the downstream cooling bed, heavy sections slow down the process as these sections take longer to cool. Where possible, multiple beams are cut simultaneously at the cold saws to make optimum use of the saws. A mix of different consecutive lengths can cause bottleneck problems as saws and stoppers must be repositioned all the time. To facilitate shipping, the sections must be



Optimised cut planning for steel sections and detailed information for evaluating plan quality.

stacked and bundled to bundle sizes as per customer specification and loaded on trucks, railcars or pallets for shipping. From a production perspective, on the other hand, all sections of equal length should be processed, before a stacking and bundling unit can process a different length. All these constraints have a big influence on the generation of an optimal plan for scheduling and cutting.

Develop cross-system potential

PSI Metals has developed a new optimisation approach for section mills that creates feasible order and cut combinations, maximizes the yield and simultaneously optimises rolling speed and productivity. The optimizer in *PSI metals* is using the same rules and system restrictions for calculating the material demand, for allocating beam blanks, blooms and slabs to production orders and creating schedules for all production steps, from reheating, rolling, hot cutting, cooling on the cooling bed, straightening, cold cutting to stacking and bundling. Therefore, each line schedule includes the required input materials, their sequence for rolling, the set points for cutting at the hot and cold saws and the routing for stacking and bundling. It also reports the resulting quantities of process inherent scrap and excess steel, that results in either scrap or stock sections. The line schedules are provided to crane operators and the plant automation systems and support the operators in production.

Adjusting to production events

Sampling is vital to ensure that the rolled product stays within the specification. Sometime material samples must be provided to the customers. As every sample is simultaneously a ma-

terial loss, this requirement must be taken into account. Ideally, the samples should be cut from excess steel to optimise the use of materials here as well. For this purpose, the results of sample planning (e.g. using *PSI metals Quality*) can be incorporated into the optimisation algorithm. To immediately compensate for deviations during production (e.g. in the weight of raw materials, in the finished metre weight or in the length of the head and tail scrap) the running production can be directly re-optimised, taking changed conditions into consideration. If, for example, machine availability of cold saws or in the stacking/bundling area has changed, this may also necessitate

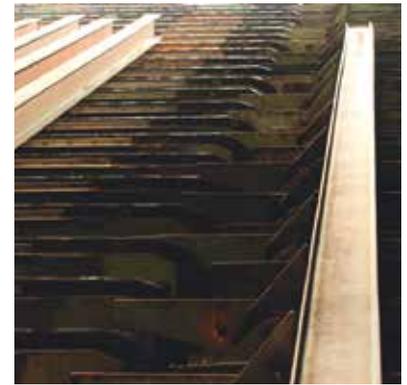
PRODUCTION OF STEEL SECTIONS

Steel sections are primarily used in the construction industry for supporting and bearing functions. They are produced by casting liquid steel into a profiled shape. These are referred to as blooms or beam blanks. They are then rolled into their final cross sectional shape in campaigns and, after straightening, cut to final customer length.

a change of cutting plans for material in the cooling bed, in the reheating furnace and as yet unloaded material. This re-optimisation considers the production progress of materials, material transformations and creates new cutting plans using operator or system adjustable parameters.

The best plan?

Whether a production plan is “optimal” depends on the business goals: Maximum system throughput versus



Multiples on a cooling bed.

minimising raw material stock versus minimising storage of finished products and process scrap. Monetary penalties are used to evaluate the results of optimisation with *PSI metals*: How much money do I lose per tonne for the amount of scrap from a section? What monetary values are represented by sections in the schedule that have not yet been assigned to an order and therefore become materials in stock? What does it cost me to use raw material with higher quality steel grades? While the optimizer minimises the overall penalty to get to an optimum, the display of the penalties allows the evaluation of the cutting plan. By adjusting the penalties the algorithm is tuning and aligned with the business goals of the company. This creates a solid decision basis for active production control. *PSI metals'* customers operating section mills include companies such as Emirates Steel (United Arab Emirates), Peiner Träger (Germany) and ArcelorMittal (Luxembourg). 

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Product report: PSIPenta/Leitstand with Qualicision®

From the pegboard to multi-criteria optimisation

Anyone who remembers knows what this means. The pegboard is a classic among planning systems and serves to determine sequences of various work processes. In this system, cards for individual tasks are pegged or moved to different rows (= workplaces) at different points (= times). As a result, every employee can see at a glance which tasks are scheduled at which workplaces for the near future. However, the ability to fit in express orders or react to malfunctions is severely limited and inconvenient. In most companies, programs are therefore used to plan and control sequences of operations.

Planning board in finite capacity scheduling

The PSIPENTA finite capacity scheduling module allows sequences to be planned digitally within the system. Interacting with a leading ERP system, it serves to improve the production flow and is suitable for planning both various manufacturing typologies and maintenance. Planning can be carried out completely manually by means of drag and drop or fully automatically according to set rules. The resulting sequence plan is visualised as a planning board which is available to all company staff as required, at

least as information. If express orders need to be inserted or to react to malfunctions, a new plan generates a new sequence plan that takes the new circumstances into account. This new plan can be generated either manually or automatically. If an operation has been added at the front of the queue, the update function performs the laborious adjustment of all affected operations at the push of a button.

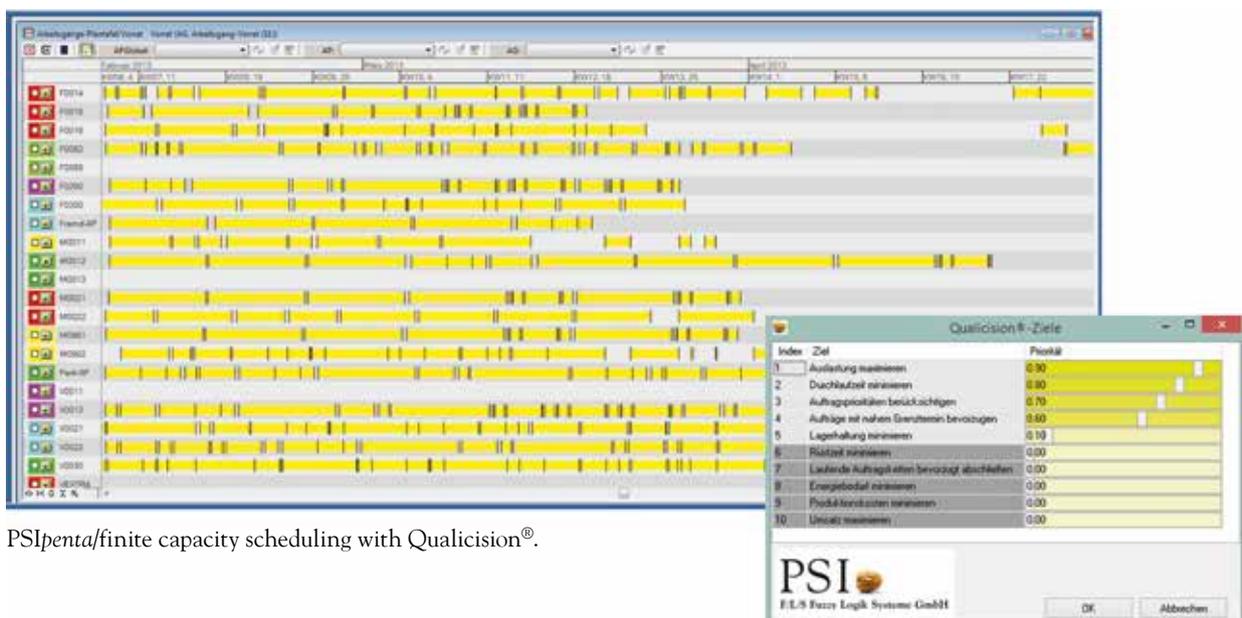
Sequence planning in finite capacity scheduling

Automatic sequence planning imitates a planner's decision process. For

a pool of orders that is to be planned, it is first decided which operation in the pool is the most important. Next, the ideal workplace and time for this operation is determined. The respective decisions are based on configurable rules. For example, the most important operation could be the one that has the earliest desired deadline. If two operations have the same desired deadline, the algorithm could be allowed to make the decision in the next step based on default priority. Various rules, which can also be combined, are available for evaluating importance and deciding the best position. In the simulation, the results of different rule settings can be compared to determine appropriate settings for custom planning.

Ranking with Qualicision®

Let us use this example again. The most important operation has been determined through the desired deadline and, in the second stage,



PSIPenta/finite capacity scheduling with Qualicision®.

using default priority. The opposite would also work: concerning the priority first and concerning the desired deadline in the second stage. What would happen, though, if both were ranked? Can a combination of desired deadline and default priority be used to evaluate importance? This is where ranking with Qualicision® comes into play. Multiple criteria with different weights can be included in ranking evaluation. A target function is defined for each criterion describing the importance of each value range. Users can control the relative weighting of criteria using a slider. Qualicision® provides a multi-criteria ranking based on the criteria and their weights. Sequence planning can then use this ranking as a basis for further planning.

Planning with Qualicision®

Let us go a little further. What happens if we want a complete plan instead of just ranking based on multiple criteria? Typical requirements for planning are: high utilization, short mean lead times, high compliance with delivery deadlines, small inventory. As is well known, these requirements conflict. How can a good compromise be found nevertheless? And what does a good compromise even mean? When planning with Qualicision®, users can weight the various criteria for evaluating the entire plan using slide controls. In this case, Qualicision® provides the entire sequence plan. The mathematical foundation—in concrete terms, the extended fuzzy logic of Qualicision®—calculates occurring target conflicts to support traceability. To give an impression of the plan results, a special view containing a kivi-iat diagram illustrates the feasibility

of the weightings for the individual criteria.

In practice

Version 8.4 of PSIpenta/finite capacity scheduling includes automatic sequence planning with adjustable rules, a simple version of Qualicision® ranking and a simple version of Qualicision® planning. Criteria and their target functions are preconfigured. Users can adjust the weighting of any element.

Users who have purchased the full version of Qualicision® ranking can easily supplement additional criteria. Target functions for each individual criterion can also be adjusted. Users who have purchased the full version of Qualicision® planning can develop custom criteria specifications and interactions in collaboration with us.

Qualicision® modelling

Qualicision® technology is based on complementary extended fuzzy logic. This software supports the optimisation and control of business processes. The diversity of possible interactions when controlling business processes means that variances arise even when all basic business process data is known with absolute certainty. Business process goals are expressed using key performance indicators (KPIs). For Qualicision®-based optimisations, interactions are derived from the process data in the form of impact matrices. Based on these impact matrices,

mathematical conflict and compatibility analysis (CC analysis) is used to calculate which courses of action are best suited to achieving the process goals. The results of the CC analysis are represented in relation matrices. In technical terms, CC analysis makes the combinatory variety of KPI control options manageable. In this way, the software helps users to make better and more strategic decisions faster.

Qualicision®-based modelling is performed with the help of the Qualicision® Functional Decision Design



Qualicision® targets as a kivi-iat diagram.

Engine (QFDD). It uses a range of modelling functions, which are now also integrated and available in a specially adapted form in PSIpenta/finite capacity scheduling. 

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News: Flow Configurator

Business processes using drag and drop

With the takeover of Broner Metals, the PSImetals solution benefits from the innovations of the new subsidiary. PSImetals takes on the Flow Configurator as the first of several functions within the standard and enables user-friendly representation of business processes.

At the end of 2014, PSI Metals proudly reported the takeover of their British global competitor Broner Metals. After an initial technical evaluation phase, interesting features of the Broner Metals solution were identified

our customers to adapt the system independently. In this way, PSI reacts to the increased demands of metals producers with regard to flexibility in the areas quality, product mix and production.

Modelling...

Reflecting every customer's specific business processes is strategically important. The user should be able to reflect these independently in the PSI system and, if necessary, to make adjustments without the assistance of PSI.

In future, this will be made possible by the "Flow Configurator", which is already being used successfully by Broner customers. It offers the option of modelling business processes quickly and intuitively within the system—something that previously was only possible with the help of PSI specialists.

...business processes

It establishes sequences or procedures (flows) using a drag-and-drop-capable interface. Individual flows can be formed from a library of standard functions or from custom functions created by the customer themselves. Completed flows can be initiated either via predefined standard events or by project-specific supplementary events. Examples of this are messages that enter peripheral systems via interfaces, rigidly defined event points within the solution or user interaction within the PSImetals GUI. Once they have been created, flows can simply be exported into XML files and imported again. The Flow Configurator will be available for all PSImetals customers beginning with the autumn release. ☺

The flow configurator enables the user to adapt processes by himself.

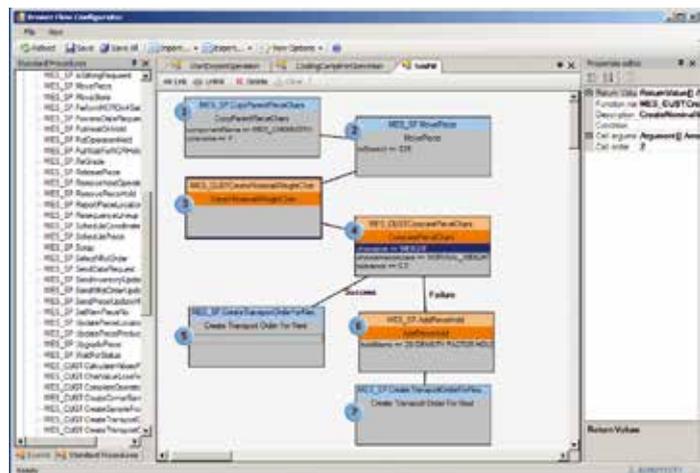
Jörg Hackmann
Director Product Management
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and will gradually be adopted by the PSImetals product family. Special attention has long been paid to the usability of PSImetals products. This involves the graphic interface, but also more options to allow

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The flow on the right shows an example of desired system behaviour after a received message concerning the creation of a new material from a mother piece. The boxes represent functions and are assigned and linked via drag and drop.

- 1 Data adopted from the mother piece
- 2 Piece positioned in the line outlet
- 3 Weight calculated
- 4 Calculated weight compared with reference value
- 5 If successful, transport order is created to transport the material to the next line
- 6 In case of failure, material is blocked and
- 7 Transport order to the blocked stock is generated



News: Contract from Schlotte Holding GmbH for Chinese Plant

Roll-out for all plants and companies

The PSI subsidiary PSIPENTA Software Systems GmbH has been contracted by the automobile supplier Schlotte Holding GmbH with the delivery of the PSIPenta ERP suite as well as MES modules in Chinese.

The implementation of the ERP systems is occurring in connection with Schlotte's expansion to China and the opening of a plant in Tianjin. In an additional step, the planned system structure is to be introduced in all the Schlotte plants and companies.

For the purpose of obtaining maximum process automation, along with the ERP system, MES modules such as operational data recording (ODR), control room, employee time recording (ETR), a solution for voucher-less material flow using PSIPenta/Industrial Apps (from ordering warehouse to shipping) will be implemented. The new production site in the Chinese city of Tianjin will be connected with the support of the multisite controlling system PSIPenta/Multisite and administered centrally from Germany.

The communication to customers and suppliers will be performed via Edifact- and VDA messaging formats



The SCHLOTE Group, founded in 1969, is headquartered in Harsum near Hildesheim and employs about 1 200 persons at six plants that are specialised in various segments of automobile parts. The production lines are set up for small, medium and large series, but also offer customised manufacturing and prototyping.

from the Supply Chain Management module.

In the current system architecture of the Schlotte Group the PSIPenta ERP suite is running at the sites Harsum,

Brandenburg, Wernigerode and Uher-ské Hradišt (Czech Republic). Presently, the ERP system is being implemented at the Saarbrücken site. The plants are all interconnected using PSIPenta/Multisite.

The PSI Group has had offices in Beijing and Shanghai in China since 2004. PSIPENTA has already accompanied other German companies in their expansion to China and obtained Chinese companies such as the CSR Group as customers. Along with the on-site support, the companies profit from the multisite control with PSIPenta/Multisite, the UNICODE capability that also offers a Chinese language version as well as country-specific adjustments in the software products. ☺

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News: Automobile Supplier Spicer GWB uses PSIjjs

Further MAN plant connected to PSI sequencing system

Spicer Gelenkwellenbau GmbH (GWB), a long-term customer of the PSI subsidiary PSIPENTA Software Systems GmbH, has been using the PSIjjs just-in-sequence solution since September 2014 to supply an additional MAN plant.

GWB now also supplies the MAN plant in Salzgitter with drive shafts produced synchronously with the PSIjjs sequencing system. The software automates and optimises the core processes for planning and controlling the optimised sequence and synchronous production and delivery of the

units to the assembly line. GWB has been using the PSIPenta/Automotive ERP suite and decided in 2012 for the PSIjjs solution. The Polish MAN plant has been supplied with production synchronous units since 2013.

The Spicer Gelenkwellenbau GmbH, headquartered in Essen, has been manufacturing drive shafts, couplings and

universal joints for trucks and busses for over 70 years. GWB belongs to the US DANA Holding Corporation, a leading supplier of products for drive chains and energy technology with around 23,000 employees in 26 countries and headquartered in Maumee, Ohio. ☉

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News: AMAG goes with PSI for the optimisation of aluminium production

Leading production management system

The PSI Metals Non Ferrous GmbH has been contracted by AMAG Austria Metall AG with the implementation of PSImetals as the integrated production management system for the rolling mills in Ranshofen.

PSImetals will also replace the old system in the existing part of the plant. With the new system, AMAG aims to establish standardised and documented processes, significantly simplify the

IT administration and allow the transfer of know-how as well as install a sustainable and flexible solution at the MES level.

With the PSImetals components Production, Quality and Logistics, the production control will be performed for all lines as well as the single material unit tracking across all the process steps in the rolling mill. PSImetals assumes an integrative function between machine control and business software. With the decision in favour of PSI, AMAG intends to assure support at various levels and to distribute it to a number of employees. AMAG delivers a

wide array of products for different industries and, with PSImetals as the MES platform, will be able to apply many standardised functions, but also to extend these with individual functions as needed. The high scalability and configurability of PSImetals allows the use of standard functions, expanded by customer-specific add-ons and at the same time assures the release capability. An initial partial project already went into successful operation in February 2014. ☉

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Slab production at AMAG.

News: Strategic planning, controlling and optimisation of logistics networks

Aldi optimises British logistics network with PSIGlobal

The British subsidiary of the supermarket chain Aldi has acquired PSIGlobal, a software product for strategic planning, controlling and optimisation of logistics networks, from PSI Logistics GmbH. Aldi intends to use this to enhance its supply network, transport processes and logistics centres in Great Britain and Ireland.

Aldi opened its first British store in 1990 and is expanding in the British market. The Company is investing 600 million Pounds (761 million Euros) as it opens over 550 new stores between now and 2022, more than doubling its employee number in the UK.

Aldi chose the strategic planning and optimisation system from PSI Logistics to optimise its procurement networks and transport processes for store delivery in Great Britain and Ireland. In addition to cost and resource aspects, the system also takes account of the carbon foot-

print during the optimisation process. PSIGlobal provides decision support for locating new logistics centres and determines an optimal layout for the commodity flow.

PSIGlobal is a logistics management system that facilitates mapping, analysis, control and optimal layout for multi-level and multi-modal logistics networks. Its scenario technology and integrated analysis methods allow it to model, check and optimise multimodal networks and multi-level processes and to identify key figures and sensitivities. Using a model based approach; it computes

the optimal number and location of warehouses and optimises transport structures to reduce warehousing and transportation costs. Mathematical methods allow the incorporation of forecast volumes and labour cost changes into the planning process to allow calibration of the networks accordingly.

Over the last two years alone numerous recognised brand leaders have decided to use PSIGlobal to optimise their logistics processes. To date PSIGlobal has optimised more than 15 million transport orders. 

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Die britische Tochter der Supermarktkette Aldi optimiert logistisches Netzwerk mit PSIGlobal.

Event: Review of HSM Scheduling Road Show

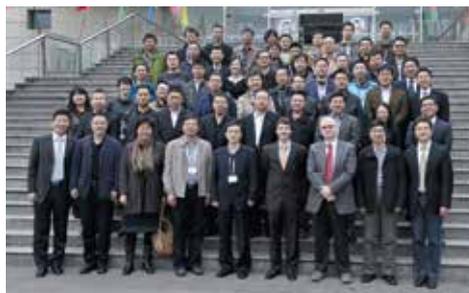
Not only quantity counts

China is by far the largest steel producer in the world and the economic engine of the past few years. However, quantity has not been the sole criterion for a long time. Instead, customer satisfaction and delivery reliability are among the most important challenges Chinese manufacturers face. The PSI Metals Road Show on the subject of line scheduling for hot rolling mills illustrated this very clearly last autumn in Beijing.

Forty-eight representatives from thirteen of the leading Chinese steel producers accepted the invitation to the PSI HSM Scheduling Road Show in Beijing. In view of the continuing weak economic situation of the world steel industry, this number of participants underscores the particular importance of the topic, since the ongoing pressure on costs is also reflected in restricted travel. For this reason, most visitors travelled to the event hotel not by plane and taxi, as they usually would have, but by train and public transport. The topic is highly relevant and therefore: The main thing was being there! Before the event, participants were sent various planning scenarios and a request to submit questions in advance. In this way, PSI experts were able to respond to the specific requirements and desires of the participants. The idea that the main concern in China is the quantity produced has finally been rendered obsolete. Topics such as in-

tegrated planning, hot charging rate, delivery reliability and general customer satisfaction were very important to the participants.

PSI Product Manager Robert Jaeger really hit the mark when he demon-



Participants at the HSM Scheduling Road Show.

strated the possibilities and performance capability of optimised planning to the industry representatives at the event. The financial capacities a hot rolling mill ties up for the company is shown in purchasing, but particularly during ongoing operation. It is therefore that much more vital to utilise this investment well and intel-

ligently. Using scenarios shown from the point of view of various interest groups within the company, the visitors were able to recognise their everyday tasks and transfer the examples to their daily work.

This ranged from the basic principle of creating a new rolling schedule using PSI software to more complex problems such as maximising schedule length while simultaneously taking existing product mixes into account. With the help of hands-on exercises, the participants could immediately try out what they had heard. They were surprised how simply and elegantly the set tasks could be accomplished with the help of a planning optimisation tool.

After a long day—the event ended at 5:00 PM—all the visitors were enthusiastic. It was not just the performance capability of the PSImetals Line Scheduler that impressed them. First and foremost, the steel mill representatives felt that they were understood and included in terms of their daily tasks. The PSI experts succeeded in communicating complex material in a short time in a comprehensible and engaging way. Of course, the exchange of experience among manufacturers was not neglected and the end of the day saw various ideas concerning how planning processes might run in the future—perhaps also with the help of PSImetals. ☺



Full attention and active participation confirm the high level of interest.

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Events: CeBIT and Hannover Messe 2015

Software solutions for the future

PSI PENTA Software Systems GmbH will once again be represented this year at the spring trade fairs CeBIT and Hannover Messe. In March, the new ERP suite version 9 will be presented live. In April, visitors can learn about interesting solutions involving the topic Industry 4.0.

China is the partner country of CeBIT this year

From 16 to 20 March 2015, at CeBIT in hall 5, stand E16, the new major release of the PSIPenta ERP suite will be presented with a focus on comprehensive usability aspects. In addition to a large number of new functional developments, the new PSIPenta ERP suite version 9 offers a new, Java-based user interface (GUI) in which the requirements for a positive user experience have been implemented. Interfaces and processes can be easily customised in the work process to simplify the handling of complex functions. As a result, the user's role can be adapted to the current work context and task at any time, and information can be presented clearly. Since 2004, the PSI group has been represented in China with branches in Beijing and Shanghai. In addition to receiving on-site support, custom-

ers benefit from PSIPenta/multisite multiple plant management and from UNICODE capability, which also provides a Chinese language version and country-specific adjustments in the software products.

Would you like to visit us at the spring trade fairs?

Register at:
www.psi.de/en/events/



As a software supplier for StreetScooter GmbH, which was recently taken over by Deutsche Post DHL, PSIPENTA will present a prototype of the StreetScooter C16 at its exhibition stand. An additive manufacturing scenario, i.e., a modern and above all faster approach in automobile design and manufacturing or spare parts manufacturing, will be shown using

the example of the electric car. A service event will be simulated and the manufacturing order generated in the PSIPenta ERP suite. The system sends the order to a 3D printer which prints the required spare part.

At the Hannover Messe in the Digital Factory

The Digital Factory is completely in the spirit of the fourth industrial revolution. Under the trade-fair motto "Integrated Industry—Join the Network", PSIPENTA will present using new demonstrator as part of the Guided Tour Industry 4.0, in hall 7, stand A26. It is dedicated to the aspects of cross-company and internal networking of various components involved in the value-creation process in a smart factory. Real-time visualisation of the concrete status of a production system in connection with the simulation of future manufacturing situations increases the efficiency of production as a whole. Smart devices support users during fulfilment of their tasks.

Guided Tour Industry 4.0 is being organised for the second time by the trade-fair company. It provides the opportunity to learn about this main issue of German industry from select companies. Registrations are made directly via the trade-fair company: www.hannovermesse.de/de/messe/touren/technology-tours/



PSIPENTA presents the new ERP version 9 and innovative networking solutions.

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Event: Review of LogiMAT 2015

High visitor interest in new logistics solutions

From 10 to 12 February, PSI Logistics GmbH presented a comprehensive overview of the entire product spectrum and a variety of innovative new developments at LogiMAT 2015.

At the centre of innovations among current releases were the warehouse management system *PSIwms* and the *PSIglobal* strategic planning, control and optimisation system for logistical networks. *PSIwms* attracted considerable attention from trade-fair visitors, partly due to its new Warehouse Service Broker. This is an integration platform that

controls the WMS systems of other sites and offers cross-warehouse inventory optimisation. Visitors were also interested by adaptive scenario management. This optimises process and system control by switching autonomously into other, predefined scenarios (e.g. high load, low load, night shift, emergency operation) when certain key figures or points in time are reached.

PSIglobal scored points with functions for cross-site inventory optimisation, calculation and optimisation of CO₂ footprint and for tender management for automatic freight-tariff calibration. The *PSI Mobile Service Solution* was also well received as a further unique selling point. The new technology platform was developed for end-to-end solutions so that the modules of standard systems can be used in industrial applications via apps on tablets or smartphones. ☉

Event: Review of PSI LOGISTICS DAY in Stuttgart

“More Modern Times—Industrial Internet”

As a prelude to this year’s LogiMAT, the PSI LOGISTICS DAY was held on 9 February 2015 in Stuttgart Airport under the motto “More Modern Times—Industrial Internet”. For the first time, the logistics industry was thus given the opportunity to exchange experience with users of the entire product portfolio of PSI Logistics.

Innovation—information—networking: The solution potential of the software was presented

and discussed with these in mind. The latest developments in the current releases of *PSIairport*, *PSItms*,

PSIwms and *PSIglobal* and the possibilities of the PSI GUI were introduced. Examples of solutions from user companies such as Hellmann Worldwide Logistics, STUTE Logistics and Schaeffler Technologies were also on the agenda.

The *PSIairport* solution portfolio, used by Stuttgart Airport to control its baggage handling system, could be experienced at first hand. Feedback from participants was consistently positive and led our executives to consider making PSI LOGISTICS DAY into an institution in the future. ☉



Uwe Kaschdailewitsch, Director of Materials Handling and Machine Technology at Stuttgart Airport and his colleagues demonstrate the use of *PSIairport live*.

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R & D: Smart Logistics Grids research project

Multimodal logistics networks

The objective of the Smart Logistics Grids research project is to develop a system that allows for better handling alternatives along the logistics network to increase the efficiency of the overall system.

Within the research project, methods and systems are compiled for considering, developing and optimising global logistics networks as a whole.



One focus of these considerations is intermodal, real-time scheduling to reduce CO₂ emissions, reduce transport costs and improve ability to de-

liver within the logistics network.

PSI Logistics is working on the project in collaboration with the FIR (Institute for Industrial Management) at RWTH Aachen University, TOP Mehrwert-Logistik, ZITEC Industrietechnik, GSI Germany, Hellmann Worldwide Logistics and the Technical University of Berlin. 

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Company news

+++ PSIPENTA received a new order from plant manufacturer Esterer WD GmbH +++ PSI delivers network control system to Berakas Power Management Company in Brunei +++ Test equipment manufacturer COMPRION GmbH chooses PSIPenta/ERP +++ PSI expands passenger information system at Aare Seeland mobil AG to include buses +++

IMPRINT

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Layout

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Printing

Repro- & Druck-Werkstatt

SOURCES

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EVENTS

www.psi.de/de/events



05/03/2015	Practical seminar at Alfing Kessler Sondermaschinen GmbH Aalen-Wasseralfingen, Germany	PSIPENTA
16/03–20/03/2015	CeBIT 2015 Hanover, Germany	PSIPENTA & FLS Hall 5/stand E16
13/04–17/04/2015	Hannover Messe 2015 Hanover, Germany	PSIPENTA, FLS & PSI Electrical Energy Hall 7/stand A26
04/05–07/05/2015	AISTech 2015 Cleveland, OH, USA	PSI Metals Convention Center Stand 2671
05/–08/05/2015	transport logistic Munich, Germany	PSI Logistics Hall B5 Stand 315/414-5
16/06–20/06/2015	METEC 2015 Düsseldorf, Germany	PSI Metals Hall 3/stand 3C19

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