

production manager

Journal for logistics & production

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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^{dep}*. 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 optimisation

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News ticker

+++ PSI increases incoming orders, sales revenues and earnings in the third quarter—improved results for electrical energy and logistics +++ BASF expands existing PSI control system by adding Workforce Management—PSIcommand supports switching operations management using a mobile connection +++ PSIPENTA receives order from Karl Schnell GmbH & Co. KG—integrated ERP and MES solution and Multisite multiple plant management +++ PSI AG Switzerland receives order from Saurer Embroidery—leading textile company once again decides for PSIpenta/ERP +++

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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 PSIlaps (Advanced Planning and Scheduling) and PSIlpep (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 PSIlaps and PSIlpep 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 PSIlpenta MES solution has brought new impetus to production at Karosseriewerke 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 PSIlwms. You can also read about how the Tuning Dashboard for planning in PSIlmetals—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



◀Continued from page 1

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 *PSIaps*, can help.

Holistic and flexible production planning

PSIaps 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 *PSIaps* supports all multi-stage production processes. It also enables products whose production comprises many process steps to be re-

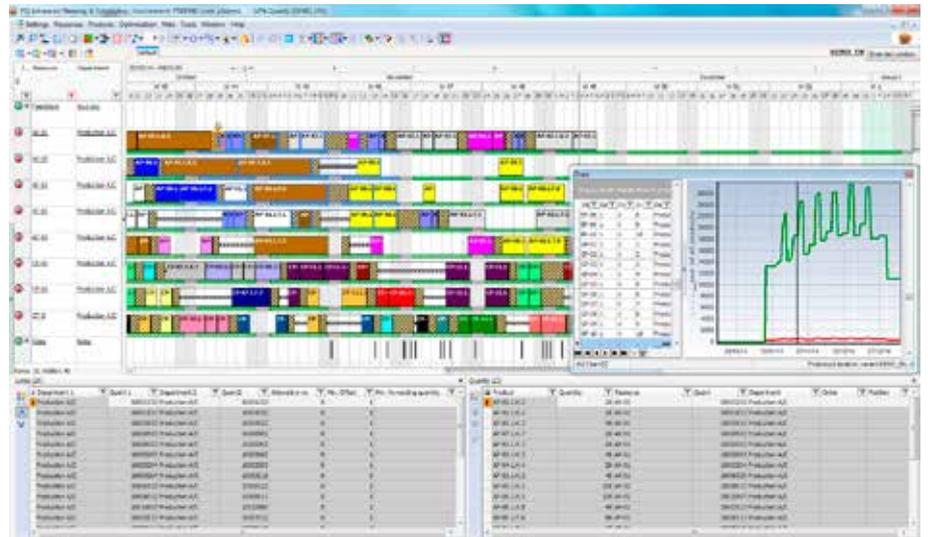
alistically mapped and successfully optimised. Based on an integrated data model, *PSIaps* has interfaces to the ERP world. Modelling is a one-off process, whilst data synchronisation in day-to-day business occurs on a continuous basis. All-in-all, the module accompanies the full planning cycle from 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-

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, *PSIaps* 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 ho-



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. *PSIaps* 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.

Both planning levels can be linked, as the use of the *PSIaps* ensures data and model integrity and enables links. The plan obtained is visualized in the form of a Gantt chart; the *PSIaps* Visual Planning Assistant allows interactive intervention in the planning process and visualizes the process flow according to the desired level of detail. Extensive tabu-

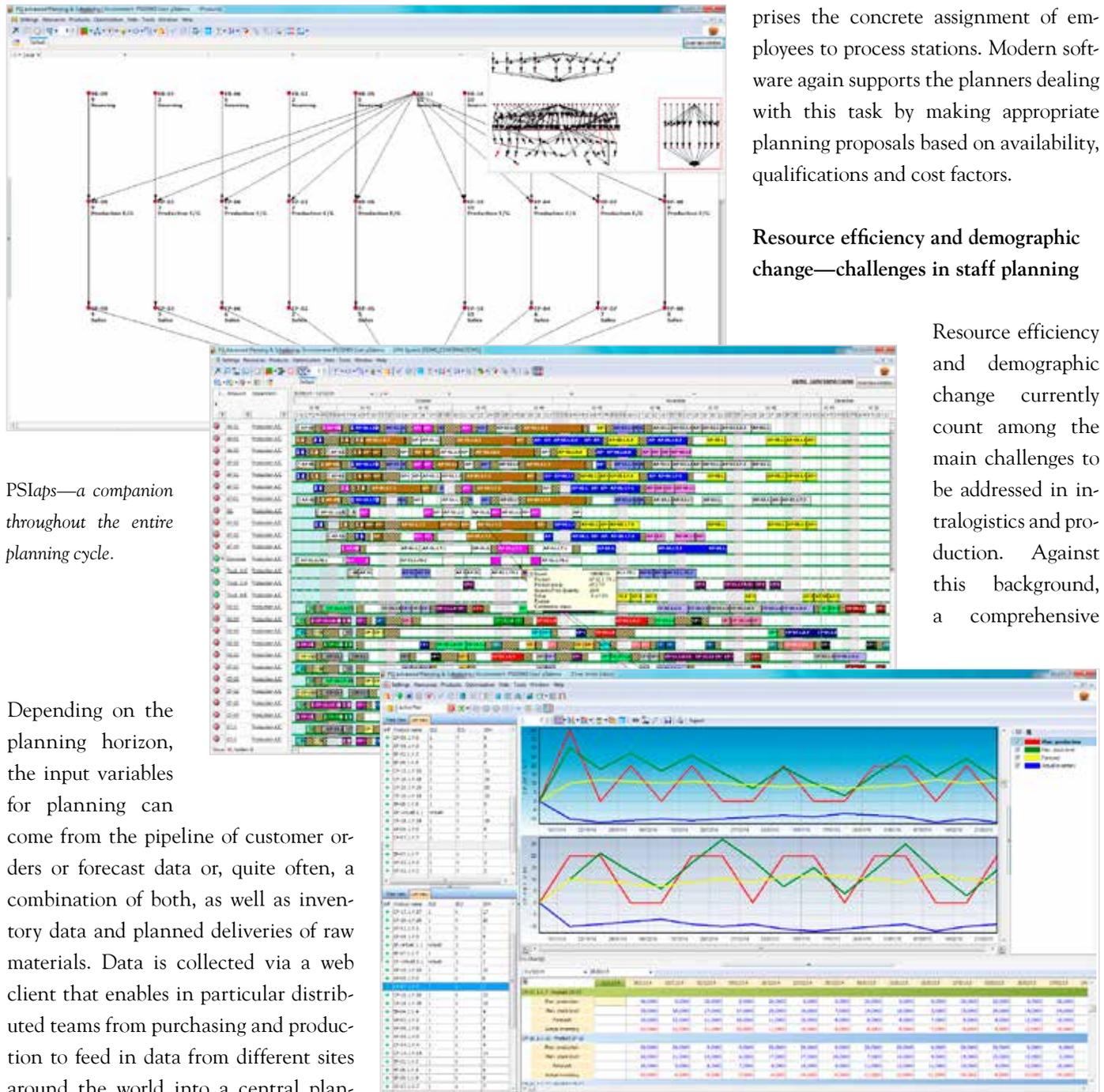
lar and graphical analyses for each scenario provide transparency with regard to costs, resource utilisation and inventory flow. Thus, all planning information required for organizing day-to-day business is available.

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

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



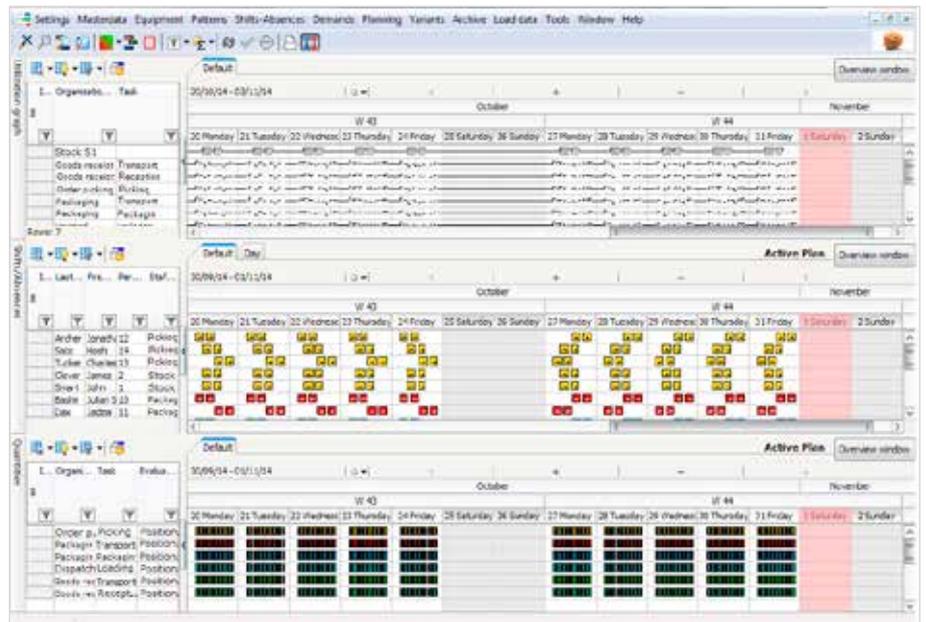
PSlaps—a companion throughout the entire planning cycle.

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. PSlaps 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 *PSIpep* 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-

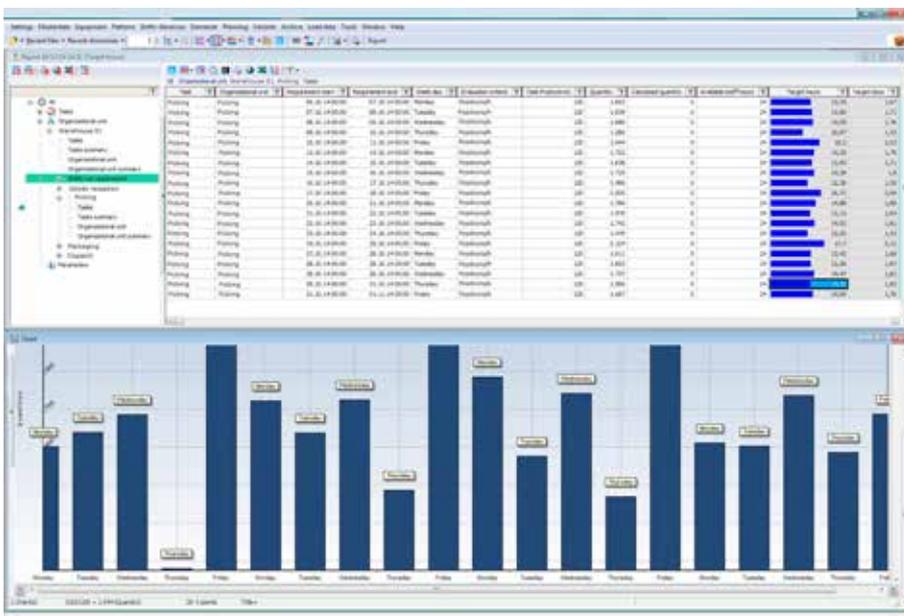


PSIpep—strategic and operational staff planning.

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 *PSIpep* and *PSIlaps* 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. 



PSIpep—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-

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Event: Follow-up on the aluminium trade fair in Düsseldorf, Germany

PSI on Aluminium 2014: that was “Intelligence for Metals”

The Aluminium 2014 trade fair in Dusseldorf featured PSI Metals together with the large producers of the industry in Hall 9. Many visitors took the opportunity to discuss current industry trends with the experts from PSI. The main focus was on topics such as eco-friendly production, a growing market expansion in the automotive sector, as well as the quality and efficiency of recycling. The focus of the trade fair presentation: how PSImetals enables better energy management, a higher rate of capacity utilisation and a complete quality assurance system.

With PSImetals the quality management of the production and business processes and even the of the product itself gets real:

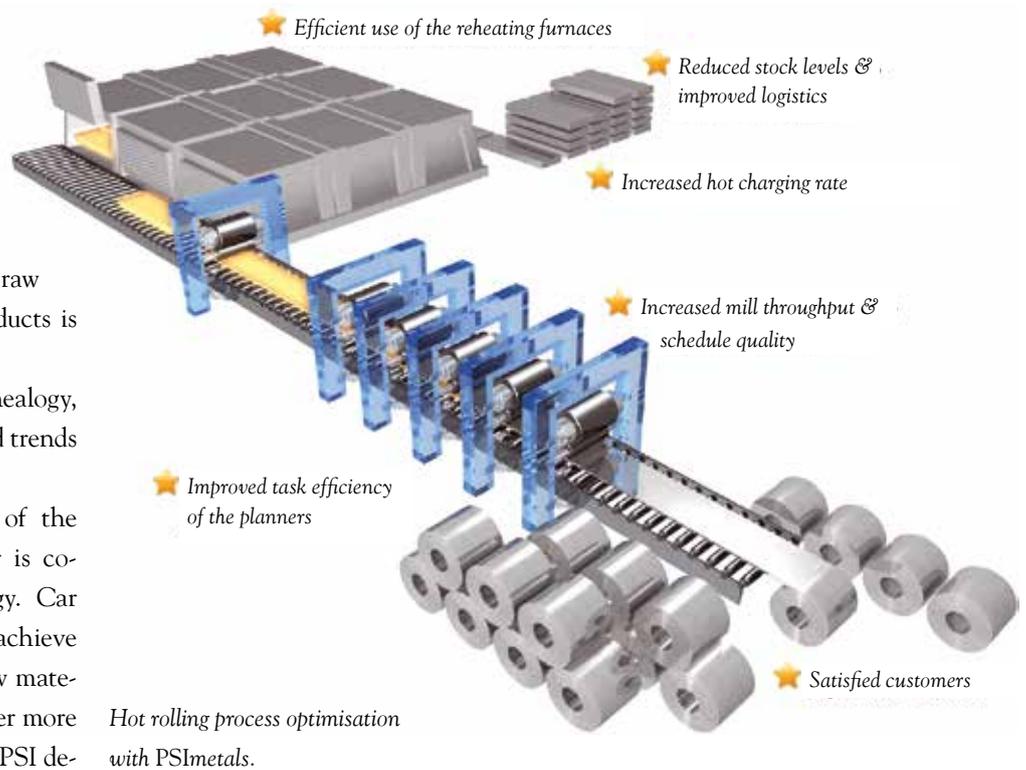
From the recycling process, where mixed scraps are transformed into high quality materials up to the full traceability of the products, where the whole path from raw materials up to the finished products is gapless recorded.

The key concept is material genealogy, one of the most important upward trends in the automotive industry.

An important aspect in view of the trends in the automotive sector is covered by the material genealogy. Car manufacturers are striving to achieve more material variations and new material grades. They are based on ever more complex alloys. At the trade fair, PSI de-

monstrated how, for example, integrated composition calculation are reducing the number of post-alloying processes which is the key performance indicator of the respective production cycle. Only a comprehensive and consistent material genealogy enables the full traceability from the final products back to the heat.

Another topic of the PSI trade fair presentation that generated keen inte-



Hot rolling process optimisation with PSImetals.

Special roadshow: “Line scheduling for hot strip mills”

PSI Metals designed its own presentation program for the topic of “Optimisation opportunities in the hot rolling process” presented at the trade fair. In this presentation programme we look at the operational problems impacting the planning for hot strip mills from the viewpoint of customer consultants, planners and colleagues on the basis of typical everyday scenarios. Ready-made online scenarios are available for different situations: live demonstrations using the PSImetals system show the decision-making support offered by the planning system and what concrete improvements can be achieved with regard to inventory reduction, system programming, delivery reliability, etc.



If you would like to receive more information about this presentation package, please scan the QR code.

rest was the optimisation opportunities in hot-rolling processes on the basis of PSImetals Line Scheduling for hot rolling mills. The high level of configurability is the key for the largely automated line sequencing with a large number of system rules, material constraints, production dependencies, etc. leading to a comprehensive planning knowledge base for the enterprise. Planners can easily and interactively generate optimised rolling programs with increased lengths and higher planning



Keen interest in the live presentations at the Aluminium trade fair.

quality. Continuously reduced stocks combined with maximised on-time delivery and improved overall efficiency of plant and rolling systems—these are the results which impressed the audience of the live presentations. The visitors to the Aluminium trade fair were convinced: PSImetals stands for “Intelligence for Metals”, i.e. process and technology expertise from many different customer projects consolidated in a software standard and aligned with the needs of metal producers. ☉

News: Leadership in Production Management Software for the Metals Industry

Takeover of strongest competitor Broner Metals

PSI has acquired 100 percent of the shares of the British Broner Metals Solutions Ltd. The transaction was signed and executed on 12 November 2014. Broner Metals is a leading provider of IT solutions in the field of production planning and control, supply chain management and MES (manufacturing execution systems) for the steel and aluminium industry. The company employs 65 persons in sites in Europe, Asia, North and South America. Broner Metals has customers in 12 countries, some of which are among the world's largest producers of steel.

Broner Metals expects sales of about 10 million Euros in 2014. The EBITDA fluctuated in the previous years, depending on the steel economy, between 2 and

lion Euros in write-offs from the purchase price allocation as well as additional margin and growth effects for the existing PSI Metals business. For Hyperion Systems

Together, PSI and Broner Metals have more than 350 experts for the global support of the production processes for the metals industry. Due to the fact that the companies' sites complement each other superbly, an even more comprehensive global service will be available to customers in the future. The Watford site near London will be expanded as project and product development site. In addition, it will be expanded as the sales and service base for the British market for a number of PSI business units.

The existing product lines and service agreements will be continued. In the mid-term PSImetals, which already provides the most comprehensive software solution for metals production, will be supplemented by additional unique selling propositions from the Broner software. ☉



From left to right: Detlef Schmitz, David Mushin (Broner Metals), Sven Busch and Thomas Quinet.

4.8 million Euros. PSI will pay 12 million Euros in cash for the shares to the seller, Hyperion Systems Engineering Ltd. From 2016 PSI expects an EBIT contribution of just about 1 million Euros after 0.75 mil-

lion Euros in write-offs from the purchase price allocation as well as additional margin and growth effects for the existing PSI Metals business. For Hyperion Systems Engineering Ltd., the transaction is consistent with a strategy focus on solutions and software for hydrocarbons, chemicals and power industries, where the company expects to see its future growth coming from.

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User report: Finite Capacity Scheduling and SFDC steer production at Karosseriewerke Dresden

New impetus in production with the PSIpenta MES solution

A modern, sophisticated manufacturing execution system (MES) can revitalize production when the ERP system is unable to cover the requirements for production, without having to replace the entire ERP system. That is what Karosseriewerke Dresden did.

The history of Karosseriewerke Dresden begins in 1864 as a workshop for carriages and horse-drawn sleighs. These were followed by convertibles for Bugatti, Ford, Horch, Mercedes—basically any company of high repute. Today, KWD Karosseriewerke Dresden GmbH in Radeberg, Germany manufactures products for all German automotive manufacturers, including the entire VW-group, as well as international truck manufacturers.

Insufficient production control

A solution developed by Planat GmbH is used as the ERP system for purchasing, distribution and production control activities. However, the solution does not

offer an MRP (Material Requirements Planning) flow function. Moreover, the functions for order scheduling and detailed planning were also unsatisfactory. “This was highly complicated and basically no longer unacceptable for the colleagues in production control. The visual representation could also have been clearer”, says IT manager Bodo Oppermann. He started to research available options and visited many a trade fair to explore appropriate ways of improving the situation.

The trade fair presentation he noticed most of all was the MES and the Finite Capacity Scheduling of PSIPENTA Software Systems GmbH: “We could see that the representation in Finite Capacity

Scheduling corresponded to our view of production: a graphical planning board, for instance, that I also can reproduce on paper. With colours that indicate the status of an order. We liked that.” Unlike PSIPENTA, other eligible systems were aimed mostly at a link to SAP and were not open for interfaces, or the provider sought to use the interface issues to do away with the ERP system. “But that was not my goal”, says Oppermann, “I wanted to couple our ERP system with an MES and PSIPENTA was by far the best solution”.

Tested and approved

First they agreed on a test installation, as Oppermann wanted to try the system out for himself and in particular with his own data. “Once we had TA, SFDC and FCS as a complete MES we then reduced the entire interface issue to a bare minimum.”



As soon as the order is scheduled it is passed on to SFDC. At the end of each shift, SFDC transfers its information to FCS.

The test version has meanwhile developed into an accepted live version used as a control system. The press shop and body production are mapped completely in the FCS. Previously it had not been possible to split the work orders in body production, but now FCS offers several options: after submitting an order to body production, it is possible to produce a certain quantity first and the rest later. Alternatively the order is split according to the number of available workers and completed on an hourly basis over several days. It is never necessary to do anything within the ERP-system; controlling takes place exclusively via the MES system.

The transparent order

Having received a customer order, the ERP system first checks inventory levels. In the event of a shortfall, it checks demand and the current stock level of sub-assemblies. For every item that now has to be manufactured, it checks the inventory and, if sufficient material is available, generates a work order and sends it to FCS, including a number of resources such as tools with their states and locations, the materials required and the corresponding packaging materials. The machines normally used for production for the order are defined in the MES routings. The order is logged in the worklist and the operators can assign it to the corresponding presses in a reasonable chronological sequence.

As soon as the order is scheduled it is transferred to SFDC and MES takes care of it automatically. Around half an hour after the end of the shift, SFDC relays its information to FCS and the order progress is visualized in the form of changing bar lengths on the chart. In parallel, MES reports all the time spent on the order to the ERP system. It is also possible to call up all of the information from

FCS for a variety of reports from a logistical perspective or from a machine operator viewpoint.”

Living the system

The main improvement for Oppermann is that all information is available via Intranet to everyone who needs it. “It has always been a thorn in my side that our manually created and printed Excel spreadsheets became obsolete the minute they were distributed”, says the IT manager. Today, the Intranet can be used to display the entire layout of the press shop, including the machines connected to SFDC—all colour-coded according to their status.

For Oppermann the MES project is a success. “It works, we use it, we live it”, he says, and emphasises in particular the flexibility of the system which allows him to extend it using his own resources and to fine-tune it, for instance by integrating logistics even further into the system. The openness at PSIPENTA to fulfil user requirements has also significantly increased the acceptance of the new system. Accordingly, Oppermann is very happy and satisfied with the collaboration with PSIPENTA: “The people there know what they are doing. They often offer multiple solutions to a problem and together you decide on the best option. This is what working together in partnership is all about. ☺

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Karosseriewerke Dresden GmbH

Founded: 1864

Location: Radeberg, Germany

Employees: 500

Sales: EUR 140 million

Product portfolio:

- Series development
- Pressed and stamped parts
- Welding assemblies
- Tools
- Devices
- 3-D measuring machines
- Materials lab
- Ultrasonic testing (UT)

Locations (KWD Automotive):

- Germany
- Czech Republic
- China

References (excerpt):

- Audi
- Bentley
- BMW
- Mercedes
- Dell
- Ford
- Lamborghini
- Mitsubishi
- Skoda
- VW

User report: Tender Management System automates processes at Hellmann Worldwide Logistics

Transparency in tendering and bidding

A growing number of well-known logistics service providers are interested in bid generation using the Tender Management System from PSI Logistics. The IT system consolidates the data required, unifies and automates the processes, and provides a transparent organisation of optimal bids and tariffs.

With a global network and offices in 157 countries worldwide, and a range of services from classical forwarding services via courier to warehousing and special services, Hellmann Worldwide Logistics GmbH & Co. KG, Osnabruck, Germany, today counts among the largest international logistics service companies. When the company, which was founded in 1871, submits a bid for a call to tender issued by a shipping agent, the bid is more than just tailored precisely to the specific logistics requirements of the shipping agent. It is also optimally modelled to the logistics network of the ser-

grammed with comprehensive enhancements for a transparent, cost-optimised design of bid tariffs, in September. It is now being rolled out gradually across the organisation. More and more service providers are relying on the Tender Management System from PSI Logistics to perform customer-specific costing and to coordinate bid generation across departments, subsidiaries and means of transport. The IT system is based on *PSIglobal*, the standard system for the strategic planning, control and optimisation of logistics networks. It is used in the operational area.

lated previously and shows, among other things, what prime costs are to be expected for the tendered shipments or what full and marginal costs will arise for additional transports within the existing network according to a business approach.

Shippers can also use the Tender Management System as it has sub-functions for freight cost controlling. They can use the function tool to define network structures, regions, fare structures and target costs for calls to tender and create a basis for qualified bid rating.

The Tender Management System features largely automated processes that reduce the costly and time-consuming consolidation and analysis of the required data. It also offers logistics service providers the option to generate their bids on the basis of real actual data—from their own resources and logistical networks as well as from concrete figures such as shipping volumes. “The inclusion of specific figures in a flexible and highly automated calculation method can not only save time but can in particular lead to transparent rate calculations on a realistic basis”, explains Dr Giovanni Prestifilippo, Managing Director of PSI Logistics. “They can also be demonstrated to customers as sales arguments.”



Intense activity at the loading bays. The freight cost controlling module of the Tender Management System provides shippers with a qualified ranking.

vice provider and precisely calculated on the basis of the respective cost blocks. And there's: a large proportion of the necessary calculations and analyses was performed automatically. That's because the numbers are very probably based on the new intelligent Tender Management System from PSI Logistics GMBH. Hellmann went live with the IT system, pro-

Integration of concrete figures

In day to day use, the Tender Management System defines, for instance, how tenders with customer-specific relations in the standard network of service providers or external service providers can be processed. The IT system can point up how similar proposals have been calcu-

No more miscalculations due to imprecise figures

Hellmann, for instance, has stored the internal cost structures of the service provider in its system. Hellmann can manage its data structure independently. In addition, the Tender Management System unifies the calculation processes



Cost accounting: the automated processes with the Tender Management System reduces the cost of calculation by up to 90 percent.

across the company on the basis of a single system, and thus replaces the many systems required previously. This simplifies the calculation processes, increases

their quality and puts an end to miscalculations due to imprecise figures, reduces the effort and the resources required for preparation of bids, and leads to a transparent pricing policy.

At the heart of the Tender Management System is an intelligent modelling component. It enables the generation of calls for tenders on the basis of concrete data and terms strategies almost with just a click of a mouse button. Users can apply the modelling component to vary figures, resources and logistics chains, simulate various initial situations and changing developments, construct different rate constellations and ultimately combine them to form concrete, optimal solutions. In these cases, the Tender Management System also shows how planned or simulated changes in volume quantities or ship-

ment structures have an impact on profitability. In this way, bids are generated on the basis of realistic cost structures, taking varying distances, weights and surcharges into account, in a largely automated process. The continuous IT service process associated with the Tender Management System reduces the manual input required by a conventional bid generation for, among other things, verification, generation and billing by up to 90 percent. 

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Event: PSI Logistics at LogiMAT 2015

New functionalities of the latest standard system releases

PSI Logistics GmbH will present an overview of the new functionalities of the current standard systems releases for the first time in Stuttgart.

It represents a glimpse into the future: at LogiMAT 2015, the 13th international trade fair for distribution, materials handling and information flow, PSI Logistics will present the new release of its standard product PSIlwms (Warehouse Management System) as well as release 2.3 of PSIGlobal, the strategic planning, management and optimisation system for logistical networks, from 10 to 12 February 2015 in Hall 7, Stand D 76.

PSIGlobal 2.3 now offers functions for multi-site inventory optimisation. They can be used to optimise the storage capacities and inventories of multiple warehouses dependent on order data, customer restrictions and logistics costs

(storage and transport). In a further step, derailings can be derived or even avoided. PSIlwms 3.0 features an adaptive scenario management module. It can be used to control the complete configuration of the system in real-time to optimally control the processes depending on the scenario (such as high load, low, night shift, emergency mode) according to the situation on the basis of defined rules. Scenarios and key inventory figures are freely definable. PSIlwms also features a new Warehouse Service Broker, a platform that—depending on the client—can integrate the warehouse management systems at other sites to create a transparent, integrated warehouse and

process management system as well as cross-warehouse inventory optimisation. This method “virtualises” physical warehouses with regard to the ERP system, as is common practice in IT today.

In addition, trade visitors can learn about the cost-saving and optimisation potential they can achieve by calculating and generating bids and calls for tender largely automatically with the new intelligent Tender Management System. 

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Product review: Tuning Dashboard for planning in PSImetals

Planning as intuitive as driving: select, run, outperform!

The optimisation algorithms in many of PSImetals planning system used around the world are aligned exactly to each customer's unique needs, such as service maximisation, inventory minimisation or the reduction of in-plant transportations. However, the growing complexity of today's supply chain networks combined with rising fluctuations in demand and supply underline the need for flexible and intuitive planning. In analogy to pre-set car engine tuning modes (e.g. comfort, sport, economy), PSI develops the new PSImetals Tuning Dashboard which the planner can use to easily and quickly change the algorithm behaviour, including faster “what-if” simulations and adjustable priorities. Furthermore, the qualitative analysis of tuning parameters by complementary advanced fuzzy technology allows planners to control optimisation in alignment with their business KPI targets.

Planning optimisation in metals production needs to consider multiple sites layouts and production routings, technical constraints of various production equipment, as well as logistical constraints and market priorities. These constraints often enter in conflict: for instance, maximising campaign sizes against on-time order fulfillment. Such conflicting objectives must be balanced whilst taking business priorities of each plant into account. This is achieved by the use of dedicated tuning multipliers which are now embedded in the PSImetals optimisation algorithms. Fine-tuning the planning algorithms is very complex and has, so far, required a high level of user expertise due to:

- a high number of multipliers that can be considered in the objective functions of the various algorithms
- an unclear relative weight of the different business constraints based on the values given to those tuning multipliers

Knowing what to modify in order to drive the optimisation result in a given direction is quite challenging from a user's viewpoint. This is where the new PSImetals Tuning Dashboard comes into its own.

Intuitive management of customised tuning profiles

The PSImetals Tuning Dashboard offers an easy-to-use view for setting and adjusting planning algorithms on the basis of different KPI targets or simulation scenarios.

With the help of modern charts and GUI controls, the planner can easily define and manage various tuning profiles and corresponding multipliers as well as business targets based on KPIs:



How would you like to plan today? As easy as you decide for your car driving mode you will be able to switch the direction of your planning.

- Tuning profiles contain a predefined or user-specific set of tuning multiplier values, corresponding to specific business objectives or target business KPIs' values.
- KPIs represent target values for measuring the quality of a plan. KPI target

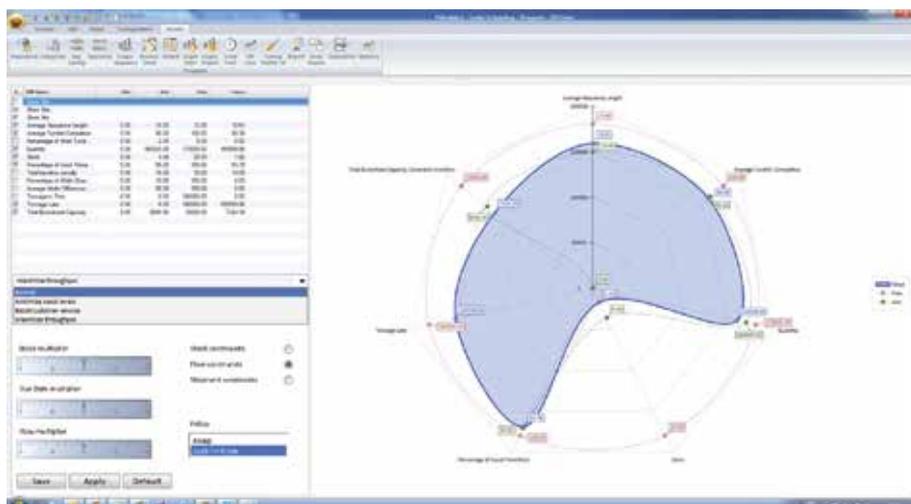
values (e.g. 85 % for OTIF—on time in full) can be given as input to drive the tuning optimisation.

- Macro-tuning parameters relate to a specific business dimension of a plan (e.g. throughput maximisation). They are directly connected to the corresponding set of multipliers impacting the objective function of the planning algorithm. Changing the value of the macro tuning parameter will automatically change the values of its underlying tuning multipliers.

As an example a “boost customer service” tuning profile could be defined, aimed to maximise the service level, measured by the OTIF KPI. If such a profile is activated, the corresponding multipliers are automatically adjusted in the background so that due date violations are minimized by the algorithm. The weighting of major constraints within this profile can be easily adjusted by scaling the appropriate macro-tuning parameters. Other possible profiles could be: minimise inventory, maximise plan throughput or line schedule length, maximise the hot charging rate, etc.

Simple comparison of planning scenarios

Once a tuning profile has been selected (standard or custom) and the corresponding set of macro-tuning parameters has been adjusted (optional) in the Dashboard, the user can execute the profile directly from the view. The plan results will be displayed in the KPI view, together with optionally preset min./target/max. values. After saving the plan results



The PSImetals Tuning Dashboard with the selected tuning profile and associated macro-tuning parameters (left) as well as corresponding KPI target values versus actual planning values (right)

and KPIs, the user can re-run the solver based on other available tuning profiles and compare the results of multiple simulations in the KPI view.

Parameter evaluation with Qualicision®

Mathematically, Qualicision® is based on complementary advanced fuzzy logic. It recognises conflicting objectives in pro-

cess data and balances them out. Qualicision® is used as an optimisation and decision logic in complex processes. As a component of the PSImetals Tuning Dashboard, Qualicision® provides the user with semi-interactive support, enabling him to adjust the tuning parameters in the best way possible and thus to achieve business objectives.

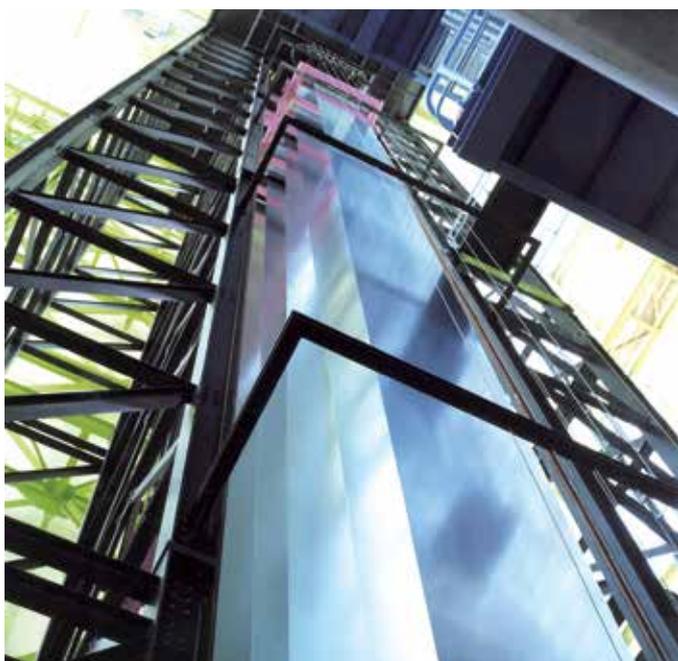
Qualicision® is used as an offline support tool to optimise the fine-adjust-

ment of PSImetals planning and to configure the best tuning profiles. Based on the selected possible values for the given macro-tuning parameter, multiple solver runs are performed and stored. Each run results in specific values for a given set of output KPIs. Based on all these runs Qualicision® helps the user in finding the optimal tuning parameter values that would lead to his target output KPIs.

With the new Tuning Dashboard, PSImetals improves the level of usability and interactivity for the customer: each planner will be able to adapt planning strategies according to his given targets, despite the complexity of the optimisation models in the background. 

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Campaign size maximisation versus on-time order fulfilment: the new PSImetals Tuning Dashboard can balance out conflicting targets with the simple selection of pre-set tuning profiles in relation to the given business goals.

User report: Eheim order production three times faster

The intelligence lies in PSImms

Eheim GmbH & Co. KG, the market leader in aquaristics, is one of the first users in Germany in the field of process automation to invest in aisle-free compact storage in a highly dynamic AutoStore system from Norwegian manufacturer Hatteland Computer. The innovative system was easily integrated in inventory management, material flow and process control via a new interface in the Warehouse Management System PSImms. As a result, the Eheim order production is now three times faster than before.

The ability to easily integrate new technologies and processes is a major criterion for future-proof modern IT systems. This is especially true in the field of intralogistics, where ever shorter develop-

ment cycles and technology advances continuously increase the efficiency of storage and order-picking systems and tap into new optimisation potentials. Example: Eheim GmbH & Co. KG, with headquarters in Deizisau near Stuttgart, Germany The Warehouse Management System PSImms implemented in the distribution warehouse does more than en-



The new AutoStore compact warehouse system and PSImms provide Eheim with automated processes.

sure the control of efficient processes. The modular system, with its scope of functions and integration capability supports the consistent redesign of material flow processes over the years as well

ment cycles and technology advances continuously increase the efficiency of storage and order-picking systems and tap into new optimisation potentials. Example: Eheim GmbH & Co. KG, with headquarters in Deizisau near Stuttgart, Germany The Warehouse Management System PSImms implemented in the distribution warehouse does more than en-

as the integration of innovative automation technologies—thus offering Eheim long-term security of investments in the IT area. Founded in 1949, the medium-sized, family-owned company caused a continuing boom for ornamental fish aquariums in the 1960s with the invention of the first aquarium suction filter—with

major consequences for the manufacturer's intralogistics. On average, the employees in Deizisau pick around 200 orders per day. The volume of orders to be picked increased by 50 per cent between 2010 and 2013 alone. "We have an increasing number of orders for small and very small quantities", explains Uwe Horburger, Head of Information Technology at Eheim. "We had to adapt the philosophy of our logistics to accommodate this development."

One of the first AutoStore users

First of all, all storage areas were assigned to the central warehouse (production supply) and a distribution warehouse (finished products) by 2012. "We wanted to consolidate the restructuring measures and complex material flows by implementing powerful IT support for efficient warehouse management", says Horburger. Eheim chose PSImms as a Warehouse Management System for inventory management and holistic process control. "With PSImms, PSI Logistics offered us a competent and sustainable solution", says Horburger in explaining the acceptance of the bid. This is because additional automation was to be introduced in the distribution warehouse and connected to the WMS as part of the storage area restructuring measures.

The new automatic small parts warehouse (ASPW) in Deizisau has been in full operation since August. Eheim is therefore one of the first users in Germany to invest on the innovative, aisle-free and highly dynamic compact warehouse named AutoStore developed by Norwegian manufacturer Hatteland Computer. Eheim's AutoStore warehouse

cube comprises 500 shafts with 7000 bin spaces on 14 levels. Special feature: The container warehouse consists of an aluminium grid that looks like a channel storage system tilted by 90 degrees and serviced by ten small robots (operating vehicles) running on tracks at the top of the cube. "It is a new technology that cannot be compared with off-the-shelf solutions", says Horburger.

The same also applies to IT. "The compact warehouse is connected to PSIlwms via a new interface with web services. AutoStore has been integrated in inventory management, material flow and process control via the WMS", explains Hartmut Braun, Division Head at PSI Logistics.

The intelligence lies in PSIlwms

"The stability of the interface and a simple, intuitive user interface with quick and clear input screens were decisive reasons to decide in favour of PSIlwms", says Klaus Uhlmann, Head of Central Logistics at Eheim.

"The WMS rarely intervenes in the AutoStore automation. It nonetheless ensures the peak performance of the AutoStore system. We will increase performance further still through the integration of a prioritisation strategy via PSIlwms. The intelligence for the AutoStore system is located in PSIlwms."

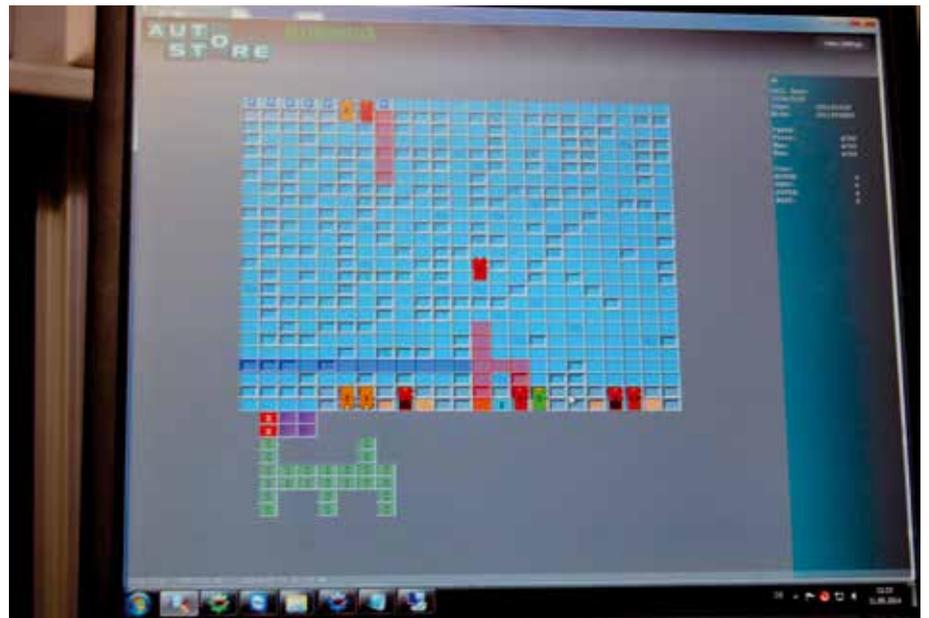
PSIlwms knows what is contained in each bin and what items are needed. The PSI software manages the stocks in the AutoStore warehouse without any additional subsystems. It retrieves items on an order basis, sequences them from the container warehouse and controls the dialogues of the three connected work stations. PSIlwms also performs integrated plausibility checks to ensure picking accuracy of the highest-quality. "The bottom line is that we have increased picking speed by 60 percent", says Uhlmann. "There are also the advantages of the near-zero error rate."

Four to five loaded trucks leave the warehouse in Deizisau every day. "Today we

are three times faster in order production with the AutoStore thanks to optimum process control via PSIlwms", says the Head of Central Logistics. "Orders with 105 items, for which we used to need two to three hours, are today ready in one hour with a significantly lower physical strain on our employees." 

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Monitoring the AutoStore storage via PSIlwms: the warehouse cube offers 7000 bin spaces.



PSI LOGISTICS DAY
INNOVATION | INFORMATION | NETWORKING
9. February 2015 | Stuttgart Airport

Highlights:

- Best practices of various users
- New software releases
- Guided tour of the airport

News: Trovarit user satisfaction survey 2014

Spotlight on user trends: PSIPENTA customers increasingly more satisfied

The results of the Trovarit user survey 2014/2015 confirm an increasing level of satisfaction among PSI users with regard to our solutions and services.

For example, the Maintenance and Support Division received a much better rating than in previous years. This improvement is also a result of providing our modern support portal which offers our customers a wealth of different Internet-based features, for instance to report activities, maintain and query their respective statuses and download solutions.

The support portal is integrated in the social media platform www.PSIing.org. This has been available exclusively to our customers since 2012; in Version 8.2 onwards it can be called up directly via the PSI/ERP client. Here we offer the opportunity for customers in get in touch directly with other users or PSI

employees, to discuss problems in the chat room, develop solution concepts or establish work groups. It provides a basis for a constantly growing knowledge management on the topic of production.

Trend in user satisfaction overall

The study shows that the overall satisfaction with the ERP systems and providers is high. But a detailed view clearly reveals significant criticisms. Against this background and under the maxim of a continuous improvement process, we have for many years analysed user criticism and suggestions and implement them in collaboration. The result of our work is re-

flected in the trend of overall satisfaction (see illustration). This trend shows that we are continuously improving in comparison to other providers. 



Trovarit AG

Trovarit AG is a market analyst and specialist for the selection of business software. As a provider of vendor-independent advice, it helps companies to implement the successful integration of business processes and enterprise software.

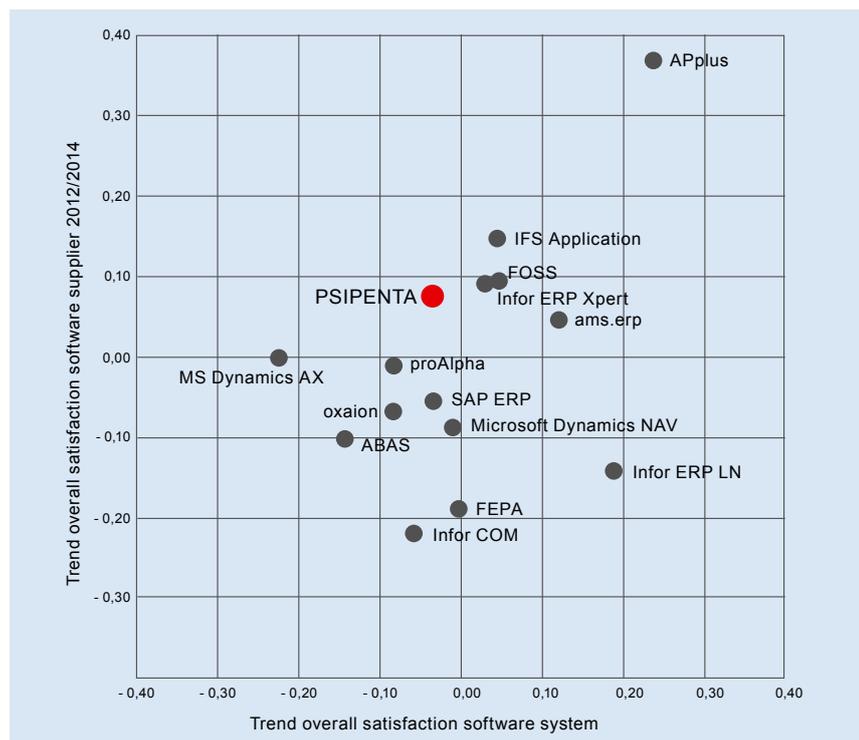
Undertaken every two years, against the background of the huge importance of ERP software to business success, the Trovarit survey "ERP in practice" investigates how satisfied companies are with their IT system from the perspective of the ERP user. In addition to the pure benefits of the ERP system, the survey also looks at aspects such as the introduction of the software, user satisfaction and the provider's range of services.

You can download the entire study free of charge at:
www.trovarit.com/erp-praxis/erp-praxis.html

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Note: Non-competing suppliers were removed with the permission of Trovarit.



The trend of overall satisfaction reflects the continuous improvement process at PSIPENTA.

Event: A convincing future strategy at the 28th annual customer conference in Berlin

PSIPENTA presents Industry 4.0 for realists

PSIPENTA Software Systems GmbH presented a convincing strategy for the future at the annual conference of the PSIPenta user group (IPA) from 6 to 8 November 2014 against the background of practical support on the road to the smart factory.

PSIPENTA Managing Director Alfred M. Keseberg stressed in his presentation that following the theoretical hype surrounding Industry 4.0, it is now time to design more realistic development scenarios. He made it clear that the existing ERP and MES building blocks will be the data backbone for Industry 4.0. "Only those who control the shop floor are in a position to implement the idea of industry 4.0", said Keseberg in emphasising the importance of existing software solutions and in doing so made the vision of the smart factory tangible. "We must understand data and informa-

tion as a valuable raw material and production factor", concluded the managing director.

The fourth Industrial Revolution

For some time now, PSIPENTA has been involved in research projects that develop and assemble exactly this type of practical building block. These include, among others, the research projects WInD, ProSense and Eumonis. Some of the objectives of these research projects include, for example, the development of monitoring and control systems or drafts

for standard interfaces between all the IT systems involved.

Change in the IPA Executive Board

IPA members bade farewell to long-standing member of the IPA Andreas Liebe, IT Manager of the Felss Group, who has retired. Hans-Peter Rudolph, IT project manager at automotive supplier Láppe Dienstleistungsgesellschaft mbH, was elected as his successor.

Major release 9

In addition to the traditional workshops, during which customers reported on concrete solution scenarios, PSIPENTA presented a beta version of major release 9 which will be introduced to the public at CeBIT 2015. The presentation of the PSIPenta/Industrial Apps as well as the PSIPenta/Business Reporting solution were also very well-received. "We are extremely satisfied with the results of this year's conference. The realistic demonstrations of our software vendor with respect to a common road to the smart factory and further development strategy were just as pleasing as the active participation of IPA members in various workshops", summarise Mr Rudolph. 



The lectures and workshops were rounded off by a stylish evening event.

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Event: PSIPENTA presented a number of innovative concepts for integrated manufacturing processes

The future of production planning at the IAS in Shanghai

PSIPENTA Software Systems GmbH presented three-dimensional visualisations of real manufacturing systems in the German Pavilion at the Industrial Automation show in Shanghai from 4–8 November 2014.

The IAS is an important platform for economic and trade exchange for the Chinese and international industry and hosts companies from the fields of manufacturing, measurement and control technology. With eight trade fairs and an exhibition area of more than 160 000 square meters, more than 1 800 exhibitors and over 100 000 Chinese and foreign visitors are expected at the event each year. The IAS provides various forums and workshops to exchange new manufacturing technologies. PSIPENTA was represented in the German Pavilion (Hall W1/Stand A110) with new ways of interacting in the production process.

Innovative concepts

The visitors navigated their way through a visualised production line using only gestures. In the most spectacular demonstration of the show, visitors were able to experience moving through visualised machinery, actuating individual machines and accessing parameters with a single-channel electroencephalogram headset—using the power of thought.

PSIPENTA intends to use the concepts presented in the future to develop interfaces to its own products that are even more user-friendly. 



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To all PSIPENTA customers

Remember to redeem your bonus points for 2014.

You can redeem them against PSIPENTA services, power tools, ERP standard licences or advertising media.



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R & D: Research projects

PREsTiGE: Cloud computing without security risks

Cloud computing enables businesses to relocate IT services to the “cloud” and to network business processes across organisational boundaries. How data protection and data security can be guaranteed in particular where multiple actors are involved is the focal point of the nation-wide research project PREsTiGE (privacy-retentive methods and tools for cloud-based business processes) under the coordination of the University of Leipzig and with the collaboration of PSI.

Increased networking in the context of B2B processes requires new approaches to provide secure cloud-based IT services.

The demand to relocate business processes into the cloud with changing actors and without a centralised controlling instance is on the rise, especially in the field of logistics.

Over the next three years, together with other partners from industry, re-

search and education. PSI will develop new methods for configuring, certify-



Work together with other companies and still protect business secrets.

ing and monitoring cloud-based business processes within the scope of the

PREsTiGE project. One new feature is the embedding of privacy rules and multi-level agreements (service level agreements) in cross-enterprise cloud environments. A powerful identity management and effective data protection service models will monitor compliance with all data protection regulations. 

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EVENT CALENDAR

www.psi.de/en/events



09/02/2015	PSI LOGISTICS DAY	Stuttgart, Germany	PSI Logistics
10/02–12/02/2015	LogiMAT	Stuttgart, Germany	PSI Logistics Hall 7, Stand D76
16/03–17/03/2015	Railway Forum	Berlin, Germany	PSIPENTA Exhibitor
16/03–20/03/2015	CeBIT 2015	Hanover, Germany	PSIPENTA Hall 5, Stand E16
13/04–17/04/2015	Hanover Messe	Hanover, Germany	PSIPENTA Hall 7, Stand A26

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