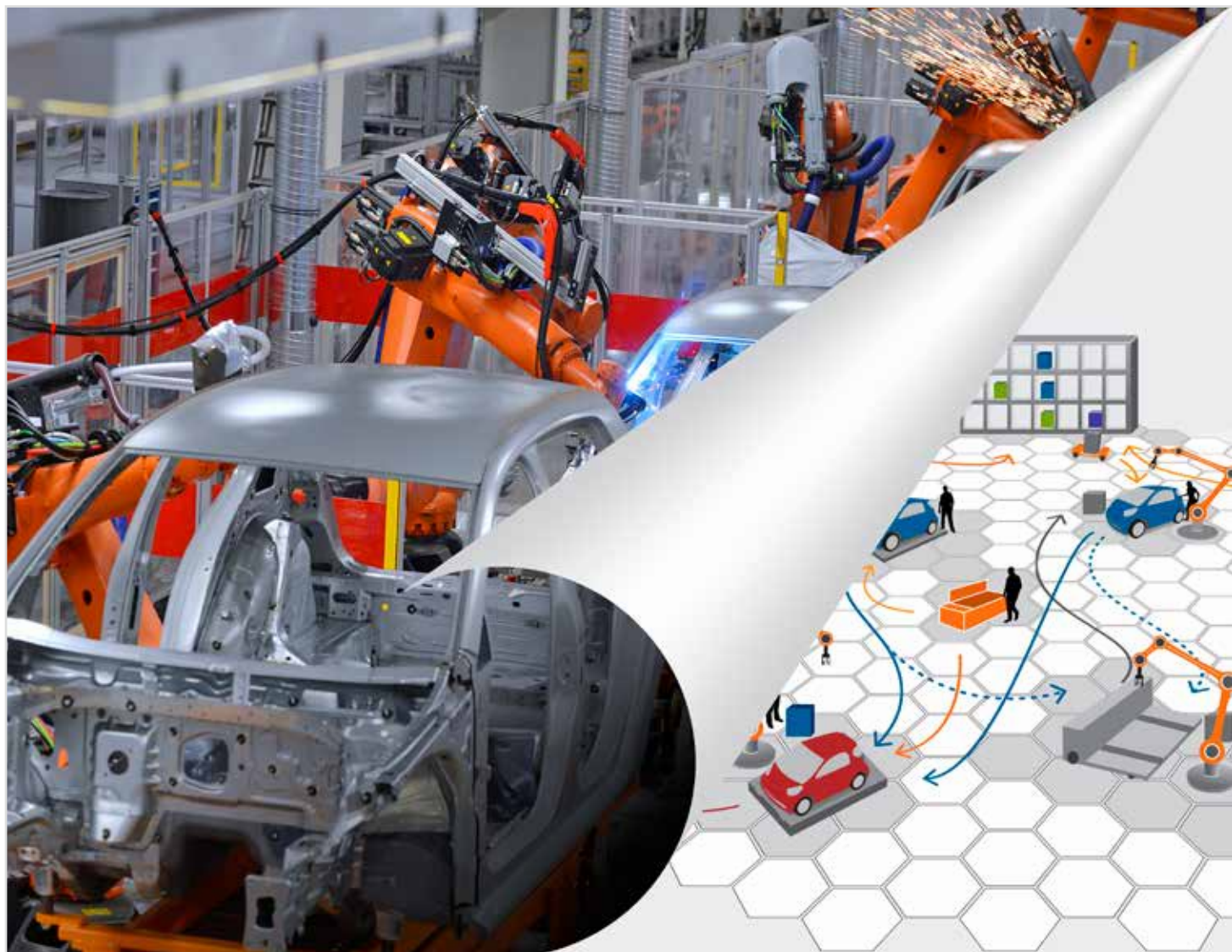


# PRODUCTION manager

Magazine for logistics & production



KPI-oriented production control with Qualicision®

## Industry 4.0—the flexible assembly line?

### User report

Görtz relies on the  
PSIwms warehouse  
management system  
Online shop connected  
effortlessly

### User report

PSI*metals* at SSAB Mobile,  
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Global view, local decisions

### User report

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manufacturing process at  
FMB  
Simple. Mobile. Productive.  
Tablet-controlled assembly

## EDITORIAL

Dear readers,

In a self-organising production process of an Industry 4.0 scenario the organisation of this process and its corresponding decision-making paths won't be determined by a physically fixed manufacturing structure in such a strict manner as in case of a classical assembly line. Instead, automated guided vehicle systems will move partly finished orders within a manufacturing structure of working stations that can be flexibly modified. Even though the individual workstations have their determined positions and functions, these will change far more often depending on the specific order structures and manufacturing requirements. The orders themselves will decide dynamically and "on demand" to which



workstation they will move next and what will happen to them when they get there.

What does this scenario mean for the organisation and management of the industrial production processes?

Our featured article describes how the PSI Group is prepared for such a loom-

ing paradigm shift not least thanks to Qualicision® technology and the KPI-driven optimisation. As an example, the optimisation of production processes in the automotive sector is discussed. Additional articles that focus on the topics of logistics, the ERP and MES systems and solutions for metal industry provide further insights into current developments within the PSI production management sector.

Best regards



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

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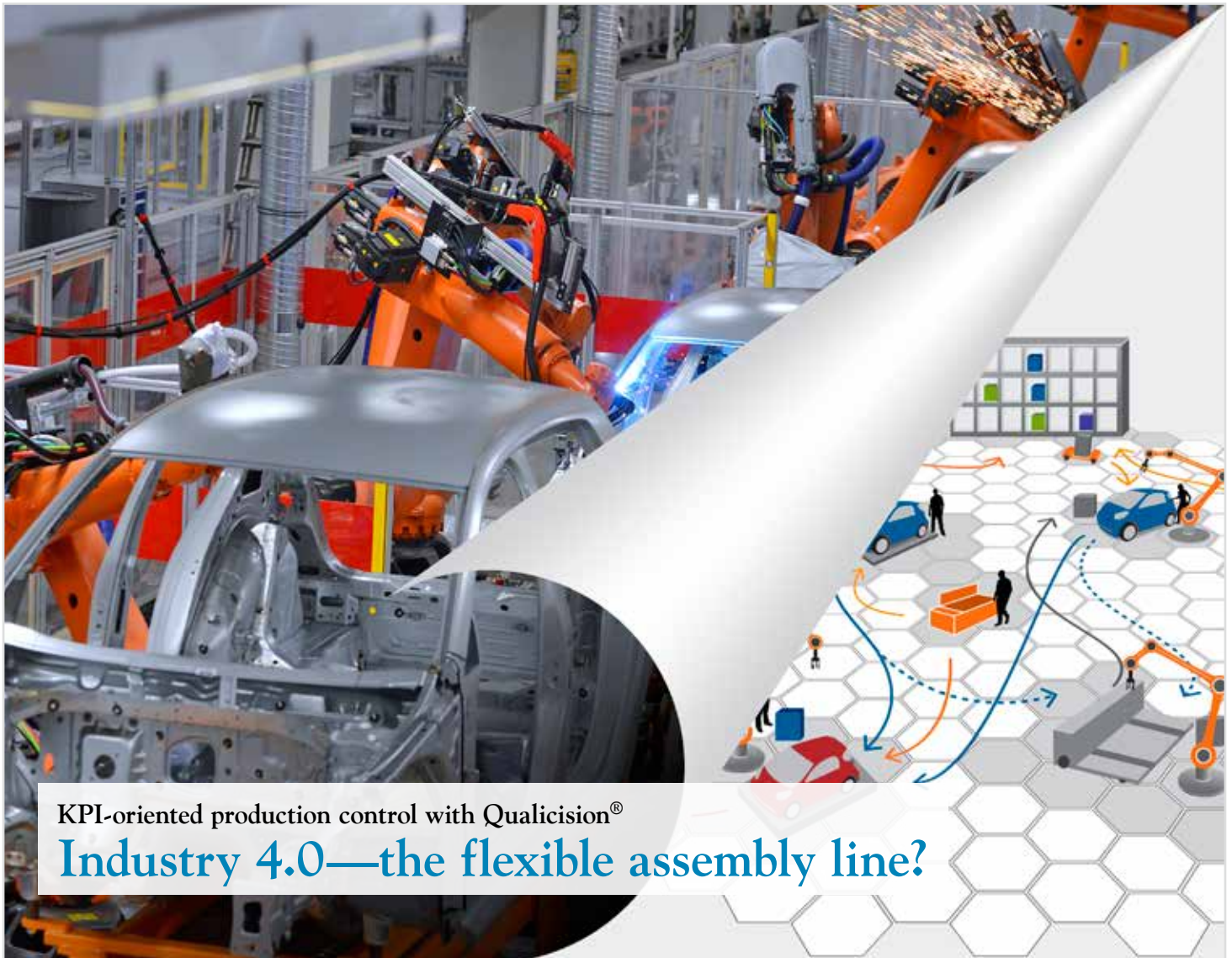
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KPI-oriented production control with Qualicision®

## Industry 4.0—the flexible assembly line?

Since the early 20<sup>th</sup> century, car production has been identified with the production or assembly line—a “road” on which vehicles are manufactured in a physically fixed sequence of assembly workstations as a line. However, other potential methods of organising production are increasingly being seen against the backdrop of highly flexible Industry 4.0 production scenarios.

Within the context of digitalisation, the automotive industry is also investigating the question of a deep paradigm shift—moving away from the proscriptive, physical structure of the assembly line and towards a self-organising form of production in which orders self-dependently make their own decisions on the way through more freely organised shop floor of

workstations. This could lead to a new scenario in which the assembly line being gradually replaced by a new, flexible logic of how the orders are moved along flexibly placed workstations. This new organising principle promises to solve, in the future, the apparent contradiction between the growing individualisation of (mass-) products and the goal to

increase the flexibility of production processes.

### Assembly line versus variant diversity

As mentioned, the automotive industry is facing the ever-increasing demand for flexibility in production, in the light of the variety of options how customers are able to configure their vehicles.

Depending on the model over a billion variants are possible. Until now, the industry has addressed this complexity by more or less universally planning the assembly line for a given model and then by controlling the production se-

quences by optimising the with respect to more or less physically motivated process restrictions and KPIs. The assembly line—once designed—remains essentially unchanged throughout the life cycle of the car model the line was organised for. In this way, of course, the assembly line with its physically fixed arrangement of production resources strictly determines intra-logistical processes of the whole production and supply chain.

Despite the obvious advantages of the controllability of this organisation—controllable, as once the line is established, it will not be changed for several years over the entire life cycle of the model—it won't be flexible enough for the smaller series and the significantly shorter life cycles of the car models. For a hypothetical lifecycle of only three months instead of six or seven years, fixed production lines would lead

guided by their own working plans and by both efficiency and engineering KPIs. They would communicate as cyber-physical systems with both, the working stations and the entities providing the necessary material.

If the workstations were also designed to include redundancy, the flexibility would increase a lot. The Industry 4.0 scenario offers the opportunity of digitalising objects via the Internet of Things (IoT) and connecting self-organising orders and workstations. So far so good.

Are there new challenges when facing such an innovative approach? Of course there are. The challenge is that a fully flexible production structure lacks an organising principle that until now has been provided by the physical structure of the production line. The revolutionary idea - and this is the challenge - is to replace the physical organising principle of the production process with a logical one. The autonomous decisions made by the orders themselves should follow technical and economic principles. This means that a new, a logical, organising principle is needed that replaces the physically given organising principle of the physically fixed production line. Said new organising principle shall follow the process KPIs and optimise the process accordingly instead of following the physical restrictions of the line. This is the hour of the Qualicision®-based KPI optimisation. Today, the underlying KPIs are designed to represent the physical structure of the production process. At present, order sequences are still predominantly formed according to the physical properties of the orders. In the future, the physical KPIs are complemented by new Industry 4.0



*Self-organising cyber-physical system at Fraunhofer IML.*

This production control and optimisation, known as sequencing, is strongly exposed to the ordering power of the physically fixed production line structure. Through its physical restrictions and requirements, this structure of the line strongly influences the connected supply processes and the necessary logistics. For example, the physically fixed production line results in the specification of minimum distances in the assembly sequence that must be fulfilled between orders (vehicles) with particular features.

to increasing costs and decreasing efficiency. The economic figures (KPIs—Key Performance Indicators) of processes organised in such a way would collapse.


### **Self-organising production—a vision of the Industry 4.0 age**

The dream of an extremely flexible production structure would be that workstations are standing freely in the production hall grouped by certain production functions. The orders would navigate autonomously from workstation to workstation

KPIs. These KPIs will be a mix of technical restrictions and efficiency-oriented production goals.

First steps towards such an approach have already been done. For example by those automobile manufacturers whose sequences are defined by workload and resource capacity expressed in working time. For the first time, working capacities are being used here to optimise sequences based on working time KPIs. The Industry 4.0 scenario goes a step further in the new organisation of the production process by allowing the orders to make decisions on the basis of new Industry 4.0 KPIs. Partially finished vehicles (orders) move on automated guided vehicle systems and decide for their own point of view, which workstation to go to next, based on the KPIs. Supplying the workstations with material and parts is done similarly. Based on demand the stations even decide for themselves when they want to be supplied by the automated guided vehicle systems.

## The paradigm shift

In fact, the process is already fully underway. The organising principle in the Industry 4.0 age will be KPI-oriented (Qualicision®-based) optimisation. Based on this, KPI optimisation implements the paradigm shift. In the future of Industrie 4.0 the rigid, physical order of the assembly line will be replaced by KPI-oriented optimisation. 

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## Questions backstage

**The automotive industry sector is one of the pioneers when it comes to Industry 4.0 scenarios. This is proven by SMART FACE, a project within the Autonomik 4.0 programme funded by the German Federal Ministry for Economic Affairs and Energy. PSI's F/L/S Fuzzy Logik Systeme GmbH is a member of the SMART FACE consortium, which consists of the automotive and supplier industries, both logistics and IT providers as well as direct and applied research institutes. We spoke to the Managing Director of PSI's F/L/S Fuzzy Logik Systeme GmbH, Dr Rudolf Felix, about the project's goals and the idea that the current paradigm shift towards process KPIs is a basis for a new organisation principle in industrial manufacturing.**

**PM:** Dr Felix, the SMART FACE project is a good indication that Industry 4.0 scenarios are no longer just visions. Can you briefly describe the project?

**Dr Felix:** By using the concrete example of small-batch electric vehicle production, SMART FACE is experimenting with the looming paradigm shift you have described: Towards production without the organising principle of a fixed assembly line.

**PM:** Can you explain why assembly lines in smart factories only have a future if made more flexible or could even be entirely replaced in the future?

**Dr Felix:** Because of the fixed physical structures of production lines until now the planning process in the automotive industry has taken place on several hierarchical levels. Beginning with the annual planning, continuing through rough-cut planning down to weekly and daily planning, the process determines what parts and components are required based on the bills of materials. This information is provided to the connected suppliers in the form of JIT and JIS orders. The stricter the physical structure of the lines the more complex the hierarchies and the smaller the possibility

to influence the production sequence in a context of quickly changing demands and customer requirements. The future challenge will be to increase flexibility.

**PM:** So does that mean the solution to this challenge lies in increasing the flexibility to act?

**Dr Felix:** That is the goal, yes. And to achieve it, the old principle of optimising the sequences for a fix production line must be made more flexible or simply replaced with another principle. At F/L/S we say that the new organising principle will be the KPI-oriented optimisation based on the extended fuzzy logic decision engine Qualicision®. Within the SMART FACE project, planning and organisation are taken over by self-organising orders. The orders communicate independently with the assembly stations and navigate autonomously through the production area from working station to working station. The orders are moved on automated guided vehicles. Both orders and vehicles are implemented as cyber-physical systems. The navigation is optimised according to a set of physical and economical business process KPIs. In such an Industry 4.0 scenario the KPI-oriented optimisation is the new organising principle.

User report: Görtz relies on the PSIwms warehouse management system

## Online shop connected effortlessly

In the central distribution centre of the shoe retail chain Görtz, the PSIwms warehouse management system ensures maximum flexibility and efficient stock movement. Now the firm has connected further process automation in the distribution centre, as well as their online shop and complete product range to PSIwms.

**M**ore than 160 branches in Germany and Austria are supplied by the logistics firm's central distribution centre in Norderstedt, just outside of Hamburg. Some 500 containers and around 5.5 million pairs of shoes are handled here per year. The PSIwms warehouse management system from PSI Logistics GmbH forms the information backbone and a leading IT system for controlling storage processes. "We were looking for a logistical IT platform that could meet the demands on infrastructure and process control made by our complex intra-logistics, as well as addressing future growth and the associated changes in material flows", explained Thomas Koopmann, Head of Process Management and author-

ised representative of the logistics firm.

### PSIwms leads processes in the central distribution centre

PSIwms has been running the processes in the Görtz central distribution centre since 2009 and in that time has acquired around three million pieces of key data. This is what has enabled the PSI system to become the backbone for the automated supply of goods to all Görtz branches. A combined material-management and cash system ensures that the current designs are available in sufficient quantity and size. A central computer system registers all sales and immediately transfers the necessary back-orders to the logistics centre in Norder-

stedt. In collaboration with PSIwms, the articles are then allocated to the individual branches.

### Integrating automation gradually—step by step

In Norderstedt, a four-aisle, six-level, high-rack warehouse with 2,462 spaces is available for storing goods. An additional five block-storage areas are set up for incoming goods and sorted into sizes, range, accessories, seasonal articles and returns. Of these five block-storage areas, one has three different stock location areas.

Around 60 % of goods received are re-distributed directly to the branches via cross-docking, without needing to be stored. This applies to whole pallets as well as to individual shoeboxes that are sent straight to the consolidation area for the branches. As part of this, PSIwms takes all open orders from the central goods management system, the advice note and predicted delivery times from the transport company, along with the assignment of goods received to each particular branch, which is set by Görtz purchasing. PSIwms consolidates the data and ensures that the relevant processing orders are sent to be labelled, picked and packaged. Sales, as well as back orders, are transmitted hourly from the branches to the logistics centre, picked within the day and then sent out to the branch as a next day delivery.

### Complete process control

The processes in the Görtz logistics centre were automated step by step, completing at the end of 2014.



PSIwms forms the backbone for the autonomous supply of goods to all Görtz branches.

They were then gradually integrated into the warehouse management system and an integrated system of process control was established through PSIwms. The four building levels are linked by a continuous transport system including ascending conveyors and lifts. It runs along the floors at either end of the picking aisles, so that pickers can take the orders to the conveyor by the shortest possible route. The warehouse management system administers the eight different storage areas, controls the transport, conveyor and picking processes directly, and organises re-supply. Its range of functions includes the ability to control modern picking technologies such as Pick-by-Voice, a forklift truck guidance system, or the direct operation of conveyor technology without a material flow computer. The application of dif-



*Items are ready for dispatch within ten minutes of us receiving the order.*

ferent labels for product identification, transport and dispatch control ensures optimal routing of various items, order sizes and carriers.

also connected directly to PSIwms. “Within just ten weeks, the redesigned material flows in the Görtz distribution centre were being controlled by the WMS”, explains Hermann Tomczak, Project Manager for PSI Logistics.

### Efficiency increases that are really noticeable

“The efficiency increases from connecting the new conveyor technology and online shop to the PSIwms are very noticeable”, summarises Olaf

Diekhoff, authorised representative and Head of Supply Chain Management (SCM) at Görtz. “With PSIwms, goods are turned around extremely quickly in the warehouse, despite us having taken on multi-channel processes. When it comes to the completion of online orders, items are ready for dispatch within ten minutes of us receiving the order. In terms of cross-docking, shoeboxes require between 5.5 and 7 minutes from goods being received to goods being issued—a quantum leap for the quality of our delivery. This means that the warehouse management system fulfils all of our expectations. We are very satisfied with the results, with the system, and with how the project was run”. 🌀

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*The efficiency increases from connecting the new conveyor technology and online shop to the PSIwms are very noticeable.*

**Olaf Diekhoff**

Authorised representative and  
Head of Supply Chain Management (SCM) at Görtz

### The basis for multi-channel logistics

The increasing levels of automation and process efficiency in the logistics centre form the basis for operating multi-channel logistics using the firm’s own capacity. In early 2016, the Görtz online shop was redesigned and the entire product range was made

User report: PSImetals at SSAB Mobile, USA

## Holistic overview, local decision

Since 2012 PSImetals has been in use as production management solution at SSAB Mobile (USA), a successful implementation in cooperation between PSI Metals and SSAB IT. Increasing complexity of process demands and the requirement for a holistic planning solution were primary drivers for the system installation. Additionally, PSImetals provides the flexibility and decision support to react manually or automatically to events in the production process.

**B**efore the PSImetals solution was implemented at the SSAB Mobile facility, Production Planning lacked the tools to provide a holistic plant-wide view combined with detailed line planning. The SSAB Mobile facility in Axis, Alabama, is a steel

management, SSAB Mobile implemented an integrated PSImetals system. Commencing with the Order Dressing module to elaborate the customer orders, the solution then incorporates Production Tracking, Quality Execution, and Logistics to manage



Continuous casting plant at SSAB.

mini-mill which includes an EAF, LMF, vacuum degasser, continuous slab caster, and a combination rolling mill capable of producing plate and hot rolled coil. The downstream lines include two quench and temper lines, a normalizing line, and a blast and paint line.

### Supply Chain Management in three categories

In order to improve the overall process of production planning and

the product flow, while using several Planning modules to schedule and control the overall process. This software went into production several months before a new quench and temper production line entered operations, which was expected to significantly increase the complexity of the production flow. One of the main purposes for purchasing the PSImetals solution was to provide the Production Planning department with improved

visibility of plant-wide scheduling, the capability to balance line capacities, and the power to create detailed line schedules in consideration of the special requirements of each individual production line.

Production Planning at SSAB can be divided into three categories:

- Planning
  - Holistic plant-wide view of orders and line capacities
  - Individual line scheduling
  - Optimizing order planning on slabs and heats
- Reacting—The ability for users to manually adjust line schedules and slab planning in order to react to production events
- Dynamic updating—The ability to automatically adjust material planning based upon quality events and other real-time occurrences

### PSImetals—standard solution for SSAB

The PSI Metals planning group working together with the SSAB IT group was able to provide a solution to the requirements posed in all categories of the planning process.

Every slab designed to satisfy plate orders must be engineered to account for process losses. Plates are sold based upon ordered dimensions, so any extra material is not included in the sale price. Process losses vary based upon product and production lines. The PSImetals Plate Combiner considers the order book together with the production and quality requirements to engineer slabs optimised for slab size as well as order requirement date and grade grouping.



PSI*metals* Order Scheduling provides a holistic view of all the production lines. It allows the user to define campaigns on each individual production line while having the resolution to see individual orders and the planned production dates of material assigned to that order.

PSI*metals* Line Schedulers allow the user to define parameters and patterns specific to a production line in order to optimally sequence individual material according to those configurations. There are separate Line Scheduler modules for the caster, the rolling mill, and the quench and temper lines.

The applications mentioned above are offline components that provide Production Planning with the visibility and the planning tools necessary to schedule orders for production to meet shipment dates. However, during production SSAB needs the ability to alter released line schedules and change orders on scheduled material, both virtual and real. The PSI*metals*



Hot-rolled coil.

## In demand

**George Wallis, project manager, SSAB Mobile**

**PSI:** What was your experience working with PSI team to adapt your business process to PSI*metals* software?

**George Wallis:** The PSI team was very open in discussions involving how the PSI software works versus the SSAB business process. This was very helpful in aligning the software with the business process.

**PSI:** What is the main improvement for production since using PSI*metals*?

**George Wallis:** The main improvement is in the visibility of the material, where it is, what's been done to it, what needs to be done, and when is the work expected to be done.

**PSI:** Which functionality is your personal highlight?


**George Wallis:** I was deeply involved with the reactive scheduling. The alignment of the software with the business needs took a lot of work, but I'm proud of the results.

Production Tracking module was enhanced to provide SSAB Production Planning with these capabilities, creating a combined functionality referred to as reactive scheduling. The SSAB Production Planning group has the ability to respond to production events and manually create, modify, or delete line schedules on every line. It also has the ability to manually engineer slabs when required. The SSAB Mobile IT group continues to enhance this functionality as production requirements change.

SSAB refers to the last category as dynamic updating. Some production events affecting planning occur in real-time and happen too fast for manual intervention. The PSI*metals* Production Tracking module incorporates logic to identify and make decisions regarding production and quality events. It is tightly integrated with the different level 2 systems to provide an automatic adjustment to produc-

tion execution when necessary. These events may include

- Adjusting slab engineering for end of cast sequence optimisation
- Reordering or resizing slabs for caster intermixes
- Replanning test sample sizes and plate planning based upon Level 2 material feedback

The PSI*metals* production management solution has been installed for several years now and PSI continues to work with the SSAB IT group in improving its functionality and flexibility, while continuing to transfer knowledge and configuration capability to SSAB. 

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User report: PSI<sup>penta</sup>/ERP in production processing at the mechanical engineering firm FMB

## Simple. Mobile. Productive. Tablet-controlled assembly

The mechanical engineering firm FMB Maschinenbaugesellschaft mbH & Co. KG, from Franconia in Germany, systematically uses its ERP system to simplify operational process. Instead of importing machine-specific data into the machine with a USB stick as they used to, employees now use tablets to document and control the whole assembly process.

ERP in general and PSI<sup>penta</sup> in particular is nothing new for FMB. Quite the opposite: The established, mid-sized business, now a leading worldwide specialist in loading and unloading devices for machine tools, installed the system back in 1999. Measured in IT terms, that was another age. “We have seen the decision we made back then validated year after year, and even today we see no reason to consider any fundamental changes”, says Tino Penning, IT Administrator at FMB. Further: “The system has grown with us over time,

together with PSI Automotive & Industry we have kept it up to date and added more and more new functionalities. We have not yet reached any limits worth mentioning”, says the system’s administrator.

### The core of production processing

It is no wonder that the machine manufacturers rely on an ERP system and in particular on a manufacturing execution system (MES). For one thing, the firm is making a significant contribution to the auto-

mation of its customers’ production processes, so standardising its own processes as much as possible is a no-brainer. And secondly, the loading devices are complex and highly individualised products, which can require up to 50 bills of materials per order. An MES provides the support necessary to keep the error rate as low as possible and the productivity as high as possible. “In many firms, ERP systems are seen purely as an administration programme for managing orders, and we started the same way. But today it is a lot more: It is the core of our production processing”, Penning explains.

The monitor makes it particularly clear: At FMB, production utilisation is continually monitored and displayed graphically. Every ten minutes, PSI<sup>penta</sup> delivers the production utilisation data that makes this happen—among other things the process, item and feedback numbers, as well as the delivery date. It also provides a traffic light system that shows the production progress in the mechanical and electrical assembly. This status is displayed as an HTML page on a large screen in the electrical assembly area. This lets staff immediately see which machine is mechanically ready and where a switch cabinet is needed next. It is also immediately clear which machine is going to be collected for delivery and when.

The newly added barcode scanner and tablet make the extensions to the ERP system literally within reach. The scanner is used in stock management, where it has made signifi-



Using PSI<sup>penta</sup> on tablets while on the move helps the assembly team to get the information they need quickly and efficiently.

cant contributions towards simplifying processes and reducing error rates. Data is transferred to PSI*penta* in real time, meaning that from purchasing through to assembly and controlling, each department has the latest information on raw materials, parts produced and parts purchased.

### Mobility in assembly

The tablet is increasingly becoming a control centre for assembly staff. It lets them monitor and control the entire production of an FMB automatic loader. A PSI*penta* client is installed on the tablet, which provides direct access to the data from the ERP and manufacturing execution systems, in real time. Stock levels and component part lists are among its basic functions and count as the “easy tasks”. Since then specific operations have been implemented: “An additional function allows pre-assembly colleagues to get the data for a machine’s type plate directly from the system and send it to the en-




A monitor shows the current production utilisation and helps the assembly team to set their priorities correctly.

“only positive things: The staff are excited about the solution”.

If there are any questions or difficulties, the administrator uses the PSI

work with partners and suppliers has already become a reality. And to do so, FMB uses myOpenFactory. Orders can be produced completely digitally, without pieces of paper going missing in a fax machine or post box, and without the need for emails to be written manually. In particular, purchasing benefits from a marked increase in productivity.

The increase in the number of users from 20 to 66 alone shows that FMB is doing very well with the system. Penning agrees too: “I am happy with the system. It is very easy to manage, easy to expand, powerful, and the support is good”. 

“ I am happy with the system. It is very easy to manage, easy to expand, powerful, and the support is good.

**Tino Penning**

IT Administrator at FMB Maschinenbaugesellschaft mbH & Co. KG

graving machine. This means that the laborious and error-prone manual typing of numbers is a thing of the past”, says Penning, describing the progress. In the future, tablets will also have scanner modules to allow them to scan in order data, which will further reduce the labour required of staff members. From introduction to active operation, it has all worked perfectly so far. So, no wonder that Penning has heard

Automotive & Industry support portal—“and I always receive sensible solutions within a short timeframe. Collaboration with the support team works very well, just as it does with the project team, if we have new requests”.

### Full EDI integration of partners and suppliers

Connecting the PSI Automotive & Industry ERP system to an EDI net-

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Product report: PSImetals release 5.13 now available

## Quality is not an act, it is a habit

Quality is a critical topic in metals production and has replaced throughput as the primary goal in today's business operations. The new PSImetals release 5.13 includes many functions and improvements to support our customer in various areas of quality, directly driven and inspired by customer ideas and project requirements. The influence of quality considerations are supported in three areas: data, decision support and overview.

Metals production is complex, requiring different areas to be considered to improve product and process quality. Aristotle once said, "Quality is not an act, it is a habit." Quality determines success or failure and would not work without habits, since they determine behaviour and therefore have the ultimate influence on a company's culture.

### Quality through data

The basis of information is data. While mass data collection has become the current state-of-the-art, it is still not easy to achieve the benefits of its analysis in daily operations. Big Data is the goal but it is not available off the shelf.

The new release provides a first step in that direction with Statistical Process Control (SPC). In prior releases PSImetals already maintained position-specific information for defects or welding seams. With the new Coil Part Tracking now the material genealogy also manages coil sections through all production steps, further improving the accuracy and completeness of the digital fingerprint of a material.

### Quality through support

In the end it is a human being who takes responsibility for decisions. To increase performance a good production schedule is followed, and exceptions on the shop floor are han-

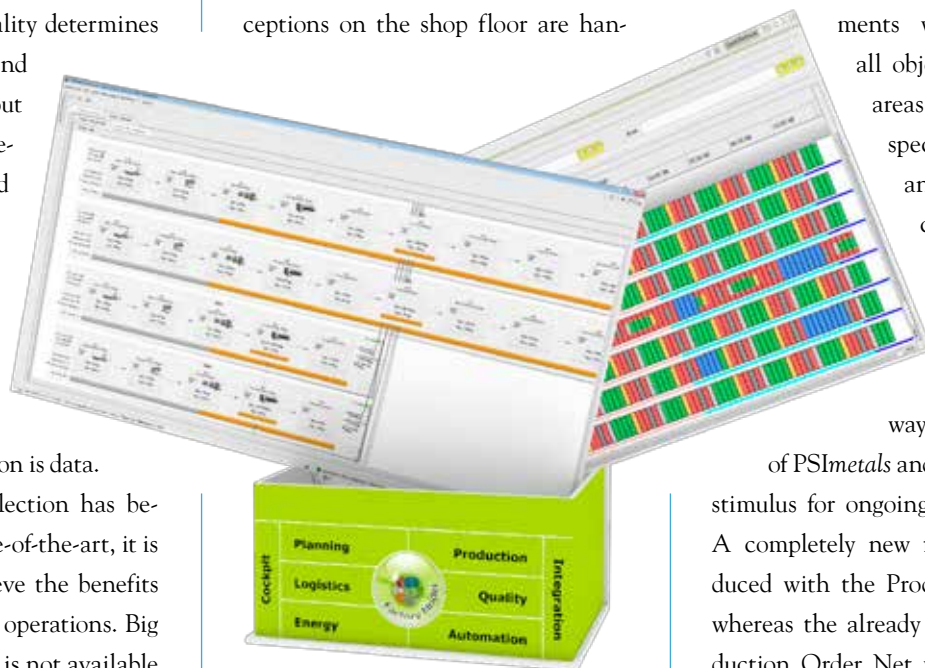
tures that support the user to make the right decision at the right time. The new Plan Improvement Assistant provides hints on the constraints that could be modified to improve the plan within PSImetals Master Planner. Other improvements in the new release assist with plate cooling bed load control or coil design.

### Quality through overview

Quality management is an ongoing process of balancing out local requirements with the overall objectives. In some areas the human perspective is limited and is given no chance to consider the larger picture. To close this gap has always been a key goal of PSImetals and continues to be

stimulus for ongoing enhancements. A completely new feature is introduced with the Production Monitor whereas the already introduced Production Order Net was visually improved.

As stated by Aristotle, PSI has made quality a habit, and will continue to advance this topic in the future. Further details can be found at [www.psimetals.com](http://www.psimetals.com)



*An improved visualisation of the Production Order Net and the completely new Production Monitor are part of the new PSImetals Release 5.13.*

dled based on experience. IT systems have long been able to relieve humans of routine tasks. Future IT systems should assist the user with supporting suggestions, whether in the planning process or when confronting exceptions during production. PSImetals 5.13 includes a number of new fea-

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News: PSI Metals starts new PSI TechTalk range

## Experts on stage

PSI is justifiably proud of the expertise and experience of its staff. A new selection of internet clips by the name of PSI TechTalk now offers PSI Metals customers another way to profit from this expertise. They are not short on entertainment value either.

Over 300 PSI Metals staff ensure that current and future customers receive the best possible support and that their production management needs are optimally met. This happens through close contact with the customers, so it is no wonder that PSI staff have collected considerable levels of expertise—in some cases over the course of decades. The new PSI TechTalk range offers a new channel for passing this knowledge on to customers. The range has broken new ground and interesting topics have been looked at in new ways. It can be seen as an experiment: Having agreed together on which topics to cover, the presenters were then given free rein in terms of how to communicate the content, provided that they did not use PowerPoint slides or other similar screen content. The result is that the clips in the first batch are completely different from one another and they reflect the character and presentation style of the individual experts.

### New faces, old hands

The first series (five clips) offers a mix of experienced PSI Metals staff and new faces. But it was a new experience for everyone—even those that have been passing on their knowledge to customers and colleagues for decades first had to get used to speaking to a camera—and had to

get used to doing without immediate feedback from the recipient. The “performers” did of course feel more at home with every test run. Another challenge was the PowerPoint ban. However, in the end it was this



Snapshot of the PSI TechTalks editing process.

very restriction that inspired the creativity to find new ways and forms of expression. There was no shortage of self-mockery either. Suddenly chocolate, kitchen appliances and bricks were being used to demonstrate the metal production processes. But in contrast, a concept can be explained perfectly well using a whiteboard.

### Exclusive offer

Our customers can look forward to the way that our experts have described the topics and issues they encounter in their everyday life. The clips are exclusively available for PSI Metals customers to stream in the customer area at [www.psimetals.com](http://www.psimetals.com). A one-off registration at that address is all that is required to gain access. The first clip, named “How standard

interfaces make the octopus happy” is available immediately. Others will follow every month. 🌀

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News: New release provides further economisation and optimisation options

## Schaeffler Group implements PSIGlobal 2.4

The industrial division of the Schaeffler Group has re-structured the European logistics network using PSIGlobal. By migrating to the latest release, version 2.4, the IT system will support further economisation and optimisation options.

OpenStreetMaps for higher quality of information in tracking and tracing applications, additional analysis methods for calculating and presenting relevant KPIs, structured evaluation of freight costs and tariffs, as well as the concerted optimisation of production and logistics are just a few of the highlights in PSIGlobal release 2.4.

The Schaeffler Group was also convinced by the advantages of the standard software for the strategic and tactical analysis and the planning, designing and optimising of logistics networks. With the latest release, the supplier is aiming to realise further potential savings by optimising their logistics network.

### Efficient logistics networks for marked success

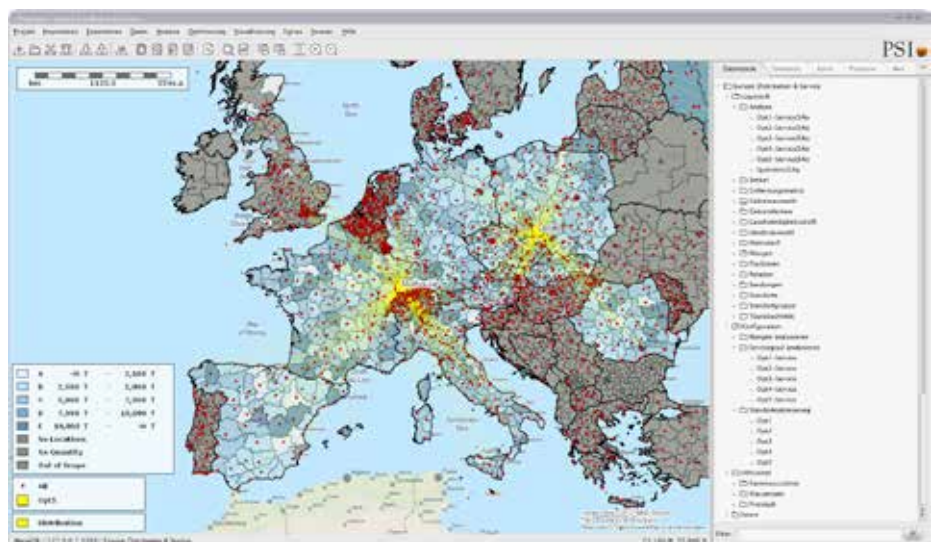
The automobile supplier and machine building group has a worldwide network of around 170 production locations, research and development institutions, and sales companies. Efficient logistics networks are essential to the business' success—as much for the export of produced machine and plant components as for punctual distribution.

### Over a million machines and plant parts

Around 62 % of the 260,000 tonnes of freight in 2015 landed at destinations on the European network. With the

“European Distribution Centre” project (Europäisches Distributionszentrum—EDZ), in 2013 the group began to consolidate the flow of more than one million machine and plant parts per year and to further increase the level of service.

(EDZ Mitte), currently being built in Kitzingen, near Schweinfurt in Germany, will form the logistical centre of the new Schaeffler network. Both other locations have already been created. EDZ North (EDZ Nord) started operating in Arlandastad, Sweden in March 2015. The launch of EDZ South (EDZ Süd) followed in October and is located in Carisio, Italy. With the current migration to release 2.4, PSIGlobal is using its ex-



PSIGlobal, the strategic tool for analysing, planning and optimising supply chains.

### Optimisation of the European logistics network

Schaeffler has worked with PSIGlobal for years on optimising the European logistics network. Using more than 100 alternative scenarios for optimal location choice, along with PSIGlobal, the group of companies were able to reduce the number from 30 logistical locations to just three European logistics centres. The ideal number and their optimal location was provided by scenario technology from PSIGlobal. In the future, EDZ Central

panded scope of features to support Schaeffler, for example, in the continual optimisation of the logistics network, the service level and the complex tariff structures of numerous linked logistical service providers. ☺

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News: Second phase of the PSI<sup>ipenta</sup> roll-out commences after successful pilot project


## PSI awarded follow-up contract from CRRC Sifang

The PSI subsidiary PSI Automotive & Industry GmbH has been contracted by CRRC Sifang Co., Ltd., a subsidiary of the world's largest railway vehicle producer, China Railway Rolling Stock Corporation Limited (CRRC), with the implementation of the second roll-out phase of an integrated software package for the support of the manufacturing processes.

In an initial pilot phase, PSI Automotive & Industry successfully implemented a planning-execution-control (PEC) solution for the integrated planning and control in a single plant.

The second phase of the planned roll-out in other company segments commences with this important follow-up contract.

Located in Qingdao on China's east coast, CRRC Sifang is part of the

Chinese CRRC Group. With 46 subsidiaries and over 185,000 employees, CRRC, headquartered in Beijing, is the world's largest producer of rolling stock and also one of the largest industrial groups in the world. 

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Event: Follow-up to ABM Steel Week in Brazil

## Industry 4.0 with Google Glass

With 58 exhibitors, more than 1,000 participants and more than 500 expert contributions—the 2016 Steel Week from the Brazilian steel group ABM. “Industry 4.0” was the main topic of conversation at the trade fair and at the PSI stand.

The Google Glass exhibition gained a lot of interest at the PSI stand.

Representatives from the large Brazilian steel manufacturers such as Gerdau, ArcelorMittal and CSN did

not pass up the opportunity to be quality inspectors for once and to point out coil defects or to put a coil in the right place using the smart glasses.

The PSI Click Design presentation and the mobile app for smartphones and other devices also drew a lot of interest, as they can be used in any location and they create completely new opportunities for the customer to adjust the system themselves.

More than 50 visitors also listened to the joint “Industry 4.0” presentation given with our partner Primetals Technologies. 



The Google Glass wearable opens up new opportunities for work processes.

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Event: Active exchange of information and ideas at the German Logistics Congress

## PSI Logistics deepens its collaboration with Fraunhofer Institutes

At the 33<sup>rd</sup> German Logistics Congress (Deutschen Logistik Kongress—DLK), as one of the Congress' sponsoring partners, PSI Logistics once again opened the PSI Havana Lounge. Guests were invited by the youngest-ever top-100 innovator to exchange information and ideas over the course of three days.

The three days were summarised by Dr Giovanni Prestifilippo, Managing Director of PSI Logistics: "Many interesting conversations resulted [from the Congress], as well as concrete project enquiries".

He was particularly pleased with the collaboration between Fraunhofer SCS and PSI Logistics, which was contractually agreed at the DLK. "In addition to the close, long-term collaboration with the Fraunhofer IML, the cooper-


ation agreement with SCS underlines how near PSI Logistics is to leading technology and research institutions", explains Dr Prestifilippo. "This has a direct influence on the development of innovative functions for the products in our PSI Logistics Suite."

In this way, SCS uses the PSIglobal strategic planning and optimisation system for its consulting and optimisation projects.

SCS also develops functions and algorithms that are customised for its cus-



Shortly before signing the contract: Dr Giovanni Prestifilippo with representatives of the Fraunhofer SCS.

tomers. The institute in turn makes these available to PSI Logistics for the future development of industry-specific and standard functions. 

Event: PSI Logistics Day 2017 with logistical extensions for PSI<sup>penta</sup>

## The future at a glance


Technological developments, flexibility and networking within intralogistics and the supply chain are at the centre of the 3<sup>rd</sup> PSI Logistics Day.

PSI Logistics extends an invitation to the 3<sup>rd</sup> PSI Logistics Day, on 13 March 2017 under the motto "Smart Logistics Today". The event traditionally takes place on the day before LogiMAT in the Wöllhaf Konferenz- & Bankettcenter at Stuttgart Airport. Around 100 visitors are expected. The main theme of the event focusses on the options for being competitive in the future by integrating modern technologies and continuous networking

of logistical processes in intralogistics and supply chain.

In a presentation on the fundamentals, Professor Volker Stich, Managing Director of FIR at the RWTH Aachen, outlined the main theme of the event, sketched out various technological developments and fields of operation, then put them into the context of future logistical demands. Four parallel workshops offer the opportunity to deepen understanding of topics in the areas of supply chain,

tender management, warehouse management and logistical extensions for PSI<sup>penta</sup>.

To finish the day there will be a gathering to exchange information in a relaxed fashion. On the following day, PSI Logistics invites visitors to their stand at the LogiMAT, Hall 7, Stand 7D76. 

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Event: IRISA and PSI collaborate on production management solutions

## PSI intensifies engagement for the metals industry in Iran

PSI Metals, and the Iranian market leader for Industrial Automation and IT solutions in metals, IRISA Co., have signed a comprehensive collaboration agreement. Using the local expertise of IRISA, PSI *metals* solutions will be introduced and implemented at Iranian and regional metals companies.

IRISA Co. was founded in 1992 as a spin-off from the biggest Iranian steel producer Mobarakeh Steel. Already in 2008 PSI und IRISA were working together to design a new supply chain planning concept for Mobarakeh. With the removal of the sanctions both former partners were interested to restart the relationship. Mr. Hans Jürgen Sauter, Managing Director PSI Metals Austria says: „It was not only the huge expertise gathered by IRISA in many years of business in our industry that has convinced us that we have found the right partner for our market activities in Iran but also the people of IRISA and their experience in business with European partners in the past.“ After intensive negotiations a long term collaboration package was




The celebratory signing during the 2<sup>nd</sup> Iranian Iron & Steel Conference.

crafted with a focus on joint sales and implementation activities. For PSI the extensive industry experience of IRISA on one hand and its local presence are key success factors and provide added value for Iranian custom-

ers and as well as the customers in the region. In the future it is also foreseen to jointly develop market specific solutions based on PSI *metals*.

Mr. Mohammad Taheri, CEO IRISA says: “I am sure forming such strong partnership from PSI and IRISA, as provider of information system including MES systems of more than 75 % of steel production in IRAN with its reputation and expertise, will achieve all objectives of the agreement regarding market development in Iranian and regional market and as well as developing specific solutions.”

The new collaboration was publicly presented during the “2<sup>nd</sup> Iranian Iron & Steel Conference in Esfahan”, on the 27<sup>th</sup> of September 2016. 

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## PSI *metals* UserGroup - Save The Date!



**TATA STEEL**

**PSI *metals* Usergroup**  
10-11 May 2017  
Tata Steel  
IJmuiden, Netherlands



**Industry 4.0 Conference**  
9 May 2017  
PSI & Primetals Technologies



Event: PSI Automotive & Industry introduces solution concepts

## 30<sup>th</sup> IPA anniversary sets an example for Industry 4.0

With the slogan “Industry 4.0—Enabling New Business”, the managing directors Dieter Deutz and Dr Herbert Stefan Hadler presented the direction for the 30th anniversary of the PSI*penta* user interest group (Interessengemeinschaft der PSI*penta*-Anwender—IPA) in Stuttgart from 10 to 12 November.

For some years now, PSI Automotive & Industry has been focusing its solutions portfolio increasingly on supporting the gradual implementation of the fourth industrial revolution. On the one hand, Industry 4.0 concepts were the subject of intense conversations, and on the other, many real Industry 4.0 examples were presented in the form of customer solutions. At the centre of the journey into the networked future of production and logistics were

examples of sophisticated, customised solutions and the new PSI*penta* version 9. Other topics included the extended features available in the PSI*Ing* community and the new process consultation offer.

Release 9 of the PSI*penta* ERP and MES suite was piloted by the firm Greif-Velox Maschinenfabrik GmbH, who successfully tested the system this year. The new version is characterised by user-friendly and easily customisable software interfaces, as

well as expansions to functionality in the areas of service and quality management. Michael Rundshagen, Head of IT at the Lübeck machine building firm Greif-Velox said: “With us, PSI*penta* can really make use of its manufacturing strengths”. The firm is an ideal PSI*penta* customer due to the high demands it places on an ERP system and this makes it a perfect beta user of PSI*penta* 9.

There were further customer-focused workshops on topics such as migration paths to newer releases, solutions for continuous planning mechanisms, using industrial apps for in-house maintenance and business reporting solutions for improving process control.

Prof Dr Reinhold Rapp from the Zukunftsinstitut (Future Institute) rounded off the first day of the Congress with a short presentation entitled “Business Model Design—the Organisations of the Future”. He illustrated how businesses can prepare themselves for the Industry 4.0 future and remain long-term, sustainable partners.

This independent PSI*penta* user interest group (IPA) is organised into regional working groups and technical working groups that meet up once a year at the conference. As well as customers from Germany, Austria, Switzerland, the Netherlands and Hungary, strategic product partners were also present, who exhibited their solutions.

As usual, it was well received, with 220 participants and the satisfaction with the event was summed up by IPA Chairman Hans-Peter Rudolph, CIO at Läßle: “I’m already looking forward to next year! We’ll be meeting in the Austrian capital Vienna from 9 to 11 November 2017!”



As “Customer of the Year 2016”, GEMÜ was presented with the “Competence Customer Award”. Pictured from right to left: Dr Herbert Stefan Hadler, Achim Stapf and Armin Wagner (both GEMÜ), Dieter Deutz.

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News: w & p Zement GmbH optimises network with PSIglobal

## Analysis of sites and transportation routes

Wiertersdorfer Zementholding GmbH, a subsidiary of the international player Wiertersdorfer Group, has contracted PSI Logistics GmbH with the implementation of PSIglobal. The construction materials specialist, headquartered in Austria in Klein St. Paul near Klagenfurt is represented with production sites and sale units worldwide.

With the PSI standard software for the strategic planning, optimisation and control of logistic networks, w & p Zement is implementing a cross-border optimisation of its production and delivery network.


### Optimised transportation orders improve CO<sub>2</sub> balance

The innovative PSIglobal allows for the reproduction, continuous analysis and composition of national, continental and global supply chains as well as an optimal site planning. Renowned consulting companies as well as market-leading industrial companies and service providers throughout the sector

optimise more than 100 million transportation orders and consequently improve their CO<sub>2</sub> balance in accordance with EU Norm DIN EN 16258 every year. The strategic IT system from the PSI Logistics Suite compiles operative data for management analyses.

Its scenario technology makes it possible to configure processes and transportation chains for multi-stage and multi-modular logistics networks as well as to identify key parameters and sensitivities. Integrated analysis and simulation models allow for the variation of data in model investigations and equilibrate them to an optimum.

w & p Zement will first of all analyse the sites and transportation routes of

the cement business in Austria, Italy and Slovenia with PSIglobal. In subsequent steps, the company will prepare the key performance indicators determined with the IT system and then report options for optimisation for the network through structured evaluations. 

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## EVENTS

[www.psi.de/en/events](http://www.psi.de/en/events)



|                |   |  |
|----------------|---|--|
| 15.02.2017     | Hamburger Logistiktage<br>Hamburg, Germany                  | PSI Logistics                              |
| 13.03.2017     | PSI Logistics Day<br>Stuttgart, Germany                     | PSI Logistics<br>PSI Automotive & Industry |
| 14.–16.03.2017 | LogiMAT 2017<br>Stuttgart, Germany                          | PSI Logistics<br>PSI Automotive & Industry |
| 14.–16.03.2017 | Passenger Terminal Expo<br>Amsterdam, Netherlands           | PSI Logistics                              |
| 20.–24.03.2017 | CeBIT<br>Hanover, Germany                                   | PSI Automotive & Industry                  |
| 06.–07.04.2017 | Deutscher Materialfluss<br>Kongress 2017<br>Munich, Germany | PSI Logistics                              |
| 24.–28.04.2017 | Hannover Messe<br>Hanover, Germany                          | PSI-Group                                  |

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