

# PRODUCTION manager

Magazine for logistics & production



Technology transfer and functional software systems

## Digital networking in production and logistics

### Product report

Sequencing at shop floor level with Qualicision  
Scheduling for smart production

### User report

California Steel relies on PSImetals  
Securing the future through successful open-heart surgery

### Product report

Automated master data management as a success factor  
Increased data quality with PSIpenta

## EDITORIAL

Dear readers,

The weather and the season are back in sync. Autumn is on the way and it's almost harvest time. Previous work in the field is rewarded with full ears of corn and sweet wine. In many ways, it's quite similar to the latest developments in the PSI Group. Subsidiaries, most recently PSI Mines&Roads and PSI Logistics, are being rewarded with prizes for their innovativeness, excellent products and forward-looking solutions. Demand for PSI software systems is high.

These are results of many years of consistent development work, technological expertise and specialist industry know-how. They are testament to our customers' trust in and satisfaction with PSI products. This is backed up by the two user reports from PSI Automotive & Industry and PSI Metals.



This issue of Production Manager also brings you the very latest information about new developments and, with the leading article on digitalisation and the project report on master data management in particular, fascinating background information.

Talking of digitalisation, we admit that we were surprised by the latest

figures from the Centre for European Economic Research (ZEW). For years, PSI has been supplying forward-looking IT solutions across all system hierarchies to meet the challenges of digital networking. It is no problem for users of PSI products. As the poet Rilke wrote in "Autumn Day", "Anyone who doesn't have a house now will never build one" and will "wander restlessly once the leaves start to fall". But the beginning of autumn is yet to come ...

We hope you have an interesting read.

*Prestitifilippo* *Sascha*

Dr. Giovanni Prestifilippo and  
Sascha Tepuric  
Managing Directors  
PSI Logistics GmbH

## CONTENTS

### COVER STORY

Digital networking in production and logistics ..... 3

### USER REPORTS

California Steel relies on PSImetals ..... 6

Integrated system from ERP to shop-floor  
data collection to production control centre ..... 8

### PRODUCT REPORTS

Sequencing at shop floor level with Qualicision ..... 11

Automated master data management as  
a success factor in the digital world ..... 14

### NEWS

PSImetals FutureLab initiative ..... 10

Centralised maintenance and customer support ..... 12

PSIroads-MDS named as a milestone

project in intelligent mobility ..... 13

PSImetals at Chinese MaGang ..... 16

Strategic planning and optimisation  
of logistical networks ..... 16

Improved logistics processes cut production  
and procurement costs ..... 17

### EVENTS

PSI Future Mobility Forum 2017 in Aachen ..... 15

PSI Logistics at four autumn events ..... 18

IPA 2017 in Vienna ..... 18

PSI exhibits at China Coal & Mining Expo 2017  
in Beijing ..... 19

Events ..... 19



Technology transfer and functional software systems

## Digital networking in production and logistics

**T**he study results published in recent days by the digital association Bitkom and the Centre for European Economic Research (ZEW) are striking: when it comes to digitalisation, the most important economic trend, Germany runs the risk of getting left behind internationally.

According to the ZEW study, Germany is ranked 17th in the world—way behind other industrialised nations such as Finland, the UK and the USA. In parallel, a recent Bitkom survey has revealed that more than half (53 percent) of companies in Germany have been victims of industrial espionage, sabotage or data theft in the past two years—causing around 55 billion euro of damage to the economy each year. At the beginning of last year, the ZEW published a study indicating the close link between digitalisation and data security. In it, economists cited guaranteeing data security and protec-

tion as one of three key areas of activity to promote digitalisation.

### Digital transformation

Digital transformation enables companies to network their value chains. Digital networking enables information to be exchanged between different stages of a value chain. This leads to optimised business processes and unlocks efficiency gains. However, small and medium-sized companies in particular are lagging behind when it comes to digitalisation. Only around 20 percent have embarked on digital networking of products and

services, and only around a third of companies are networking production and logistics.

Digitalisation and networking are currently the key challenges that will shape companies' future competitiveness. With this in mind, the latest study results are surprising for several reasons. "IT networking is the segment of production control and intralogistics where it is easiest to adapt the infrastructure for digitalisation and to make the evolution processes referred to as Industry 4.0 and the Internet of Things (IoT) future proof and ensure investment security", says Dr. Giovanni Prestifilippo, Managing Director of PSI Logistics GmbH.

### Requirements for digitalisation

As one of the most innovative software companies in Germany, the PSI

Group focused on the requirements for digitalisation at an early stage and integrated them into its product development. For example, PSI Logistics is ISO 2700 certified for its comprehensive data protection and high security level in the development of software solutions, products and services. The tested Information Security Management System (ISMS) certifies the integrity of the data lines used—both in-house and externally—as well as the systems' network security and susceptibility to attacks.

ment of their software systems, PSI Logistics is working with Qualicion in some areas. The associated algorithms from sister company PSI FLS Fuzzy Logik Systeme GmbH support safeguarding and optimisation of process quality. One example is the adaptive order start feature in the latest release PSIWms 4.0, which enables PSIWms to automatically start or delay order processing. The objective is to achieve consistent utilisation of the resources involved, based on capacity.

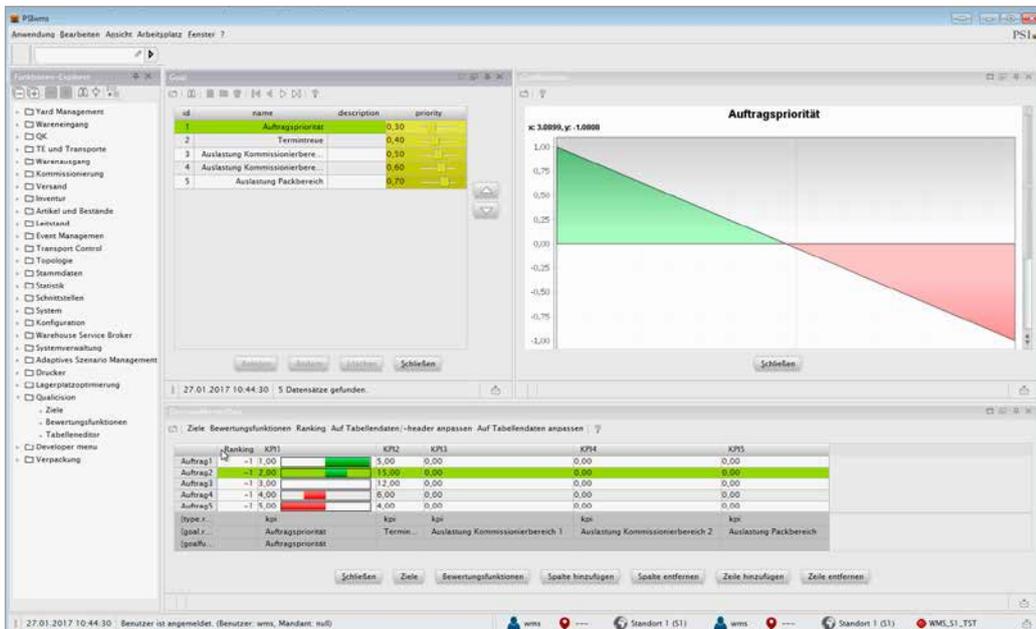
In conjunction with PSI Automotive & Industry GmbH, a specialist in processes in the automotive industry, solutions are designed for manufacturing and logistics companies. These can be integrated into the IT infrastructure as add-on solutions for the internal transport management or the dock and slot management modules in PSIWms. The result is comprehensive IT solutions that cover everything from ERP to MES and SCM through to WMS, all from a single source and with no interface problems.

The Group's focus on the future is being recognised by the market. Last year, PSI Logistics was awarded the TOP 100 seal as one of the most innovative German SMEs. In the spring of this year, the Warehouse Management System PSIWms from the PSI Logistics Suite was named "Best Logistics Brand 2017" in the "IT for Warehouse Management" category. Moreover, incoming orders from well-known compa-

nies at PSIglobal, PSIms and PSIairport Solutions point to continuing dynamic business development and further increases in sales.

### Upgrade and release capability

It doesn't happen by chance. "In addition to the certified data security and innovative programming platform, the PSI Logistics Suite systems are designed for maximum future viability and emphasise the long-term investment security—thanks to their upgrade and release capability", Dr.



An example of technology transfer within the PSI Group: Adaptive order start.

Additional benefits to customers are provided by the architecture of the standard systems and the PSI Java-based framework (PJF), a forward-looking milestone in system programming and customer-specific system design that has now been rolled out across the Group. The PJF provides subsidiaries with a common structure for conveniently linking the functions and innovative new developments in PSI standard products with one another as required. In the functional develop-

### Intelligent PSI-Click-Design

Customers benefit from maximum flexibility in functional and technological system customisation, which goes way beyond the standard and additional functions in conventional systems. They can put their trust in an intelligent PSI-Click-Design based on proven standard logic, algorithms and functions. The range of systems offered by subsidiaries also enable an integrated, horizontally and vertically linked IT infrastructure to be established for industry.

Prestifilippo stresses. This enables the systems' functionality to cover and incorporate the very latest technological developments at all times.

## Concerted optimisation of production and logistics in a core module

What's more, they provide a basis for aligning users' business processes for Industry 4.0 and the Internet of Things (IoT). For example, the standard PSIGlobal software selectively consolidates operational data for management analyses. It indicates key performance indicators for identifying potential improvements. PSI

*Involvement in research projects allows proactive development and integration of forward-looking functions and solutions into the standard systems from the PSI Logistics Suite.*

**Dr. Giovanni Prestifilippo**  
Managing Director  
PSI Logistics GmbH

Logistics was one of the first software companies to use this as a basis for developing functions and algorithms for combined analysis and concerted optimisation of production and logistics, and to pool them in a new core module. The module is part of the standard PSIGlobal package, but can also be incorporated into all the other systems in the PSI Logistics Suite. Reference projects show that users have access to additional cost-reduction potential in the double-digit percentage range depending on sector, size and structures.



PSIwms Warehouse Management System has been certified "Best Logistics Brand 2017" (3rd place) in spring.

## PSIGlobal as a central data platform and meta-system

PSIGlobal can also read and use almost all common data formats, or format them in a suitable way for particular uses or applications. The system works with heterogeneous data without the need for any intermediate steps to harmonise it. In the context of ERP systems, PSIGlobal thus meets the requirement of pre-adaptation for digitalisation. In terms of big data concepts, the software can act as a kind of central data platform and meta-system for harmonisation and analysis of poly-structured master data from different sources.

The underlying algorithms and the focus on adaptive functionality underline the position of PSI Logistics as one of the most innovative companies in the market.

The company is unlocking more growth factors through its close links with leading research institutions. "Involvement in research projects facilitates proactive development and incorporation of forward-looking functions and solutions into the standard systems from the PSI Logistics Suite", explains Dr. Prestifilippo. For example, PSI Logistics

set up the "Smart Parcel" project, in which PSI Logistics works as a member of the Smart Logistics Cluster at the RWTH Aachen Campus, in cooperation with the Centre for Connected Industry. Applications for the Internet of Things (IoT) are developed under real-world conditions in the connected demonstration factory. PSItns or PSIwms modules communicate to allow transparent tracking of packages and their status using IoT chips or iBeacons.

"IT for logistics is all about forward-looking and innovative solutions that offer users greater efficiency and competitive advantages", says Dr. Prestifilippo. "The systems in the PSI Logistics Suite, the technology transfer within the Group and the forward-looking architectural and functional design of the systems provide the market with the key instruments for digitalisation and networking." 

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User Report: California Steel relies on PSImetals

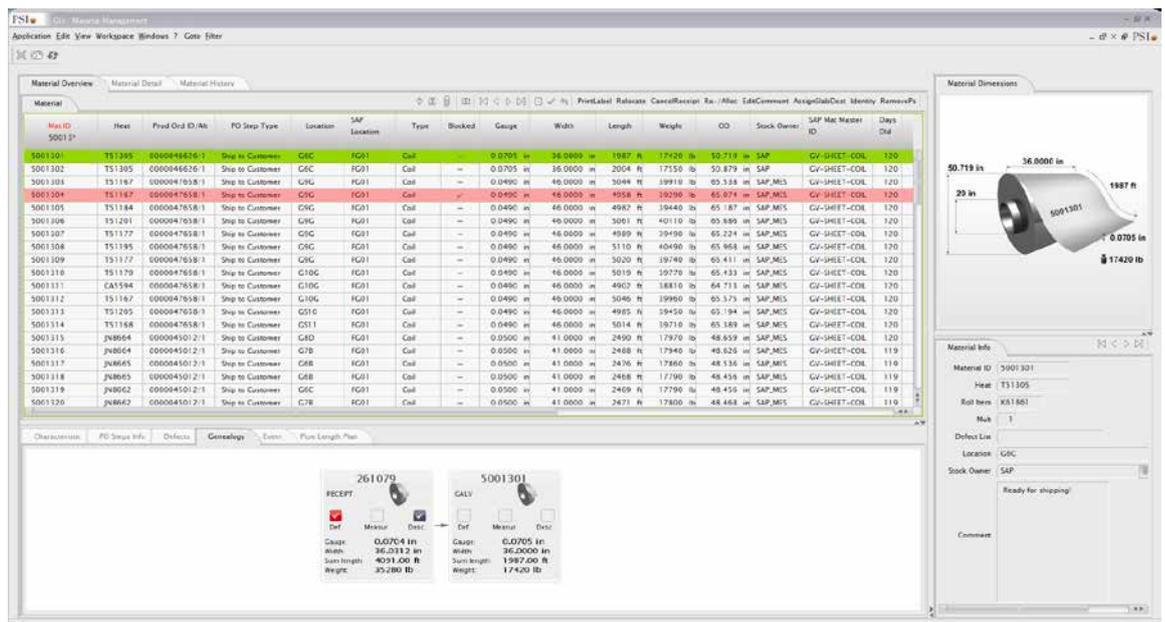
## Future security through successful open heart surgery

The increasing complexity of California Steel's supply chain, as well as increasing end-product requirements, required an investment in a modern, integrated production management solution. The complete mapping of all production processes with PSImetals now allows smooth processes in existing and new plant areas. The gradual introduction led to a stable implementation.

California Steel Industries (CSI) is located in Fontana, on the sunny U.S. West coast about 80 km from Los Angeles. Starting from purchased slabs, the company produces hot- and cold-rolled coils, galvanised coils and ERW (electric resistance welded) pipe for their customers. The product offering is as diverse as the end users: the customer range extends from the construction industry to pipelines to the OEM and service center markets.

The increased complexity of the supply chain, increasing demands on the end products, and addition of a major new production facility

meant that the new system should cover not only the new pipe production, but also all areas already in operation, from slab yard, through hot rolling, to various finishing operations. Hence, the PSImetals system would assume full responsibility for the planning, tracking, quality control and management of all materials, including slabs, coils, and the new tube products.



More transparency in production e. g. through seamless material tracking.

### Consistent growth strategy

Since its inception in 1984, CSI has invested hundreds of millions of dollars at the site. The latest major project was a state-of-the-art pipe production facility commissioned in 2015, which since then has been able to provide customers with an additional annual capacity of up to 400,000 tons of high-quality ERW pipes.

brought the legacy MES system to the limits of its capability. After intensive evaluation of modern products in the market, CSI decided on PSImetals. To gain additional benefit from the introduction of a replacement MES system, CSI decided to implement a fully integrated solution consisting of Planning, Quality, Execution and Logistics modules. Replacing the legacy solution

### Local anaesthesia instead of general anaesthesia

In addition to the functional complexity of the intended solution, system implementation was also a delicate issue. This was a key requirement that current production be impacted as little as possible and larger interruptions be avoided. A production stoppage of the entire plant, equivalent to "general anaesthesia," was not

desired. The risk of restarting all operations under a new implementation was deemed too high. CSI and PSI therefore opted for a gradual introduction, a process of several sequential operations under “local anesthesia.” Configuration and going live of the new solution was performed step by step for each production unit. In doing so, higher effort was incurred for the creation of temporary interfaces between SAP, the legacy MES and PSImetals. However, the advantages of smooth and trouble-free start-ups outweighed the extended project timeline, and have proven itself in a very high level of user acceptance and satisfaction, as well as project cost control.

The project success was made possible by the excellent teamwork between the IT and operations departments of CSI and the PSI experts in North America. A strong emphasis was placed on training the IT specialists and key users on CSI’s staff in PSImetals, who participated heavily in the configuration of the system. On the basis of this knowhow, CSI’s specialists developed detailed use cases and test plans, which were executed by PSI and CSI for each partial go-live. This high attention on the quality of the new solution was one of the primary reasons for the smooth running of all start-ups, with the result that there was no unexpected production interruption in the 4 year duration of the project.

### High user acceptance

The stepwise introduction and extensive testing had another very positive effect. While in many cases the replacement of a familiar and well-known environment leads to conflicts with the users, the affected

## Interview with Victor Rivera

### Information Services at California Steel

**PSI:** What were the reasons for the replacement of the Legacy MES?

**Mr. Rivera:** We knew that our home grown application was getting outdated and we recognised that the company needed a modernised system with graphical user interfaces and an easy configurable way to change it.

**PSI:** How did you prepare users for the system change?

**Mr. Rivera:** This was a long process. First, we identified key user at the different areas of the company and invited them to listen in to all vendors’ presentations. They got involved in the selection process and issued surveys to get their feed. Second, Once PSI was chosen we selected a reduced group of key users to invite them to

participate in the requirements gathering and factory acceptance process. Third, key users had a high participation on the testing and training activities. In fact, some of the key users became the trainers for the end users. Lastly, we listen, we took seriously all the request for adjustments and changes.

**PSI:** What are the advantages of the new solution from today’s point of view?

**Mr. Rivera:** The amount of data to the users has grown considerable. They can get answers to their questions immediately. The system is very intuitive and easy to use. I took time for user to get used to the new system, but over time they became proficient and now they know how to filter or slice data in way they want.

users at CSI were able to more gradually get familiar with the new solution. The parallel operation in different facilities allowed a side-by-side view of the functionality of the old and the new systems. The comparison made apparent the modern user environment and its easy adaptability to a user’s individual requirements. The increasing integration of the individual production units quickly showed how the new holistic approach of the PSImetals solution contributes to more valuable information and easier communication of all parties involved in the production process.

With the final acceptance in August 2017, a journey that was started in 2013 has been successfully completed. PSI’s ongoing product development, however, already continues to provide additional functions and new improvements for CSI through regular releases. The motto is one of continuous improvement, a strategy that fits perfectly into the plans of CSI. 

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User report: Integrated system from ERP to shop-floor data collection to production control centre

## On the pulse of production at Wagner with PSI

For Wagner International AG, meticulous planning and monitoring of production processes is of crucial importance. However, the requirements for the corresponding production control system go beyond the capabilities of the existing ERP software. Thanks to PSI, this gap has been successfully closed. Wagner now has an integrated system from ERP to shop-floor data collection to the production control centre—which means it is always right on the pulse of production.

With its innovative coating technologies for application of paints, wet and powder lacquers and other liquid materials, Wagner contributes

systems. Wagner International AG, based in Altstätten in Switzerland, is the holding company for all operational units. The company employs around 1500 people worldwide.

an immediate response to any unusual incidents. As these facilities were not available in the existing ERP system, Wagner decided to evaluate additional software as an add-on. The aim was to keep a finger on the pulse of production at all times. The add-on needed to be one hundred percent compatible with the existing ERP and had to allow an international roll-out. Replacement was not under discussion. The company knew from experience that only an easy-to-operate

system would be suitable for practical implementation, which meant that user-friendliness was also right at the top of the list of criteria.

### Greater competitiveness thanks to MES

By introducing a powerful MES, Wagner set clear objectives. The improved planning and monitoring of production processes is intended to improve delivery reliability and reduce the planning workload. Thanks to clear, realistic calculation of production costs, the company wanted to produce more efficiently and have the

ability to obtain an overview of the target/actual cost situation at any time. This meant that data on productive and non-productive working times was required. Compatibility between the HR system and SDC systems was essential to avoid media



Employee in production at Wagner.

to exceptional surface quality across the world. Wagner surface technologies are currently used by DIY enthusiasts, skilled craftsmen and in industry—from small, handy paint sprayer systems to professional equipment through to industrial painting

To maintain its international competitiveness, Wagner depends on efficient production processes. Transparent and up-to-date information from ongoing operations are hugely important. They provide reliable details of the current situation and allow

gaps and increase the validity of analyses. Last but not least, it was vital for feedback to enable the current status of a work order to be identified at any time in real time—information that is hugely important for customers but also for planning and production scheduling.

## PSI as a partner for demanding customers

“Experience has shown us that only a very few software providers can operate at this level”, explains Peter Neukam, Head of Controlling at Wagner International AG. The fact that PSI’s offer was ultimately chosen was particularly due to the excellent, intensive advice provided. A detailed concept was drawn up in conjunction with PSI specialists in a two-day kick-off workshop. This provided a basis for the subsequent software configuration, which was specifically tailored to Wagner’s requirements. This was followed by individual user training. A pilot project to successfully link ERP, SDC and MES was launched at the Altstätten site, where one of the development and production locations is situated.

## The following applications are used

**PSIintegration.** Enterprise Application Integration ensures the exchange of data between third-party software and PSI modules.

**PSIbde.** The solution allows precise shop-floor data collection using software/hardware terminals as a basis for post-costing and cost accounting. A direct link to the existing HR time recording is guaranteed.

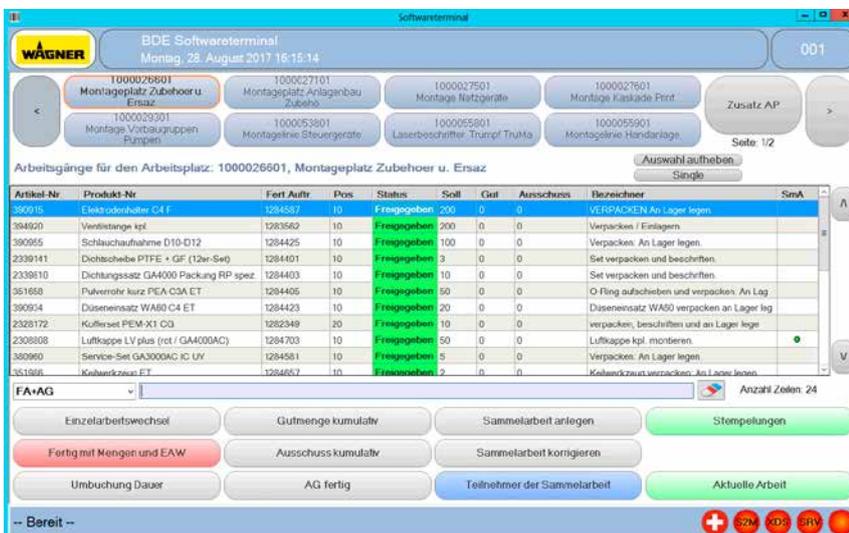
**PSIprofessional.** The project management application ensures that all project-critical information is always immediately available. At the same time, the module includes powerful workforce planning features and extensive evaluation options.

**PSIleitstand.** This application is used for detail planning, order management and production monitoring. At Wagner, the MRP data is transferred from the ERP system and processed in the graphical PSI Finite Capacity Scheduling module.

## Looking to the future with confidence

Thanks to PSI, Wagner was able to successfully extend the existing ERP system with the required functions. This not only increased planning security, it also created a reliable basis for future improvements. According to Peter Neukam: “The target/actual comparison makes product costing

even more transparent. At the same time, continuous collection of shop-floor data enables us to identify which Kaizen measures have reduced costs. This means that we can constantly optimise our production.” For Peter Neukam, the fact that they managed to stick to the schedule despite additional changes being requested by the customer is an indication of the excellent cooperation. The PSI specialists were recognised as obliging, expert project partners who were constantly looking for the optimum solution. Next comes the roll-out to other sites—a project that Wagner will be tackling with a great deal of confidence thanks to its positive experiences with PSI. 



The SDC software terminal in use at Wagner.

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Latest: PSImetals FutureLab initiative

## Designing the software of tomorrow

Changing market conditions are bringing new challenges for our customers. Entire business models are under pressure. PSImetals FutureLab is our approach to supporting our customers by developing software solutions for current and future challenges.

In collaboration with our customers and partners, we are focusing on intelligent, digital metal production and launching PSImetals FutureLab as a continuous innovation platform. We are designing the software of the future together and realising intelligent production through:

- Analysis of developments relating to Industry 4.0
- Collaborative action with customers, partners and experts
- Use of state-of-the-art IT technologies in conjunction with the PSI Java-based platform

We warmly invite all customers to help actively shape the future of intelligent production.

Various workshops beginning in autumn address the following themes.

### “Getting rid of the pyramid” workshop



Better cooperation between planning, MES and automation

**Objective:** Identifying potential areas of value creation through better communication.

### “Big data” workshop



Data analysis and decision support

**Objective:** Match advanced data analytics and real business requirements to „lift the treasures in the data“.

Scan the QR code and ask for your workshop participation without obligation.



### “Integrated product design” workshop



Integrated approach of technical order elaboration

**Objective:** Technical elaboration as a service—discuss business cases & gather requirements.

### “Reactive & collaborative planning” workshop



Realtime scheduling based on shop-floor events and scenario based scheduling

**Objective:** Identify potentials of real-time and scenario based scheduling.

### “Interfaces” workshop



Defining a standard service platform for the metals industry

**Objective:** Discuss standard ways to define, implement and orchestrate production management services for Metals..

Be there and contribute your ideas for the software of the future in the metal industry!

Further information and dates for the workshops, which are in English, can be found at:

[psimetals.com/futurelab](http://psimetals.com/futurelab). 

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Product report: Sequencing at shop floor level with Qualicision

## Scheduling for intelligent production

Heading into the fourth industrial age, the face of production sites is increasingly changing. Thanks to the proceeding connectivity of IT, machines and people, productions can be made more flexible and mobile, e.g. by automated guided vehicle systems in the sense of an Industry 4.0 swarm production. In addition, self-organising production structures at shop floor level can be established based on information and material flows, without the need to simultaneously neglect the variety of key performance indicators (KPIs) and the resulting interactions between possibilities for managing production processes.

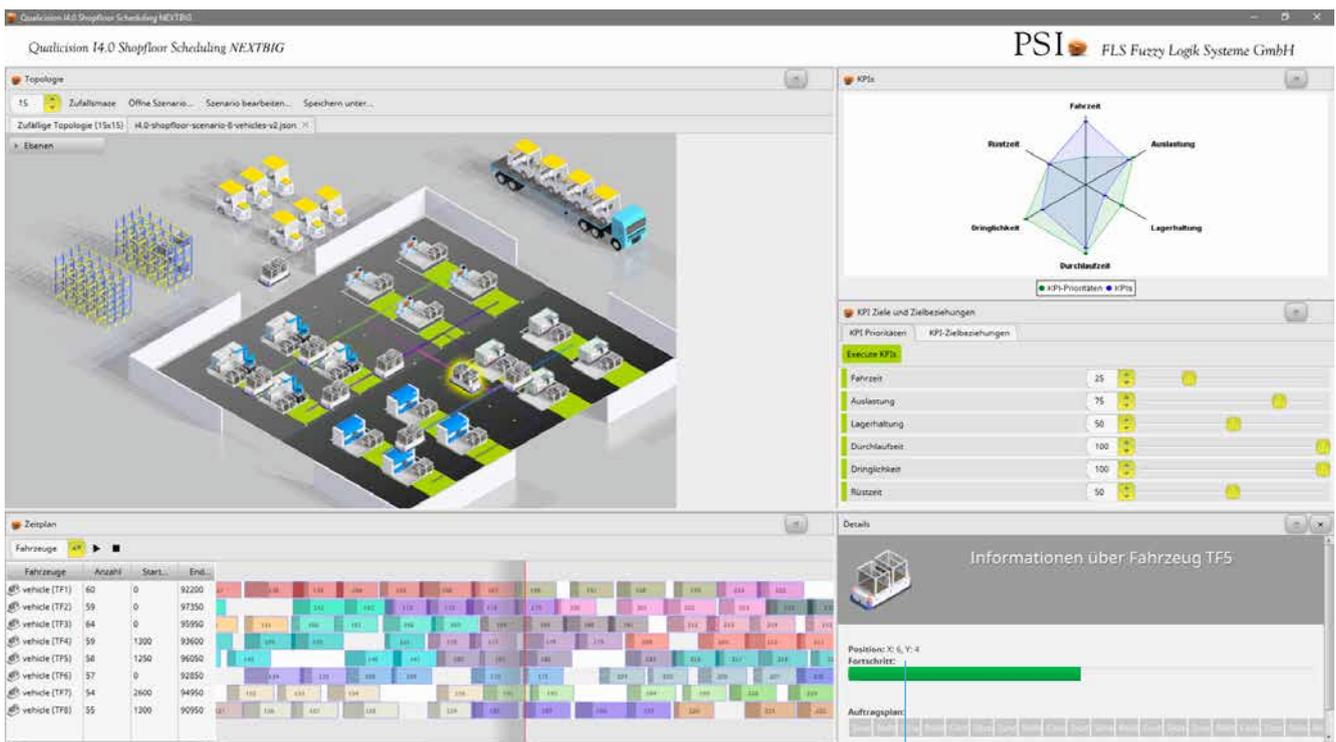
Conceptual research projects on the road to an intelligent production, in which processes become self-regulating and highly flexible in planning and control by cyber-physical systems, result in software solutions such as Qualicision I4.0 Scheduling from PSI FLS Fuzzy Logik Systeme GmbH which already assists the visualisation of order sequences at shop floor level in production planning and control. The software optimises

and visualises production orders, the utilisation of the individual manufacturing cells, and the automated guided vehicle systems that move between stations and storage areas controlled by KPIs (see figure).

### Optimising production process in real time

Qualicision I4.0 Scheduling enables users to optimise the production process in real time. In addition, even

before the start of production they can use simulations to calculate estimates at which time which settings of the KPI inputs are required so that the planned orders can be produced in a timely manner while simultaneously the KPI goals are optimally achieved through the production process, i.e. taking into account the KPI goal conflicts. The scheduling combines proven methods of sequencing which determine the sequences based on order characteristics or planned times per station, by usage of flexible resources such as automated guided vehicle systems in the sense of an Industry 4.0 swarm production as well as characteristics of the production stations at the KPI-oriented planning and control of production orders. The application is configured using the priority graph for the products



Qualicision I4.0 Scheduling enables the user to optimise the production process in real time.

to be manufactured. This provides a technical map of all relevant operations required to manufacture the respective products with their predecessor and successor relations. For example, it shows that the wiring harness in a car is forcibly first laid and then the interior trim panels of the components.

However, if there are degrees of freedom in terms of the sequence of operations, it is possible to perform a real-time situational calculation of which station conducts which operation and in what sequence. For example, for two production stations which could perform the same operation at the same time for two different orders a qualified decision can be made which

sequences are closer to the KPI production goals. Examples of such KPI goals are minimising order lead time while simultaneously maximising capacity utilisation of the entire shop floor.

### Conflict and compatibility analysis

To analyse the sequences generated at shop floor level the conflict and compatibility analysis from Qualicision is used. The analysis is calculated by using a real time, self-organising KPI goal relations matrix and controls the scheduler. Their visualisation creates transparency in processes by indicating which optimisation input requirements are in conflict with one an-

other and thus can be met gradually and intensively. The user can adjust the optimisation settings through the integrated slider in the scheduler. On the basis of Qualicision's KPI-oriented optimisation model goal conflicts are accordingly optimally balanced by using flexible resources. Thus savings of up to 15 percent can be achieved, compared to conventional optimisations in comparable applications, e.g. based on weighted sums. 

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News: Centralised maintenance and customer support

## Global product support for PSImetals

**PSI Metals is reorganising the customer support provided for PSImetals. In future, a dedicated group of specialists will deal with product maintenance after commissioning and provide support for customer projects after completion. This represents a further milestone in the implementation of the product philosophy.**

**W**hile maintenance was previously carried out within the regional divisions, from now on it will be performed by a group of maintenance specialists available globally. Of course, where necessary experts from the relevant projects will provide support as before. The support group will be led by Julie Clements, who has defined a clear objective: "It is all about good communication! We support our customers in using PSImetals, show them the potential for improvements and therefore strive to improve our customers' satisfaction."



Julie Clements, Head of Global Support.

PSImetals customers will be able to call on a professional team that will use web-based online tools to provide 24/7 support. As well as traditional services such as a telephone hotline, remote maintenance and problem solving,

the global support team will deal with product upgrades, periodic on-site visits and monthly coordination. Where required, the specialists will also be an initial contact for software expansion enquiries, user training, on-site support and implementing new business objectives using PSImetals.

During the launch phase, the team is supporting three existing customers. Initial feedback is extremely positive. As a result, the new objective for the global support group has been set—to support all new projects that move into the maintenance phase. 

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News: PSIRoads-MDS designated a flagship project for intelligent mobility

## German Mobility Prize 2017

With the PSIRoads-MDS solution, the PSI subsidiary PSI Mines&Roads GmbH is among the 10 winners of the German Mobility Prize, which was awarded for the second time this year. In 2017, the competition, sponsored by the “Germany—Land of Ideas” initiative and the Federal Ministry of Transport and Digital Infrastructure, is awarding pioneering best practices projects focussing on security. The digital, innovative solution PSIRoads-MDS optimises the use of transportation networks with a method for multi-criterial decision-making support and therefore contributes to safe and reliable mobility.

A jury of 16 experts, chaired by Dorothee Bär, Member of the Bundestag, Parliamentary State Secretary at the Federal Ministry of Transport and Digital Infrastructure, selected the 10 award-winning projects. Together with Ute Weiland, Managing Director of the “Germany—Land of Ideas” initiative, she presented the awards to the project leads of the 10 winners at a ceremony yesterday evening in the Federal Ministry of Transport in Berlin. PSIRoads-MDS allows the operators of roads to optimise traffic according to freely-defined operative and strategic targets. To accomplish this, possi-

ble measures for influencing traffic on the basis of the current and expected traffic situation are assessed using the Qualicision software for solving multi-criterial decision and optimisation tasks from the PSI subsidiary PSI FLS Fuzzy Logik Systeme GmbH. The measures for influencing traffic that lead to the optimal target are determined and proposed by PSIRoads-MDS.

Nation-wide about 170 start-up, companies, associations and research institutes submitted their projects to the competition.

“Germany is the number one land in mobility! With the Germany Mobility Prize we are promoting moving innovations “Made in Germany”. Because with the best ideas we will be the pi-



Award of the German Mobilitätspreis.



PSIRoads-MDS allows the operators of roads to optimise traffic according to freely-defined operative and strategic targets.

oneers of mobility 4.0!” stated Alexander Dobrindt, Federal Minister for Transportation and Digital Infrastructure. “The award winners show how digital innovations can make mobility safer. The people behind the projects, with their creativity and engagement, are making an important contribution to the future viability of our country,” said Dieter Kempf, President of the Federation of German Industries (BDI) and President Germany—Land of Ideas. 

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Product report: Automated master data management as a success factor in the digital world

## Increased data quality with PSIpenta

**Data is the oil of the 21st century. While it certainly contains a great deal of truth, this popularly used phrase only looks at one side of the coin. There is no doubt that digitalisation can bring huge rationalisation potential, but to really take full advantage of the opportunities provided by big data, Industry 4.0 and the like continuous master data management is essential.**

**C**urrency, consistency, validity and representation of data are increasingly becoming key factors. In simple terms, data quality is critical in achieving future economic success. We have taken a look at why automated master data management in ERP makes sense and what opportunities are already available.

To a certain extent, all ERP solutions are based on processing of data. In this sense, master data is incredibly important as it represents the business data that is valid over the long term. If this data is not correct, entire processes may run incorrectly or not at all. Thus, genuine digitalisation is only feasible with a high quality of master data.

On a day-to-day basis, many ERP users report incomplete, old or incorrect data. This is certainly due in part to the high workload involved in maintaining master data, which continues to be a mainly manual process. As a result, optimum use cannot be made of the options provided by ERP systems. Further problems caused by poorly managed master data can also occur outside the actual ERP system, for example in support if discussions with customers or remedying faults takes longer due to incorrect information, with the knock-on effect on customer satisfaction.

Automated master data management provides an opportunity to minimise the workload for the user and, at the same time, to optimise business processes. The whole purpose of ERP systems is to provide users with sustainable support and to ease the burden on them.

The VDMA working group “ERP 2020 Dialogue Master Data Management” has developed a whitepaper on the subject: <http://sud.vdma.org/viewer/-/article/render/15281816>

PSI Automotive & Industry is a member of the VDMA and is involved in various working groups.

### So what methods are available for advancing automated master data management?

On the one hand, there is already a constant exchange of data between companies, their customers and suppliers. In the coming years, as Industry 4.0 gathers pace IT infrastructures will become even more networked than they are today—across company boundaries in many cases. Suppliers know their products much better than customers do, which means that it would make sense to offer product information right away. Rather than customers having to spend time and

effort entering prices, delivery times, dimensions, weight, customs information and any changes, in the future this data will simply be provided by the manufacturers.

### Automatic data maintenance

On the other hand, digital communication, by e-mail for example, contains a great deal of information that is not currently being used. In the future, an ERP system could automatically monitor correspondence with a supplier and then, for example, automatically apply any changes of address that are communicated. At the same time, the ERP can indicate any inconsistencies if the user wants to enter different contact information, thus helping to minimise errors and simultaneously guaranteeing the user's autonomy.

### Data relevant for planning

Another opportunity for automatic maintenance of master data is in the area of data relevant for planning. In many cases information regarding sliding purchase prices, for example, is automatically updated but other data that is important for managing orders is ignored. The key is to make the best possible use of the available data in the ERP, including for master data management. The PSIpenta/Adaptive solution package provides users with effective support in this area.

For manufacturing companies, it is useful to continuously determine and evaluate master data on purchasing lead times, mean lead times, procurement type (consumption-based vs. requirement-based), order points (reporting points), order quantities and



*Automated master data management can save money.*

maximum quantities depending on possible capital commitment and security requirements. Within definable limits, this data can be incorporated into the planning parameters in the ERP on an item-specific and plant-specific basis.

#### Multi-stage requirement and consumption forecasts

Thus, master data is automatically maintained based on data from the past and future requirements on the

product side are planned according to actual orders. These multi-stage requirement and consumption forecasts enable the planning parameters to be continuously adapted to incoming order levels and the situation in the procurement market.

For example, if the user follows the suggestion from PSIpenta/Adaptive in terms of purchasing of bought-in parts, the master data is automatically updated when receipt of the goods is documented. In addition, the item-

specific delivery time is forecast, enabling better planning and utilisation in production. Automated master data maintenance reduces the user's workload and increases data quality. At the same time, it enables inventories to be reduced, mean lead times and on-time delivery to be increased, and liquidity to be maintained.

Further information about the APS solution PSIpenta/Adaptive can be found at:

[www.psipenta.de/en/erp/advanced-planning-scheduling/](http://www.psipenta.de/en/erp/advanced-planning-scheduling/) 

Event: PSI Future Mobility Forum 2017 in Aachen

## Change as an opportunity in the automotive sector

**Industry 4.0 and Smart Factory have become ubiquitous buzzwords and herald a revolution in the automotive sector. But very few talk about what exactly that means.**

**W**e want to talk to you about what specifically these developments mean for your company and what opportunities they present. To do this, we would like to cordially invite you to a special event at our customer StreetScooter in Aachen on 26th September 2017.

PSI Automotive & Industry GmbH already supplies effective solutions for tomorrow's digital world. These are being used on a day-to-day basis at StreetScooter. In a series of exciting technical presentations, electric vehicle manufacturer StreetScooter and the BI experts from Evidanza and PSI will report on their experiences. Themes

will include mobile apps, the new and individually customisable user interface PSI-Click-Design and modern SCM solutions.

All information and registration details can be found at:

[www.psipenta.de/fmf2017/](http://www.psipenta.de/fmf2017/) 

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News: PSImetals as an integrated supply chain planning and full process quality management system

## Harmonised production processes at Chinese MaGang

PSI Metals has been awarded by its long-term Chinese customer MaGang with the implementation of PSImetals Planning which will cover all plants from hot iron to service centres and PSImetals Quality as a full process quality management system.

Since 2015, MaGang was looking for a new IT solution for their supply chain planning and integrated quality management for all flat production lines. In the end, MaGang decided in favour of PSI for both projects. PSI's solution, based on one factory model, is capable of harmonising MaGang's production processes. MaGang and PSI have already been working together for more than ten years.

Vertically, the goal of the supply chain planning system is to build a solution from strategic planning, sales and order planning with online due date quoting, flow planning to order and line scheduling. Horizontally, from hot iron demand, steelmaking, hot rolling, and

cold rolling to MaGang's distributed service centres all over China.

As an integrated solution, the quality management system includes centralised order dressing and quality standard management as well as a quality know-how database. Based on process data acquisition a comprehensive process analysis, online quality decision making, cross-line defect position analysis as well as centralised Statistical Process Control (SPC) is provided.

"We have worked with PSI for 12 years. With the award of both projects via a bidding process, PSI and MaGang will continue their trustful cooperation. We are convinced that with its experiences and its proven

solution for planning and quality, PSI will harmonise our IT landscape optimally", says Zhang Wenyang, Vice General Manager at MaGang.

MaGang (Group) Holding Co., Ltd. is the seventh-largest state-owned Chinese steel-making enterprise which was founded in 1958. Presently, MaGang's steel production capacity amounts to 18 million tons per year. Worldwide, MaGang owns the top production lines for thin strip cold-rolling and thin strip hot-rolling, strip hot-galvanizing, strip colour coating, silicon steel, H-beam, high-quality wire and rod, train wheel, etc.

[www.magang.com.cn/](http://www.magang.com.cn/) 

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News: Software system for strategic planning and optimisation of logistic networks

## PSIglobal optimises Bosch's Supply Chains

Robert Bosch GmbH's Central Logistics, headquartered in Stuttgart-Zuffenhausen, licensed the PSIglobal software system from the PSI subsidiary PSI Logistics GmbH in April 2017 following a six-month test phase.

The Bosch Group consists of the Robert Bosch GmbH as well as about 440 subsidiaries and regional companies in 60 countries. In designing optimised logistic structures for the supply of production plants as well as for distribution, amongst other things for

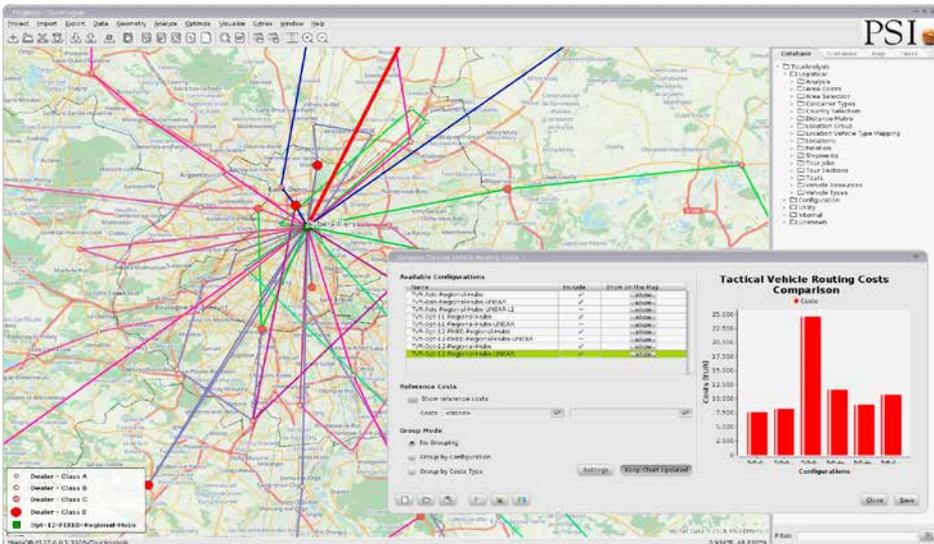
automobile parts to leading automobile manufacturers, Bosch depends on PSIglobal.

### Integrated scenario technology

The strategic planning and optimisation software combines targeted operative data for management analysis.

With the integrated scenario technology, processes and transport chains of multi-phase and multi-modal supply chains can be designed and the primary parameters and sensitivities identified.

With the implementation of the PSI standard software, Bosch employees can visualise and optimise supply streams as well as production and storage sites around the world. This also includes support in the allocation of new products to existing production



PSIglobal users can solve complex tasks related to Supply Chain Management independently.

sites, taking production and transport costs into consideration.

As a leading IoT company, Bosch offers innovative solutions for smart

homes, smart cities, connected mobility, and Industry 4.0. As early as the test phase, the staff at Bosch was intensively trained by PSI, so as to be able to optimally use the multitude of system functions.

For the purpose of additionally supporting the complex planning tasks, PSI also performed an after-sales service including web sessions. 

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News: Improved logistics processes reduce production and procurement costs

## Nordzucker AG optimised with PSIglobal

Using the new PSIglobal software supplied by PSI Logistics GmbH, Nordzucker AG in Braunschweig will in future be able to organise supplies of raw materials to its plants taking consideration of capacities, production, procurement and transport costs on a daily basis. The new module based on PSIglobal permits Nordzucker to achieve additional, previously unattainable, cost reductions.

**D**uring development of the new core module, focus was attributed to the requisite functions and algorithms for combined optimisation of production and logistics in day-to-day business operations. The module enables Nordzucker to achieve additional, previously unattainable, cost reductions.

### Calculation of most cost-efficient supply

In real time, PSIglobal receives from an upstream SAP system at Nordzucker capacity and demand key figures for various Nordzucker plants

and the current and anticipated harvest yields on the suppliers' sugarbeet fields. On this basis, the PSI software calculates the most cost-efficient supply of individual production facilities taking account of specified parameters. This occurs both before the beet campaign for selecting the least expensive beet contracts and during the campaign for controlling the logistics associated with beet deliveries.

### Analysis of planning results

The exchange of data between the PSI system and the upstream SAP ERP system at Nordzucker takes place

via an interface using SAP Process Integration (PI). The planning results calculated using the optimisation module can be analysed at any time by the Nordzucker beet logistics department using the PSIglobal software. The optimisation algorithms on which they are based make it possible to weight the framework parameters as required and implement further specification tests.

The commissioning of the optimised supply control at Nordzucker with the PSI system already took place at the end of May 2017. 

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Event: PSI Logistics participating in four autumn events

## Save the dates

At four events this autumn, PSI Logistics will be involved in an extraordinary dialogue with customers and other players in the market.

These begin with the 5th Supply Chainers' Conference EXCHAIiNGE, on 26th and 27th September 2017 in Frankfurt am Main, where the latest developments in the products from the PSI Logistics Suite will be presented.

From 10th to 13th October at **inter airport europe** in Munich, the focus

will be on the PS Lairport solutions, which PSI Logistics will be presenting at the airport association GATE's stand (Hall A5, Stand 1174).

At the **34th German Logistics Congress** in Berlin, representatives from PSI Logistics will be available to deal with enquiries and share ideas in the media lounge provided by media partner Mainblick.

During the **31st PSIPenta User Group (IPA)** event from 9th to 10th November 2017 at the Vienna Hilton am Stadtpark hotel in the Austrian capital, PSI Logistics will be presenting on the subject of "Internal transport management".

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Event: IPA 2017 in Vienna

## Digitalisation, Industry 4.0 and the Internet of Things

With the theme "Working with technology to create value", the annual meeting of the "PSIPenta User Group" (IPA) will be held on 9th and 10th November 2017 at the Vienna Hilton am Stadtpark hotel. Issues relating to digitalisation, Industry 4.0 and the Internet of Things will be discussed in a range of workshops, presentations and the ever-popular partner exhibition.

The workshops, in which customers talk about their experiences with PSI software, have always been particularly popular. This year, Aequator AG will be reporting on efficiency improvements

achieved by combining PSIPenta with eKanban. Schöfer will explain the advantages of integrated logistics processes for SMEs, and Kampf will outline how purchasing optimisation using myOpenFactory works. Meanwhile, SD Automotive will be presenting on Finite Capacity Scheduling, and we are expecting an exciting presentation from Bahmüller about quotation configuration and costing. Alongside all of these, there will be presentations from the PSI Group itself on "Qualicision-based KPI optimisation as a new order principle for Industry 4.0", "Internal transport management for PSIPenta" and

"PSI Industrial Apps meet PSICommand: Perfection in field force management". One of the highlights will be the keynote presentation on the issue of security by Colonel

All the information regarding the IPA 2017 and registration details can be found in our customer community PSIng:  
[www.psing.org/termine/ipa-2017](http://www.psing.org/termine/ipa-2017)

Michael Bauer, followed by an evening programme showing off the best of Vienna.

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Lively discussions are expected once again at the IPA this year.

Event: PSI exhibits at China Coal & Mining Expo 2017 in Beijing

## Maintenance in mines with PSImining

From 25th to 28th October 2017, PSI Mines & Roads GmbH will be presenting the PSImining control system for mines at the China Coal & Mining (CCM) Expo 2017 in Beijing.

The integrated PSImining solution combines monitoring, control, automation and resource planning in a single system. Thanks to enhanced integration of fuzzy logic algorithms, PSImining will in future cover the key area of maintenance in mines.

### Predictive maintenance

With the newly integrated maintenance module, PSImining supports mining companies in increasing efficiency in maintenance. One of the highlights is predictive maintenance. Mathematical methods are used to identify patterns and relationships be-

tween shop-floor data and events, allowing future sources of faults to be forecast in real time. This enables the system to suggest staggered maintenance measures to prevent unexpected faults and maintenance events. 

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## EVENTS

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



|                |  |   |
|----------------|--|---|
| 26.09.2017     | PSI Future Mobility Forum 2017<br>Aachen, Germany                          | PSI Automotive &<br>Industry                                    |
| 26.–27.09.2017 | EXCHAiNGE—The Supply<br>Chainer's Conference<br>Frankfurt am Main, Germany | PSI Logistics   |
| 28.–29.09.2017 | China International Forum on<br>Manufacturing Industry<br>Tianjin, China   | PSI Automotive &<br>Industry                                    |
| 02.–06.10.2017 | ABM WEEK 2017<br>São Paulo, Brasil   | PSI Metals  |
| 10.–13.10.2017 | inter airport europe<br>Munich, Germany                                    | PSI Logistics   |
| 17.–18.10.2017 | 9. Deutscher Maschinenbau-Gipfel<br>Berlin, Germany                        | PSI Automotive &<br>Industry                                    |
| 25.–27.10.2017 | 34. Deutscher Logistik-Kongress<br>Berlin, Germany                         | PSI Logistics   |
| 09.–10.11.2017 | IPA 2017<br>Vienna, Austria  | PSI Automotive &<br>Industry, PSI Logistics,<br>PSI FLS, PSI EE |

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