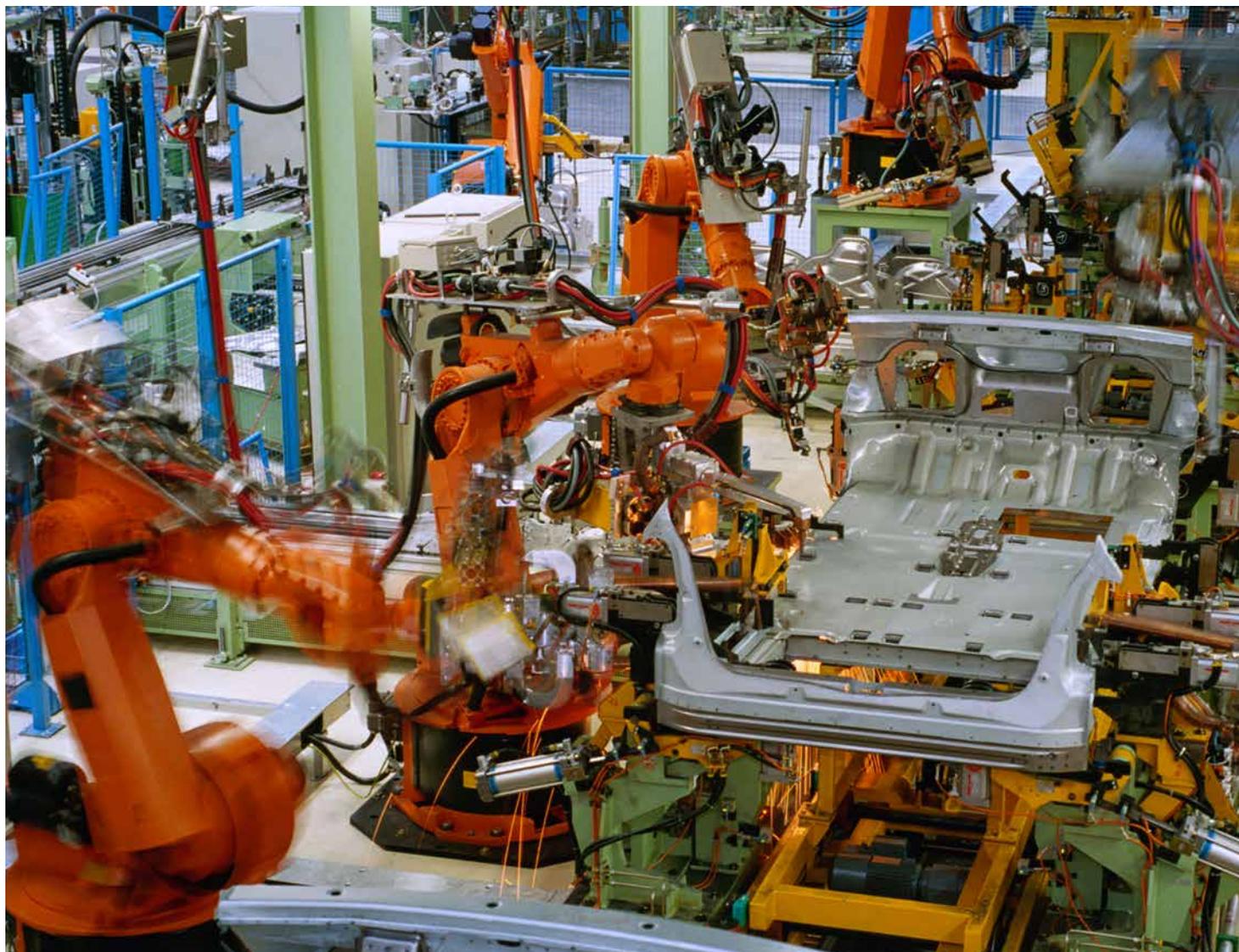


# PRODUCTION manager

Magazine for logistics & production



“Operating System” for versatile production plants

## BaSys 4.0—Basic System Industry 4.0

### User report

**Digitised aluminium  
production**  
Ready for the future with  
AMAG 2020

### Interview

**Applications of the Internet  
of Things under live  
conditions**  
Smart parcel—building  
blocks for digital logistics

### Product report

**Qualicision® learning component  
PSIqsp supports KPI-oriented  
process optimisation**  
Optimisation of business  
processes

## EDITORIAL

Dear readers,

The fourth industrial revolution—Industry 4.0—is the result of the changed production conditions in Germany and Europe. One key objective is assuring the competitiveness of German and European industry in international competition in the supply chains. It is no longer only individual companies or company groups that are in competition for the favour of the global customer. The performance of these production networks is decisive for the success or failure in global markets.

The concept of “collaborative productivity” at the core of Industry 4.0 brings a new dimension to the performance of value creation activities that can achieve a significant increase in productivity. Using powerful production management systems, production



systems of the future will need to be able to be optimised largely independently. The emphasis is on the real-time exchange of relevant information across company boundaries and the simulation of alternative strategies in the form of what-if scenarios. However, Industry 4.0 must also be understood as a future concept for society as a whole—“Society 4.0”—

in which people, perhaps more than ever, are at the forefront. It is a question of allowing people to perform high-quality and creative work and giving them the opportunity to achieve a work/life balance—with just as much flexibility as the production systems of the future that will be controlled by people.

Discover this and more from the PSI divisions in the current issue of Production manager.

Enjoy reading!



Karl M. Tröger  
Business Development Manager  
PSI Automotive & Industry GmbH

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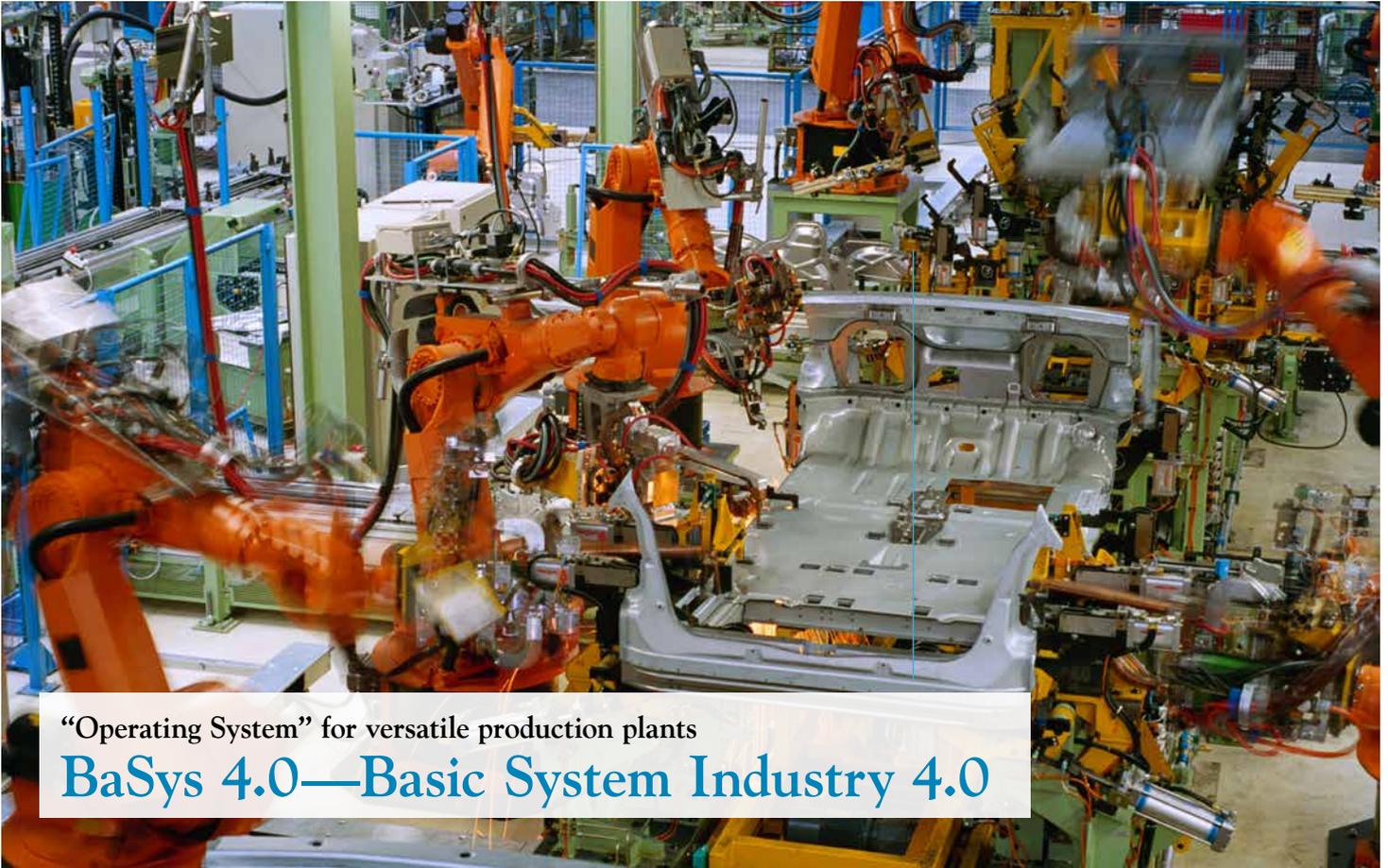
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“Operating System” for versatile production plants

## BaSys 4.0—Basic System Industry 4.0

As already frequently recognised, the economy is on the threshold of a fourth industrial revolution. Against the backdrop of economic challenges, particularly those in Germany, the aim of the digitisation in the manufacturing sector is to ensure that manufacturing companies can successfully adapt to the ever greater volatility of the markets, new global competition, rising version numbers and increasingly customised products up to batch size 1.

**T**he adaptability required for the fourth industrial revolution is the key distinguishing feature of this technology. However, adaptability must not be confused with the production flexibility that is already being realised today. A flexible production plant means production lines that can be adapted in a specific area of flexibility; however, flexibility cannot be implemented efficiently. In contrast, versatile plants can be adapted to entirely new products extremely cost effec-

tively, even if these products are not considered during the planning of the plant. The realisation of this adaptability requires new methods and technologies that enable production process to be dynamic.

### Developing products and plants in parallel

Another aspect is the parallelisation of product and plant development. Developing in parallel is, in part, already state of the art in mass production and even the automotive in-

dustry, but the standards need to be raised to a much higher level. It must be possible to take the flexibility and versatility of “by design” into consideration on both sides.

The gradual implementation of the concepts will see Industry 4.0 increase the penetration of production processes with IT technologies. More and more people have to interact with software systems. The efficiency of order processing is (must be) further enhanced by mobile solutions in the production environment.

### Optimal interoperability thanks to standardised communication

The automated communication capabilities of machines and plants, but also business partners, are a critical factor in the success of implementing Smart

Factory concepts. This communication must be based on standards, both in terms of content and protocols (“All-IP”). Only in this way can a satisfactory level of interoperability be achieved. A wide range of initiatives have been developed, not least as a result of the activities taking place around Industry 4.0. One example is ERP 2020 as carried out by the VDMA. The focus is on the basic requirements for ERP systems and MES applications, such as connectivity, enhanced usability, support of mobile processes and also significantly improved agility of systems and business relations.

### User-friendly interface

Ultimately, Industry 4.0 requires integrated software solutions (in the field of production and logistics) that provide all existing data and information in a user-friendly interface. The resulting data is visualised and used for the continuous optimisation of production, such as sequences, drift compensation etc., and for product improvement. The obvious fields of action and objectives include increasing the availability of production systems and reducing the cost of maintenance and repair work, stable production processes and consistently high product quality as well as reducing the costs associated with failure, in addition to punctual deliveries in the right quantity.

### Self-learning systems and digital twins

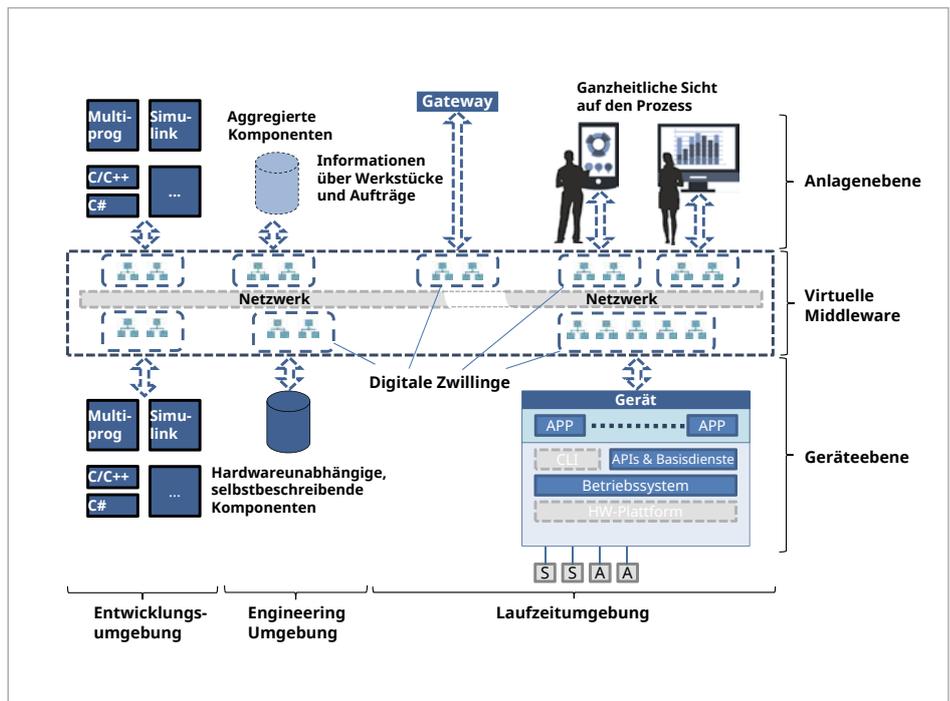
These objectives can be achieved by measures in the field of predictive maintenance, machine data acquisition and continuous monitoring of production and quality data. Completely new approaches such as vis-

ual computing enable correlations in the data base to be identified and self-learning systems to be introduced to support decision-making or even automated initiation of necessary activities.

Simulations and sequencing act as “digital twins” as an image of the current plant configuration and the current and future order situation—as a timeline containing all order, plant

for networking business partners in value-added networks.

Exchanging order-specific information is no longer enough—the availability of certain capabilities of a plant or an entire production system also needs to be factored in. Only by having this information is it possible to automate a technology comparison between required and available capabilities. The data models in the



Central scientific and technical approaches of BaSys 4.0.

and even product-related information. The engineering of products is not only limited to geometric and other product characteristics, but it also provides the configuration information needed to make adjustments to the plant. This simultaneous product and production engineering requires the functionality of modern-day MES or PLM systems to be expanded. Comprehensive networking of suppliers and producers Requirements for the comprehensive networking of suppliers and producers (connected world) can be derived from the demands

information layer must therefore be adapted to the necessarily systems and suppliers across the board. The variety of existing standards, such as for describing products and resources, must be applied consistently.

### Event-driven production control

The expected increase in the flexibility and autonomy of future production systems is making it increasingly difficult to comply with defined processes and to describe the diversity of these processes at all. The traditional process analysis and subsequent mod-

elling is being replaced by an event-driven production control in the short and medium term. In this case, it is less about processes described in minute detail and more on rules, possible events and alternatives. Switching configurations or modifying a product mix may then actually be the rule and not the exception. Today's order processing systems must take this into account. Ultimately, this is about the departure from the deterministic, multi-stage planning and organisation of work content to adaptive and customisable algorithms. The adaptability of production systems increasingly requires simulation-based planning and organisation systems. Customised products with their own identity and communication capability must be mapped in the order processing systems—be it with regard to production or the after-sales service. Depending on the application, it must be possible to monitor or even manage these IT systems in the field or within the plant itself.

### Bringing users and providers together

New requirements for software solutions are expected to emerge in the industrial environment alongside the progressive implementation of Industry 4.0 concepts. It will be important for users and providers of solutions to come together and jointly develop pioneering solutions based on use cases, leaving behind the “old” world of production control with its restrictions, fixed constraints and Excel tables. To make this change possible, old paradigms and current system limits or concepts need to be disregarded and an agile environment made up of hardware, software and people to be created in the digital factory.

### Collaborative project BaSys 4.0

A multitude of structural, functional and non-functional requirements have arisen from these challenges. In the same way as basic platforms used in other domains to simplify and standardise the development of complex systems, a basic platform is needed as a reference to stimulate and support the practical implementation of the fourth industrial revolution. This “AUTOSAR for Industry 4.0” is defined based on existing technologies and necessary standards, exchange formats, basic services and interfaces that support efficient networking and conversion of production plants. The intention is to realise a service-based reference architecture that defines the limits of an Industry 4.0 system yet is flexible enough to unite the needs of different industry sectors.

### Integrating an Industry 4.0 component

In addition, further profound changes to the order processing systems (ERP and MES) are expected. It is about the integration of another IT system (which was scarcely or not at all considered previously) in these software systems: the Industry 4.0 component. This “smart product” has communication skills and capabilities for data processing. It may be a product in use (in the field) or a stationary system in the production. Data is supplied continuously and must be considered by the order processing systems in a different context or the data must first be placed in a context (semantics, ontology). These perspectives relate to plants, orders and products, and the result is order data and usage data. However, the communication capabilities of the smart prod-

ucts have no value if the assets are not clearly identified. As a result, all types of assets must be reflected in all possible forms in the order processing systems.

### PSI: Standardised coupling from the sensor through to the ERP

The findings are validated by various demonstrators. PSI Automotive & Industry has the task of mapping

1 July, 2016 saw the launch of the German Federal Ministry of Education and Research (BMBF) funded collaborative project “Basic System Industry 4.0” (BaSys 4.0).

With 15 partners from industry and research, the project (under the coordination of the Fraunhofer IESE) has EUR 12 million in funding and runs for three years.

this dynamisation of production in the higher layers of production planning and control processes. A key element of this mapping is coupling with automation technology and the resulting base system via a standardised gateway and the use of digital twins in the ERP and MES environment. The necessary extensions are primarily implemented using PSI solution architecture. 

(See also: [www.basys40.de](http://www.basys40.de)).

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User report: Digitised aluminium production

## Ready for the future with AMAG 2020

AMAG, the Austrian aluminium producer, has been pursuing a consistent growth and modernisation strategy for several years now with its AMAG 2014 and AMAG 2020 projects. The developments around Industry 4.0 provide additional impetus and highlight the importance of digitisation as part of the chosen path. If seamless integration of new production plants, rising requirements in terms of real-time transparency for ongoing production or synchronous quality monitoring; AMAG has chosen PSI as its partner to realise these objectives. PSI has now supported this strategy for a few years and will continue in the future to be a guarantee for a high-performance IT foundation for implementing digital production at AMAG.

**A**MAG, which is based in Ranshofen, Austria, is using the AMAG 2014 and AMAG 2020 investment projects to meet increasing market requirements with the help of complexity and efficiency gains. In doing so, the intention is to fully exploit the opportunities that modern production plants offer in terms of

self-optimisation, process feedback messages, process data and communication present. Investment in a new production management system was therefore needed for this purpose. A customised version of the system previously installed supported AMAG in recent years, however, it was not designed to cover future challenges.

### Integration is the key

The new system must therefore be able to bring into line the commercial processes in SAP with the production-related business processes of rough, detailed and plant planning through to actual production at the plants. In addition, the new solution is designed to function as a platform to integrate all plants that form part of the production process. Maximum flexibility is therefore required from the platform, because not only existing plants must be connected during the initial phase, but all new plants will be installed one by one as part of AMAG 2020. But what does AMAG hope to gain from this investment? Dr. Werner Aumayr, head of the IT department: “The introduction of a new production management system and the uniform connection of all plants



Digital production in Europe's most modern aluminium factory.

and processes involved in production has created the prerequisites to evaluate future data volumes as defined by smart data analytics, on the one hand, for process improvement and, on the other, for predictive analysis as well.”

### A balancing act with a net

To minimise the risk of replacing the system, and to avoid a balancing act without a net, PSI has been chosen to implement the first prototype. Only a limited production area was therefore considered. Thanks to the experience gained in this preliminary phase, both parties were able to build the trust necessary to begin a long-term partnership. “For us, the modern system architecture, specialisation in our industry and the high degree of adaptability were the reasons why we finally chose PSI Metals for the solution”, stated Aumayr.

In addition to the existing plants, in recent years the new plants for the “AMAG 2014” investment project have been integrated based on the PSI*metals* product. Using PSI at this stage guarantees excellent production quality for all plants. Currently, more than half of all plants are running the new solution, with all other plants being integrated one-by-one.

The mutual understanding of their respective operations forms the basis for such a strategy. IT integration of a new plant, its installation and commissioning must all be coordinated with each other, which requires the client and supplier teams to be closely integrated. “Isolated thinking would be out of place. Only ongoing and trusting communication enables us to successfully implement this complex and time-consuming project”, stressed Roger Necker, PSI project manager.

## In demand

**Dr. Werner Aumayr—CIO AMAG Group**

**PSI:** What is the role of digitisation in the framework of AMAG 2020?

**Dr. Aumayr:** Digitisation does not just play a role in AMAG 2020. It is the wish of our customers, and therefore our aim, to map all data gained during the production process.

**PSI:** In your opinion, is the aluminium industry a pioneer or latecomer in the area of Industry 4.0?

**Dr. Aumayr:** Due to extremely long plant lifetimes in the aluminium industry, complete digitisation poses a huge challenge, because plants that are several decades old need to be integrated alongside the latest equipment. But I would not describe the industry as a pioneer or a latecomer, but rather as a willing integrator.

**PSI:** In your view, what are the biggest advantages of the new PSI system?

**Dr. Aumayr:** Thanks to the new PSI system, it is possible to achieve the objective of paper-free production and its modern interface supports the migration of users from paper, with computer monitoring, to completely digital processes.

**PSI:** How would you evaluate the collaboration of the AMAG and PSI teams and what proportion of the project’s success can be attributed to this cooperation?

**Dr. Aumayr:** Working together in a joint team is crucial to the success of a project. The continuity of team members and the balancing act between formalism and pragmatism are the most significant aspects.

### Industry 4.0 is not an end in itself

The main objective of all activities was, and is, to connect one of the most modern facilities in the aluminium industry with state-of-the-art production software solutions; this connection allows production processes to be integrated and aligned according to Industry 4.0.

The real-time feedback opportunities gained using the new software solution create the conditions necessary to enable automated decisions to be made based on the current production situation and therefore to be made

quickly. The result is shorter mean lead times and thus a higher level of customer satisfaction thanks to faster delivery times.

The AMAG and PSI project teams are already working on preparations for integrating the AMAG 2020 investment project plants, which will go into operation throughout this year. 

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Interview: Applications of the Internet of Things under live conditions

## Smart parcel—building blocks for digital logistics

Center Connected Industry and PSI Logistics GmbH present “Smart Parcel” in the demonstration factory at the RWTH Aachen campus. Speaking to Production manager, Christian Maasem, Head of Center Connected Industry in the Smart Logistic cluster (also at the RWTH Aachen campus) and Dr. Hans-Thomas Nürnberg, Head of Technology at PSI Logistics GmbH, explain the background and aim of the application.

**M**r Maasem, what role does Center Connected Industry (CCI) take on the RWTH Aachen Campus?

Maasem: As a centre in the Smart Logistics cluster, the CCI forms the interface between research and industry. The centre offers more than 50 “registered” industry partners the opportunity to convert new technologies and possibilities offered by the Internet of Things directly into productive benefits; this is done by early evaluation and testing in industrial consortium projects.

**This sounds a bit abstract!?**

Maasem: Only at first. Against the backdrop of digitisation, Industry 4.0 and the Internet of Things and services, the process is about the application-related (further) development of new networked solutions, which are analysed in an innovative test bed and optimised until they are ready for the market. To this end, we use various locations, including the demonstration factory and the FIR innovation



Christian Maasem (left) and Dr. Hans-Thomas Nürnberg (right).

labs at RWTH Aachen University—all of which act as a real environment for prototypical application cases for Industry 4.0. In addition, we use them so that other industry partners can experience the project results and find them tangible.

**What role does PSI Logistics play in this process?**

Maasem: At present, bodies for electric vehicles and mobile pedelec-driven fun sport karts are produced by e.Go Mobile AG on the demonstration factory production lines. On the one hand, this places high demands on the order control system,

while on the other, it opens up new business processes. As one of the registered members in the Smart Logistics cluster, PSI Logistics GmbH uses IT expertise in transport management, mobile applications and technologies for the Internet of Things (IoT) to provide the essential IT building blocks of the implemented showcase. PSI Logistics GmbH is the ideal partner for the development and testing of new technologies in innovative scenarios of networked information provision.

**Dr. Nürnberg, what specific benefits does PSI Logistics add?**

Dr. Nürnberg: Our experience in the field of digital networking of logistics processes. Even now, the demonstration factory brings Industry 4.0 to life. Our IoT-based solutions include the Internet of Things, which becomes tangible. In combination with the major topic of electric mobility, the coordinated production control of electric vehicles in the demonstration factory and the future challenges for operating large electric mobile fleets, we are also focusing on functions of our transport management system PSItms—such as when planning trips for electric vehicles, taking charging cycles, charging stations and energy demand into account—as well as the contactless identification and information col-

lection using IoT chips. Smart Parcel supports intralogistical processes on one hand and the supply chain as a whole on the other.

### Could you put this into concrete terms?

Dr. Nürnberg: Happily. The IoT chips, such as iBeacons with Bluetooth transmitters, not only make individual items or charge carriers individually identifiable. They also feature sensors that collate and make additional information available during transport (such as temperature, position, acceleration, shocks or light conditions); this is provided via the data for tracking & tracing applications. In terms of supply chain applications, this means significant added value thanks to improved transparency of information.

### Could you provide any examples?

Dr. Nürnberg: First of all, different levels are introduced for tracking using IoT chips. Depending on the goods or load carrier, these levels range from Bluetooth communication via UWB systems for indoor localisation, through to worldwide position recording by GSM and GPS trackers. The automated information acquisition and the range of available information opens up further application options. Linking information with the PSItms then enables dynamic control of the transport processes and for sta-

tus information to be provided for predictive optimisation.

Maasem: By collecting and processing the IoT chip data in the demonstration factory, we determine in what way and in which applications the technology brings is the most beneficial. From this, we develop new application cases. Ultimately, our goal



*Presentation of the IoT showcase "Smart Parcel" in the demonstration factory at the RWTH Aachen campus.*

is to test future-oriented technologies in specific applications with industry partners and to develop them in such a way that they are quick to adapt to other application scenarios.

### Where do you see the future viability of Smart Parcel?

Maasem: Well, first of all, in the numerous application options. With the IoT chips we are currently testing, in future the parcel will find its way to the supply chain itself and look for the appropriate means of transport to arrive at the addressee just in time. As part of this process, we look at the data transfer and the exchange of information in the internal flow of goods and in the higher-level supply chain, as these are

scaled accordingly. If the automation mechanisms work in-house, then they can usually also be implemented across multiple locations.

### Transport means transport!?

Maasem: Exactly. Dr. Nürnberg has already mentioned it, but planning trips for electric vehicles is interesting, taking charging cycles, charging stations and energy demand into consideration. After all, in addition to the PSItms, the expertise offered by the PSI Group also comes into play with the controlling of energy supplier networks. In any case, intelligent packages and charge carriers, as shown with Smart Parcel, are key building blocks for digital logistics scenarios.

Dr. Nürnberg: We have these scenarios and then there is the practical environment of the demonstration factory to provide an ideal framework for testing and validating the relevant modules of our IT systems and possible applications of IoT chips.

**Mr Maasem, Dr. Nürnberg, thank you for sharing these interesting insights.** 🌐

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News: Leading Swedish aluminium company Gränges decides for PSI

## PSI metals as integrative MES solution for Gränges

PSI received an order from Gränges AB in Sweden to implement PSI metals as a production management solution to harmonise their production processes worldwide. Gränges, a global leading aluminium company focused on rolled products for the heat exchanger industry, aims to establish globally integrated production processes based on one common platform.

Line Scheduling, Order Combination, as well as Production and Quality Execution. To guarantee seamless integration of all business relevant IT systems, PSI metals will be fully integrated in the ERP system and the automation

Today Gränges operates different MES systems in their sites in Sweden, China and in the U.S. which are developed and maintained in-house. To standardise business processes and to reduce administration and maintenance efforts Gränges implements PSI metals as integrative production management solution from Planning to Execution. First part of the solution will be installed at the finishing area at the Finspång site in Sweden but finally PSI metals will cover all processes of aluminium production: melting and casting, cladding, hot and cold roll-

*In addition to the benefits of having one solution for all sites we also expect improvements by the new online planning solution through an ongoing consideration of the current production situation. Furthermore we want to optimise our order preparation process and PSI convinced us that their solution will help to tap our potentials.*

**Kim Vilhelmsson**

MES project manager, Gränges AB

ing as well as annealing and slitting. The integrated solution comprises the modules Order Dressing, Order and

systems on shop floor. The overall solution for Finspång is expected to be implemented by the end of 2018.

Gränges offers a complete range of clad and unclad rolled aluminium products in various widths, gauges and tempers which are used for brazed heat exchangers. Every second car produced in the world today contains material manufactured by Gränges. Today Gränges is operating as a global group with approximately 1 500 employees and sales of more than SEK 10 billion. 

[www.granges.com](http://www.granges.com)



Cold storage of flat-rolled aluminium coils at Gränges.

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Product report: Qualicision® learning component PSIqsp supports KPI-oriented process optimisation

## Optimisation of business processes with Qualicision®

The ever-increasing significance of KPI systems (key performance indicators) for optimising business processes and controllability to be ensured means that the need for flexible and intuitive planning tools is on the rise. The PSI company F/L/S Fuzzy Logic Systems GmbH supports the KPI-oriented process optimisation with Qualicision®, its multicriteria software solution.

To date, optimisations to corporate KPI systems have primarily been based on the knowledge of individual employees. In the day-to-day planning and control of processes this means that interactions between individual KPIs, their necessity as well as their prioritisation is assessed rather intuitively. Therefore, planning strategies are not based on facts systematically derived from the process at hand. And this is where non sector-specific PSIqsp (see figure 1), the Qualicision® learning component for KPI-oriented process optimisation, comes into play.

### Situational balancing of goal conflicts

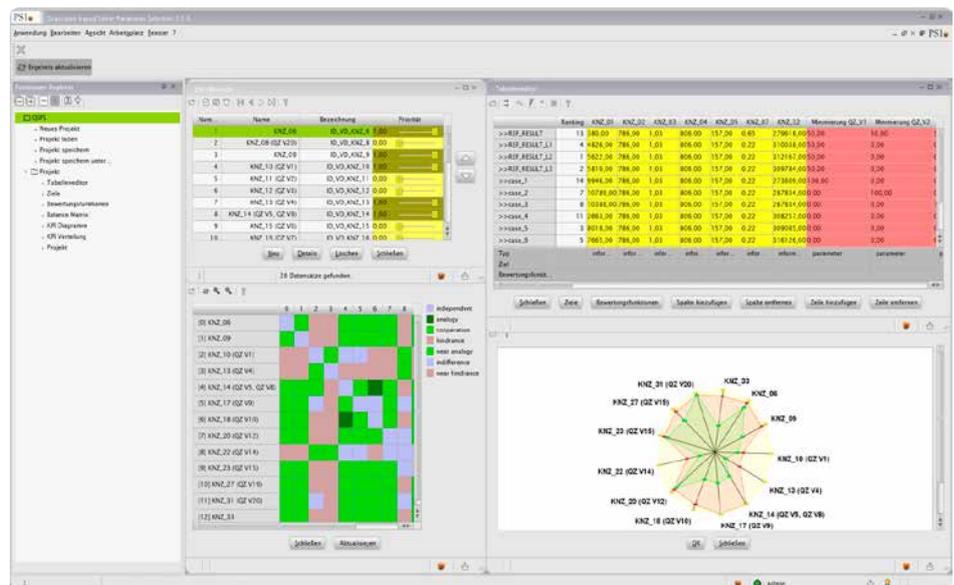
Based on KPIs derived once through process knowledge, processes are initially optimised using Qualicision®-based KPI optimisation software. Different solutions resulting from the KPI optimisation serve different KPIs in different ways. At the same time, the target conflicts are also balanced situationally. This balancing is controlled through the KPI weighting (goal prioritisation). Subsequently, characteristics of potential solutions are calculated automatically. In automatic planning runs with differently set priorities, the PSIqsp learning software then determines possible KPI characteristics based on representative process data.

### Derived KPI goals with Qualicision® balance matrix

The KPI goals are adjusted based on these results and the customer-specific KPI characteristics. This is done through special ranking proce-

### Interactive adjustment of KPIs for situational target achievement

PSIqsp not only allows the interactive adjustment of KPIs for situationally appropriate target achievement. It also enables the user to further configure and optimise the most successful KPI profiles via the integrated learning component. The modern, user-friendly Java-based PSIqsp user-interface (which employs the PSI Java-based framework



PSIqsp KPI-oriented process optimisation with Qualicision® as PSI-Java-based-components (PJF).

dures that learn a Qualicision® balance matrix. The systematic similarities in the goal priority settings of the data records can be derived and fixed from the Qualicision® balance matrix.

Working from numerous program cycles, Qualicision® is able to support the user to determine the optimal setting parameter values in the sense of optimally achieving the goal KPIs.

[PJF] also facilitates online and, where necessary in respect of real time aspects, the adjustment of optimisation strategies to the current target requirements. 

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Event: Industry 4.0 conference and PSImetals user group

## Digitisation of the metal industry in focus

Digitisation in metal production—a broad field with huge potential. In order to bring concepts and realities into line, PSI Metals is organising two events on this topic in May 2017. With its partner company Primetals Technologies, the customer Tata Steel IJmuiden and PSI as the aligners, the events will be looking at ideas and requirements from the perspective of producers, plant suppliers and IT service providers. The user group is also using the events as an opportunity to exchange experiences regarding PSImetals solutions.

### Industry 4.0 conference

On 9 May, 2017, Primetals Technologies and PSI Metals invite you to foray into seemingly uncharted territory. While the whole world is talking about initiatives such as “Industry 4.0”, “China 2025” or the “Industrial Internet Consortium”, the associated issues are hard to pin down and understand. Case examples stemming from innovative metals producers and insights into new technologies with huge potential for industry will provide insights

into scope of the challenge and the knowledge and inspiration to master it. The venue is Dudok Huis (Tata Steel conference centre) in IJmuiden, the Netherlands, the conference language is English and attendance to the one-day conference is free of charge.

For further information and to register, scan the QR code or go to

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

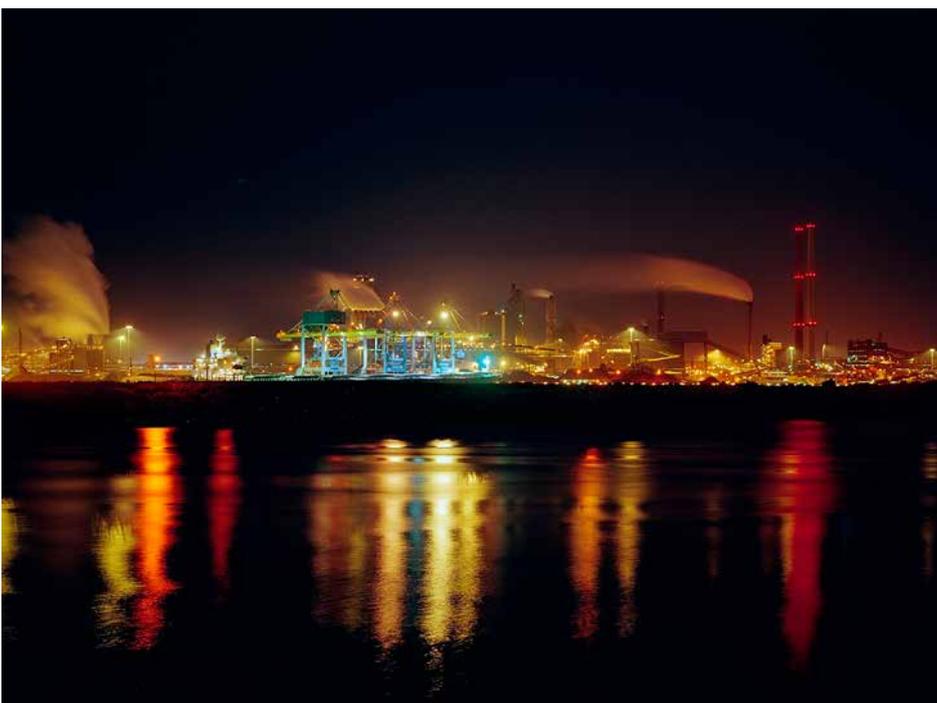


### PSImetals user group

When market conditions change and entire business models are put under pressure, this is where new opportunities can also emerge. PSI has a long tradition of developing IT solutions to meet the challenges faced by our customers.

Under the motto “Shaping the future of metals industry!”, Tata Steel IJmuiden and PSI are inviting all PSImetals customers to Dudok Huis on 10 and 11 May, 2017. This event will be an excellent opportunity to exchange experiences and learn about upcoming developments at PSI. What’s more, there will also be initial insights into the new PSImetals FutureLab initiative. A range of customer presentations and a plant tour at Tata Steel will give visitors a varied programme as always. The conference language is English and attendance is free of charge. For more information about the event, such as the agenda, hotels and travel information, visit the log-in only area of our website. Our customers automatically receive the necessary login information by email.

PSI Metals customers can register directly by scanning the QR code or by visiting [psimetals.com/ug2017](http://psimetals.com/ug2017)



Venue is the Tata Steel conference centre in IJmuiden.

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News: DB Vehicle Maintenance decides for PSI MES software

## PSI *penta* for rail wheel refurbishment

PSI subsidiary PSI Automotive & Industry GmbH has been contracted by the DB Fahrzeuginstandhaltung (Vehicle Maintenance) GmbH, a subsidiary of the Deutsche Bahn AG, with the implementation of a manufacturing execution system (MES) for rail wheel refurbishment. The system is based on the established PEC solution that combines planning, execution and control and will be introduced to the Paderborn maintenance plant. After the successful implementation in the Paderborn pilot plant, it will be rolled out at other sites.

The decision in favour of the PSI software was made following a preliminary study, a proof of concept and the definition of the requirements in extensive specifications of work. The future manufacturing execution system should primarily serve to consolidate the heterogeneous IT landscape in production and therefore result in an optimisation of the IT operating costs. In

the framework of a corporate structure with a division of labour, the IT support is also an important component in the planned automation of the production processes that consist of both the assembly line production of the simple wheel sets and the workshop production of drive wheel sets.

As a full-service provider, the DB Fahrzeuginstandhaltung GmbH, with about 7500 employees at 14

sites, offers a wide range of services in the heavy maintenance of rolling stock. Along with refurbishment, repairs following accidents and the modernisation of entire fleets, a major portion of the total volume of work is the reworking of railway vehicle components.

With the order from DB Fahrzeuginstandhaltung, PSI Automotive & Industry highlights its technologically leading position in the field of complex production and maintenance process in vehicle, rolling stock and the aerospace industry. 

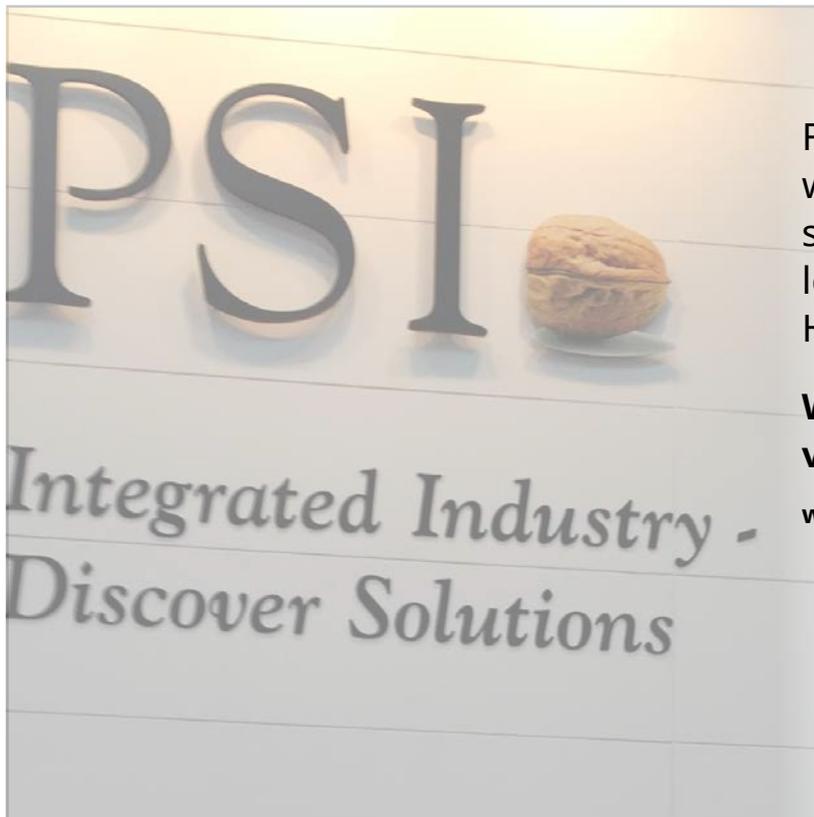
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From 24 to 28 April 2017, PSI will present comprehensive solutions from production, logistics and energy at the Hannover Messe.

**We look forward to your visit in Hall 7, Stand A24.**

[www.psipenta.de/hannovermesse2017](http://www.psipenta.de/hannovermesse2017)



News: Tyasa orders solution for steel making plant and new coil production line from Primetals Technologies

## Production management solution is based on PSImetals

Mexican steel producer Tyasa, has awarded Primetals Technologies an order to supply a production management solution (level 3) for its existing steel making plant, billet caster and new Castrip based coil production line in Ixtaczoquitlan. The Production management solution steers the order based production utilizing product routing information and corresponding process instructions for the individual processing units. A seamless material tracking along the entire production route from heat creation in the electric arc furnace down to the final coil product provides Tyasa with the genealogy information customers require for flat products. The project is due for completion by early 2018.

**T**he Production Management solution integrates the business level with the automation level by translating sales orders for coils received from SAP into pro-

duces production schedules to be loaded into the system's schedule execution module. After each production step, e.g. producing a new hot rolled coil at Castrip, production re-

track of work in progress and inventory the solution also consists of a coil yard management module providing a consistent yard image and easy to use material search functions.

### PSImetals provides comprehensive set of modules

Tyasa's new production management solution is based on the product PSImetals, which provides a comprehensive set of modules specifically developed for the metals industry already proven in many installations. The product approach (vs. traditional software development) allows the Primetals Technologies project team to bring in its expertise in plant building and extensive process know how to build a broad and robust production management solution through configuration rather than coding, taking advantage of already existing functionality. Hence, custom coding is reduced to a minimum, shortening projection execution time, while keeping the solution's quality high. By selecting the Primetals Technologies solution, Tyasa prepared itself for future growth. Already existing product modules can be added to the solution in a short time while the company's production management requirements grow with its size.

Castrip is a registered trademark of Castrip LLC. 



Control pulpit in Tyasa's plant in Ixtaczoquitlan, Orizaba, Mexico.

duction orders including routing information and process instructions for the production units to allow the product specific setup of the aggregates. Based on released production orders, Tyasa's planning department

sults are collected. The horizontal integration of the different automation systems ensures one process step's production feedback is used as part of the process instructions for the next step along the production route. To keep

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News: Generation change will secure continuity

## Thomas Quinet becomes new Managing Director

PSI Metals prepares its organisation for the challenges of the future. With Sven Busch and Thomas Quinet at the top of the company, PSI Metals continues its path towards product business. Detlef Schmitz, manager at PSI for 29 years, resigns as Managing Director of the PSI Metals Group and will serve the company further on in business development.

**T**homas Quinet, former CFO, is the new managing director at PSI Metals. The 42 years old Belgian studied civil engineering and entered the metals business already in 2001. He started as sales executive, took over leadership as sales director very soon and became member of the board at PSI Metals Belgium in 2009. After performing an executive MBA, he took over the role of the Financial Director in 2013. Thomas Quinet will keep responsibility for the Finance, Controlling, Legals, IT and Services. In addition he will be managing all topics related to the product *PSI metals*. Therefore, two new areas were created: Products & Methodology in-

*“ I am enthusiastic, but also excited to take on new responsibilities and to continue the growth path of the company. My goal is to make our products fit for the requirements of the future as well as to provide our customers with top application and business consultants.*

**Thomas Quinet**  
Managing Director, PSI Metals

cluding the new “FutureLab” initiative, as well as Marketing & Product Management, Accounts & Sales Support and Training.

### Customer focus

Sven Busch will be responsible for all customer needs covered by four divisions which are directly responsi-

ble for Sales and Delivery in dedicated markets: Asia, Americas as well as Tubes & Plates and Non Ferrous, Flat & Long.

Detlef Schmitz, leading the company from the very beginning, transformed

PSI Metals together with his co-managing director Sven Busch from a German market leader to the global leader in production management software for metals. With this change, Detlef Schmitz wants to continue to support the company with his expertise whilst starting a well-regulated generational transfer at the same time.

Adapting the new organisation will secure continuity on the path towards a product driven business model with the clear goal to combine top application and business consultants with the best in class product in the metals industries whilst ensuring and enhancing the market leadership for production management solutions in the metals industry. 



Detlef Schmitz introduces the generation change with handover to Thomas Quinet.

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Event: LogiMAT 2017 and third PSI Logistics Day

## PSI presents solutions for smart logistics

The trade fair appearances of PSI Logistics at LogiMAT 2017 and the third PSI Logistics Day are very much in the spirit of automation and digitisation.

The solution offerings for tackling the future challenges as a result of Industry 4.0 and the Internet of Things (IoT) are the main attraction of this year's trade fair appearance at LogiMAT in Stuttgart. Visitors to hall 7, stand 7D76 will experience and discover the warehouse management system *PSIwms* from the PSI Logistics Suite for the first time in its latest release 4.0. Future-oriented functions and tools such as the adaptive order start for automated load balancing of work areas, linking KBOB data, extended functions for yard logistics and yard management with slot management for appointments and truck management on the premises as well as a standardised interface for connecting and managing driverless transport systems (DTS) are all unique selling points of *PSIwms*. In addition, the *PSIwms* 4.0 Cloud solution is designed

for the essential core functions and further simplified operation.

Additional highlights at this year's trade fair put the spotlight on developments to standard products from the PSI Logistics Suite. *PSIglobal*—the standard software for strategic and tactical analysis, planning, design and optimisation of the supply chain that is proving to be in particular demand on the market—offers additional analysis methods to determine and prepare relevant key performance indicators (KPI), and to enable a combined consideration and concerted optimisation of production and logistics. Using the automated tender management systems, tenders can be tailored exactly to the tender specifications, volume as well as the available resources available and the section of the supply chain. What's more, the new "Smart Parcel" will be showcased, which PSI Logistics has set up in the Center Connected



This year's PSI stand, once again in the same place in hall 7, stand 7D76.

Industry demonstration factory on the FIR campus at RWTH Aachen.

The showcase employs technologies for the Internet of Things (IoT) already used by PSI Logistics and modules for *PSItrms*, the transport management system, in order to develop new, application-related solutions for the implementation of Industry 4.0 and the Internet of Things. The "Smart Parcel" showcase will also be a highlight at the third PSI Logistics Day, which is traditionally held on the eve of LogiMAT in Stuttgart.

Under the motto "Smart logistics is today", renowned speakers and around 60 expected participants will discuss solutions and offerings all about automation and digitisation on 13 March. 



The venue is once again the Willhaf Conference Center at Stuttgart airport.

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News: Metroplan uses PSIglobal Planning and Optimisation System

## Scenario technology for analysis and network structure

The logistics and procurement consultants of the Metroplan Holding GmbH, headquartered in Hamburg, contracted PSI Logistics GmbH with the implementation of PSIglobal. The strategic planning and optimisation system is to be used for the optimisation and long-term reduction of costs of a logistics network.

**M**etroplan is currently conducting analyses and optimisation of the European distribution network for a renowned customer in the sector. Metroplan is using PSIglobal simulation and scenario technology for the required optimisation of the distribution. The IT system from the PSI Logistics Suite provides a multitude of innovative programme functions for the strategic and tactical analysis, planning, design

and optimisation of logistic networks. Applying these, Metroplan will initially determine and prepare the key performance indicators in the contractor's logistics network.

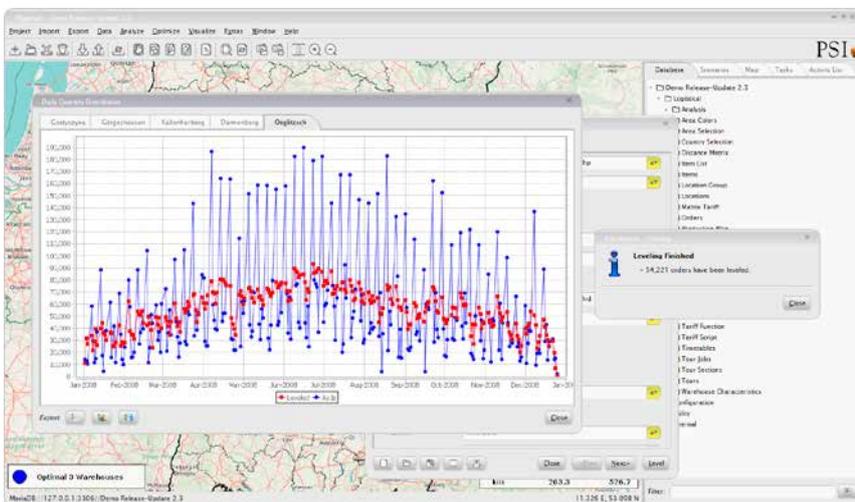
### Location of the hubs with scenario technology

The analysis of the status quo will serve as the basis for the subsequent optimisation steps. With the scenario technology, alternatives will be cal-

culated for the location of the hubs and in combination with the volume streams and transportation volumes, the optimal number and location established. Lorry, rail and ship transportation will be optimised in parallel and consequently the best mixture of cost, time and environmental aspects determined. Additional functionality will include a transparent and initiator-based distribution of costs within the supply chain, thus allowing for optimal negotiations with logistics service providers.

### Combined monitoring of production and logistics

The current 2.4 release of PSIglobal also provides Metroplan the opportunity of combining the monitoring of production and logistics. Such integrated concepts for production and logistics processes are a core business for Metroplan which, as one of the leading technical consulting and planning organisations, was awarded the "Best Logistics Brand 2016".



Sample presentation of the function "Warehouse throughput balancing (levelling)", which postpones broadcasts to achieve a uniform daily warehouse throughput.

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Events: CeBIT and Hannover Messe 2017

## Digitised production processes

The PSI Group will be represented this spring at CeBIT and the Hannover Messe 2017 with extensive new solutions and live presentations about digital production processes and control systems.

At the CeBIT in Hanover PSI subsidiary PSI Automotive & Industry GmbH is presenting their standard solutions PSI<sup>penta</sup>/ERP and MES from 20 to 24 March 2017. The presentation will be held in the framework of the special

the production sequences assures the profitable production of even small batches. The traditional portfolio from the PSI Automotive & Industry is supplemented by the SCADA and visualisation solutions from the PSI Group.



There is a new and affordable electric car at the RWTH Aachen University campus: e.GO Life.

“Digitalisation live!” show as a partner of the e.GO Mobile AG in Hall 5 Stand C38. The electric vehicle manufacturer uses PSI<sup>penta</sup>/ERP and MES in their production.

The complete scenario “Innovate—Produce—Connect” stands for the integrated value-added chain from engineering to after sales. With this, PSI demonstrates the digitalised production processes. The innovative and integrated ERP and MES solution provides the required agility for the e.GO Mobile AG to be able to play a leading role in the dynamic market of producing electrical vehicles. The optimisation of the material flows and

### Cross-sector optimisation software

PSI company F/L/S Fuzzy Logik Systeme GmbH will also be represented in Hall 5 at Stand B22/1 at the special “Production” show with the presentation of their cross-sector optimisation software Qualicision®. F/L/S will provide insight into optimised decision support solutions as well as production control systems in the MES and planning environment with Qualicision®. Simulations and optimisations in production planning, in strategic budget and capacity planning as well as in operational workforce and work field planning

are examples of further application fields.

### Live scenario at Hannover Messe

PSI will be presenting a scenario for dynamic production planning and control systems developed from integrated PSI product modules at the Hannover Messe from 24 to 28 April, 2017 (hall 7, stand A24). The seamless interaction of the products will be demonstrated at the PSI exhibition stand live, using a real strapping machine from Mosca GmbH. In addition, comprehensive logistics and network control solutions from the areas of production, logistics and energy will be showcased.

### KPI-optimised production planning and sequencing

The exhibition presence is made up of different PSI software modules that control the complex processes and requirements in real time. The solution demonstrates KPI-optimised production planning and sequencing, in order to maintain the flexibility and autonomy of future production systems (e.g. Swarm manufacturing) for the specified processes.

In addition to the Qualicision® optimisation software from the PSI company F/L/S, the PSI Logistics Suite 2017, including the warehouse management system PSI<sup>lums</sup> release 4.0 and the strategic standard system PSI<sup>global</sup>, will be presented. Scores of new functions, apps and the PSI<sup>lums</sup> Cloud offering will show customers and interested parties the potential



At the PSI stand at Hannover Messe.

for optimisation in process control and increased efficiency and flexibility in warehousing and the supply chain.

As part of the international MES conference at the Hanover Fair, Dr. Marcus Adams, Managing Director of PSI subsidiary PSI Mines & Roads GmbH, as chairman of the working community MES in the ZVEI will give a keynote speech on “From production control to optimisation” and

will participate in the subsequent panel discussion.

The PSI division of electrical energy will be showcasing the Workforce Management System. 

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## EVENTS

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



13.03.2017	PSI Logistics Day Stuttgart, Germany	PSI Logistics
14.–16.03.2017	LogiMAT 2017 Stuttgart, Germany	PSI Logistics
14.–16.03.2017	Passenger Terminal Expo Amsterdam, Netherlands	PSI Logistics
16.–17.03.2017	Maschinenbau VorausageDACHt Salzburg, Austria	PSI Automotive & Industry
20.–24.03.2017	CeBIT Hall 5, Stand C38 Hall 5, Stand B22/1 Hanover, Germany	PSI Automotive & Industry F/L/S Fuzzy Logik Systeme
06.–07.04.2017	Materialflusskongress Munich, Germany	PSI Logistics
24.–28.04.2017	Hannover Messe 2017 Hall 7, Stand A24 Hanover, Germany	PSI Group
09.05.2017	Conference: The Digitalisation of the Metals Industry Tata Steel IJmuiden, Netherlands	PSI Metals
10.–11.05.2017	PSI metals Usergroup Tata Steel IJmuiden, Netherlands	PSI Metals

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