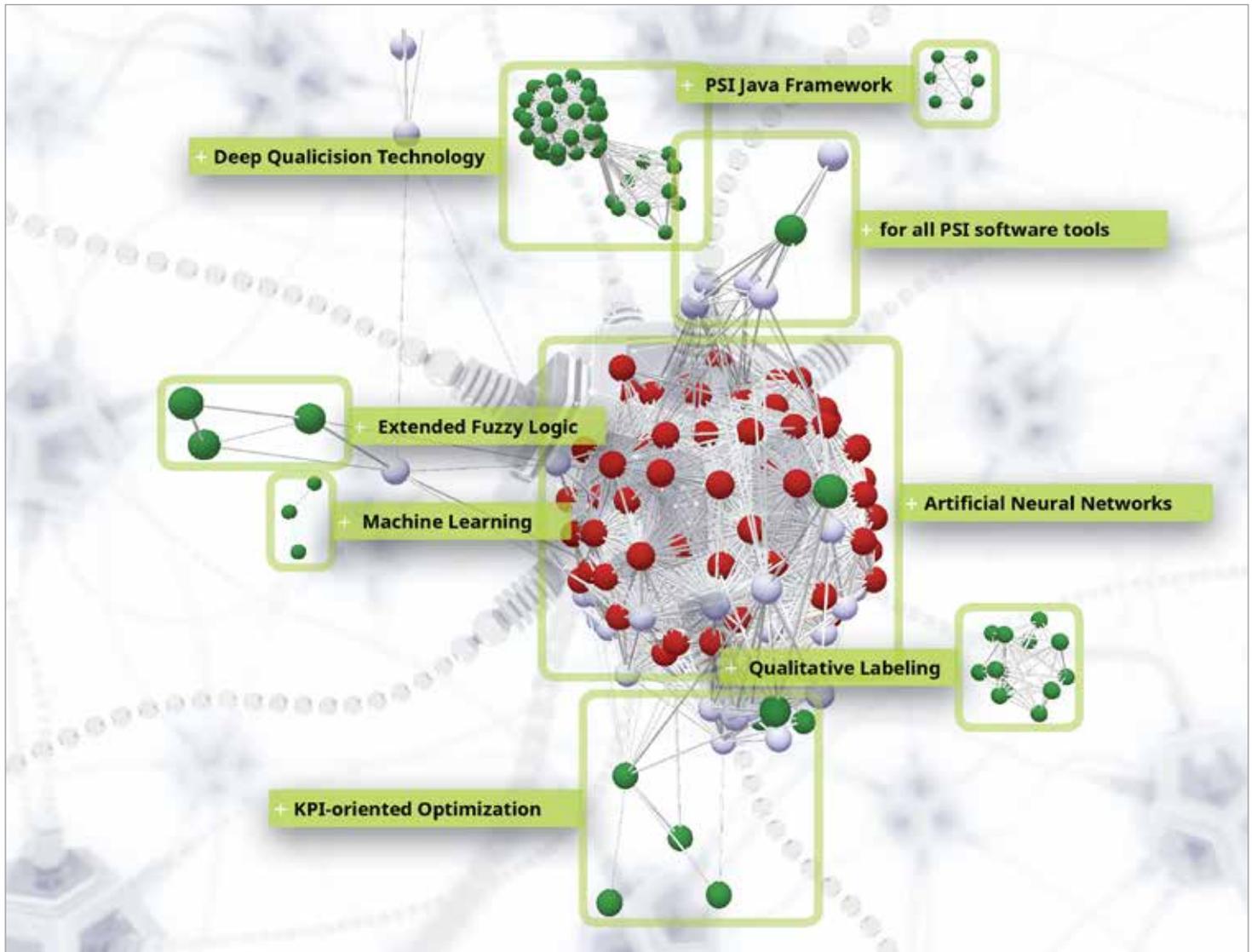


# PRODUCTION manager

Magazine for logistics & production



Machine Learning with Qualitative Labeling for all PSI Software Tools

## Deep Qualicision AI

### Product Review

**Increased Efficiency of Logistics Processes with Holistic Process View**  
Problem solver Warehouse Management System

### User Report

**An ERP System for Complex Corporate Structures**  
Schwarz Müller Uses Multi-Site Management

### User Report

**Implementation of the Production Management System at MaGang**  
A Journey Full of Opportunities and Perseverance

## EDITORIAL

Dear readers,

Within the PSI Group, Deep Qualicision is the powerful tool that masters the task of connecting methods of Artificial Intelligence with learning strategies in order to optimize industrial processes.

Deep Qualicision AI is the connection between optimization methods, machine learning and neural networks. By using the optimization for automatic labeling of process data, the gap between the optimization of business processes, Deep Learning and other methods of machine learning can be bridged. This paves the way for the application of software for Industrial Intelligence.

This is where the strength of the PSI Group lies. Read the leading article



of the present edition and find out how Qualitative Labeling and Deep Qualicision provide for machine learning power in all PSI software tools. Further articles of our production management journal inform about new developments in the fields of lo-

gistics, present new software for the metal industry and report on the subject of ERP software and its users. News regarding trade fairs and future events complete the present edition. As you can see, a bundle of interesting subjects is coming up next year. We will have a lot of interesting articles for our readers. We promise to keep you informed.

Regards,

Dr. Rudolf Felix  
Managing Director  
PSI FLS  
Fuzzy Logik & Neuro Systeme GmbH

## CONTENTS

### COVER STORY

Machine Learning with Qualitative Labeling for all PSI Software Tools..... 3

### USER REPORT

Increased Efficiency: Problem solver Warehouse Management System ..... 6  
ERP System for Complex Corporate Structures: Schwarzmüller Uses Multi-Site Management ..... 8  
A Journey Full of Opportunities and Perseverance at MaGang..... 10

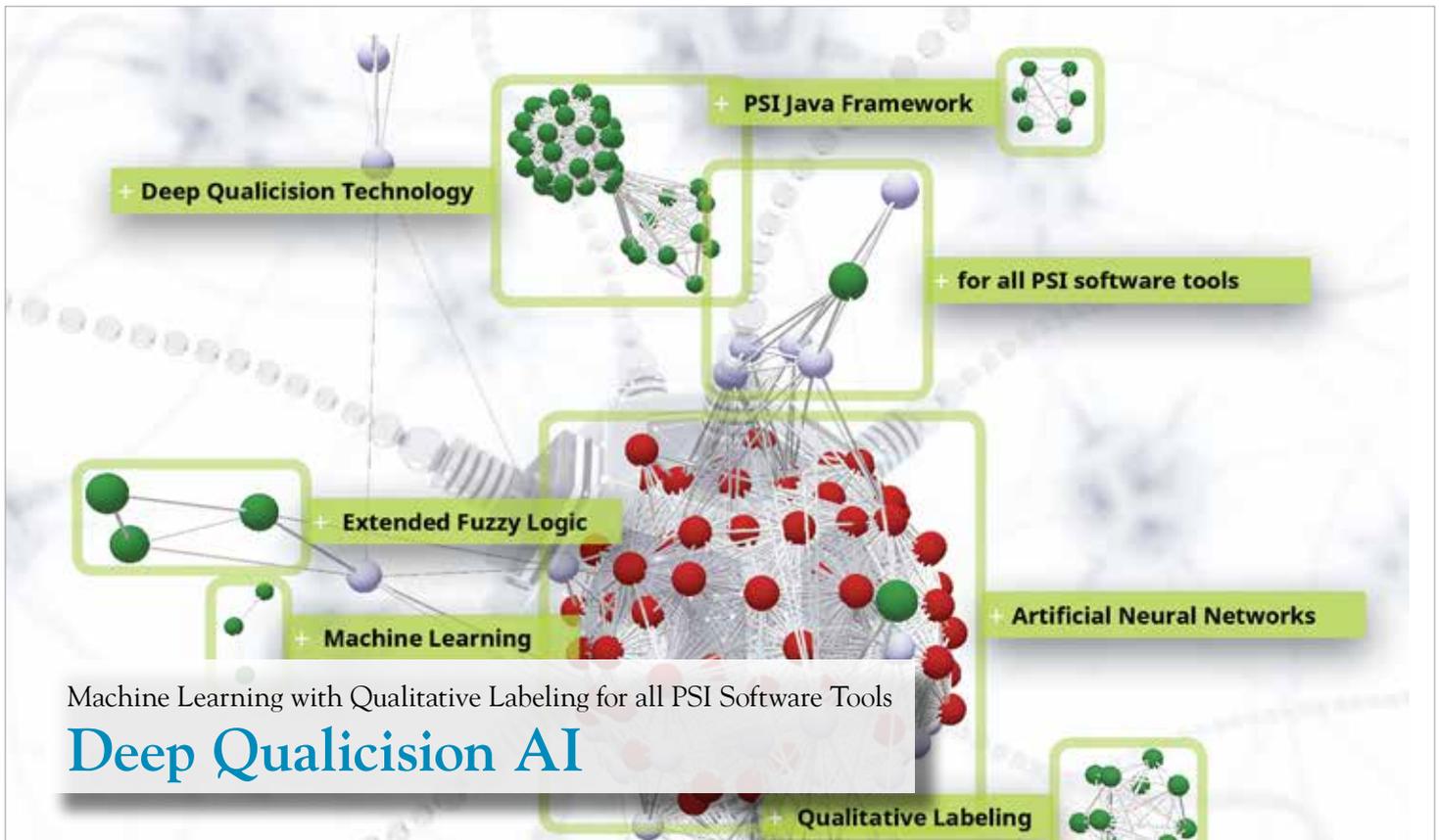
### NEWS

New ERP System PSIpenta for Bolz Process Technology GmbH..... 12  
PSI Logistics Leads Research Project APEROL for Autonomous Driving..... 14

Information Portal for Manufacturing Companies..... 17  
Relocation of PSI Metals: All Change in November..... 19

### EVENTS

Review of Hypermotion: Digital Mobility Solutions Optimize Traffic Flows ..... 12  
PSImetals UserGroup: Production Management Meets Art on the Bosphorus ..... 13  
Preview of the 5th PSI Logistics Day and LogiMAT ..... 15  
IPA in Review: PSI Looks at the Future of Digitization with its Customers ..... 16  
ABM Week: Innovative Solutions for the Metal Industry ..... 18  
Events ..... 19



Deep Qualicision AI is the linking element between the AI decision engine Qualicision and machine learning. This solution concept efficiently learns how to set the parameters of optimization algorithms so that decisions that are based on data and optimization results automatically adjust themselves. It is available for all PSI software tools equipped with Qualicision and promotes the implementation of AI within the group of PSI solutions.

**T**he core element of Deep Qualicision is its machine learning process based on the automatic detection of KPI goal conflicts in the data of business processes, which is done by means of extended fuzzy logic. The goal conflict analysis helps arranging the process data in such a way that the Deep Qualicision algorithm is able to detect what situations require which specific actions in order to plan and control the business processes in an optimal way.

Fascinatingly, for this purpose it is possible to use already established

Qualicision optimizations: If business processes are optimized through Qualicision algorithms, labeling the process data is indispensable if AI solutions are to be applied. With Deep Qualicision, the process data can be labeled qualitatively using the known KPI-driven optimization. And this is done by Qualicision algorithms—in other words, the optimization itself. Manual data labeling (for instance: millions of cat images placed in the web), that is the manual classification if the data at hand led to positive or negative KPI results in the process in question, is no longer necessary.

This helps eliminating the known bottleneck of data preparation for AI methods.

### Qualitative labeling by means of an automatic KPI labeling machine

In this way, any existing Qualicision solution can be understood as a KPI labeling machine and can be used for implementing efficient AI learning strategies. Qualitative labeling creates new perspectives for the application of Deep Learning in business processes because it provides qualitatively labeled status data, which are automatically generated via continuous fuzzy clustering of situationally dynamic process data.

These close the gap between the dynamics of process data and the necessity to operate with labeled data. Closing this gap is of such importance because for the first time the condi-

tions are given to use artificial neural networks for optimizing business processes.

### A simple introduction to Deep Qualicision

From the customer's point of view, the introduction into said scenario is quite simple. If Deep Qualicision AI is to be used for optimizing or analyzing a business process, we have to ask for those process indicators and criteria (KPIs) that allow evaluating and optimizing the business process' quality.

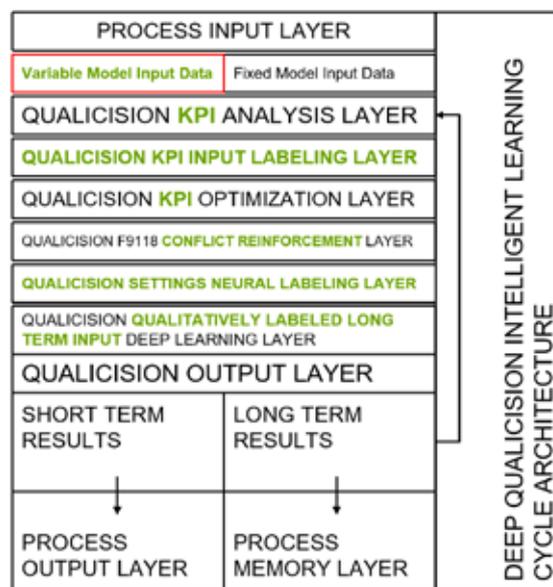
Classical KPIs in production processes are efficiency criteria like adherence to deadlines, resource utilization, capacity and material availability. Further criteria like employee satisfaction, even resource management or process stability could also be considered. Additionally, evaluations of product variations, diversification of the order structure and the development of the KPIs in the course of time (in the sense of usability of historical data) are considered. From the descriptions above follows, that collecting the information described above presents rather an organizational challenge, not a fundamental one. It is a known obligation in any project whose aim is to improve the workflow in a business process. The "icing on the cake" however are the automatisms of Deep Qualicision.

### Business process data and KPI definitions are the only data to be entered

Once the KPIs are described and the raw data of the business process are available, Deep Qualicision starts applying its optimization algorithms for labeling the business process data, op-

timizing the processes and for using the optimized and learned labels for automated learning of the positive and negative rules inherent to the business process in question. Using the automated labeling function allows saving the learned information directly in a neural network. Figure 1 shows the structure of a Deep Qualicision solution and its components (see the box).

Apparently, Deep Qualicision consists of the original Qualicision opti-



The architecture of Deep Qualicision.

mization solution, which now is used for the qualitative labeling of process data, too. Additionally, an intelligent goal conflict oriented cluster method is used for KPI-oriented reinforcement learning. Enhanced by a neural network component, Deep Qualicision is able to perform learning based on the qualitatively labeled process data. The outcome is positive and negative labeled process data and process situations. These data are the basis for machine learning aimed at decisions about how, in the future, the process optimization should react in certain process situations.

### Automatic Process of Qualitative Labeling

One of the advantages is that the labeling process described here is done automatically, controlled by the optimization itself, and that, except for the KPI definition, it doesn't require any human input. Another advantage is that the principle of Deep Qualicision applies to every business process that has already been optimized by Qualicision.

The second of the advantages mentioned above is of special importance because each existing Qualicision application can be equipped with the machine learning feature of Deep Qualicision. Particularly, all PSI software products equipped with Qualicision can be enhanced with the Deep Qualicision-based capacity of machine learning. Maybe, in some of these solutions additional KPIs would have to be defined, in order to perform qualitative labeling and machine learning in the future.

And this is a further advantage. In each of the PSI software products additional KPIs can be integrated and thanks to the Deep Qualicision framework, they can be used for improving or completing the already existing functionalities.

### Sequencing in the Car Production

Among the first customer applications working with the basic principles of this method was the optimization of production sequences in the car production, based on the so-called planned times. The KPIs defined here are derived from the working times for specific activities and processes in each of the work stations along an assembly line. The cars to be produced

are to be ordered in a sequence in such a way, that none of the work time KPIs exceeds its capacity limit.

In case that exceeding the limit cannot be avoided at a certain station, a reduction of the work time has to be ensured immediately afterwards. This is done by planning the sequence in such a way that cars requiring complex assembly work are immediately followed by cars requiring less complex work. As this has to be ensured

Considering several thousands of production orders per day plus the astronomical number of equipment combinations plus more than 100 KPIs to be optimized, the complexity becomes apparent immediately. For the same reason the qualitative automatic labeling of process data is a must-do. Thanks to these data only it is possible to ensure both the learning capacity of Deep Qualicision solutions and the required pro-

ments. Again, the number of KPIs and auxiliary KPIs is about one hundred. For each year, more than one hundred thousand maintenance and emergency jobs have to be allocated to hundreds of technicians.

## Machine Learning for all PSI Software Tools

In this case, Deep Qualicision is being used as an additional machine learning functionality that can be switched

on or off. It is implemented as an outer layer to the PSIcommand solution which is already installed and running. From the technical and the content-related point of view, the activatable Deep Qualicision AI is the blueprint for integrating machine learning into all PSI software tools that are already



The Deep Qualicision framework.

for all possible situations and for all order combinations, the optimization of production sequences is far more complex than certain strategic games like chess, go or poker.

## Unknown Dynamics of Order Data is no Obstacle at all

Beyond the combinatorics, similar to all production processes sequencing, too, has to cope with the unknown regarding the composition of the order quantity and its dynamic diversity of variants. This raises the complexity of the optimization required here to an even higher level.

cess stability. The method described is already in productive use in several production lines of the automotive industry.

## Field Force Management with PSIcommand

Another use case is the combination of Deep Qualicision with the software tool PSIcommand. Here Deep Qualicision is used for learning the parameter settings of the field force optimization for maintenance and emergency work in electric supply grids, and the KPIs describe the efficiency of the scheduled resource to job assign-

equipped with the Qualicision optimization. Thus, thanks to the Deep Qualicision framework, machine learning is available for PSI products like PSIBms, PSIcommand, PSIsaso, PSIPenta/Leitstand/PSIasm, PSIlwms and, of course, for all software products of PSI FLS. 

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Product Report: Increased Efficiency of Logistics Processes with Holistic Process View

## Problem solver Warehouse Management System

Modern warehouse management systems with holistic process overviews, planning, and real-time control from Yard Management through to Dispatch Staging deliver clear optimization potentials, and underpin automation and digitization on the road to Logistics 4.0.

The processes involved at the loading ramp and in the yard, as identified in the report “Marktbeobachtung Güterverkehr” [Goods Traffic Market Analysis] published by the Federal Office for Goods Transport [Bundesamt für Güterverkehr, BAG] in February 2018, often represent a bottleneck in the supply chain.

However, truck drivers and ramp operators believe notification and truck call systems offer significant potential to optimize processes. This is because the loading and unloading areas of a warehouse or logistics center in-

volve particularly complex business processes that are becoming more and more difficult to handle manually.

By ignoring software support, operators are missing out on the opportunities offered by process monitoring and automation. Various software modules are available such as time window management, dock and yard management systems, and forklift control systems (SLS), which are simple to integrate into existing IT landscapes.

The VDI Guideline 3601 counts SLS for route-optimized control of internal traffic and resource planning functions, for efficient dock and yard manage-

ment, and time window management tools as add-on functions of warehouse management systems. These organize work processes and make the day-to-day tasks of large transshipment and distribution centers easier.

In view of the importance and far-reaching optimization potentials offered by an IT-supported dock and yard management system, PSI has bundled this activity area in a dedicated module in the Warehouse Management System PSIWms from the PSI Logistics Suite. Its range of functions offer a host of configuration possibilities that optimize ramp processes and minimize or even eliminate waiting times.

### Structured traffic, minimal coordination effort

PSIWms is thus able to organize, manage, and control all trucks on the site from data entry to task allocation and administration. Restrictions can also be defined to ensure that every truck is processed at the correct ramp. Large displays can be connected to visualize processes, inform waiting drivers outside, and coordinate traffic accordingly.

Internally, the pending orders are displayed and goods staging directed to the right gates on time. Planners organize and assign dispatch spaces based on the forecast departure times. Drivers are electronically provided with load gate information and informed about possible wait times. Data about



Data about arriving trucks or updated times is transmitted to PSIWms via an interface or entered in the dialog.

arriving trucks or updated times are transmitted to PSIWms via an interface or web portal, or directly entered in the PSIWms dialog itself. Traffic frameworks can be defined for regularly repeating traffic and tasks—for example, the daily cut-off times for courier and express loadings or the weekly collection for intercontinental transport. The necessary logic is defined in the system. A specific loading gate is then allocated by a planner automatically using the Yard Management function in PSIWms.

### Minimum coordination effort

When the data is first entered, the truck is assigned a loading gate or parking position. Once the loading gate is free, the driver is informed either on the large screen outside or via an electronic message, then drives to the specified gate and performs the assigned task. The operation is then confirmed and the loading gate is released again.

Minimum coordination effort for outside operations, structured traffic during inbound deliveries and collections, efficient intralogistics processes during loading, reduced waiting times—leading to the possibility of negotiating better conditions with transport service providers.

### Automatically recalculated commissioning processes

In addition to the add-on functions set out in VDI 3601, PSIWms provides additional support options such as positioning tools for vehicles, transport units and order destinations in the warehouse or yard. This means goods



*With its internal planning, order management, and transport control, PSIWms offers the option of automatically recalculated commissioning and staging processes.*

transports can automatically be confirmed without additional scans as soon as the transport unit or forklift has reached the destination.

### Coordinated process control

With time window management alongside slot management with gate assignment, the functions of the PSIWms module extend beyond internal processes. Using a browser dialog or web service interface, suppliers and collectors can reserve time windows for arrival and loading processes. This balances out delivery traffic and reduces administration.

By integrating the module into a coordinated process management structure, all intralogistic process workflows in order completion and staging can also be linked. This is because, unlike conventional standalone systems, time window management in PSIWms offers options for automatic, recalculated triggering of commissioning and staging processes. Ar-

rival time delays or gate assignment changes trigger immediate recalculation of the commissioning and staging processes.

### Automation, digitization, and optimization

Even standard packages of modern warehouse management systems like PSIWms offer a tried-and-tested range of tools to improve information flow and process quality at the ramp, optimize resource utilization, and significantly reduce waiting times in order completion processes. With their statistics functions, they also offer a starting point for digitization and automation as well as continuous process optimization. 

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User Report: An ERP System for Complex Corporate Structures

## Schwarz Müller Uses Multi-Site Management

It is difficult to find anyone in the long-distance transport sector, the construction industry, the waste disposal industry or the oil industry who hasn't heard of Schwarz Müller. Based in Freinberg, Upper Austria, the Group is one of Europe's largest complete providers of truck trailers with production sites in Austria, the Czech Republic, Hungary, as well as nine service and repair branches and other sales and partner locations in 21 countries.

Only recently was the internationally established company cited as one of the most dynamic companies in Austria in an independent market study. And the underlying software systems that play such an important role in managing the complex, cross-plant and cross-location business processes must also take their share of the credit. For several years, Schwarz Müller has been using a specialized ERP solution—one that includes intelligent multi-site management.

### Stability and performance are everything

Whether it's development, production and service, spare parts or equipment rental—premium vehicles are the passion of the more than 2290 Schwarz Müller employees in over 21 countries. What is also remarkable is the company's almost 150-year history in which Schwarz Müller grew from a small workshop business into an international player to achieve an unrivaled position in Europe with its complete offering of truck trailers.

Although 60% of its vehicles have individual components, the equipment is manufactured according to industrial standards across the three plants. Put simply, for production this means that it must be possible to produce



Production at Schwarz Müller.

135 types of vehicle in approximately 1000 variants.

### ERP for the automotive industry

With this in mind, Schwarz Müller soon chose the ERP system PSIPenta with PSI Automotive & Industry, which specializes in the production workflows used in the automobile industry. However, the decision was also based on the fact that the solution offers a good range of functions for other business areas such as Service and Repair, Spare Parts, Used Vehicle Sales, and Vehicle Rental.

"At that time, there were four decisive criteria that the IT system had to

meet," according to Johann Kropf, IT Director at Schwarz Müller: "The ERP solution must be able to map our complex, international, multi-site structure including different languages, currencies, licenses, as well as the processes used in all business areas.

Above all, everything must be stable and high-performance—because it all depends on this system."

### Cross-plant and cross-location consistency

Since its introduction, the ERP system has mapped all the processes in the company—from incoming orders to invoicing. It is also available in four language variants—German, English, Czech, and Hungarian, and four currencies—euro, koruna, forint, and leu. The system is also installed at eleven locations with a full range of functions.

The multi-site management function "Multisite" manages cross-plant busi-

ness processes and shared data, and controls it from the central installation in Freinberg. Schwarzmüller also uses the function package for establishing central services for Sales and Purchasing.

The benefits: All relevant data is available at a glance, thus creating a good basis for reliable information concerning availability and scheduling of the required deliveries.

For example: When the CRM system reports an incoming order to the ERP system, the location of the customer determines the production plant, which then assumes responsibility for billing. If a customer from Austria, for example, orders a product to be made in Budapest, the order is created in Freinberg. With Multisite, this is automatically transferred to Budapest, and then transferred back to Freinberg via Multisite following completion.

If on the other hand, a customer is based in Hungary and requires a product that is manufactured in Budapest, this is handled entirely in Hungary and then simply reported as complete to the central system afterward.



*At Schwarzmüller, everything revolves around trucks, trailers and platforms*

And IT Director Johann Kropf also appreciates the interfaces to the CRM system or Financial Accounting, which can be controlled and standardized via a web service. “The importance of standard interfaces or open software solutions is increasing all the time. We leverage huge potentials thanks to the consistency of and ability to integrate the various solutions and business processes. At the

moment, we are also in the process of integrating our production machines into the ERP system.”

This has already been done for the laser cutting machine and the bending machines. These receive the work order, including CAD drawing, from the ERP system, and send the order back to the ERP system following completion.

### Standardized database saves effort

By using PSIpenta, the entire Group is able to access a standardized database. This then forms a reliable platform for later evaluations and fast reporting. “For a company of our size, this saves enormous coordination effort, and we can talk about real cost reflectiveness,” says Johann Kropf. 🌀



*Workers in Production.*

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User Report: Implementation of the Production Management System at MaGang

## A Journey Full of Opportunities and Perseverance

A Chinese proverb states it takes 10 years to make a sharp sword. And this is the same approach that MaGang, one of China's biggest producers of flat-rolled steel and long products, has taken for the last 10 years to continuously improve its information system based on PSImetals. A glance to the past and the future.

In 2005, when terms like "Industry 4.0" and "digitization" had not yet even seen the light of day, the Chinese central government started to accelerate industrialization through modern information technologies. Almost all steel companies embarked on IT projects centering around ERP and MES. MaGang was one of those companies, and invested in a new production management system for its steel and rolling mill no. 4 in Ma'anshan.

### Buy or make?

Then, as now, almost all large steel companies in China had their own IT departments with broad expertise

in L1/L2 automation. For this reason, MaGang chose to develop the MES system for hot/cold rolling in-house. However, all planning processes from steel production through to rolling, including APS and sequence planning, as well as MES for steel production, were to be handled by a market solution.

In the run-up to the bidding process, MaGang had already excluded software firms with tailored systems. Only software providers that offered a suite of applications were invited to bid. Since all major international players took part, the competition was tough in every respect. PSI was able to come

out on top against the competition due to the solution advantage, the close cooperation with SAP and last but not least due to the solid brand "Made in Germany".

"The MaGang Plant no. 4 followed the strategy of installing an IT system to produce high-quality steel products," said the then deputy General Director of MaGang, Gao Haijian. "We wanted an experienced company in this niche sector that would secure us the best expertise in the industry. For us, it was about much more than simply implementing an IT system," he added.

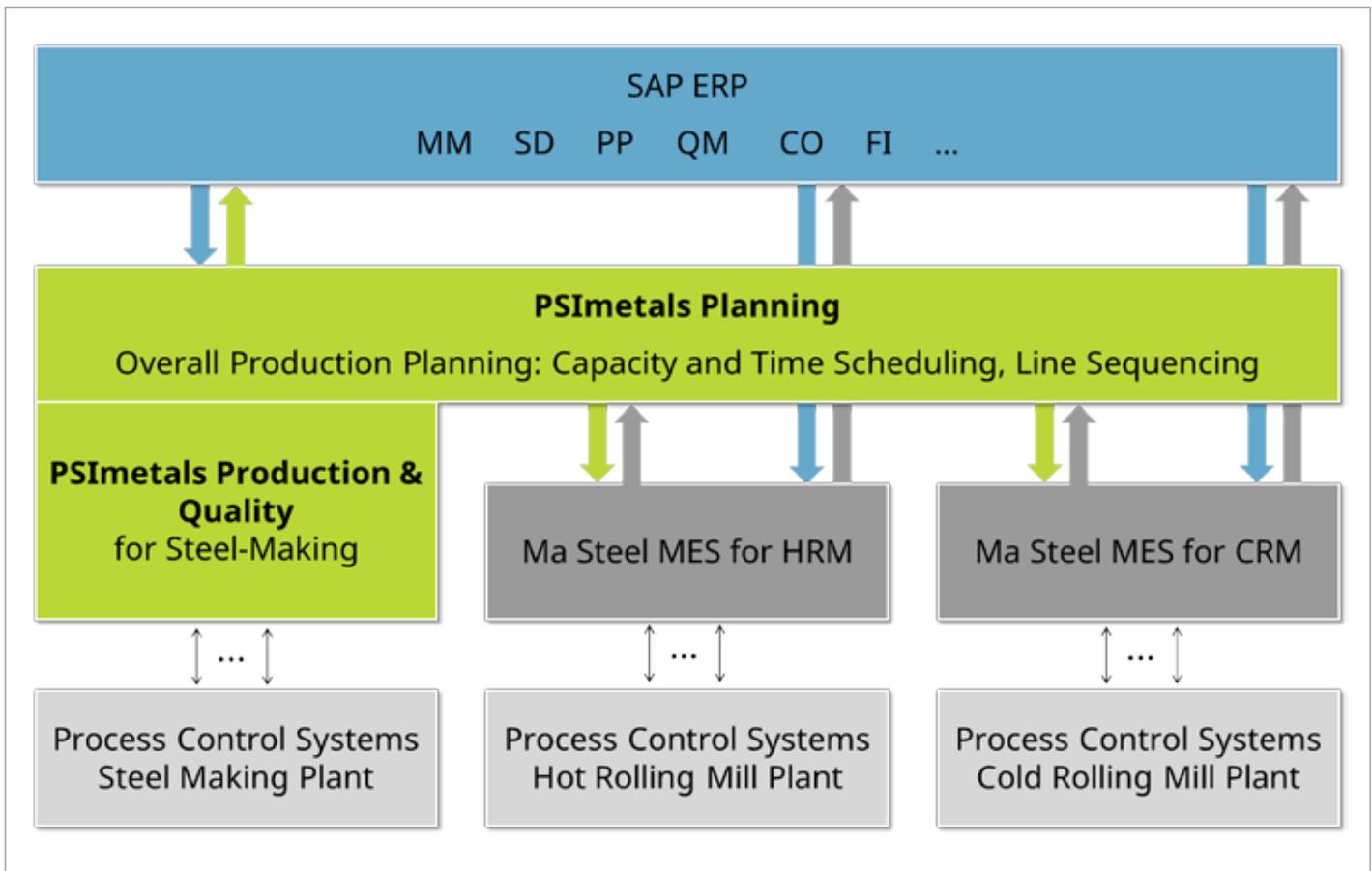
### Between highlight and challenge

Since 2007, MaGang has managed all production processes in its iron and steel production operations in Plant no. 4, from hot rolling and cold rolling to surface finishing, with PSImetals.

The solution offers several highlights. For example, the entire project was perfectly coordinated for the official start of production date in September 2007. After the kick-off in April 2006, the system was successfully put into operation after only one year. From the first day of production, the PSImetals system formed part of the production organization. Fur-



Shipping of flat steel products at Maanshan Iron and Steel.



System scope of MaGang Phase 1 project.

thermore, both parties always communicated well with each other and were able to discuss problems and difficulties openly and objectively.

Aside from this successful collaboration, the project also posed some serious challenges from a technical perspective. In 2006, for example, hot charging was more a word on paper than a reality in daily operations. As Liu Qiang from the MaGang Planning department puts it: "Direct and hot charging is an important topic. Implementation requires the seamless integration of APS, MES and Level-2 automation in steel production and in the hot rolling area. At the start of the project we did not have enough experience in this." It was therefore a bold decision to implement this function in the first phase. The dynamic coordination required to avoid cast-

ing breakdowns was also a major challenge. In order to supply the continuous casting plant continuously, the software must dynamically ensure that the supply of pig iron at the converter and steel ladles at the continuous casting plant is always guaranteed.

### Into the future together

Establishing an IT system in a company is no one-step process. All developments must be continuously adjusted to current market requirements. Following the trouble-free operation of the phase 1 system, MaGang signed an extension agreement in October 2011. All other lines in Plant no. 4 not yet covered by the solution were now also connected to PSImetals.

In 2017, MaGang embarked on two ambitious new projects with the aim of greater digitization in production: an

integrated planning project and a comprehensive quality management project for flat products. Once again, PSI was able to fend off the competition in an open tender for both projects. MaGang's decision was primarily based on its familiarity with the PSImetals solution and on a stable project team. However, there is always room for improvement. MaGang works tirelessly to pursue its high quality standards, both for its steel products and in terms of digitization. And PSI as the IT supplier will continue to play its part in the future. 🌐

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News: New ERP System PSIpenta for Bolz Process Technology GmbH

## Customer Order-Based Make-To-Order Production

PSI Automotive & Industry GmbH has been commissioned by Bolz Process Technology GmbH to implement a new ERP system based on PSIpenta. As well as connection to the financial accounting system Datev, the modules Sales, Costing, Procurement, Inventory Management, Material Planning, Production, and Workflow Light are also included for make-to-order production based on customer orders.

Following an extensive selection process, Bolz PT decided on the ERP standard system from PSI at the end of September 2018. This will enable Bolz PT to completely map its processes from Sales to Shipping. Previously, projects were largely managed using self-devel-

oped applications. Following a timely project start, the go-live is expected as early as the start of 2019.

Bolz Process Technology GmbH is an SME based in Wangen im Allgäu, and specializes in plant and apparatus engineering for the drying, mixing, boiling, and filtering processes in

the pharmaceuticals, chemicals and food industries.

Bolz is a subsidiary of Stibbe Management B.V. based in the Netherlands and belongs to the HEINKEL Drying and Separation Group. HEINKEL is already successfully using the PSI ERP system at its site in Besigheim. 

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Event: Review of Hypermotion 2018 in Frankfurt am Main

## Digital Mobility Solutions Optimize Traffic Flows

PSI Mines&Roads presented its software solution PSIRoads/MDS at Hypermotion in Frankfurt from November 20 to 22, 2018. Alongside numerous specialist presentations, over 100 exhibitors this year presented products and services focusing on the topics of intelligent transport networks of the future and innovative traffic and logistics solutions.

At the event, PSI focused on the PSIscada-based software solution PSIRoads/

MDS powered by Qualicision. The solution allows traffic flows in road networks to be optimized and measured for control-

ling traffic to be implemented telematically through integration into traffic management systems.

One highlight was the visit to the PSI stand by the Hesse State

Secretary for Transport and Economic Affairs, Mathias Samson. During a ten-minute presentation, the numerous possible uses of PSIRoads/MDS were demonstrated as well as the benefits for transport not just on highways, but also in cities and for local municipalities.

“Overall, Hypermotion was a major success for us. Our digital solution enables reliable mobility together with lower emissions,” summarizes Elmar Jaeker, Managing Director of PSI Mines&Roads. 

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Elmar Jaeker (right) explains the possible uses of the PSI solution.

Event: Review of PSImetals UserGroup 2018 in Istanbul

## Production Management Meets Art on the Bosphorus

Just as the city on the Bosphorus unites the two continents of Europe and Asia, in the context for this year's PSImetals UserGroup, it also brought together the two vastly different worlds of art and production. Under the motto "The Art of Production", numerous presentations and a plant visit to ASAŞ Alüminyum offered an impressive program. The third Digitization Brunch on the topic of cloud computing was also held immediately before the event.

**W**hat does music as a genre of art have to do with steel and aluminum production? Just like learning to play an instrument, steel production requires patience and perseverance. Do you like Paganini? Perhaps you prefer Hendrix? There is no right or wrong an-

entations at a UserGroup, renowned customers reflected on their experiences with PSImetals. Participants included Marcelo Llambias, IT Manager at Tenaris, who shared his experiences of establishing a competence center, and Bakhrul Ulum, Director of Krakatau Information Technology, who re-

had been perfectly organized by the ASAŞ team, provided insights into the production processes and their management with PSImetals.

### A missed opportunity or visions of the future?

The parallel event DigiBrunch centered around cloud computing. Its attendees were quick to agree that the topic holds great potential for the steel industry. "Whether MES will run in the cloud is still uncertain," said Franz Nawrath, Key Account Manager PSI Metals. "There are two key issues here: data security and network availabil-



Attendees of the PSImetals UserGroup 2018 in Istanbul.

swer. Every performance must be tailored to the audience. In the same way, PSImetals allows its customers to tailor the software to their processes. We are the instrument; our users the musicians.

### Practical insight

With more than 100 attendees and the highest ever number of customer pres-

ported on a self-managed PSImetals implementation.

### Art you can touch

Participants were also able to experience another branch of the arts during the plant visit to ASAŞ. Various aluminum artworks made as part of the ASAŞ Art Initiative were admired extensively. The tour of the plant, which

ity." These were the main reasons why people are still skeptical about the idea of putting the factory in the cloud. ☺

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News: PSI Logistics leads APEROL research project for autonomous driving

## Order Disposition System for Mobility Services

PSI Logistics GmbH was awarded the leadership of the consortium for the research project “Autonomous, person-related organization of road traffic and digital logistics” (German APEROL) by the Federal Ministry of Transport and Digital Infrastructure.

The goal of the project is the implementation, testing and validation of a holistic approach for an optimized, fully-automated organization of traffic that takes

GmbH. Under the leadership of PSI Logistics, these will develop the technical basis for autonomous personal transport and digitalized services in the urban logistics by the end of 2020.

muneration system in a cloud-based framework.

The autonomous passenger vehicles management (scheduling, routing, and billing) is based on the PSItrms Transport Management System from the PSI Logistics Suite. In the framework of the research project, amongst others, processes and methods of artificial intelligence will



The project team at the kick-off is ready to start.

into consideration the individual needs of citizens and provides services for a fully-automated, optimized transportation system accepted by the public. The partner project consist of five research institutions of the RWTH and the University of Trier, the City of Aachen, e.GO Mobile AG, MAT. TRAFFIC GmbH as well as Ergosign

PSI Logistics will develop the required algorithms and simulation technologies for mobility services in the field of software. This includes, amongst other things, the development of a user-friendly graphical user interface for intelligent mobility as well as the development of a transport control and an integrated booking and re-

be developed and used in practice in the vehicles. 

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Event: New Releases for PSIWms and PSIGlobal on the 5th PSI Logistics Day and at LogiMAT

## Discussions and Information About Logistics Issues

At LogiMAT 2019, PSI Logistics will unveil the new releases and extended range of functions of the PSIWms warehouse management system and the PSIGlobal strategic planning and optimization system for logistics networks. In addition, the exhibition stand in Hall 8, Stand D76 will provide an overview of latest developments concerning the integration of artificial intelligence (AI) methods and processes.

**T**he focal point will be cross-system networking and integration of modules from both PSI systems directly at the ERP level of the IT infrastructure. Specifically, innovations for visual control center displays, time window management with slot management and gate and ramp management with appropriate package routing in intralogistic processes will be demonstrated.

### Balanced resource utilization

In addition, the range of functions for the adaptive order start has been expanded, which uses high-performance fuzzy-logic algorithms to help PSIWms automatically ensure even utilization of resources when conditions change in dynamic and complex environments. In the new release, PSIGlobal offers the ability to harmonize heterogeneous data formats from different sources and to analyze holistic data sets. In terms of big data concepts, it is therefore a central data hub and destined to become a meta-system in supply chain networking.

### AI-based applications

There will also be an overview of latest developments concerning the integration of artificial intelligence

100 attendees are expected at the Wöllhaf Conference and Banquet Center at Stuttgart Airport.

Dr. Harald Schimpf, CEO of PSI Software AG, will deliver a keynote address outlining the general direction of product development in the PSI Group. Based on recent user reports, Javier Carvajal Vargas from Mister Spex GmbH and Steffen Leck from Schaeffler AG will explain the



The PSI Logistics Day provides a comprehensive information platform for customers, interested parties, and partners.

(AI) methods and processes such as fuzzy logic, neural networks, and deep learning in the products of the Logistics Suite.

As is tradition, the topics to be discussed at the 5th PSI Logistics Day will be outlined in detail on the day before the LogiMAT under the motto "Industrial Intelligence". Around

user benefits of PSI products in day-to-day work. 🌐

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Event: IPA Annual Conference 2018 Focusing on Discussions with Customers

## A Shared View of the Future of Digitization

Open discussions between customers and PSI, two extremely interesting and enthralling keynotes, and a broad program of presentations and workshops made the 32nd annual conference of the PSIpenta User Syndicate (IPA) a great success. The event was held in Hamburg under the motto “On course to the second wave of digitization”.

**W**hat this second, disruptive wave means for manufacturing SMEs and their ERP and MES providers was the topic of many presentations and workshops. In the presentation by the Managing Director of PSI Automotive & Industry, it became clear that a paradigm shift is currently taking place. Processes are becoming non-linear, networked, agile and global, competencies need to be redeployed, and “smart products” are being produced in “smart factories”.

### Shaping the paradigm shift

Digital products, services, and marketplaces are just one part of the change that companies must face.



Visitors attending one of the many fascinating presentations.

“Business models will change and data will become an even greater focus than before. These factors are critical to the success of Industry 4.0. We regard technology in the form of ERP and MES solutions as facilitators of the digital transformation,” summa-

rized Managing Director Dr. Herbert Hadler.

The new MES, which is already in use, was presented as the cornerstone of the solution. This is based on workflows that are created by advisors in direct consultation with the key users of a company. The result is significantly reduced development time for the adapted business logic, greater flexibility, and free capacity for developers who can concentrate more on further developing the software and products.

### Cloud solutions

Equally significant is the step into the cloud. Whereas concerns over data protection and technical barriers used to scare off many users, PSI can now offer solutions that guarantee German data protection and make applications available in real time.

The two keynote speakers outlined how to handle these challenges and even grow as a result of them. Rupert Deger, CEO of the European 4.0 Transformation Center, used the example of the e.GO Life to demonstrate how agile vehicle and software development can go hand in hand with PSI as a partner, and how a good “Made in Germany” product is possible at a low price with creative thinking.

Polar expert Trixi Lange-Hitzbleck on the other hand reported on her experiences in the eternal ice of the north pole. She offered the attendees a glimpse into her own unique world, with its many lessons on how to handle risks.



The customer workshops in particular were once again extremely popular.

## Digitization as a central thread

The popular customer workshops with reports and solution scenarios from the real world also demonstrated that digitization has arrived in manufacturing and is being actively shaped by businesses. Whether it be “PSI Industrial Apps—Mobile Warehouse as Precursor to a Paperless Workshop” at Salzmann, “Digitization and Lean Management” at Mosca or “E-Invoicing—Automatic Invoice Receipt Processing and Invoice Sending” at GEA Refrigeration, the workshops showed that PSI products are already generating digital dividends for many cus-

**The IPA annual conference 2019 will be held on November 7–8, 2019 in Erfurt.**

tomers and delivering added value for businesses and employees.

“The IPA annual conference at the end of the year is always an excel-



*The IPA again offered customers many opportunities to discuss working with PSI/penta.*

lent opportunity for us to thank our customers once again for the wonderful collaboration,” says Dagmar Mahrwald, Director Customer Care. “It’s a very special atmosphere in which all our customers come together in a high-class setting to learn more about specific topics and our strategic perspective in presentations and workshops. It is also another opportunity for our customers to engage in important

networking. Customers can not only discuss issues directly with PSI employees, but also with our managing directors.” 

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**News: To keep up-to-date with ERP and MES—ERP Demo is the place to be**

## Information Portal for Manufacturing Companies#

**The latest trends, reports from real deployments of business software, and how-to articles—all this and more can be found now at [www.erp-demo.de](http://www.erp-demo.de).**

In the new specialist blog, PSI experts share their expertise and write helpful articles on topics from the world

of ERP and MES. The portal also provides an overview of PSI software solutions that precisely responds to the

requirements of departments in manufacturing companies.

### Head over now

**[www.erp-demo.de](http://www.erp-demo.de)**

New articles appear regularly, so it’s worth checking frequently. 



*Discover software for your department.*



*The blog is all about ERP and MES.*

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Event: Review of ABM Week 2018 in Brazil

## Innovative Solutions for the Metal Industry

Latin America's biggest industry event for the metallurgy, materials, and mining sectors opened its doors to more than 1500 representatives of the metal and mining industry in São Paulo from October 2 to 4, 2018. One of the focal points was digital transformation. PSI was also there, offering interesting insights into how artificial intelligence (AI) can help better predict quality in complex material flows.

duction environment to be made faster and more efficiently in future.

### Record number of visitors

ABM Week 2018 drew to a close after three days with record visitor num-

One of the key issues being talked about right now in Brazil's metallurgy industry are the changes brought about by the 4<sup>th</sup> industrial revolution. What effects will the increasing use of digital technologies have? In the plenary session "Industry 4.0: Big Data Analysis for Process Optimization", four experts from industry and science—among them Heiko Wolf, Director of PSI Metals FutureLab—discussed how steel production can be managed in a new digital future.

### Big Data

Industry 4.0 technologies generate increasingly high data volumes. Although this data offers vast potential to optimize production processes, it is currently insufficiently utilized. To



PSI Metals Team at ABM Week 2018.

meet the new demands, the market and science are increasingly turning to innovative solutions. In his presentation, "Using AI Modeling for Predictive Quality and Routing", Heiko Wolf discussed ways in which artificial intelligence could be modeled to leverage deep insights from the collected data and reliably predict future trends. This would allow decisions in the pro-

bers. Once again, this year's steel week proved to be the flagship forum for networking and dialog in the South American steel industry. 

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# PSI

Industrial Intelligence

From April 1 to 5, 2019 PSI will present at the Hanover Trade Fair a wide range of software solutions for production, logistics, service and maintenance with a focus on AI applications.

**We look forward to  
welcoming you.**



News: PSI Metals Head Office Relocates to Düsseldorf

## All Change in November

When one door closes, another one opens—at Parsevalstraße 7a in Düsseldorf! On November 24, 2018, PSI Metals Head Office relocated to a new, modern office building with a view of Düsseldorf Airport.

**W**e look back on more than 15 years at Heinrichstraße 83–85 with



The new office building of PSI Metals Head Office in Düsseldorf.

happy memories and a little nostalgia. Due to our constant growth, however, those premises could no longer meet our needs. We therefore decided to move to a bigger office to prepare ourselves for the future and to better serve our customers.

We look forward to welcoming you to our new home soon! 

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Page 15: PSI Logistics  
Page 16, 17: PSI Automotive & Industry  
Page 18: PSI Metals  
Page 19: PSI Metals

## EVENTS

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



30.–31.01.2019	Hamburg Logistics Day Hamburg, Germany	PSI Logistics
18.02.2019	PSI Logistics Day Stuttgart, Germany	PSI Logistics
19.–21.02.2019	LogiMAT 2019 Stuttgart, Germany	PSI Logistics PSI Automotive & Industry
26.–28.03.2019	Passenger Terminal Expo London, UK	PSI Logistics
01.–05.04.2019	HANOVER TRADE FAIR Hanover, Germany	PSI Group

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