

# PRODUCTION manager

Journal for logistics & production



Greif-Velox machine factory controls manufacturing with PSIpenta

## Flexibility as the paramount requirement

### Interview

Internet of Things—  
automation and digitisation  
Future-proof technologies

### User report

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material usage

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PSI at CeBIT and Hanover  
Messe 2016  
User-optimised software  
solutions live

## EDITORIAL

Dear readers,

PSI Automotive & Industry GmbH— as of 1 January, 2016 this is the new company name of PSIPENTA.

I (Alfred M. Keseberg) am delighted, as this means our company name now more closely reflects our positioning within the PSI Group. The new name also emphasises the focus on the automotive industry as well as classic mechanical and plant engineering.

At the start of the year, I (Alfred M. Keseberg) handed over the baton of the operational business to the two

PSI Managers Dieter Deutz and Dr Herbert Stefan Hadler. I will, however, remain a spokesman for the management until 31 March, 2016, and thereafter as a consultant for large customer projects. We deliberately chose the term “baton” because we will continue to work with you going forward, primarily through co-operation on the development of our products and services, not least in the implementation of the major project “Industrial Internet”. Within the PSI Group we are working with common purpose on the practical realisation of this goal.



This edition contains user reports, product reports and interviews outlining how our software is used today, potential future developments and what the company is currently working on. Our lead article reports on how the Greif-Velox machine factory uses PSIPenta to control manufacturing with increased flexibility, and how NLMK Clabecq uses PSIMetals to achieve real improvements in supply chain planning, material use optimisation and plant planning. In the interview, Dr Hans-Thomas Nürnberg, Head of Technology at PSI Logistics GmbH talks about the

value of technologies that underpin the Internet of Things and developmental work.

I hope you enjoy reading this issue.

Three handwritten signatures in blue ink. The first signature is 'Alfred M. Keseberg', the second is 'Dieter Deutz' and the third is 'Dr. Herbert Stefan Hadler'.

Alfred M. Keseberg Dieter Deutz Dr. Herbert Stefan Hadler  
Managing Director  
PSI Automotive & Industry GmbH

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User report: Greif-Velox machine factory controls manufacturing with PSI*penta*  
**Flexibility as the paramount requirement**

**L**übeck plant manufacturer Greif-Velox specialises in filling systems for a wide range of industries and materials. All systems are built to customer specifications; on average, 180 to 200 bills of material are used per plant with up to 35 levels. “Most ERP systems are unable to handle such requirements”, says Rundshagen. “In our plants, PSI*penta* can show its strengths to the full in manufacturing.”

Innovation and flexibility have always been a guarantee of success at Greif-Velox. The company was founded in 1938 by the miller and inventor Ernst Mahlkuch. Mahlkuch, whose “Greifmühle” mill had been in the family’s possession since 1734, produced the first automatic “Velox” flour sack filling and weighing machine, which he patented in 1908.

This system laid the foundations for the product portfolio of Greif-Velox: innovative filling systems for food, building materials and chemicals of varying consistency, from powders and granulates through to crystalline

products. Each year, Greif-Velox processes up to 45 major orders with an overall turnover of up to 14 million euros.

**No two machines are the same**

The Greif-Velox product portfolio includes various types of plant, especially for companies in the chemicals, petrochemicals, building materials and food industries. These include filling systems—including dosing, weighing and sealing of bundles—as well as solutions for palletising and transport safety. “No two machines are the same”, explains IT Manager

Michael Rundshagen. “Not only do our customers fill the widest range of materials, but they also all have their own processes into which the filling systems must be seamlessly integrated.”

A sophisticated manufacturing concept ensures that Greif-Velox can meet these very specific customer requirements efficiently and economically. Greif-Velox plants consist largely of proven, standard modules, manufactured by the company itself that can be varied and combined in multiple ways. The huge depth of manufacturing enables the plant builder to tailor solutions to customer needs easily and flexibly.

Since 1993, Greif-Velox has used ERP solutions from the Berlin-based PSI Automotive & Industry (formerly PSIPENTA) to manage its production—initially using the PIUSS-O

production control system, and since 1999 its successor, the ERP and MES system PSI*penta*. “At that time, PSI*penta* was introduced within four months as part of a rapid introduction”, says Michael Rundshagen. “Today, 45 users work with the system here, from purchasing through to accounting and spare parts distribution. By 2016, this number will increase to 50. The system controls all aspects of production: scheduling, work plans, BOM explosions, capacities and so on. Without PSI*penta*, the wheels would grind to a halt.”

### Tightly integrated

At Greif-Velox, PSI*penta* works primarily with two systems: the 3D CAD program SOLIDWORKS from Solidpro is used in the design of assemblies and modules. The product data and document management system PRO.FILE from PSI partner PROCAD

manages drawings and parts lists, thereby connecting CAD and ERP. All systems are seamlessly integrated with each other. Changes on the design side or to BOM items are automatically transferred to PSI*penta* and vice versa. For example, if as a result of changes to customer specifications, another part has to be installed, the user only needs to input this in the corresponding BOM in PSI*penta*; the changes are then automatically replicated to PRO.FIFFE and Solidworks. With projects lasting up to one year, such changes to customer specifications tend to be the rule rather than the exception, even up to shortly before delivery. Michael Rundshagen gives an example: “A customer needed a plant for filling a liquid product. Right in the middle of the project—our plant was already about 70% complete—the customer had to modify their product. PSI*penta* enables us to

map such extensive changes easily and flexibly.” As such, the corresponding assemblies in the system were cancelled and replaced with new ones. Items were removed or added in almost all of the more than 100 BOMs. Naturally, these necessary changes also affected the designs in SOLIDWORKS, which were updated in all of the connected systems without the need for any further user intervention.

### High transparency

Thanks to PRO.FILE, all manufacturing-related documents such as drawings and bills of material can be opened as PDF documents from any workstation as required. The extensive software support in manufacturing, parts management and product data management ensures greater transparency—further supported by the high proportion of in-house production since around 90% of all pro-



Production of innovative filling systems is controlled with the PSI*penta* ERP and MES system.



The PSIpenta ERP and MES system controls all aspects of production, including scheduling, work plans and capacities.

duction work is performed on-site at Greif-Velox. This ensures excellent quality and traceability, but also the availability of spare parts over the entire life cycle of a plant.

Owing to the complex manufacturing processes and long project times at Greif-Velox, high-performance project management is also essential. For a long time, a widely used spreadsheet program was used for this purpose. Since the start of 2015, the project management tool *PSIprofessional*, a supplementary module to *PSIpenta*, has been successfully deployed in a test phase. “With *PSIprofessional*, we can plan and monitor the required times and capacities even more effectively”, explains IT Manager Rundshagen. “This helps us to make realistic forecasts and ensure punctuality.” *PSIprofessional* retrieves all the necessary up-to-date data directly from *PSIpenta* and runs simulations to predict runtimes, resources and third-party services that may be required.

Planners no longer need to laboriously enter and update information. The current status of projects is clear for all users to see—countermeasures can be taken immediately in the event of bottlenecks. “In test mode, we are monitoring important orders in particular with *PSIprofessional*”, explains Michael Rundshagen. “And this has already enabled us to repeatedly identify undercapacities, enabling us to respond quickly. In December, the tool will go live—after this time, all projects will be planned in *PSIprofessional*.”

### Service with added value

Michael Rundshagen also praises the customer service of the manufacturer: “The support is incredibly good, very friendly, engaging and helpful, and the chemistry is always good. And availability is constantly improving.” Another plus is the independent *PSIpenta* user community, IPA. “We have been to every IPA annual conference, and also regularly attend

the regional meetings of the northern user group”, says Michael Rundshagen. “We greatly value the opportunity to learn from each other and work with each other. In 2012, we even hosted the regional annual conference in Lübeck. And we have started to establish a regional customer community in the Lübeck region, offering even more dialogue.”

Michael Rundshagen is satisfied with “his” ERP system: “*PSIpenta* has never let us down. It was the right choice.” It is therefore only logical that Greif-Velox is continuously expanding the system. Plans currently include modernising the shop-floor data collection and a solution for warehouse analysis. 🌀

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Interview: Internet of Things brings automation and digitisation together

## Future-proof technologies

Production manager spoke with Dr Hans-Thomas Nürnberg, Head of Technology at PSI Logistics GmbH, and asked him about the importance of technologies that will shape the Internet of Things and development at PSI Logistics.

Dr Nürnberg: Well, Bluetooth Smart or Bluetooth Low Energy is currently changing the technology base in the area of IoT chips—both in terms of the

**D**r Nürnberg, for a long time, PSI Logistics has focussed on the integration of applications related to the Internet of Things (IoT) into the functional scope of standard products. What's it all about?

Dr Nürnberg: The idea of the Internet of Things is to bring automation and digitisation together. In future, workpieces, products or packages will be equipped with information that will allow them to autonomously manage their route through the supply chain. This will have an enormous impact on logistics. This is why PSI Logistics has been quick to look at ways of integrating the latest technologies, such as IoT chips, into the development of our standard products.

**But isn't all this in the distant future!?**

Dr Nürnberg: Naturally, current developments are just a stepping stone. We work with components that are regarded as evaluation units. However, the components are being developed incredibly quickly, and development advances in other areas, such as sensor technology, storage capacity and transmission technology, complement the existing technology base or provide additional options. Primarily, it is also about creating stable structures for future-proof applications.



*Dr Hans-Thomas Nürnberg, Head of Technology at PSI Logistics GmbH.*

**So more of a future-focussed project.**

Dr Nürnberg: Yes and no. We have already launched concrete solutions, for example for shipment tracking. The latest developments in information and communication technology, i.e., Bluetooth Smart, now control hardware and transfer options that allow us to quickly implement further applications in the areas of localisation/navigation, motion detection and fill level monitoring.

**OK, that was a lot of information to take in all at once. What does Bluetooth Smart have to do with shipment tracking?**

hardware and the transmission paths. Bluetooth transmitters called “iBeacons” are cost-effective, active chips that have such low energy consumption that they function autonomously for years. These chips not only transmit their individual identification, but can also capture motion and environmental data such as temperature, position changes or humidity via integrated sensors. Thanks to our recent development work in the field of IoT chips, our standard systems can already include these properties in their scope of function—allowing them to be used for tracking and tracing applications for example.

**But aren't these options that are already covered by RFID technology?**

Dr Nürnberg: Not entirely. For one thing, a transponder infrastructure is relatively cost-intensive compared to an IoT chip set-up. In addition, you also have to consider the benefits of Bluetooth Smart. iBeacons can be read from up to 30 metres away. Furthermore, mobile terminals running on iOS or Android are already designed to read iBeacons. In view of the rapid development cycles in consumer electronics, this opens up exciting new horizons. The infrastructure for such applications is growing all the time and the solutions are becoming ever more networked.

### So IoT chips are the transponders for mass applications?

Dr Nürnberg: In a nutshell, yes. The technology is future-proof, and already offers practical options for automated, networked identification processes with an advanced range of information and functions. They are a key tool in the digitisation and implementation of future projects such as Industrial Internet and the Internet of Things.

### You spoke about solutions you have developed. Could you elaborate?

Dr Nürnberg: Our IoT solutions cover three important areas. The first, which we have termed the “Smart Parcel” is already in the

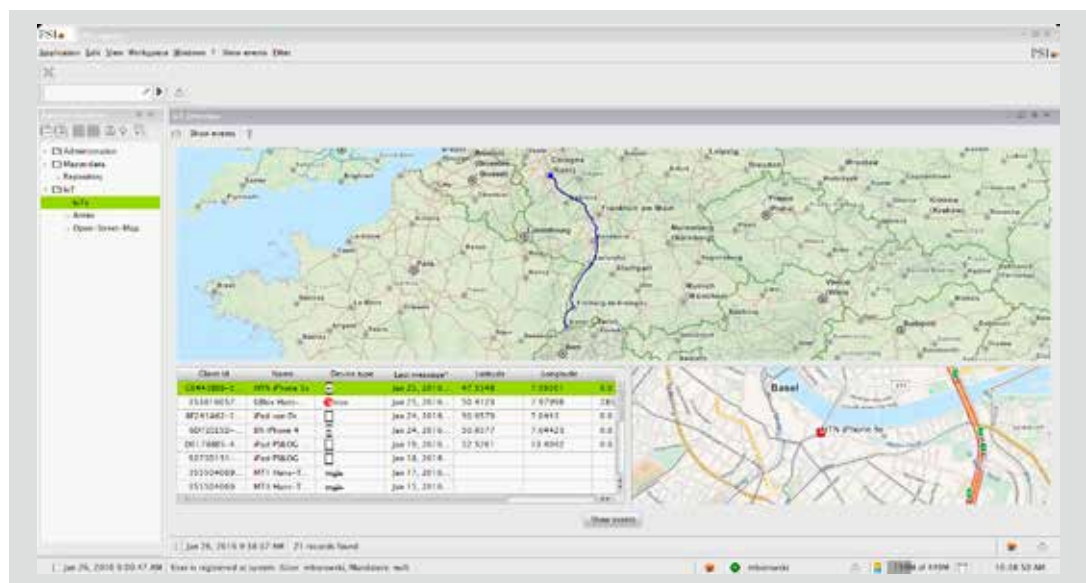
pilot stage. This concerns shipment tracking. IoT chips are used for multi-level tracking & tracing of parcels. Depending on the market penetration of the technology, later stages of development will include applications where advanced chip functions and links to smartphone apps will allow collections with location sharing.

### And what are the other two areas?

Dr Nürnberg: These include solutions in the area of indoor navigation and replenishment. For in-

This makes practical solutions feasible for randomised rack and floor storage. Other possible functions include future linking with the outdoor positional data of transports running in PSImts.

As for replenishment, the sensors of the IoT chips are used for permanently measuring or determining fill levels—independently of overarching control and management systems. The positional data can, for example, be used to optimise the automation of replenishment or the disposal of mass goods.



A sample application of IoT in PSI Logistics software.

house location applications, we are working with the Qualicision® technology from our sister company F/L/S Fuzzy Logik Systeme GmbH—hence the term QBeacon. Qualicision® technology enables us to make high-quality decisions in real time even with difficult and complex data. This in turn enables us to use the field strengths of the Bluetooth transmitters in objects fitted with QBeacons, enabling reliable location determination in a given area.

It sounds like you can look forward to some interesting projects and exciting development work in the next few months. Dr Nürnberg, many thanks for the interesting insights. 🌀

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R & D: Secondary Metallurgy Heat Scheduling

## Optimisation through large neighbourhood search

In 2011, the first results were presented from collaborative research between the Catholic University of Leuven (CU Leuven) in Belgium and the PSI Metals competence centre in Brussels (Production manager edition 1/2011). This first research project, called ParAPS, investigated constraint programming approaches to improving planning results in the area of continuous casting. The results were extremely promising, a new research project reveals further potential for improvement.

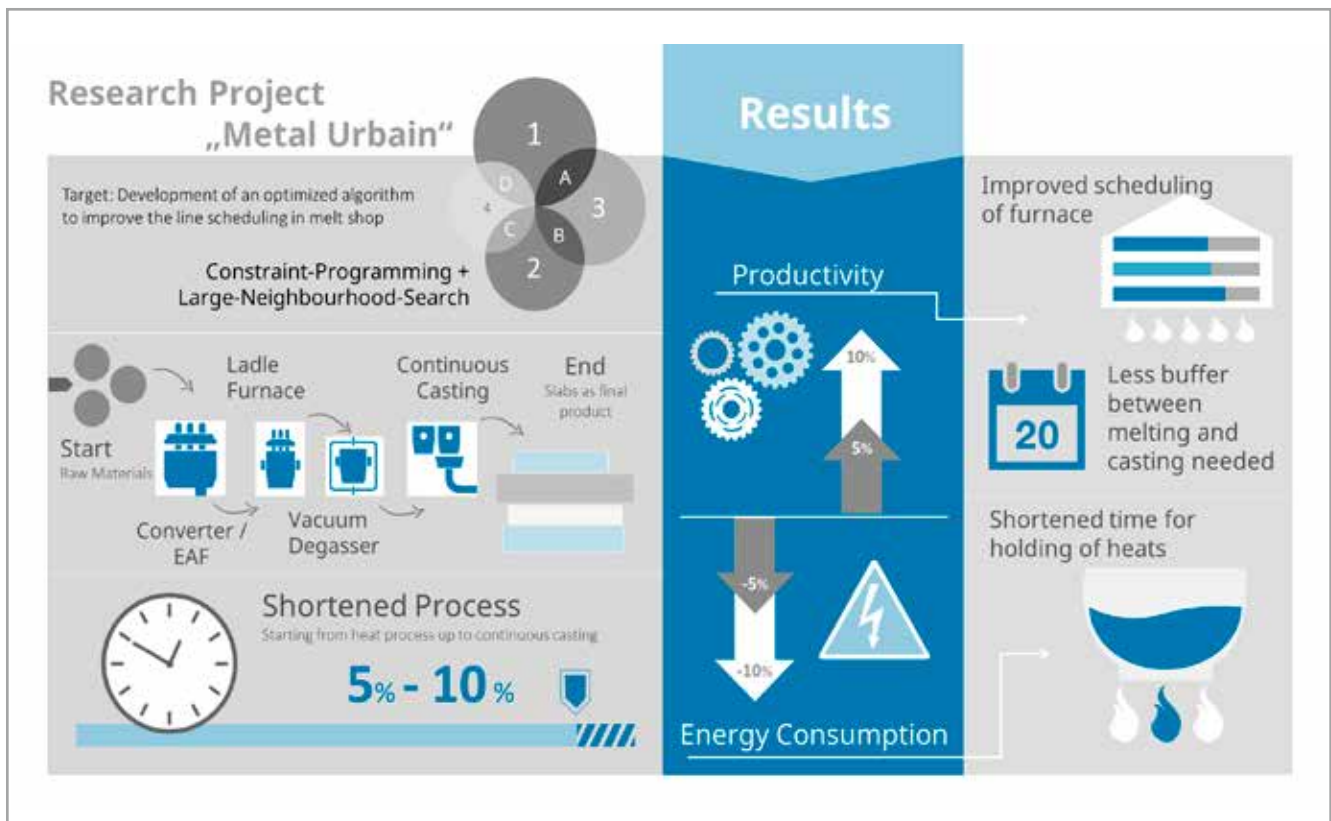
Four years later, PSI Metals has gone a step further by developing an algorithm based on constraint programming and Large Neighbourhood Search (LNS) techniques under a follow-up project called “Métal Urbain” together with sister university UCL (Université catholique de Louvain). The algorithm can be used to improve

planning in the overall steel making process over the long term. Large Neighbourhood Search is a technique that attempts to find good or near-optimal solutions of a mathematical optimisation problem. In an iterative process, attempts are made to improve the current solution by searching for a better solution in the “neighbourhood” of the current solu-

tion. LNS is designed to avoid being trapped in a local optimum by extending the “search neighbourhood” starting from the current solution. In other words, glancing over the fence to see what the neighbors are up to can be very helpful!

### Practical benefits

Despite our fascination with pure mathematics, the priority is of course finding the practical benefit. The aim of the project was to improve the current algorithm in the area of plant planning in steel making area. The technical focus was on achieving greater flexibility while retaining stability. The results are impressive. In addition to maintaining stability, it



Potential improvement to planning of the overall steel making process thanks to a new algorithm. (The project was subsidised by the Brussels-Capital Region – Innoviris.)



was possible to improve two aspects of heat scheduling that results into immediate customer benefits.


First, by enabling improved heat scheduling, the new algorithm determines more realistic deadlines for transferring heats through the steel shop to the casting operation which reduces the time buffer necessary and allows up to 10 % better throughput. As a result, the utilisation of the continuous casting plant can be significantly increased, which has a direct impact on productivity. The second key-improvement concerns energy consumption. By starting the steel

making process as late as possible and with more precise forecasts for the time of completion, energy consumption can be reduced by up to 10% in downstream processes because of reduced heat retention times.

### Implementation

Following the successful R&D phase, the new algorithm will now be implemented in the PSImetals planning products. A new project is already in the making based on the new opportunities offered by the improved method. PSImetals developers already have the next goal in sight: they be-

lieve in the near future it should be possible to use the new algorithm to solve complex planning tasks in other areas as well.

The collaboration with UCL is an excellent example of a successful R&D project between academic research and industry resulting in immediate customer benefits. 

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News: PSI Metals announces new strategy for Asian markets

## Efficient production for metals producer in Asia

Effective first February 2016, PSI subsidiary PSI Metals GmbH announces its new strategy for growth across Asia, 12 months after the successful integration of its Broner Metals acquisition. Across Asia, the merged business of PSI and Broner is already working with many customers such as Tata Steel India, Nippon in Japan, and Tangsteel in China; and this new strategy drives a multi-country vision to support its important customers across the region.

**T**his new Asia strategy incorporates existing PSI Metals solutions for production planning, scheduling, and MES, and builds on successful Industrial Internet and SAP integration with over 200 of the world's greatest steel, aluminium, and other metals companies.

### Higher competitiveness

It also brings together the existing PSI teams in India, China, and

tors, Mark Ferguson (Sales) and Tim Gedrych (Delivery).

The joint managing directors of PSI Metals Group in Germany, Mr Detlef Schmitz and Mr Sven Busch agreed that “we have long dreamed to implement strong business solutions for the whole of Asia, including Japan; and now have a full regional organisation with a competent and capable management team to deliver the winning strategy for our very important customers across the region”. 



*The new management team for Asia.*

Japan under one management team –for absolute focus on solutions design and customer service. The new management team in Asia will be headed-up by joint Managing Direc-

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Customer Report: PSImetals Planning solution at NLMK Clabecq

## Zero waste slabs

Since 2008 the PSImetals system at NLMK Clabecq is running and optimising the supply chain of producing and delivering thin steel plates. This is a good time to review and evaluate the achievements. Aiming to improve yields, inventories and customer service NLMK Clabecq achieved tangible benefits using PSImetals for Master Planning, Plate Assignment and Plate Mill Scheduling.

Customer specific thin plates are produced out of thick slabs in different production steps. The business process starts with slabs supplied by NLMK Russia, the mother company. Those so-called mother slabs are then cut into daughter slabs and rolled into mother plates before further cut into final plates and delivered to customers around the world. Typically several sizes are therefore cut and a complex cutting plan is required to achieve the best possible utilisation of materials to avoid costly waste and yield losses and to optimise the rolling and cutting process.

In the past NLMK Clabecq experienced low yield performance and a steady increase in the stock of unused daughter slabs. The old IT system was systematically cutting partially different mother slabs thus generating a big amount of unassigned daughter slabs to be piled. As daughter slabs are difficult to pile and to handle it is important to limit their amount. At the same time the assignment process was cumbersome involving a lot of time and personnel. In 2006 NLMK Clabecq therefore started with the implementation of PSImetals as new IT system to improve the overall supply chain and business processes covering the areas of Master Planning, Material Allocation and Scheduling as well as to replace the slab and plate assignment system by a state of the art solution.

### Reduced Stocks and Maximised Yield

It all starts with the objective of making the best out of existing slabs, somehow a “Zero Waste” strategy. Asking Wikipedia “Zero Waste” means ... managing products and processes to systematically avoid ... the volume ... of ... materials, conserve and recover all resources ...”.

### NLMK Clabecq

NLMK Clabecq is a hot rolled steel producer specialised in producing 750000 tonnes of thin steel plates ranging from 3 to 120 mm thicknesses. The Clabecq site is located in Ittre, Belgium. Products are medium and heavy plates, as well as quenched and tempered plates to be used in different markets as construction, shipbuilding, energy, transport, a.o. Clabecq sheets are renowned for its surface aspect, its flatness and its tight thickness tolerances and are distributed around the world, with a third of sales destined for locations outside Europe.

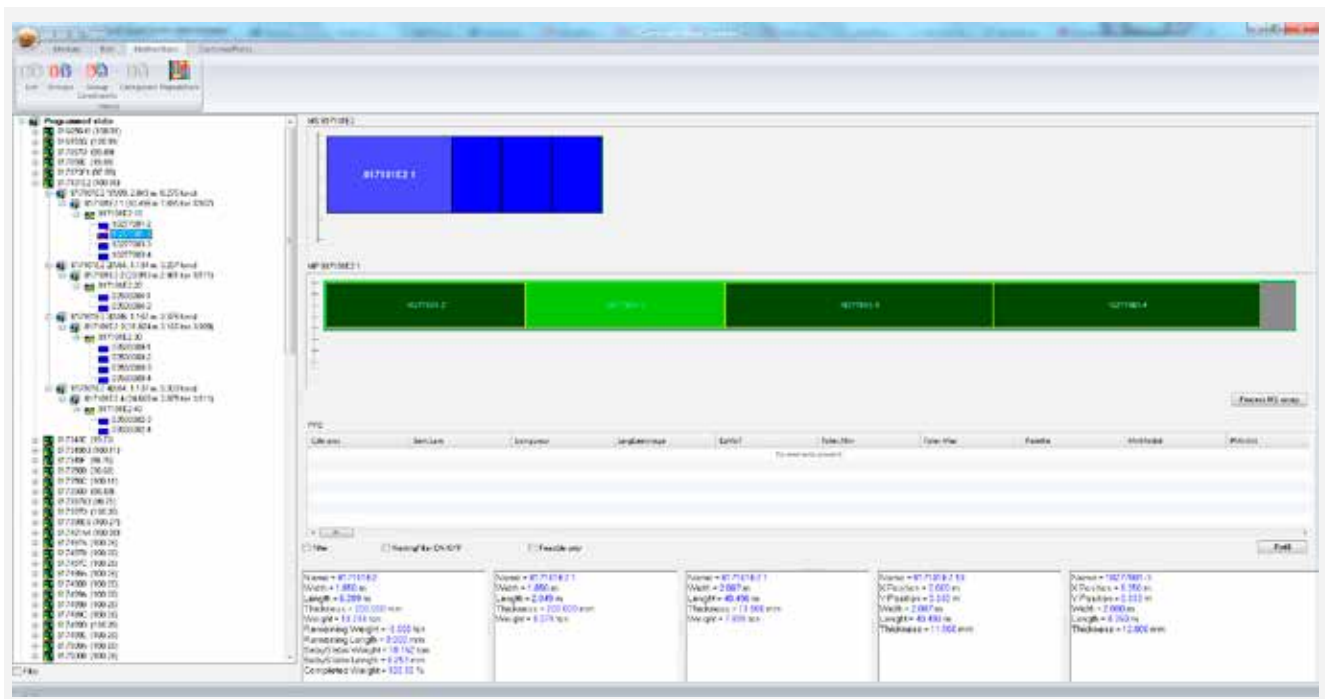
Ordering new slabs before checking what's in stock increases the level of stock and lengthens the overall lead time as slabs are supplied by the Russian mother company (6 weeks). But, using what is already there was not

supported by the old system as inventories were not considered. All material assignments could only be done sequentially order per order not allowing the combination of customer orders. Beside that it was also not possible to maintain the assignment knowhow in general and the assignment process was time and people consuming.

The PSImetals Plate Combiner now ensures that available slabs are used during assignment to minimise steel losses and unassigned stocks. Planning and production people are supported by configurable rules in PSImetals offering all matching and combination possibilities when assigning a material unit. Even old and difficult slabs are ready to be assigned whenever a fitting customer order comes in. Cherry picking of “easy-to-be-assigned” slabs will be automatically avoided as all matching slabs are considered. The system then generates 3 layer cutting plans starting from customer plates to mother plates, mother plates to daughter slabs, and daughter slabs to mother slabs aiming to minimise overall scrap of slab or plate wastes. By using the available mother slabs the inventory of unassigned daughter slabs was reduced by 50%. The rule-based assignment resulted in a faster assignment process and led to a yield improvement from 1.22 to 1.17 (means 5% less material input needed to produce customer orders or 37 500 tons less waste annually).

### Improved Customer Service

Delivering the right products in time is a must-have for customer service. The former planning in SAP focused



The advanced graphical user interface guides the user during assignment planning and production people can now focus on other tasks.

on plate mill capacity only without consideration of downstream lines and existing inventories. Thus the different line productivities could not be aligned and resulted in downstream bottlenecks and storage problems. Sales people were not able to ensure due dates, too many orders were delayed. Today the PSImetals Master Planner models the full supply chain including mill campaigns, inventories, lead times, yield and different constraints. The capacity plan for all lines is optimised avoiding bottlenecks and considering promised due dates. All lines are synchronised and PSImetals balances the intermediate




Plant of NLMK Clabecq in Ittre, Belgium.

stocks ensuring build of materials that will be further processed soon. Planner and Sales people are always up-to date about the order status and are automatically informed about delays by alerts. The customer service therefore could be improved by 20%. Furthermore scenario simulations help to optimise shift management and to plan plant staff utilisation in times of overcapacity. In case of major unplanned line breakdowns the recovery time could be decreased from 6 weeks to 2 weeks.

### Smoother plate mill scheduling

In the past the high level of inventory was inducing a lot of slab movements (piling and unpling) needed to bring the right slabs to a qualitative plate mill schedule. As slab supply could not be ensured in-time schedules could only be made on a daily/shift level, mainly by manual scheduling. The scheduling process was time and people consuming and only a limited number of basic scheduling rules could

be considered. The PSImetals Line Scheduler now automatically generates plate mill sequences. Slabs are selected based on availability, storage and pile position location. Orders are selected based on due date and priority always balancing conflicting constraints. The decreased level of inventories allows making smoother operations allowing for better plate mill sequences. The scheduling horizon was lengthened up to 4 to 7 days. Furthermore the schedule quality was improved by PSImetals resulting in 20% less scheduling rule violations. Due to the standardised modeling and maintenance of all the scheduling rules and constraints the scheduling process could be fastened and new planning personnel can be trained more easily. 

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User report: Eurotape controls processes with Warehouse Management System

## Dynamic development with PSIlwms

About fifteen years ago, Berlin-based Eurotape Media Services GmbH, one of the leading German service providers in the media industry, first implemented a logistics solution for dispatching goods manufactured in-house and products of other customers in the industry. Today, the Distribution department is an independent division with fifteen clients and additional sub-clients, and is the main revenue driver of the company.

In 2006, the company decided to look around for a new efficient Warehouse Management solution that would cover the many B2B and B2C requirements of the client group in its standard system with a corresponding range of modules. The new Warehouse Management System (WMS) therefore had to be

able to meet the requirements of the picking and packaging processes, and link to large central warehouse locations, similar to the Amazon model. Other requirements included multi-client capability, strategy diversity, DESADV connection (delivery advice), warehouse transparency with a permanent inventory, route optimisation with multi-order picking and system flexibility with the ability to customise.



*Picking and packaging processes are the key focus and must be particularly efficient. Furthermore, data connection to large central warehouses of companies such as AMAZON is crucial.*

**Holger Michael**  
Logistics Manager, Eurotape



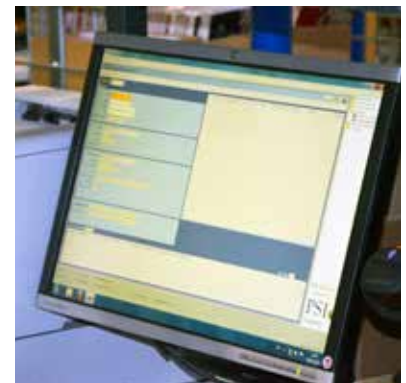
able to meet the requirements of the picking and packaging processes, and link to large central warehouse loca-

After shortlisting six additional WMS providers, the decision was taken in 2007 to deploy the Warehouse Management System PSIlwms. A specific concept was then jointly developed for Eurotape.

### Process control via Finite Capacity Scheduling


Today, processes are controlled via Finite Capacity Scheduling, and

in addition to goods received and inventory management, primarily include picking and packaging. The order processing data is transferred directly to PSIlwms from the ERP system or the connected customer



Processes are controlled via PSIlwms Finite Capacity Scheduling.

systems. Finite Capacity Scheduling then activates the order production priorities and process chains defined in PSIlwms.

The internal transport orders are route-optimised and bundle multiple transport units into one unit. Picking is a multi-order picking process via MDT radio data. For the packaging process, a detailed packaging control is requested from PSIlwms. Each individual product must be scanned because it is essential, particularly in the private customer segment that the right product is delivered to the right address. 



Route-optimised transport orders bundle multiple transport units into one unit.

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User report: PSI $l$ ums controls warehouse of one of the biggest tool and equipment dealers in Belarus

## Increasing stock handling and quality

The Moscow branch of PSI Logistics GmbH successfully completed the commissioning of the Stock Management System PSI $l$ ums in late August 2015 for the Minsk-based firm Instrumentkomplekt. The Belarus company is one of the biggest official importers of prominent equipment brands such as Bosch, Toptul, 3M, Makita, Startul, ECO, Solaris and Fiskars.

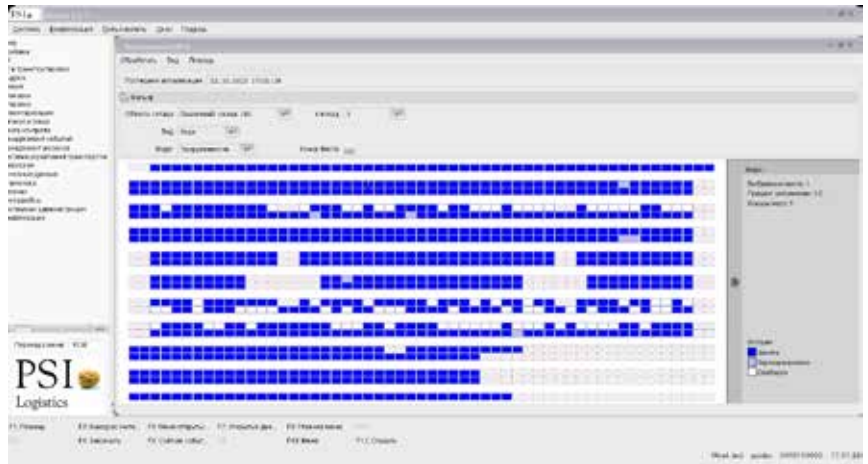
in choosing the Stock Management System was the proven system stability taking into account such a large product range. The expertise gained by PSI Logistics in a range of success-

**T**he biggest challenge of the project was the 10000 m<sup>2</sup> Instrumentkomplekt warehouse with a range of some 15000 items of vastly different sizes—from small parts to bulky items.

### Speed and efficiency for e-Commerce

Following the implementation of the comprehensive warehouse management system PSI $l$ ums, stocks can be controlled transparently and losses minimised thanks to end-to-end use of mobile data terminals in goods received, in the cross-docking process, in picking and in packaging and dispatch control.

Picking times are also shortened due to a defined multi-order picking process in which the goods are simultaneously removed from racks quickly and precisely for multiple orders. The



*PSI $l$ ums enables stocks to be controlled transparently and losses to be minimised.*

picking process is accelerated thanks to shorter routes to the storage bins. Simultaneous order processing was also introduced in the small parts and bulky items warehouse, so that the goods from both warehouse locations now arrive at goods issue at virtually the same time. The detailed packaging and dispatch control at goods issue with barcode scanners reduces the number of incomplete or incorrect packages, considerably improving customer satisfaction.

### Proven stability and competence

The most important factor for Instrumentkomplekt

ful projects in similar fields was crucial. Projects such as an implementation for the Russian automotive spare parts supplier Avto49 or the warehouse operated by logistics service provider Stute in Germany for tool manufacturer Hilti.

### Increased stock handling and improved quality

Aleksander Alekseichik, deputy CEO of Instrumentkomplekt, is delighted: “PSI $l$ ums enables our company to significantly increase stock handling and improve the quality of our order processing while retaining the same capacities.”



*The 10000 m<sup>2</sup> warehouse holds some 15000 items of vastly different sizes.*

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Event: Logistics Day 2016 in Stuttgart

## Networking of production and logistics

Networking of production and logistics is the focus of the 2nd PSI Logistics Day to be held on 7 March, 2016, one day before LogiMAT, in the Wöhlhaf Conference and Banqueting Centre at Stuttgart Airport. PSI Logistics is one of the first software companies to tackle the challenges of Industrial Internet with a core module for combined optimisation of production and logistics processes.


In addition to insightful presentations by renowned speakers, customers and other interested parties present can also expect valuable information about new functions and application options in the latest product releases.

### Presentation and product highlights

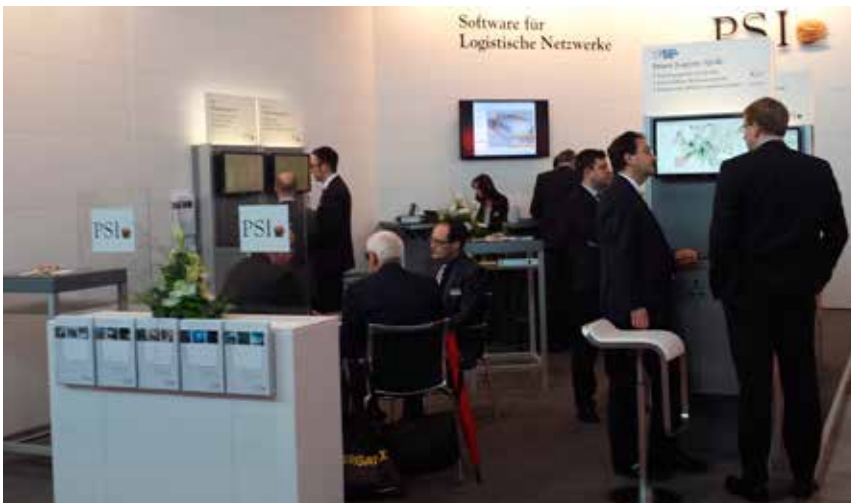
As a keynote speaker, Ueli Luedi, Distribution and System Transport Manager at Swiss Post AG, will outline the optimisation potentials that the company was able to leverage with

the Transport Management System *PSI<sub>tms</sub>*. Markus Müller, Operations Support Manager DHL/HSE24, will detail the particular challenges that teleshopping poses for contract logistics within the context of demand-based controlling and mapping of order processing. Dr Jens Wollenweber, Logistics Network Planning Manager at the Fraunhofer Working Group for Supply Chain Services (SCS), will explain how supply chain management works with *PSI<sub>global</sub>*. Further highlights include exclusive information about the latest functional enhancements to the standard systems *PSI<sub>airport</sub> 3.0*, *PSI<sub>global</sub> 2.4* and *PSI<sub>tms</sub> 3.5*.

### PSI at LogiMAT

The latest product innovations will also be presented at LogiMAT, to be held in Stuttgart from March 8–10, 2016 (stand 7D76). 

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PSI Logistics presents production innovations at its stand.



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8–10 March, 2016  
New trade fair in Stuttgart  
Hall 7, Stand 7D76



Event: Review of PSImetals UserGroup in Dresden

## Visions and realities in the metal industry

In early December last year, 50 customers accepted an invitation to the PSImetals UserGroup in Dresden. The main topic of the user group was “Data Driven Production—Industrial Internet for Metals”, explored in customer presentations, workshops and a podium discussion.

In his keynote speech, Univ.-Prof. Dr. Christian Ramsauer from the Technical University of Graz spoke about the background to Industrial Internet in Germany, and similar initiatives around the world, highlighting numerous possible applications in the metal industry.

Ralf Damitz, Head of IT Business Excellence at thyssenkrupp Rasselstein, where PSI is currently implementing a new MES system, outlined the practical scope of the topic at thyssenkrupp Packaging Steel. Damitz anticipates many benefits for the future including in standardisation of the IT landscape in production-relevant areas.

### Product highlights

The new PSI Click-Design and Flow Configurator—two highlights of the new PSImetals 5.11 release—were presented to the attendees in parallel sessions. Afterwards, Raffael Binder, Marketing Manager at PSI Metals, invited

the speakers Ralf Damitz, thyssenkrupp Rasselstein, Dr Werner Aumayr, AMAG, Univ.-Prof. Dr. Christian

The presentations are available for all customers as a PDF download and video stream in the customer portal of [www.psimetals.com](http://www.psimetals.com)

One-off registration required.




Ramsauer, TU Graz and Jörg Hackmann, Director Product Development PSI Metals to a podium discussion on the subject of Industrial Internet.

### Change required in industrial production

In general, the Industrial Internet was assessed as being very positive because the initiative has brought about increased awareness of industry in politics and the

media, led to research funding and accelerated some management decisions. For reasons of IT security, none of the speakers

would currently employ all the concepts of unlimited networking and IT autonomy in their production. However, they all believed that change is necessary in the area of industrial production. The first day was rounded off with a city tour of Dresden and a relaxed evening meal overlooking the Elbe. The next morning, BGH Edlstahl invited attendees to a tour of its special steelworks in Freital. Kimon Vamvakas led the BGH visitors through the plant and demonstrated the role of PSImetals in production. Back at the hotel, Dr Werner Aumayr, CIO at AMAG Austria Metall, gave a presentation on the company's investment strategy and the associated IT organisation of the Austrian aluminium manufacturer. He demonstrated how an advanced “cloud strategy” enables a company with a small workforce to meet all the requirements of a modern operation. Robert Jäger, Product Manager Planning at PSI Metals, presented the concept of KPI-driven planning optimisation. With a new consulting concept, PSI experts and customers are together able to pinpoint relevant KPIs to control the entire value chain more effectively. The outlook for the coming months, presented by Innovation Manager Luc VanNerom, was positive, particularly in the area of the Responsive GUI. 



Some 50 customers accepted the invitation to the UserGroup in Dresden.

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Event: PSI at CeBIT and Hanover Messe 2016

## Experience user-optimised software solutions live

**G**oing by its new name, PSI Automotive & Industry GmbH (formerly PSIPENTA) is to present modern and user-friendly software solutions for production planning and control. True to the motto “Software for Perfection in Production”, visitors will find out all there is to know about the optimisation of business processes and the entire value chain.

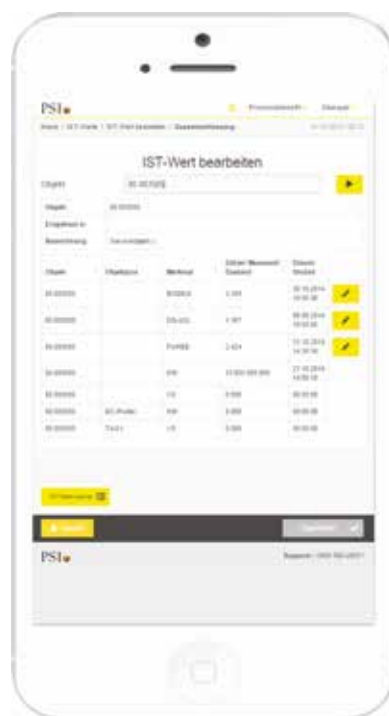
Things will be blooming again this spring in Hanover. Two major trade fairs will attract countless visitors and exhibitors to the state capital of Lower Saxony. With just five weeks to go, PSI Automotive & Industry GmbH will present its entire solution portfolio at CeBIT and the subsequent Hanover Messe.

### Service app at CeBIT

From 14–18 March, 2016 we will present our service app at CeBIT, Hall 5, Stand E16, which offers full case processing from input of an order, spare parts delivery through to service accounting.

The app assists service personnel with full case processing directly on-site, offering easy-to-use input screens. A search function, for example, allows the user to search for spare parts from the ERP item master in real time, and create them as

a Customer Transaction Line in the right quantity. Changes to the plant



*Actual value processing: The PSIPenta Service app offers complete case processing on mobile devices.*

structure as a result of restructuring, installations or removals are documented with serial number precision using the app. Measured values or condition information are entered online and appropriate service measures are initiated immediately. The app also supports confirmation of working hours and posting to the Customer Transaction with real-time invoicing. As a result, field service personnel and processes are fully integrated into company processes in real time.

### Mobile usability of central ERP functions

All PSI apps are based on web-based hybrid technologies such as HTML5, CSS3 and JavaScript. This means that all popular mobile platforms are supported and the platform-specific look and feel of PSI products is retained.

“Mobile usability of central ERP functions will become an important development in coming years, allowing latent efficiency potentials to be leveraged. One example is the seamless, mobile mapping of service processes that tips the scales when it comes



to customer loyalty”, explains Karl Tröger, Head of Product Management, as he describes the background to the application.

## Smart Production Management at Hanover Messe

Under the banner of “Integrated Industry—Discover Solutions”, the Digital Factory at Hanover Messe from 25–29 April, 2016 will demonstrate concrete applications for networked industries. This year’s partner country of the USA is one of the most important players in the area of the digitisation of the economy and therefore the industry. PSI Automotive & Industry GmbH will be present in Hall 7, Stand A26 with the theme of “Smart Production Management”, and will show how the data acquired from the smart factory can be prepared and used.

## Communicability of objects

One key theme of Industrial Internet is the communicability of objects. These may be products used in the production process or even the production plants themselves. With the growing availability of smart devices and increasingly automated produc-

tion systems, ever more data is available. The challenge now is to use this data and the acquired information to define measures relating to the pro-

view) increases plant flexibility, and ensures that customer orders are fulfilled with automatic and optimised re-planning in the event of disruptions.

## DATES AND TICKETS

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[www.psipenta.de/cebit2016/](http://www.psipenta.de/cebit2016/)  
[www.psipenta.de/hannovermesse2016/](http://www.psipenta.de/hannovermesse2016/)

duction process (for example, resource usage, sequences), or for maintaining functionality.

Continuous monitoring of operating conditions enables early identification of critical situations. The use of mobile devices also makes it possible for data to be captured regardless of location. Automatic production management based on operating parameters (plant view) and manufactured products (order and product

## IoT devices in the smart factory

The increasing availability of actively communicating IoT devices (IoT—Internet of Things) in the smart factory, and their integration into control systems opens up completely new possibilities in order processing in combination with more flexible production plants. A practical processing scenario is presented based on available products. Measured values from IoT devices are used to assess the production situation, optimise routes and perform any necessary re-scheduling in the processing of the orders, creating a dynamically networked production and logistics system. ☺

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## To all PSIpenta customers!

This year, we will once again be conducting the customer satisfaction survey with the help of Trovarit AG.

From March 14, you can visit [www.trovarit.com/erp-praxis](http://www.trovarit.com/erp-praxis) to rate your ERP system.

As part of our customer bonus program, we will credit you with two points for your evaluation.

For more information, contact  
Ms. Annkathrin Hansen ([ahansen@psi.de](mailto:ahansen@psi.de)) and  
Ms. Ulrike Fuchs ([ufuchs@psi.de](mailto:ufuchs@psi.de)).

News: PSI is a new technology partner at the European 4.0 Transformation Center

## Intensified engagement at the RWTH Aachen

PSI subsidiary PSI Automotive & Industry GmbH (formerly PSIPENTA) is intensifying its long-term cooperation with the RWTH Aachen Campus with its engagement in the new European 4.0 Transformation Center (E4TC). The Center represents a unique platform in Europe for the concrete implementation of the digital transformation of processes, architectures and business models in manufacturing industries, research, industry and software and service development.

The Center conveys practical knowledge obtained in the industrial and testing environments for the products lifecycle management, systems engineering, service lifecycle management, enterprise resource planning und Internet of Things. The initiators' claim is to concretely implement and move Industrial Internet forward beyond production processes.



European Transformation Center on the RWTH Aachen Campus.

### Develop value-added processes of the future


“For PSI, the participation in E4TC with the elite university, industrial

companies such as the electro-mobility start-up e.GO Mobile AG and complementary software providers is exactly the right way of working in a real operational environment with the corresponding real-time data and to develop the value-added processes

of the future,” says Peter Dibbern, Head of Business Development at PSI Automotive & Industry.

PSI “registered” as one of the first companies at the RWTH Aachen Campus in 2010.

As the leading industry partner in the cluster Smart Logistics, PSI partici-

participates with her production solutions in the Demonstration Factory Aachen, on-going research projects, in various innovations and the Center Enterprise Resource Planning. For a more intensive exchange with the partners, PSI set up its own offices on the campus in 2014. 

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R & D: Human resources planning for the labour market of tomorrow

## Ergonomically optimised job rotation in intralogistics

A changing age structure in the workforce demands age-appropriate work. To meet this challenge PSI subsidiary F/L/S Fuzzy Logik Systeme is carrying out research together with its partners in research and industry. In the future intelligent planning software should enable ergonomically the optimised allocation of employees to work stations.

HR planning in a modern distribution centre or production site poses numerous challenges for planners: after de-

termining demand based on the day's order structure in different work areas personnel must be assigned. Capacities, different working time models

and shift patterns have to be synchronised with specifications and qualification profiles. Software solutions such as PSI*pep* offer transparency and assistance in the planning process.

### Measures against overstraining

Demographic change, however, causes a new challenge: in Germany, musculo-skeletal problems currently

account for around a quarter of all sick leaves. This rate is considerably higher among elder people working in physically demanding jobs. To avoid overload and probable employee overstraining appropriate measures are required in businesses. This not only affects how work stations are structured but also planning.


### Developing a planning method

With the aim of facilitating ergonomic job rotation F/L/S is cooperating with the Technical University of

Munich and industry partners on research into new concepts. The goal is to develop a planning method en-



suring the ergonomically optimised allocation of employees to work stations. Dynamic plans are designed to

ensure that employees are continuously assigned to work stations with different strain profiles (taking into account their qualifications). Thus a permanent overload of body regions can be avoided. The research project is funded by the Federal Ministry for Economic Affairs and Energy. 

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## EVENTS

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



29/02–01/03/16	Railway Forum Berlin, Germany	PSI Automotive & Industry, PSI Transcom
07/03/16	PSI Logistics Day Stuttgart, Germany	PSI Logistics Stuttgart Airport
08/03/16	PSI Metals Roadshow India Dehli, India	PSI Metals
08/03–10/03/16	LogiMAT Stuttgart, Germany	PSI Logistics Hall 7   Stand 7D76
14–18/03/2016	CeBIT Hanover, Germany	PSI Automotive & Industry, F/L/S Hall 5   Stand E16
15–17/03/2016	Passenger Terminal Expo Cologne, Germany	PSI Logistics Partner stand Airport Co- logne Bonn (Stand 4000)
25/04–29/04/16	Hanover trade fair Hanover, Germany	PSI Automotive & Industry, F/L/S, PSI Logistics, PSI Elektrische Energie Hall 7   Stand A26
16/05–19/05/16	AISTECH 2016 Pittsburgh, USA	PSI Metals Stand 1652
14–16/06/16	Aachen ERP Days Aachen, Germany	PSI Automotive & Industry

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