3 / 2014

production manager

Journal for logistics & production

Contents

PSI solution architecture for production processes of the future

On the way to the smart factory

Requirements for software systems can be derived from the basic ideas of the smart factory. These are based on technology stacks widely used in the industry, ensuring the future viability of the solutions. With the Java-based solution architecture, PSI AG offers a powerful platform that, with a modern user interface and numerous productivity enhancements, provides the customer with the optimum technological basis for future production processes.

The implementation recommendations for the future-oriented project Industry 4.0 made by the research alliance make it clear that this is, importantly, an integration project for the industry as a whole. The core element is the "smart factory", which consists of cyber-physical systems (CPS). The smart factory is thus a cyber-physical production system (CPPS). The smart factory is integrated into the entire flexible infrastructure and has interfaces to smart mobility, smart logistics, smart grids and smart services. The production systems will be adaptable and use adaptive logistics concepts. The production of the future is economical, urban, "human" and conserves resources.

▶*Page 3*

PSI

News ticker

+++ PSI with recovery in energy, value adjustment and restructuring in logistics in first six months +++ PSI: Successful Launch at Hamburger Hochbahn AG—PSI*traffic* depot management system automates bus depots +++ TÜV SÜD certifies PSI Logistics information security management system—High data security level for development and sales of software +++ PSI Delivers System for the First Automatically Controlled Depot in Poland—Municipal Transportation Company in Poznan optimises tram depot with PSI*traffic* +++

IMPRINT

Publisher
PSI AG
Dircksenstraße 42–44
10178 Berlin (Mitte)
Germany
Phone: +49 30 2801-0
Fax: +49 30 2801-1000
produktionsmanagement@psi.de
www.psi.de

Editorial team
Bozana Matejcek, Annett Pöhl, Dolores Schmidt, Beate Wesenigk

Design
Heike Krause

Printing
Repro- & Druck-Werkstatt

SOURCES

Page 1: PSIPENTA
Page 5: PSIPENTA, PSI Metals, FLS
Pages 6–7: Groninger
Page 8: Airport Hamburg
Pages 10–11: PSI Metals
Page 12: PSIPENTA
Page 13: Thinkstock, PSIPENTA
Page 15: PSI Logistics
Page 16: PSIPENTA

Editorial

Dear readers,

Smart production is the future. According to industry experts and market analysts, we are entering the fourth industrial revolution. Numerous industrial associations, research institutes, machine and vehicle and leading software manufacturers, supported by the German federal government, are striving to implement Industry 4.0 in the industrialised nation of Germany, and therefore for the comprehensive propagation of these novel forms of production by 2025.

As one of the most experienced software companies originating from Germany, PSI has forty five years of expertise and the software products that have arisen from this to support the entire production and logistics process including planning, optimisation and control. With the PEC (Planning/Execution/Control) concept we began, several years ago, to prepare our products for the requirements of the future project Industry 4.0 in numerous research projects. In close collaboration with leading partners from the fields of science, research and industry, we are involved in implementing this vision in production and logistics in multiple research projects. The results are tested practically in pilot projects and are incorporated in the further development of our software products. Production processes, production systems and production planning and control must all be revolutionised simultaneously. And this has to happen not only for a few completely new production systems, but for the entire breadth of existing production. In the process it is extremely important that we offer our customers not only the long-term perspective until 2025, but also interim steps that can be used in practice.

You can learn more about this in the current edition of the production manager.

Enjoy reading!

Dr. Harald Schrimpf
Chairman of the Executive Board, PSI AG

◀ *Continued from page 1*

Human-centric applications and interaction concepts

The new requirements in the context of Industry 4.0 need innovative assistance systems and multimodal user interfaces with the production process, the machines and systems, as well as the participating software systems. The smart factory therefore requires human-centric applications and interaction concepts. The need for information is based on the role of the person in the process, this person's tasks, the tools used, the available sources of information and the overall organisation of the factory of the future. The information needs of employees depend on a wide range of influencing factors. For this purpose, role-based application concepts in conjunction with tailored and flexible interaction interfaces are required. In addition, work is becoming increasingly mobile. Mobile application scenarios together with location-based services help users to fulfil their tasks in the smart factory.

Safety and security

The high-level networking between machines and systems and the software systems that control them requires safe and stable communication channels (safety and security) based on standards. The use of the Internet of Things and Services requires secure connections and the reliable authentication of operators, machines and software systems when interacting with each other.

Horizontal and vertical integration

The vertical integration of the systems involved, from engineering to automation technology, requires standardised interfaces and technology for networking. The flexible design of the interfaces requires simple and stable tools to ensure the efficient networking of all components. Only in this way can the high-resolution production control systems be coupled—right down to the machine control system. The horizontal integration within value creation networks requires open and stable interfaces be-

Industry solutions
The standard software is enhanced with industry-specific or customer-specific functions and algorithms. These include interfaces to existing enterprise software or project-specific links to the machinery via SCADA systems.

Application
The application layer provides ready-to-use and useful functions for solving operational tasks. Functional areas offered include optimisation calculations, production control and logistics.

Framework
Basic interfaces and tools that enable the infrastructure to be used efficiently and enable the fast and cost-effective development of applications entirely based on Java. This provides the framework for scalable, reliable and secure software solutions.

Infrastructure
Core elements that provide all components and services required for the operation of application software. Key elements include the operating system (client and server), databases and networks.

The technology behind the PSI software: the Java-based PSI platform.

tween the partners of the higher level production system.
The underlying technological basis for such software systems has the required properties for the implementation of the Industry 4.0 concepts, such as real-time capability, sophisticated communication and software safety and security, flexible design options for interaction with the process and the software, support for context-adaptive methods or automated workflows and notification mechanisms.

On the way to the smart factory

The PSI platform is built 100 % on Java™. In the first instance, this ensures support for different platforms (Windows, Linux, HP/UX, AIX, etc.) and an integrated means of handling internationalisation. In the context of the requirements of Industry 4.0, however, other aspects come into focus. The special modular capabilities of Java and an OSGi-based core system allow the dynamic compilation of generic modules at runtime. This enables the composition of requirement-oriented systems that implement self-organizing logistics in an adaptive manner. The co-modelling of real and virtual production, which is the aim of Industry 4.0, thus includes the software modules as integral system components.

Multiple layers

The PSI platform supports multilayer client/server architectures. The main motivation behind this is to separate the business processes and production structures from aspects of the presentation logic. The multimodal interaction required for the interaction with a cyber-physical production system is hardly conceivable without the separation of these layers. But separation alone is not sufficient. The different modes of interaction must be specifically addressed. Here, in addition to the conventional user interfaces, technologies such as "multi-touch" and "motion detection" are used on the PSI platform and are represented by stand-alone modules.

GUI—graphical user interface

The user interface of the PSI platform (GUI) allows the interaction interface to be adapted on an individual basis. In addition to role-based versions, the user can edit personalised views of the data worlds and save them in profiles. This includes not only the relational data and comprehensive functions such as presentation in tables (sorting, filtering, grouping), but also many graphic design possibilities (schematic 2D diagrams as well as realistic 3D visualisation) that make it easy to use the task context of the employee to provide proactive support functions. As an example, location-based views can represent the immediate physical environment and thus integrate augmented reality technologies into the user interface.

Role-based authorisation

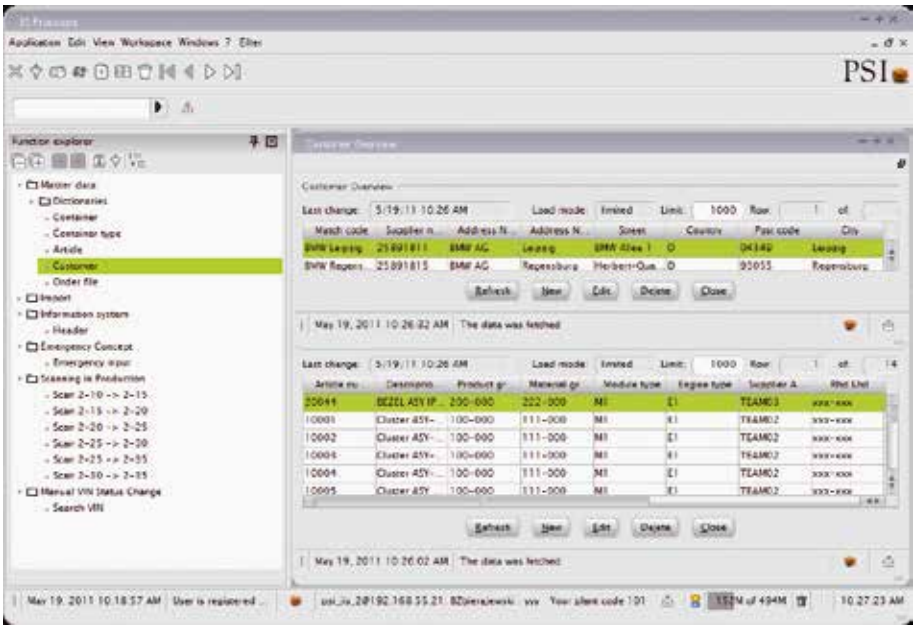
From a system perspective, support for context-adaptive working methods requires the application of role-based authorisation, which the PSI platform provides consistently. Not only the elements of the user interface but also the underlying service structures on other system levels are fully controlled by the "AUTH" module.
The protection of critical infrastructure is also ensured. In addition, with the CPCT (Code Protection) module, the PSI platform supports various mechanisms for ensuring that digital process expertise is protected and protecting against manipulation and sabotage.

Standardisation

Model-based methods are particularly important in the PSI platform. The structure of the applied models is not specified by the platform and can be adapted to the needs of the application. Various modelling aspects in the context of Industry 4.0 are not yet universally standardised. With the progressive standardisation of the reference architecture, the PSI platform structures based on meta-modelling can be adapted to a specific architecture at any time.
The PSI platform already supports automation technology modelling such as factory models in the context of preconceived product-specific domain models. With the workflow module, controlled by process models, the programmed sequence logic can be made more controllable via structures that can be adapted at runtime.
A further aspect is the ability of software systems to monitor and control value creation networks. This includes not least the integration of actuator and sensor signals. The PSI*integration* module helps to transmit these signals in real time. System interfaces across all levels and company boundaries can also be implemented via stable asynchronous data exchange. The digital vertical and horizontal consistency of the data and information flows allows transparent control over the entire production network.

Just-in-sequence: Deliveries straight to the production line

PSI*jis* supports a highly automated, sequence-optimised and synchronous production and delivery—from supplier to car manufacturer. In other words, different variants of the same part or a pre-configured mod-



Sequence optimisation for a balanced production flow.

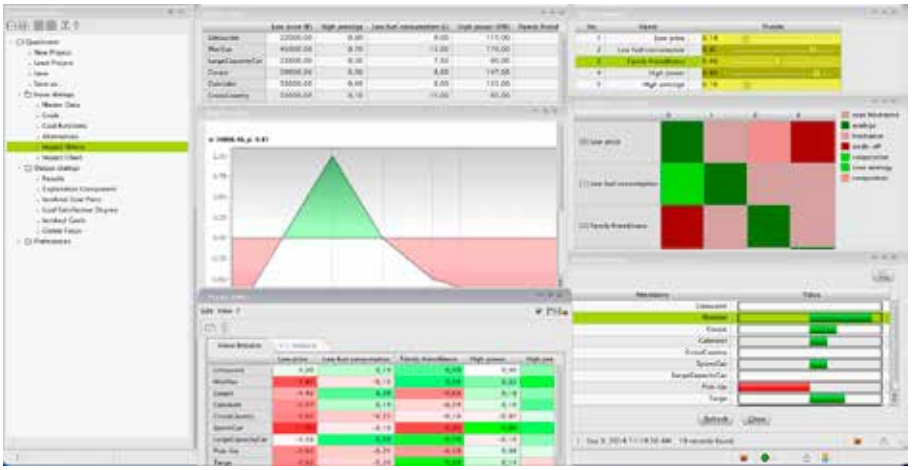
ule are delivered to the car manufacturer's assembly line according to the pull principle, at the right time and in the right sequence and position. Generally, the process has three calls (n days, n hours and n minutes), known as JIS-CALLS, which are generated by the OEM for the supplier before the start of assembly in order to react to configuration requests by the customer at short notice.

PSI*jis* is an independent software component that can be integrated into an existing software infrastructure at any time and has interfaces to ERP systems.

Qualicision®: Multi-criteria optimisation of production processes

Qualicision® is used in many different sectors as an optimisation and decision support technology in the optimisation of production processes, in the energy sector, in logistical applications and in the transport area. F/L/S has developed a release of the Qualicision® Functional Decision Design Engine (QFDD) based on the PSI GUI technology.

The data modelling of multi-criteria decision support solutions is performed with QFDD.



QFDD—data modelling of multi-criteria decision support solutions.

All elements of the QFDD engine, such as target criteria, target functions, effect matrices, relationship matrices and the corresponding editors can be configured with PSI GUI in a user-friendly way.

Sector specifics using the example of the metal industry

The multi-layer client/server architecture of the PSI technology platform separates the business processes from the presentation logic.

Sector-specific processes such as dimensioning production in primary metals can thus be mapped in software products such as PSI*metals*. At the same time the operator guidance can be configured in a

PSI*metals*: Dimensioning production in primary metals.

role-based way alongside the user's individual work processes.

In this way PSI*metals* uses the standard applications of the PSI platform and supplements them with sector-specific modules while using its own Factory Model for the metal industry.

►*Your contact*

Dr. Michael Bartmann
Management Central Development
PSI AG, Berlin, Germany
Phone: +49 30 2801-2730
mbartmann@psi.de
www.psi.de

User report: Special-purpose machine manufacturing under control with flexible ERP software

Map product diversity in the system

Special-purpose machine manufacturer Groninger in Crailsheim not only offers its customers constant innovations, it also uses an active release management for its ERP system with software upgrades and the introduction of new models. The "Hidden Champion", which is active worldwide, sees the development and use of innovations as the basis for maintaining its competitiveness and future viability.

The family-owned business Groninger & Co. GmbH, founded in Crailsheim in 1980, is a specialist in the hygienic processing of pharmaceutical and cosmetic preparations. As an innovation leader, Groninger designs precision technology from semi-automatic machines to fully automatic production lines as well as special industry services in close cooperation with its customers. This applies both to the design of individually deployable special machines and to the development of fully automated process lines.

The company has grown consistently since its founding. In 2001, the new building of a plant in Schnelldorf, Bavaria, was started. Today, solutions for the pharmaceutical industry are developed and produced in Crailsheim, while machines for the cosmetics industry are the core competence of the Schnelldorf plant. A branch founded in 2012 in Charlotte, USA, offers industrial services and after-sales services as well as first-hand consulting and sales. To date Groninger has delivered over 7 500 machines. 900 employees generate revenues of over EUR 100 million.

Business development requires an upgrade

The ERP standard PSI*penta* of PSIPENTA Software Systems GmbH has been used successfully at Groninger since January 2004. At the turn of the year 2012/2013 a change was made to the current version 8.2. Rolf Hasenkopf, responsible ERP systems engineer at Groninger, explains the motive: "We are planning to replace our current project management system, and the new ERP version is the necessary basis for this. Additionally, we had to adapt our system to our constant growth and ensure its future viability."

Multi-Site for central control of all locations

Of particular importance to Groninger is the sophisticated Multi-Site function of the ERP standard for central IT control of multiple plants. "We use Multi-Site for all three plants, for example for plant purchase orders and in-house cost allocations. And for our plant in the USA, the multilingualism of the new version, which allows for English labelling of the screens, is particularly valuable," says Rolf Hasenkopf. As the heart of the installation, the servers are stationed centrally in Crailsheim, and the branches, which operate self-sufficiently, are connected via Citrix. In this way, colleagues in the USA can access the construction plans from the German plants without any problems, if for example they need to perform modifications to machines. Similarly, items that are created in the respective plants are available to the entire group. "If you take a normal VW Golf and make an area variation out of it, both models will receive the same—effectively cross-plant—components. That's also similar to the way it

*The PSI*penta* ERP standard can be adapted to the needs of the company.*

works with us", explains Hasenkopf. Highest demands on documentation "Our special-purpose machines are all individual solutions and genuinely unique items", Hasenkopf emphasises.
Therefore Sales configures all offers in the CRM system and allows Planning to review them for technical feasibility. A time estimate is also made with the estimated delivery date, and this offer is then coordinated with the customer until there is a final order. The order is finally incorporated into the ERP system via the project management system, and production is thereby initiated. "Particularly important for us is the support for the documentation through the ERP software. Very high standards apply, particularly in the pharmaceutical area, but PSI*penta* has helped us to meet them without any problems", says Hasenkopf. Component documentation in particular plays an important role here. Depending on the customer, all welded parts, for example, must be documented with X-ray tests and material certificates. As a result, more than ten types of documentation easily come together, with the same item requiring several types of documentation depending on the customer, or sometimes completely different documentation or none at all. The software distinguishes each individual component according to the required documentation and generates batches from this so that after completion the processing chain for each individual part can be followed down to the raw material.

Groninger's special-purpose machines are all individual solutions and genuinely unique items.

High flexibility promotes individuality

In the assembly there are individual assembly groups, each one of which has an "info point". "We have aligned these info points precisely according to the needs of the final assembly", says Hasenkopf and explains further: "If he enters a production number, the worker sees the complete structure of the order. He sees what's missing and what has to arrive when. He receives an individual view of his order." Different objects therefore do not need to be opened. With a single mouse click the user receives all the information necessary to execute the order. The ERP systems engineer was able to adapt this specific view of Groninger, which does not exist at all in the ERP standard, independently via a VBA integration (Visual Basic for Applications). He sees this flexibility of the ERP standard as a very positive characteristic indeed: "Hardly any other systems offer the option of making adjustments to individual needs without outside support and without changing the standard." During the upgrade it was possible to remain over 90 percent within the standard while still receiving an individual ERP solution.

Fit for the future

The ERP system also administers warehouses with over 30 000 inventory items. This ensures that the right batch is found for the right order during picking. By means of a concurrent calculation PSI*penta* evaluates the current status of all projects every night. Therefore the exact project statuses of the previous day are available every day. An evaluation then calls attention to warning functions, if, for example, a project is running over budget or deadlines are in danger. The advanced automation and the flexibility also allow the special-purpose machine manufacturer to further increase capacity, to grow and to map all processes in an individual company way, without any complications. Hasenkopf sees the fact that PSIPENTA continually develops suggestions from the ranks of its customers and includes them in the standard as another advantage of the provider, and summarises: "We have confidence in our software partner, particularly because we experience the pronounced practical relevance for machine and special-purpose machine manufacturing."

▶*Your contact*

Beate Wesenigk
Marketing Manager
PSIPENTA Software Systems GmbH, Berlin
Germany
Phone: +49 30 2801-2127
bwesenigk@psipenta.de
www.psipenta.de

User report: Data synchronisation in real time at Hamburg Airport

Simpler, faster, more secure

Comparison of passenger and baggage data, loading equipment management and data provision in real time—the baggage reconciliation system PSI*airport*/BRS of PSI Logistics GmbH supports the high process efficiency of ground handling services at Hamburg Airport.

"We have optimised process reliability, can make the data available worldwide in real time and have continuous documentation." With this simple formula Kristof Boettcher, Ground Operations Manager of GroundSTARS GmbH & Co.KG, summarises the advantages his employees gain when registering luggage at Hamburg Airport. The subsidiary of the operator of Hamburg Airport has been working with the baggage reconciliation system PSI*airport*/BRS to monitor the handling processes in the luggage area for five years now.

The software supplements the systems used in the luggage area at Hamburg airport for baggage handling and the flight information display in the non-public area. In Hamburg an integrated solution is used for luggage processing from check-in to loading. This also includes the central computer of the conveyor system and the system and material flow control.

GroundSTARS takes over the baggage handling for the airlines at Hamburg Airport and is responsible for the operational processes between conveyor technology and aircraft fuselage—collecting, containerisation and loading.

"PSI*airport*/BRS supports the security aspects in the seamless monitoring of the baggage loading and the subsequent, IT-supported processes in equal measure", says Boettcher.

Because according to applicable safety regulations, no aircraft can take off if there is a luggage item without an associated passenger on board the plane. The baggage reconciliation system ensures transparent handing processes, optimal integration of results of X-ray checking and supports the comparison of luggage and passenger data for the airlines. "Instead of document-supported loading processes involving the handling and processing of stickers, with PSI*airport*/BRS

Code registration of a luggage item at Hamburg Airport.

individual items are processed via mobile data terminals", Boettcher explains. "As a result, required information, for example about the passenger, flight number, destination and transfer airport is available to the airlines in real time. This accelerates all of the processes."

Faster access without disruption

In this way, the data ascertained can be used not only to compare between passenger and baggage data. If a passenger is not on the plane or has to leave it again, GroundSTARS determines with a few clicks at which point and in which container the corresponding baggage item is stored and where the container is stored in the aircraft fuselage. "Faster access without any long-term burden on the flight plan", says Boettcher. In the process PSI*airport*/BRS has pre-set optimisation strategies, according to which, for example, the luggage of transfer passengers is assigned in the transport container so that as little operation handling as possible is needed when reloading at the transfer airports.

The use of PSI*airport*/BRS also precludes incorrect loading. If luggage items are loaded into an incorrect container, the system activates clear visual and acoustic signals so that the employees recognise cases of incorrect loading early on and avoid them.

Continuous inventory count and optimum container management

The data is simultaneously transmitted to the airlines online in real time. The airlines are therefore equipped with a consistent report regarding the number, weight and location of the items of baggage. If necessary, they can inform their passengers of the status of the luggage item promptly, for example by SMS. Additionally, airlines use the recorded luggage information for data exchange over one of the global data networks that connect airports with each other worldwide.

The system used in Hamburg offers another special feature: Not only does it ensure optimal data flow, continuous documentation and process reliability, it also has integrated functions for efficient container management. Consistent registration of incoming containers during unloading and comparison with the outgoing containers recorded in the baggage reconciliation system, make it possible to do more than just concentrate work processes. The systems also allows for a permanent inventory count and inventory registration of the loading equipment. "Simpler, faster, more secure", summarises Ground Operations Manager, Boettcher. "A reliable system for optimised processes and efficient data processing"

►*Your contact*

Reinhard Schauer
Sales Manager
PSI Logistics GmbH, Dortmund, Germany
Phone: 49 231 17633-141
r.schauer@psilogistics.com
www.psilogistics.com

Product report: PSI*metals* release 5.7

PSI*metals* out-of-the-box: Functions in the new release

PSI*metals* improvements and expansions from the standard software development are continuously being combined with the functional expansions from ongoing customer projects. Several times a year such innovations are made available to existing customers in the form of new PSI*metals* releases according to their maintenance contracts. The "PSI*metals* out-of-the-box" series now presents these innovations regularly.

Software improvements are complex and range from functional expansions to changes of the interface and to performance improvements in data processing. The release management of PSI Metals ensures that PSI*metals* customers benefit from future improvements without the existing solution being adversely affected. The following innovations provide an insight into the latest release of PSI*metals*.

PSI platform

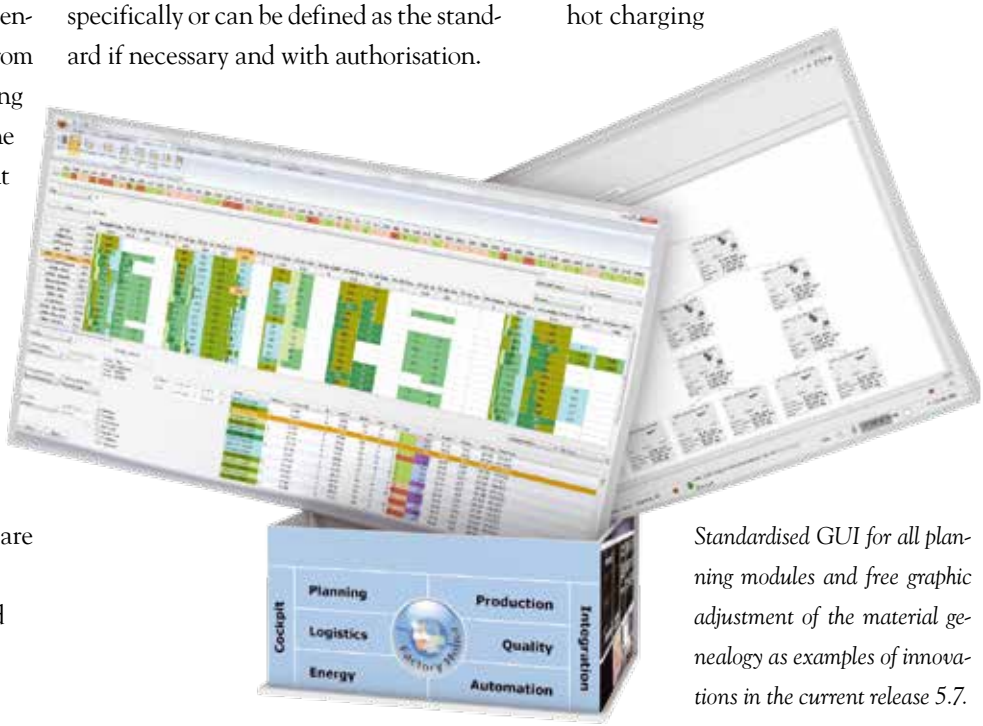
Many different options for preparing and adapting individual views like those known from the Office applications are now also available in PSI*metals*. The following options are quickly and easily adaptable:

- Window displays in size, shape and layout
- Table columns by hiding, making visible, moving or fixing with drag and drop
- Colours for fonts, background, hazard flashes, etc.

The user can also adjust the data representation itself to his requirements:

- Data groupings by drag and drop with nested structures and changeable sequence
- Automatic column width and sortings by mouse click
- User-specific headers and footers with aggregated data displays for freely selectable objects
- Individual colours for data or fields according to data content

Settings can generally be defined user-specifically or can be defined as the standard if necessary and with authorisation.



Standardised GUI for all planning modules and free graphic adjustment of the material genealogy as examples of innovations in the current release 5.7.

PSI*metals* Planning

A clearly improved interaction of the individual planning modules and the associated business processes is now available:

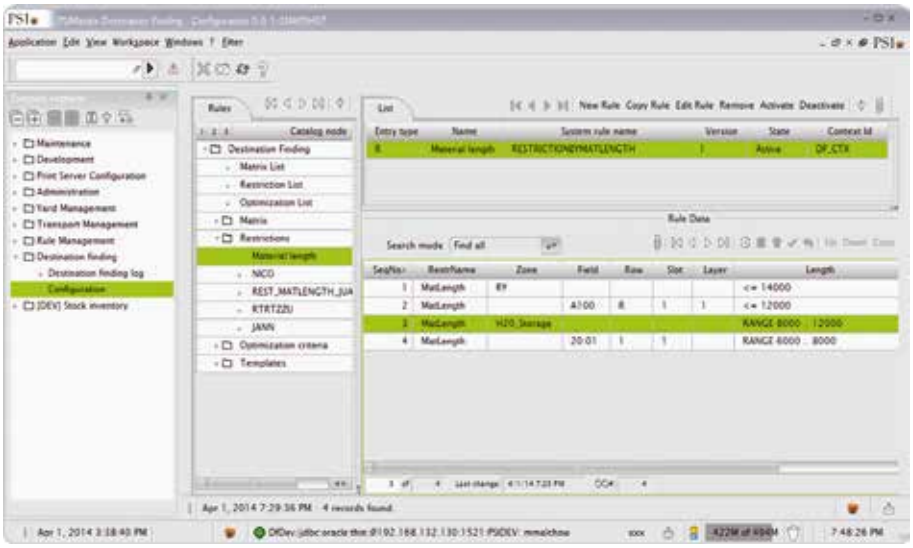
- Harmonisation of the graphical user interfaces for all PSI*metals* planning modules for standardised user guidance
- Improved synchronisation between caster scheduling and line scheduling through simplified integration in the standard
- Higher planning consistency between weekly sales and operations plan (S & OP) and daily order planning through taking into account of production plans already in production (upstream) and the target of weekly material flows (downstream)
- Expanded criteria for material re-allocation within line scheduling (last stack position, fitting according to dimension); this option is particularly interesting for small slabyards or hot charging
- Central rule management for line scheduling and material allocation in the PSI*metals* rule editor (order groups, sequencing jump rules, material to production order matchings)

PSI*metals* Production

For reduced use of memory and better performance, each data access is analysed and optimised with regard to required time, network access and memory requirements (e. g. window structure with-

out automatic data preallocation, data reduction during the transfer of calculated columns, etc.). In total, all individual optimisations led to significant improvements regarding memory use and therefore to higher performance. Further enhancements are:

- Simple correction of missing or wrong level 2 data in a generic emergency screen for direct analysis, change and re-processing by the user
- Simplified SAP feedback for defined production events (goods received, material, goods issue, etc.) through standardised pre-configuration
- Shift recording and monitoring with personal data (optional)



Constraints for destination finding (Where is the optimal storage place?) can now be configured by the user in the PSImetals rule engine.

PSI*metals* Quality

For comprehensive quality management, PSI*metals* offers the following new functions for the technical order specification (order dressing) and for operational quality assurance:

- Manual adjustment of the results of the automatic production order elaboration (chemical analyses, setpoint values, etc.); these values can be used as the basis for a new development
- Independent processing of multiple production orders in the background (e. g. required according to rule/ master data changes)
- Improved recording and management of length-related measurement values (e. g. thickness curve of a coil) for qualitative evaluation (e. g. for automatic, rule-based defect assignment in case of faulty material)
- Better presentation of the material genealogy through free graphic orientation, e. g. with many output pieces
- Simplified maintenance of inspection plans
- Improved quality management for goods receipt checks and rework: Rule-based generation of inspection plans based on templates and use of proven functions for sampling, laboratory, inspection and final evaluation

PSI*metals* Logistics

For better logistical optimisation, configurability was increased, user access was customised and shipping options were expanded:

- Administration of rules for destination finding (Where is the optimal storage place?) in the central PSI*metals* rule editor: Decision tables can be configured with the desired attributes (e. g. destination finding matrix), pre-defined catalogues, rule sets and rules for all execution steps of the destination finding can be used and new rules can also be created for restriction and optimisation criteria.
- Limitation of data access for each user by hall: for yards in several plants the user can only access halls assigned ("allowed") to him in the yard graphic and in the crane dialogue. Also only the data of allowed yards/halls are taken into account for user reactions such as material relocations, means of transport registrations, creation of transports orders, etc.
- Interim shipping to contract manufacturers (internal shipping): Multiple shipping steps are supported within a production order. This supports the user to distinguish between the final shipping to customers or to contract manufacturers for interim processing.

Before being included in the new PSI*metals* release, all innovations mentioned were reviewed and tested extensively in the PSI*metals* "Metals Factory" using example business processes and production cases.

►*Your contact*

Annett Pöhl
Marketing Manager
PSI Metals GmbH, Berlin, Germany
Phone: +49 30 2801-1820
apoehl@psi.de
www.psimetals.de

News: The future shaped by tradition—a 30-year partnership between Grenzebach and PSIPENTA

New standards in the fast-paced world of information technology

The collaborative partnership between PSI and Grenzebach began back in 1984 within the context of a research project sponsored by the Federal Ministry of Research and Technology. The objective of the project was to create a standard software package that could provide comprehensive process coverage whilst at the same time reducing the need for adjustments to a minimum. In order to create an application specifically designed for made-to-order production, the software had to be developed together with the users. In 1985, PSI presented the first platform-independent standard software in the field of production planning and control (PPC)—a ground-breaking development at the time.

Since then, joint projects have shaped further innovative software standards, such as multiple plant management. Using this functionality, which is also referred to as Multisite, all material and value flows across the Group are controlled via a central installation. Today, this is a unique selling point for PSI*penta*.

Close collaboration guarantees shared success

For Jürgen Brunner, CIO of the Grenzebach Group, the close collaboration with PSI was extremely important in numerous projects. "As a partner, we at Grenzebach were able to incorporate our practical experience and the requirements of our internal processes into the end product. Having such a close relationship with our software supplier was and remains an absolute stroke of luck for us." Alfred M. Keseberg, Managing Director of PSIPENTA, expressed his gratitude for the effective and constructive collaboration of the past decades in a small ceremony. "We develop concepts and solutions in close collaboration with our industry customers. On the one hand, this ensures that new functional modules are genuinely practical and that they comply with the relevant standards. On the other hand, with every version the users benefit from the productivity gains and value contributions that are necessary for a practical application."

Siegfried Schlegel, Mechanical and Plant Engineering Division Manager, PSIPENTA; Berhard Minning, Managing Director of the Grenzebach Group; Alfred M. Keseberg, Managing Director of PSIPENTA; Franz Gleißner, Managing Director of Grenzebach Maschinenbau; Mathias Kulbe, Research and Development Manager, PSIPENTA; Jürgen Brunner, CIO of the Grenzebach Group (from left to right)

30 years—and no signs of slowing down

The partners plan to continue working together on other interesting projects going forwards. For a start, roll-outs are being planned for the new companies within the Grenzebach Group—and not only in Germany. In addition, Industry 4.0 sets down new requirements for companies, for controlling their own processes internally and for controlling production systems. "The industry is changing. The main characteristic of these technical innovations is the comprehensive networking of all components," says Jürgen Brunner.

GRENZEBACH

Founded: 1960
Registered office: Asbach-Bäumenheim, Germany
Employees: 1 600
Turnover: EUR 320 million
Activities: designing and manufacturing complex production and logistics systems

►Your contact

Beate Wesenigk
Marketing Manager
PSIPENTA Software Systems GmbH, Berlin, Germany
Phone: +49 30 2801-2127
bwesenigk@psipenta.de
www.psipenta.de

News: PSIPENTA presents initial results of the ERP 2020 initiative

Mobility—Connectivity—Usability at the IT & Business 2014

Production specialist PSIPENTA Software Systems GmbH will be presenting new applications and operation concepts for the PSI*penta* ERP and MES Suite from 8 to 10 October 2014 at the IT & Business in Stuttgart (Hall 4, Stand E11).

PSIPENTA will be providing initial insights into a new user-oriented and role-based interface design, workflows for improved user guidance and mobile solutions (apps) for various business applications at the trade fair for IT solutions.

Industrial Apps

These new mobile applications will be part of a user lecture by the Rhaetian Railway at the forum "IT & Business direkt". The long-term PSI*penta* user is implementing a mobile IT strategy in its anniversary year—the Rhaetian Railway is celebrating 125 years of operation—and is applying the PSI*penta*/Industrial Apps to do so.

Modern interaction possibilities

In the framework of the VDMA ERP 2020 Initiative, PSIPENTA has developed extensions for the mobile use and for the optimisation of production sequences. Taking usability aspects into consideration, new user-friendly software interfaces and modern visualisation opportunities and prototypes for pioneering interaction possibilities in the production environment have been created.

ERP 2020

The future of ERP solutions is the subject of the "ERP 2020" Initiative, which the VDMA is conducting together with its partners the Institute for Industrial Management (FIR) at the RWTH Aachen and Trovarit AG. It centres on the potential and possibilities for ERP software in view of the new functional requirements, technical possibilities and changing user behaviour. The goals have been defined as better information, digitalisation of business processes and a user-friendly, intuitive software interface.

Your contact

Beate Wesenigk
Marketing Manager
PSIPENTA Software Systems GmbH, Berlin, Germany
Phone: +49 30 2801-2127
bwesenigk@psipenta.de
www.psipenta.de

News: Standardising terms of licence and maintenance

PSI strengthens ArcelorMittal ties with Master Agreement

PSI Metals has signed a Master Agreement with ArcelorMittal, defining the governance of the close collaboration with respect to production management solutions. The main aim of the contract is to standardise the terms of licence and maintenance for current and future PSI*metals* solutions across the ArcelorMittal group and to support the standardisation process for production management solutions, in order to reduce the Total Cost of Ownership at ArcelorMittal. The contract was signed by ArcelorMittal Purchasing SAS on behalf of all ArcelorMittal business units and affiliates worldwide.

In addition to general agreements to manage the partnership, the Master Agreement provides a licence agreement for a more flexible utilisation of PSI*metals* solutions and a standardised support service level through the maintenance of all the running and future applications in the ArcelorMittal group.

The Master Agreement with PSI Metals aims to harmonise the production management processes for the different business areas and plants and their related applications. ArcelorMittal will get detailed PSI*metals* know-how, to build-up respective internal competence centres. In a mid-term horizon this should lead to an ever-increasing PSI*metals* implementation in the different plants, in which ArcelorMittal can take over more and more the customisation, commissioning and maintenance of the solutions in order to realise harmonisation and cost reductions.

ArcelorMittal is the world's leading steel and mining company, with a presence in more than 60 countries and an industrial footprint in over 20 countries. Guided by a philosophy to produce safe, sustainable steel, it is the leading supplier of quality steel products in all major markets including automotive, construction, household appliances and packaging.

Event: Aluminium 2014

Seamless processes with optimised use of raw materials

The world's largest aluminium trade fair "ALUMINIUM 2014" will be held from 7–9 October 2014 in Düsseldorf. At the PSI stand in Hall 9, Stand 9F10 PSI Metals will show how aluminium producers and processors can optimise their processes in production and logistics with software solutions for production management.

The focus this time: The latest solutions for optimised scrap utilisation. The efficient use of scrap is complex and requires the highest organisational standards along the entire process chain. The entire production process is optimised by integrating the alloy calculation into production management. PSI*metals* solutions show: In addition to the traditional goals such as throughput, compliance with delivery deadlines and efficiency being optimised, the best possible use of aluminium scraps also help to achieve sustainable savings if it is integrated into the production management.

Your contact

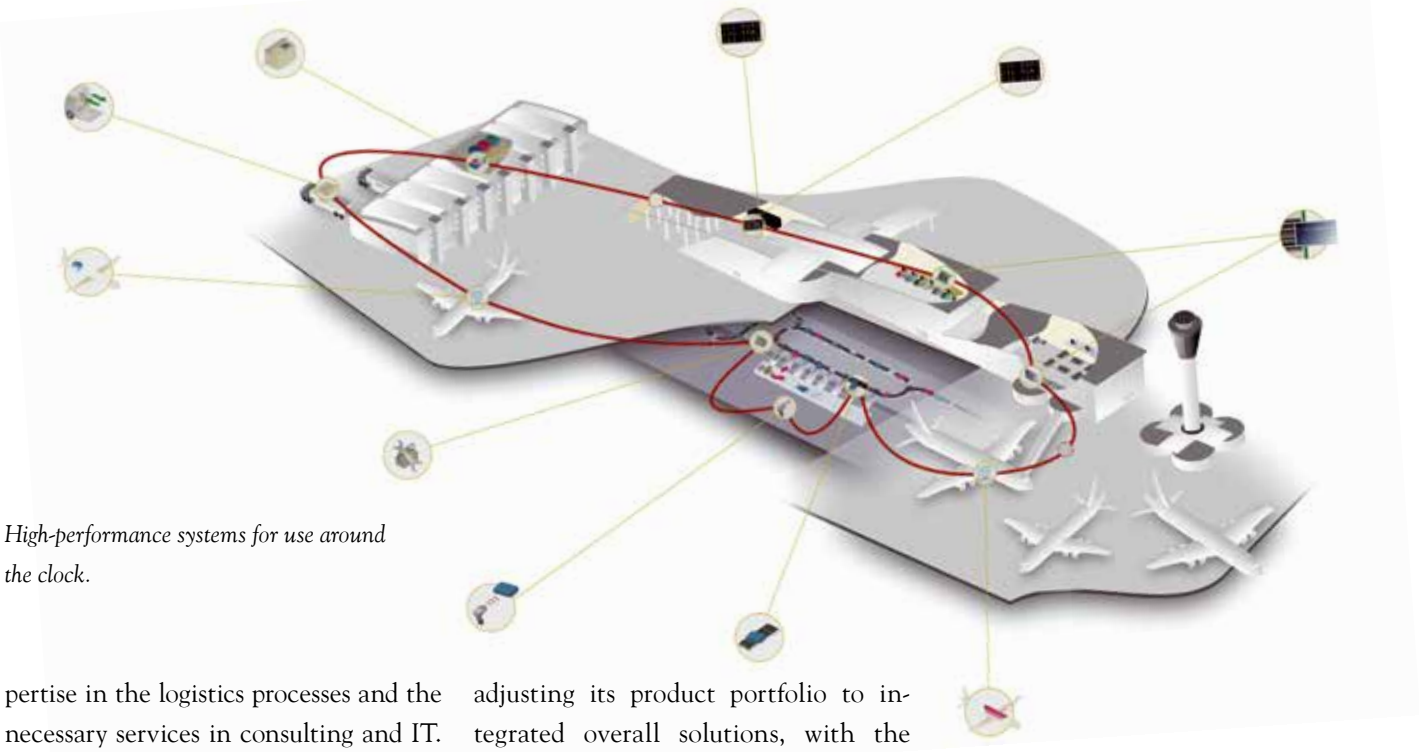
Annett Pöhl
Marketing Managerin
PSI Metals GmbH, Berlin, Germany
Phone: +49 30 2801-1820
apoehl@psi.de
www.psimetals.com

Product report: Airport solutions

Frictionless processes at zero altitude

The competition in air traffic is increasingly being decided on the ground. Due to globalisation, technological advances and sustained mobility, the volume of passengers and freight is growing—and therefore also the demands on airport IT for security, reliability and availability.

Airport solutions must be precisely designed, capable of being optimally integrated and also developed to connect information from upstream and downstream systems. PSI Logistics offers expertise in the logistics processes and the necessary services in consulting and IT. On this basis individual solutions arise—from planning to services.



High-performance systems for use around the clock.

System solutions

Airports must always be available. This applies in equal measure to the processing of passengers and luggage. While adjusting its product portfolio to integrated overall solutions, with the modularly design software PSI*airport*, PSI Logistics developed airport solutions for all three areas with the highest availability and extensively automated processes. Meanwhile, almost every large German commercial airport relies on PSI systems to ensure the safety and reliability of their extensive automated processes.

With its highly available components for automatic luggage sorting and reconciliation based on Oracle RAC and cluster systems on a virtual infrastructure, the airport software is considered one on the most comprehensive standard systems for airport applications.

PSI*airport* modules

PSI*airport*/BHS
Baggage Handling System

PSI*airport*/BRS
Baggage Reconciliation System

PSI*airport*/FPMS
Flight Plan Management System

PSI*airport*/FIDS
Flight Information and Display

PSI*airport* is used at these German airports

- Fraport (Frankfurt Airport)
- Hanover Airport
- Hamburg Airport
- Cologne Bonn Airport
- Leipzig Halle Airport
- Munich Airport
- Nuremberg Airport
- Stuttgart Airport

►*Your contact*

Beate Wesenigk
Marketing Manager
PSI Logistics GmbH, Berlin, Germany
Phone: +49 30 2801-2127
bwesenigk@psi.de
www.psilogistics.com

Event: PSIPENTA demonstrates ERP potentials in cluster logistics

Looking back at the ERP days in Aachen

"70 percent of all companies would rather use the fax machine or the good old copier than modern technologies", said Professor Volker Stich, the Managing Director of FIR and RWTH Aachen, in his keynote speech at the 21st Aachen ERP Days.

From 3 to 5 June 2014, more than 100 ERP experts from all over Germany in the logistics cluster of the RWTH Aachen Campus discussed how production processes and business processes can be better organised with the help of modern technologies and systems, and how the productivity of companies can be increased sustainably. In the familiar tradition, the FIR special event consisted of a practice day with workshops on the topics ERP and inventory management, a trade fair with well-known ERP providers and an expert conference.

During the expert conference, 19 speakers from research and industry made presentations about their experiences with ERP projects and provided valuable suggestions on how potentials in the logistics field can be enhanced with regard to the topic Industry 4.0.

►Your contact

Beate Wesenigk
Marketing Manager
PSIPENTA Software Systems GmbH, Berlin, Germany
Phone: +49 30 2801-2127
bwesenigk@psipenta.de
www.psipenta.de

News: Comprehensive software package for production management in operation

Important Rollout Order from CSR Sifang in China

PSIPENTA Software Systems GmbH has been contracted by the Chinese railway technology group CSR Qingdao Sifang Locomotive Co., Ltd. with the rollout of the comprehensive PSI software solution for production management. The rollout process foresees the inclusion of about 2 000 employees and is to be completed within six months.

Based on the prototype developed for CSR Sifang in 2013, PSI*penta* Manufacturing Execution System (MES) will be implemented for the permanent planning and controlling of the production processes interacting with SAP at the enterprise control level. In addition during the rollout a central production cockpit will be implemented so that CSR Sifang will get an overview of the entire production supply chain. Special focus will be on subjects such as production information in real time, abnormal handling, material tracking with serial numbers and key performance indicators. The process and initiation will be performed in Chinese by a mixed Chinese and German PSI team.

CSR Sifang is one of the largest railway producers in China.

For CSR Sifang the implementation of the PSI solution is an important step towards achieving the strategic goal of becoming the world's leading producer of high-speed strains. The company, a member of the CSR Group, is one of the largest producers for the Chinese railway industry and one of the most important manufacturers of components for locomotives and rolling stock.

►Your contact

Beate Wesenigk
Marketing Managerin
PSIPENTA Software Systems GmbH, Berlin, Germany
Phone: +49 30 2801-2127
bwesenigk@psipenta.de
www.psipenta.de

Event: PSI Logistics presents logistics solutions at CeMAT in Russia

Highest flexibility and efficient processes in intralogistics

From 23 to 26 September 2014, PSI Logistics GmbH will present an overview of the product spectrum tailored to the Russian logistics market at CeMAT Russia (Pavilion 3, Stand A351) at the Moscow International Exhibition Centre (IEC) Crocus Expo.

In particular, the focus will be on the control of automation components directly from the PSI*wms* warehouse management system and the integration of secondary systems, for example for pick-by-voice commissioning. PSI Logistics has a large number of well-known references in the Russian market. These include nationally and internationally active companies such as the shoe manufacturer ECCO-ROS, the dairy product manufacturer Friesland-Campina and the logistics service provider Itella. Accordingly, the PSI*wms* international logistics expertise, which is specifically tailored to the needs of the Russian market, connects with the particular local requirements.

"The Russian economy is currently experiencing an upheaval", explains Alexander Edelmann, Director of the Moscow branch of PSI Logistics. "Service providers and industrial companies need to adapt their inventory management to increasing automation and growing internet trade. An enabler of the corresponding process control and optimisation is PSI*wms*, which we will be presenting in its current version at CeMAT Russia."

PSI Logistics has had a presence in the Russian Federation for six years with its branch in Moscow and offers all services from planning to system tailoring and configuration to training and after-sales services directly on site.

CeMAT RUSSIA

►*Your contact*

Alexander Edelmann
Director of the Logistics Department
PSI Logistics GmbH, Moscow, Russia
Phone: +7 499 272 7779
aedelmann@psilogistics.com
www.psilogistics.com

News: PSI with recovery in energy in first six months

Value adjustment and restructuring in Logistics

PSI Group attained 4 % lower sales of 84.2 million Euros in the first half of 2014. The EBIT in the first six months of 2014 was encumbered by special effects from the previous year in logistics and, at 2.8 million Euros, was 20 % below the EBIT of the same period for the previous year.

This includes a percentage-of-completion adjustment of one million Euros for a logistics project from 2013 and restructuring costs of about 0.5 million Euros. The group net result was, at 1.2 million Euros, 28 % below the figure for the previous year. The previous year figure included special earnings of 0.5 million Euros from the sale of shares in the Moscow sales joint venture PSI Energo. New orders, which were characterised by a number of major international orders in the previous year, decreased to 89 million Euros, the order book volume on 30 June 2014 was, with 121 million Euros, 12 % below the figure for the previous year. By the end of the year management expects new orders of about 180 million Euros.

Energy Management (gas, oil, electricity, heat) attained 2 % higher sales of 30.3 million Euros in the first half year. The EBIT for the segment more than doubled to 1.4 million Euros compared to the previous year. The electrical energy business could improve its result after the successful acceptance of an encumbering major project and the higher product investments of the previous year and expects additional rollout contracts for the new control system in the coming quarters. The oil and gas business was able to increase sales and profits; energy trading completed a generation change in management and made further investments in modernisation and standardisation of the product base.

Sales in Production Management (raw materials, industry, logistics) during the first six months were, at 39.1 million Euros, 9 % below the value for the previous year. The EBIT decreased as a result of the special effects in logistics by 40 % to 1.1 million Euros. The automotive und mechanical engineering business won important licensing orders in Germany and China, the logistics business was able to continue to improve operations, but was slowed once again by an adjustment and restructuring costs. In the metals industry business, new orders decreased compared to the previous year; for the coming quarters major orders are expected from the North American aluminium and steel industries.

In Infrastructure Management (transportation and security), sales were constant at 14.8 million Euros. The EBIT for the segment decreased to 0.9 million Euros. In Southeast Asia sales and profits were below expectations, major contracts are expected here in the second half of the year.

The number of employees in the group was reduced by 17 to 1,687 in the course of the second quarter. As a result of the weaker group result, the cash flow from operating activities was, at –2.4 million Euros, below the figure for the previous year. Liquidity decreased to 17.1 million Euros (30 June 2013: 23.9 million Euros). In the first half year the PSI Group invested 0.9 million Euros in a new release of the group platform that allows the customer to configure user interfaces, menus and data views themselves. In addition, preparations for the next major release and tests for the web and cloud capability of the PSI products based on these were made. PSI expects a further recovery of Energy in the coming quarters on the basis of control systems products, encumbrances from the first Chinese mine project and additional orders from the booming metals industry in the USA. The management is conducting intensive negotiations about the acquisition of a competitor (about 70 employees and 9 million Euros sales) in the Production Management segment and has signed a letter of intent on 30 July 2014.

Financial Calendar

22–24/09/2014	Berenberg/Goldman Sachs German Corporate Conference, Munich, Germany
30/10/2014	Report on the 3rd Quarter of 2014
24–26/11/2014	German Equity Forum 2014, Frankfurt, Germany

►Your contact

Karsten Pierschke
Head of IR and Corporate Communications
PSI AG, Berlin, Germany
Phone: +49 30 2801-2727
kpierschke@psi.de
www.psi.de

R&D: Research projects for the fourth industrial revolution

AUTONOMIK—Optimised planning and control of very small series production

As part of our series on research projects regarding Industry 4.0, we present the second out of five: AUTONOMIK—KPI-managed optimisation of production planning and control of small-series by means of fuzzy logic.

Small-series manufacturing requires a radical new approach for lean production planning. The project, funded by the German Federal Ministry for Economic Affairs and Energy, favours decentralised, highly flexible material flow units realised by cyber-physical systems (CPS) that perceive their surroundings by means of intelligent sensors.

A new planning methodology is under development, as are an operating concept for decentralised very small-series production of electric vehicles, a control concept for CPS for automotive production and material supply, a monitoring and assistance system for early fault detection and a simulation system for production control.

AUTONOMIK FÜR INDUSTRIE 4.0

▶Your contact

Dr. Rudolf Felix
Managing Director
F/L/S Fuzzy Logik Systeme GmbH, Dortmund, Germany
Phone: +49 231 9700-920
rfelix@psi.de
www.fuzzy.de

PSI Aktiengesellschaft für Produkte und Systeme der Informationstechnologie

Dircksenstraße 42–44
10178 Berlin (Mitte)
Germany
Phone: +49 30 2801-0
Fax: +49 30 2801-1000
info@psi.de
www.psi.de

PSI