

# production manager

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Reduced stock levels and shortened mean lead times

## ERP for medium-sized automotive suppliers

Software that was fully adequate when a company was founded can quickly become a bottleneck with the company's growing success—especially if the company is in a particularly demanding sector. This was the case with automotive component supplier Alutec.

Alutec metal innovations GmbH & Co. KG, based in Sternenfels, Germany, specialises in cold forming aluminium and other materials through impact extrusion, and also provides customised solutions in the field of mechanical post-processing. Founded in the "golden city" of Pforzheim by brothers Willy and Stefan Kretz in 1988, the company was forced to

relocate to Sternenfels, around 30 kilometres away, in 1997 due to limited space on the site. In Sternenfels, 3 700 square metres of production and office space were erected during the first construction phase. Today, a good 90% of the company's output is for the automotive industry. The product portfolio ranges

► Page 3

## News ticker

+++ PSI presented mobility solutions for the future at the IT-Trans 2014—integrated operations and depot management system +++ PSI sees one-off expenditures and an increase in sales in the third quarter—new orders, at 143 million euro, 11% higher than sales +++ PSI wins important contract from Hagerer Straßenbahn AG—PSItraffic control technology increases efficiency of bus operations +++

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## Editorial

Dear readers,

During 2013, the software developments at PSIPENTA focused on producing new programmes for the automotive industry. The ERP portfolio received a completely new module for digital supply chain management—a product development project spanning many years that challenged not only us but also our customers. Following the introduction of the JIS (Just-In-Sequence) module at the beginning of 2013, the SCM (Supply Chain Management) module is the second to be developed exclusively in Java. The module will be launched onto the market



shortly. These functional extensions to PSIPenta version 8.3 not only add value to our products for new customers but also enable existing customers to benefit from more efficient and, in particular, easier control of their value-adding processes. In keeping with our corporate philosophy, we involved our customer Läßle Blechverarbeitung, a pioneer in all things SCM and one of our largest users, early on in the development project so that we could benefit from user experience and meet the industry's increased demands. Our stand at the CeBIT 2014 trade fair (Hall 5, E16) will raise additional demand among customers old and new.

This edition of production manager presents a closer look at our SCM solution. Learn how Alutec is already successfully using the PSIPenta SCM module and how SCM has been integrated into the ERP system landscape.

You can also learn about release 2.2 of the PSIGlobal strategic planning, optimisation and control software, as well as the extensions to the PSIWms warehouse management system, which are currently in continuous operation at CS Parts Logistics GmbH.

The article “Simply faster and more precise” explains how the use of PSIMetals can make recycling scrap aluminium more efficient. Also find out how the KPI-controlled optimisation functionality in PSIPenta/Finite Capacity Scheduling, with Qualicision® optimisation logic, can be utilised in production control.

We hope you enjoy reading this issue.

Regards,

Alfred M. Keseberg

Managing Director  
PSIPENTA Software Systems GmbH

◀ *Continued from page 1*

from cooling elements for air conditioning and LED lighting systems to pistons for gearbox control and from brakes to housing units for engine management and position transducers. Alutec produces around 40 million housing units for ultrasonic parking assistants alone each year. The company's customer base includes large-scale system suppliers such as Bosch, Hella, TRW and Wabco. Alutec's workforce of some 230 employees processed 1500 tonnes of aluminium during 2012 to generate a turnover in excess of 20 million euro.

### Initial software soon inadequate

When the company first started trading, its IT software consisted of a simple order processing program and quality assurance program. Ten years later, however, these programs had reached maximum capacity, not least because the organisational and qualitative demands of the automotive industry continued to grow relentlessly. "Back in 1997, we didn't even have article numbers for purchased parts", Production Manager Frank Schöninger recalls. "Many things were done by hand. It simply couldn't stay that way in view of the rapidly growing production figures."

Management therefore decided to introduce a modern ERP system to coincide with the company's relocation.

The standard procedure was followed, and a requirements specification was drawn up in collaboration with an external consultant. This was used to analyse various solutions available on the market. Finally, two bidders were invited to present their solutions. The company quickly opted for the PSIPenta ERP standard system from Berlin-based PSIPENTA Software Systems GmbH. "The ability to cross over easily from item master data to production and view all the production orders using a reference was unique at the time",



Every production area is equipped with shop-floor data collection terminals, where employees check in and out by means of a chip card. They use the terminal to enter into the system the work order they are processing, how many good parts and how many rejects they produce and the reasons for the rejects.



*The integrated EDI module enables communication with customers and repeated changes to delivery dates.*

Schöninger explains. Another major reason for the decision was that this ERP system was the only one to feature integrated SCM and EDI modules. Every other provider offered the software as an additional purchasable option. The new system went into operation at the end of 1999.

### Open for any request

The new system's open interface proved to be one of the greatest advantages for the automotive components supplier. "We were able to connect modules programmed in-house to the PSIPenta interface right from the start. We were therefore able to adhere to the standard and never had to make any adaptations", recalls Benjamin Schweizer, Head of Sales, Logistics and Purchasing. Some of the modules programmed years ago are still in use. "We have continuously made additions here and there. An IT department at a medium-sized company can do a lot of in-house programming without external help", says Schweizer, explaining why he believes that the system is so

well suited to medium-sized businesses. "In clear contrast to mechanical and plant engineering, the important issues to us in the automotive sector are communication with the end customer through EDI and repeated changes to delivery dates", says Schöninger, describing the reason for the self-programmed adjustments. Customers transfer their preferred delivery dates overnight and the supplier needs to react swiftly, not least in the field of production planning. Alutec therefore programmed a proprietary tool that enables an automatic planning run to be executed for each item every night.

### Capacity graphs and reject handling

PSIPenta/Finite Capacity Scheduling takes all of the data received and adjusted overnight into consideration and displays the correctly updated production schedule the next day. In addition to Finite Capacity Scheduling, the system also features shop-floor data collection and a personnel time management system with corresponding terminals in

the production department, as well as finance and accounting software from PSIPENTA partner Varial and the iCenter for electronic invoice control and processing from another partner, Intex GmbH. Alongside sales-related tasks, the ERP system also maps the entire order processing procedure up to invoice production. "We start working with PSIPenta as soon as the customer has sent us a purchase order or framework agreement", says Schöninger. The order is created, and purchase orders or framework agreements on component deliveries are generated. The production planning department generates the corresponding master data, the items, the necessary attachments and the routings. Production itself starts when the customer's delivery calls are transferred electronically. With the exception of a few long-term regular customers who still place their orders by email or fax, these calls for deliveries are received electronically via EDI and are transferred automatically to the ERP system, where they are compared to the overnight planning

run. During the first stage, the system automatically generates a list of all the components that the purchasing department needs to order. After the order has been verified, it takes just a click to activate the order and dispatch it to the customer. Work orders are also listed in Finite Capacity Scheduling, which provides, among other information, a complete overview for the immediate future. The system can display a future-orientated capacity graph, can indicate whether shift schedules correspond to demand and show the resources that are available and those that are actually needed.

Every production area is equipped with shop-floor data collection terminals, where employees check in and out by means of a chip card. They use the terminal to enter into the system the work order they are processing, how many good parts and how many rejects they produce and the reasons for the rejects. "This enables us to see our production output, value creation and reject rates for each shift. We can see it all on screen via corresponding reporting tools", explains the production manager. Status messages enable production managers, controllers and the management team to see how a specific order is progressing with regard to quantities or the production schedule. Production output can be tracked on a daily basis. "We can see whether our use of personnel and material resources is in keeping with production output or whether we need to take action", explains Schweizer.

### Successful sector orientation

Each morning, the department heads meet to discuss the issues of the day. Decisions can be made, for instance, to counteract high production pressure by organising additional shifts. PSIPenta compares what the customer wants against the available production capacity. The re-

spective managers take organisational action if the gap between demand and available resources is too great. "Our reporting tools enable us to make fast and effective decisions on specific action and measures", assures Schöninger.

Right from the start, Alutec concluded a maintenance contract with PSIPENTA that guarantees routine updates and upgrades, among other benefits. "We were just starting out with order management at the time. However, every module we added, including those for reporting and controlling, enabled us to further increase transparency and ultimately ensure that aspects of our performance capacity, such as adherence to delivery dates, meet the highest standards", the IT manager explains, describing the development process. "PSIPENTA was always known as a specialist for the mechanical and plant engineering sector", Schöninger stresses. "They have, however, developed into specialists for the automotive sector in recent years. Continuous improvements to the way in which automotive processes are mapped have produced measurable successes—in particular, reduced stock levels and significantly shorter mean lead times. We now have at our disposal an ERP system that is orientated towards our sector, with an open interface that easily accommodates even the most highly customised requirements", Schweizer concludes. ☉

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**Founded:** 1988

**Employees:** 230

**Turnover:** EUR 20 m

**Location:** Sternenfels

**Sales in:** Germany, Belgium, Netherlands, France, Switzerland, Turkey

#### Sectors:

- Cold-forming technology
- Construction
- Production of tools and fixtures
- Other technology
- Project planning/product development
- Project management
- Simulation

#### Customers:

- Bosch
- Hella
- TRW
- Wabco
- ... and many more

## Product report: Supply chain optimisation for logistics networks

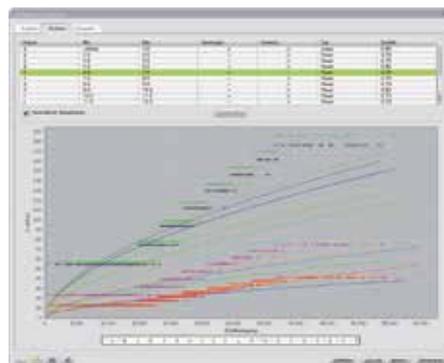
### PSI Logistics launches PSIGlobal release 2.2

PSIGlobal release 2.2, recently launched by PSI Logistics, boasts new functions including a CO<sub>2</sub> footprint calculator and optimiser, automatic freight calibration and an extended forecast generator that allows variable shipping methods to be integrated conveniently; the new release is the latest chapter in the success story of the strategic planning, optimisation and control software. The system serves as a centralised data hub in big data systems.

Five years ago PSI Logistics began the PSIGlobal success story. The solution has been used to optimise numerous logistics networks and more than 15 million transport assignments. Since then, numerous well-known industrial corporations, logistics providers and consultants have made use of the strategic software for developing and expanding logistics networks, for merger & acquisition measures and the development of new business areas. PSI Logistics presented release 2.2 to the public at the LogiMAT 2014.

#### Redesigned client-server architecture and higher performance in clusters

One of the program's highlights is its redesigned client-server architecture. In addition to operating the many functions locally, users can now make use of the "remote execution" option via a server provided specifically for this purpose. The cluster's performance can be scaled



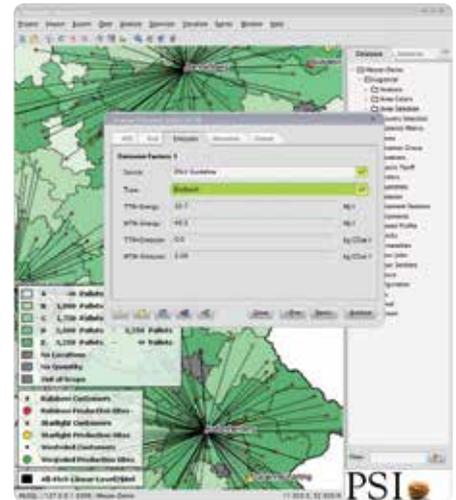
PSIGlobal 2.2—Freight tariff calibration.

as necessary by adding further computers (cloud computing). The corresponding architecture offers a number of operational options for managing communication, administrating processes and allocating orders in real time.

#### Meta system for harmonising poly-structured master data from various sources

The emissions calculator is another useful feature. It calculates energy consumption and documents greenhouse gas emissions (CO<sub>2</sub> footprint) in accordance with EU standard DIN EN 16258 for providers of shipping and logistics services. The system's freight cost calculation feature provides a number of tariff calibration functions. The integrated modelling component allows users to construct virtually any tariff constellation, and much of the process can be automated.

Geocoding has been extended and its processing speed significantly accelerated. Users can now also modify the recommendations made by PSIGlobal by entering alternative geositions. The forecast generator also features a number of functional extensions. The user-friendly integrated transmission manipulator makes it easy to variegate mass data using forecast tables, based on factors such as growth rates, in order to optimise future logistics networks.



PSIGlobal 2.2—CO<sub>2</sub> footprint in compliance with EU standard.

#### Unique features of PSIGlobal

“Thanks to its extensive range of features, PSIGlobal can also be used as a centralised data hub for harmonising and analysing poly-structured master data from various sources within the framework of big data concepts”, explains Dr Giovanni Prestifilippo, Managing Director of PSI Logistics. “In this way, the system can be used to identify supply chain bottlenecks and disruptions or to generate authoritative forecasts for the transport and warehousing resources needed in the supply chain. These unique features make PSIGlobal the essential basic system for the strategic planning, control and optimisation of logistics networks.”

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Event: Discussing PSI Logistics

## Exclusive exchange of information at the PSI Logistics User Group conference

Practical examples and information regarding the PSI*lums* release 2.2 warehouse management system, which will be released in spring, were the focal points of the fourth conference of the PSI Logistics User Group (PLUG). PSI Chairman Dr Harald Schrimpf presented an outline of the challenges and prospects created by Industry 4.0.

“Decentralised data and information management, autonomous transport and the self-organisation of IT in physical processes—“Industry 4.0” and the massive penetration and comprehensive networking of information technology have brought about an efficiency revolution in the fields of energy supply, production, logistics and infrastructure”, Dr Harald Schrimpf said in a presentation that outlined the challenges and prospects created by the fourth industrial revolution after the introduction of the steam engine, serial production and robotics. Against the background of the particular significance of the topic in research and development, Dr Schrimpf made reference to six current research projects surrounding “**Industry 4.0**” in which various divisions of the PSI Group are currently involved.

30 participants attended the event held at the distribution centre of **Wuerth Elektronik eiSos GmbH & Co. KG** in Waldenburg, and took the opportunity to engage in an intensive exchange of information and experience. Peter Schlechtinger, Excellence Manager at **Wuerth**, presented the company’s latest logistics projects and explained how PSI*lums* supports company-wide processes. The participants took a detailed look at the control of operational **processes** during the subsequent tour of the **Wuerth** distribution centre.

Alongside the latest news from PSI Logistics and status reports from the hosts of previous PLUG conferences, the agenda included exclusive advance information on the new PSI*lums* release 2.2. Product Manager Frank Brockmann consolidated and elaborated on



*Dr Harald Schrimpf at the PSI Logistics User Group conference.*

the highlights, including goods receipt entry via MDT, case calculation with nesting factor, tag cloud for more transparency in warehousing processes, extended visual presentation options for all document templates and a yard display with extensive presentation functions. The participants noted with great interest the benefits of the application outlined by Brockmann, and discussed other practical application options. “All in all, it was another interesting and highly informative event”, says Sascha Tepuric, Managing Director of PSI Logistics, summing up the fourth PLUG conference. “This forum obviously enables us to meet user needs.”

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*Factory tour at Würth Elektronik eiSos GmbH & Co. KG in Waldenburg.*

## Product report: Integrated systems for internal and inter-company processes

### Integration of SCM, ERP and MES for medium-sized businesses

Companies in the manufacturing industry need to adjust continuously to increasingly stricter market demands, such as shorter reaction times, greater compliance with delivery deadlines, rising cost pressure and shorter product lifecycles. In light of this, inter-company planning and control of business processes, i.e. the inclusion of suppliers and customers, is becoming more and more significant. Although numerous theoretical and practical approaches have existed since the 1980s, huge potential still awaits in the efficient design of a functioning supply chain.

The large, internationally operational OEMs were and still are the pioneers of supply chain management implementation. Every automotive supplier, whether Tier 1 or Tier n, must design its processes so that they meet the demands of the manufacturers. In addition to a comprehensive understanding of structural and procedural processes in the supply chain and a planning and control concept capable of handling these processes, automotive suppliers also require well-developed and supportive IT systems.

Various IT systems that support supply chain management are available on the software market: On the one hand, there are pure SCM systems; on the other, there are ERP systems with additionally integrated EDI and SCM functionality.

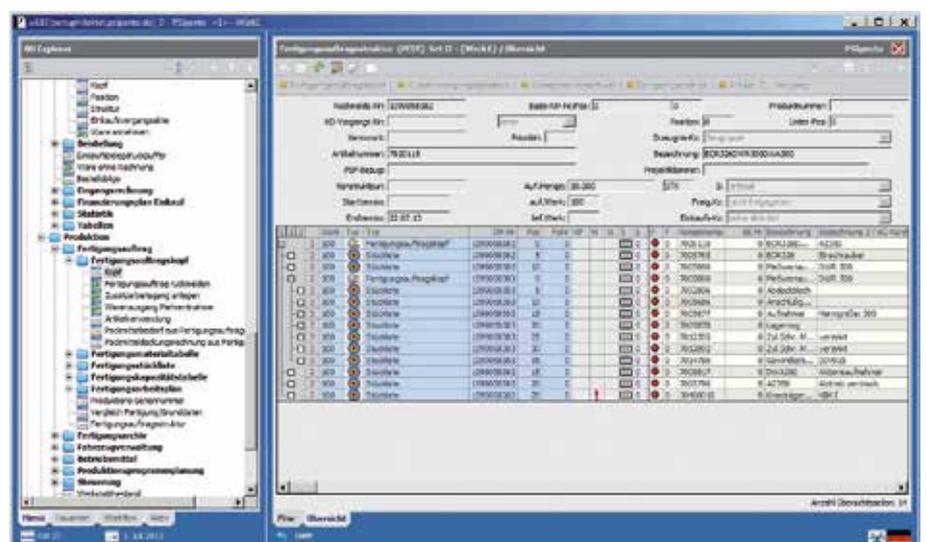
also took on a role as suppliers on the market, whether for the automotive or the mechanical engineering industry. One of the reasons for establishing supplier structures in mechanical engineering is the on-going standardisation of assemblies and the increasing ability of these companies to customise their end products on the basis of standardised assemblies. Functionality to support serial production business processes across corporate boundaries was therefore added to the ERP suite. An acquisition enabled the portfolio to be extended; SCM functions and processes were integrated into the standard package as of 2002.

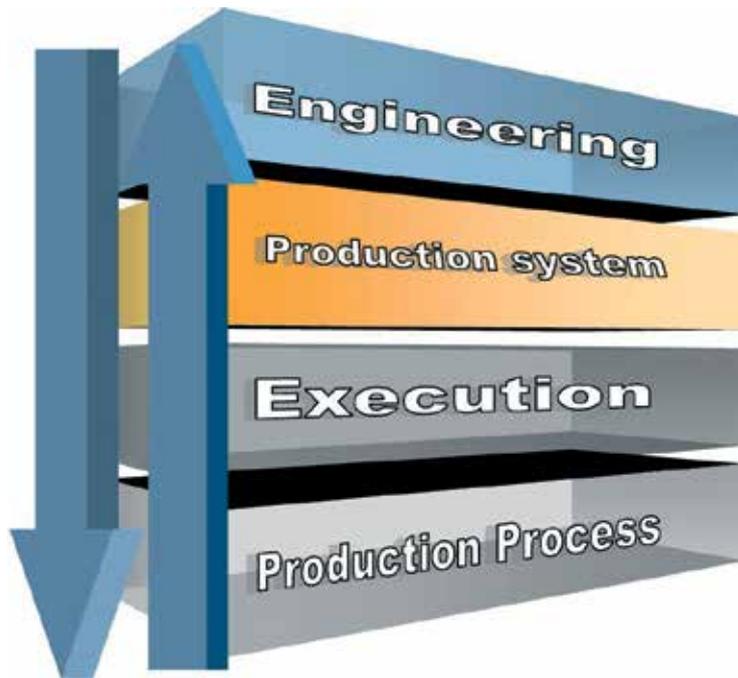
However, the market has gone through some significant developments since then. Around two years ago, PSIPEN-

TA decided to completely redevelop the SCM module using the Group-wide PSI Framework standard. The idea behind this framework is that all PSI products will in future be based on the same platform. This creates synergies in product development, improves the serviceability and compatibility of modules and standardises the layout, operating concept and appearance. As a result, the solutions remain independent of hardware, and the speed of development and range of features of the portfolio can be increased even further. The framework will also make it significantly easier to integrate components from throughout the PSI Group. The SCM module is the second functional module to be developed on the basis of this technology after the Just-In-Sequence (JIS) module. PSIPENTA cooperates closely with existing customers to develop additional features and to expand functions. The requirements of these clients flow into the further development and improvement of the overall solution and guarantee usability and market proximity.

#### ERP solution with extensible SCM functionality

The PSIPenta/ERP solution from PSIPENTA Software Systems GmbH was originally developed for manufacturers specialising in make-to-order and variant production in the field of machine and plant engineering. At the turn of the millennium, new business models began to develop. Classic machine manufacturers developed into mixed manufacturers—companies that





### Improvements based on customer experience

The redevelopment of the SCM module, for instance, was implemented through collaboration with Läßle AG. User experience also plays an important role in testing: The feedback from users testing PSIPenta/SCM was nothing but positive. Particular emphasis was placed on the redesigned operating concept and new GUI elements, which help users customise their configuration to suit their specific business processes. It is now significantly easier to implement new processes and logistics concepts and to adapt existing processes.

PSIPENTA uses integrated systems that support all inter-company and internal processes in all of its solutions for production planning and control. The aim of SCM is to improve comprehensive logistics chain planning and control. It is therefore necessary to consider all of the data to ensure that planning is comprehensive and continuous. In particular, this includes the information made available by the ERP Basis; likewise, the results of SCM planning need to flow into the ERP system.

The advantage of an integrated approach is obvious—it enables the synchronisation of various plans, such as the sales plan, and actual customer requirements.

Generally speaking, mid to long-term planning is usually good. Fluctuating short-term requirements, however, can lead to material and capacity bottlenecks.

### MES and JIS—Additional expansion modules

The additional integration of MES components, such as, for instance, capacity scheduling systems and systems for collecting shop-floor and machine data, guarantees uninterrupted planning and control right through to production, and always provides an up-to-date map of the condition of the production system.

An additional Just-in-Sequence system uses fuzzy logic to determine the ideal production sequence for servicing OEMs according to their requirements. Integrating all systems will ensure that competing demands can be taken into consideration and processes planned and controlled so as to guarantee punctual and complete delivery. 

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**topsoft**

Fair for Business Software  
7 May–8 May 2014, Zurich



**Event: Greater reach of ERP core functions through mobile applications**

## PSIPENTA Smart Apps for field work

At CeBIT 2014, PSIPENTA will present new mobile applications to supplement the PSIPenta/ERP and MES suite. The new apps for smartphones and tablets will significantly extend the reach of these business applications.

Processes and application scenarios in the areas of service and field work were the focal point of development work, thus ensuring that employees in these departments are involved in Group-wide core processes. The underlying concepts and applications were developed together with users, and were presented recently at the customer conference. The features will be available in time for CeBIT 2014. Incident rectification, feedback from service assignments and the collection of relevant personnel working hours are now more straightforward as a result. The new PSIPenta Smart Apps significantly reduce the processing times for all activities up to invoicing.

The devices are integrated with a stationary backend via WLAN or mobile connections. Current security standards and infrastructures are supported. Solutions for iOS, Android and Windows are available, in addition to platform-dependent applications. These mobile work processes and workflows will be presented in an integrated PSIPenta/ERP and MES environment at the exhibition stand.

PSIPENTA is also anticipating significant user interest in manufacturing solutions from this year's partner country, Great Britain. 



### SUPPORTING PROGRAMME

#### Guided tours

ERP: Variant production  
12/03/2014 | 11.30 a.m.–2 p.m.

ERP: Project/make-to-order production  
13/03/2014 | 11.30 a.m.–2 p.m.

#### Presentation

##### “ERP 2020”

Karl Tröger, Product Management, PSIPENTA  
12/03/2014 | 2.20 p.m.–2.40 p.m.



#### A hands-on caravan from Hobby!

This year, PSIPENTA customer Hobby Wohnwagenwerk GmbH provided a caravan for the event.

Hobby has been using PSIPenta to provide a modern corporate solution with integrated multi-plant management for more than 10 years.

**Product report: Simply faster and more precise with PSImetals**

## Integrated charge and alloy calculation makes recycling more efficient

When scrap aluminium is used in on-going production processes, efficiency and quality depend largely on the composition calculation in use. The standalone solutions that are currently in frequent use have a serious disadvantage—it takes a lot of time to set the required qualities. Intelligent integration in PSImetals enables aluminium recyclers to comprehensively optimise their processes. They also stand to gain crucial competitive advantages: The number of alloying cycles is significantly reduced, as all of the information is continuously updated and is available everywhere at any time. Rates of between 1 and 1.5 are achieved in practice. This not only increases the throughput rate but also optimises warehouse management, energy balance and purchasing.

Continuously rising energy costs and a demand for optimum resource efficiency mean that sorted product waste has become an important source of raw materials for the metals sector. This applies in particular to aluminium scrap: With a share of around 20% of total global production, aluminium recycling is now an extremely important activity. Recycling scrap metal is, however, a complex issue and requires strict organisational demands on the entire process chain to produce a high-quality, profitable and safe product. This is precisely where PSI Metals steps in as a specialist in production management systems for the metals industry: The integration of a centralised charge and alloy calculation function optimises the entire production process.

### The optimum combination makes all the difference

Regardless of the different sizes, alloys and soiling of the scrap aluminium to be processed, and regardless of whether the scrap is externally produced or gained from in-house production waste, the objective is to fulfil the customer's requirements as precisely as possible. Efficient organisation is therefore essential

for subsequent alloying on the basis of the charge and alloy calculation, and the chemical analysis of the alloys in the melting furnace plays a crucial role in this calculation. The faster and more precisely these measurement results flow into the process, the more transparent and efficient the entire production chain can be organised.

When the charge and alloy calculation is integrated in a production management system, as PSI Metals has demonstrated

with the integration of Alloy & Charge Management in PSImetals, it results in significant optimisation potential due to the time saved and maximum transparency. From scrap delivery to warehouse management, right through to the melting furnace, all data of relevance to organisation and production is collected in real time, and the charging and alloying is monitored and controlled in an ideal manner. The charge and alloy calculation is therefore the central reference and control parameter for all organisational and strategic production processes. Unnecessary trips, misunderstandings and errors, especially those affecting critical interfaces such as warehouse management, production, laboratory or procurement, are effectively prevented. Necessary decisions are made with greater speed, flexibility and precision on the basis of information that is always up to date.



Raw material for aluminium recycling: production waste and scrap.

## Far-reaching consequences

The sooner the right alloy is reached, the fewer subsequent alloying cycles are required, the less energy is consumed and the more efficient the use of the melting furnaces. The first step is therefore comprehensive material tracking that logs all scrap components as soon as they are delivered or produced in-house; this enables clear allocation by alloy type and the visualisation of stock levels, which in turn contributes towards warehouse optimisation. Above all, however, this step speeds up the process of locating the required material: An integrated monitor provides the forklift truck driver with an overview of current stock levels and therefore with speedy access. A weighing device, which is also integrated into the forklift truck, shortens the trans-

## Best practice: An average of 1.2 cycles

The Alloy & Charge Management module provides fast and accurate analysis results that are immediately utilised and implemented by PSImetals: The information as to which material is needed in which quantity is uploaded and is immediately available to the forklift truck driver, who is then able to deliver in the shortest possible time. The data is registered in the system and stock levels are automatically updated. The method also eliminates the loss of time through transmission errors as a result of manual control.

Immediate recalculation of the material input, information in real time and direct access to the material warehouse make it possible to significantly reduce the

sociated significant energy savings per melt. The software's functionality also reduces furnace idle times, during which the unfinished melt must be kept at a constant temperature. The production plan as a whole can be improved and the best possible furnace utilisation can be achieved in terms of efficient energy management, as all processes can be planned more efficiently.

## Strategic purchasing and efficient warehouse management

Warehouse management and purchasing also benefit from the integrated charge and alloy calculation and precise material tracking. The transparency of stock levels and alloy availability enable purchasing departments to determine precisely what purchases need to be made or will become necessary at a certain point during production planning. This largely avoids double orders or incorrect orders being placed as a result of an inadequate overview of stock levels or the whereabouts of material. It makes it easier to calculate the production costs of an alloy from both a price and organisational perspective, and supports optimum production process planning. Is it better to use in-house scrap? Does a certain type of scrap need to be purchased? Is it cheaper to add pure elements? What is an acceptable price for scrap? Strategic questions such as these can be answered with the help of key data provided by PSImetals including Alloy & Charge Management.



*The furnace: Precision in core processes pays off.*

port and charging process. Another important aspect of precise material tracking is the classification of in-house rest materials (e.g. head and foot scrap, trimming scrap) with a known composition, allowing this material to be included in the recycling process even more speedily.

number of subsequent alloying cycles. The figures speak for themselves, with a cycle duration ranging from 45 minutes to 2.5 hours depending on the alloy and an average of 1.2 cycles per production run. The key benefit is the significant increase in throughput rates and the as-

## Improved traceability

Compliance with material traceability is becoming ever more relevant due to stricter product liability regulations, and is easy to fulfil with the help of production management. Production manage-

ment acts as a digital archive, where the composition of produced materials is reliably documented in a complete record stretching back to the original scrap metal used.

**Conclusion: High potential for optimisation all along the line**

PSI*metals* with integrated charge and alloy calculation enables efficient production planning and control on the basis of actual up-to-date circumstances and requirements, and is able to release huge potential for optimisation.

From a user perspective, it is clear that the main benefit lies in integration: The increased efficiency of the charging and alloying has an impact on the entire process chain; the optimisation potential can be apportioned directly to all areas, both upstream and downstream from the core process of melting. Thus, the aluminium industry can design its processes more flexibly and react strategically to



*An integrated monitor provides comprehensive, relevant information in real time.*

the most varied of demands. Ultimately, it equates to savings in the consumption of the most important resources: material, time and energy. 

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**Events: ESTAD, AISTECH, PSI*metals* user group**

## Expert discussions and exchange of experiences—don't miss out!

**ESTAD & JSI**  
7–8 April 2014  
Paris, France

The ESTAD is a new European expert conference for the steel industry, set up by four European steel associations (ASMET, FFA, Steel Institute VDEh and Jernkontoret). PSI will take part as an exhibitor (Stand 11) and will present two papers (together with ArcelorMittal Fos-sur-Mer and BFI).

**AISTech**  
5–9 May 2014  
Indianapolis, USA

AISTech is North America's largest trade show for the steel industry and is again expecting around 6 000 participants this year. PSI will present optimisation solutions for steel production with a focus on planning, production, logistics and quality at Stand 1 607.

**PSI*metals* user group**  
20–21 May 2014  
Berlin, Germany

PSI Metals customers will meet this year at the PSI*metals* user group in Berlin.

The focus will be on reports from practice and talks on the latest PSI*metals* solutions, alongside an opportunity for customers to exchange experiences. A tour of the PSI facility rounds off the programme. A detailed agenda will be available as of April.

User report: Extensive PSIlwms extensions during on-going operations

## Future-proof IT solutions for efficient warehousing

CS Parts Logistics GmbH has increased both capacity and performance at the global distribution centre for agricultural machine manufacturer Claas within the scope of extensive plant extensions and new process flows. The PSIlwms warehouse management system was adapted to the new warehousing and control processes by PSI Logistics within six months, during which operations were on-going.

The Claas Group, based in Harsewinkel, Germany, is one of the market leaders among the international producers of agricultural machinery. The Group sys-

tematically turned its Service and Spare Parts divisions into profitable areas of the business when it set up its logistics centre in the year 2000. The central location was extended from its original size of just under 30,000 square metres to around 50,000 square metres during two phases of expansion. Meanwhile, operator CS Parts Logistics GmbH holds more than 145,000 different items in stock. The parts are stored in 28,800 pallet bays on more than 22,000 linear metres of storage racks for large components and in an automatic small parts warehouse (SPW). CS Parts Logistics GmbH is a joint venture by Claas and Bremen-based logistics service provider STUTE Logistics (AG

Up to 13,000 ordered items are shipped each day from the picking and packing areas in the CS Part logistics centre—which is available 24/7. The reaction time from order receipt to being ready for shipping or collection by the customer is less than twenty minutes.

The PSIlwms warehouse management system has provided the central IT basis for the warehouse's extremely high availability ever since operations began. "At the time, it was a future-oriented investment", says Gerd Pietrowski, Head of IT at CS Parts. "All extensions and process adaptations over the past years were easily integrated into the PSIlwms. We still have a state-of-the-art IT system in place, with a functionality and flexibility that significantly exceed the scope of conventional WMS."

### Coordinating two different machine controllers

The most recent examples are the refurbishments of the logistics centre that are currently underway as part of a project to extend the automated small parts warehouse (ASPW). Without interrupting operations, the nine-lane ASPW was extended by an additional four lanes



Autopilot function for the Transport Control forklift guidance system.

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& Co.) KG, a wholly owned subsidiary of the Kühne & Nagel Group.

“PSIlwms has once again proven its worth as a highly flexible and conveniently configurable IT system. With its extended functionality and other additions, PSIlwms assures that the service level at Claas is maintained in the long term despite an increasing variety of components and growing order volumes. A future-proof and adaptable IT solution for efficient warehousing processes.”

**Gerd Pietrowski**  
Head of IT, CS Parts

with around 60,000 container places for two-deep storage of three different container sizes. CS Parts also installed a new conveyor hub to integrate the four new lanes in the material flow, an additional in/out level in the old lanes and six new picking workplaces and an automated picking buffer.

“In addition to implementing the expansion without interrupting operations, it also meant a number of challenges with regard to integrating the processes into PSIums”, explains Helmut Klein, PSI Logistics Project Manager. The four new rack operating machines are equipped with four-fold load handling attachments (LHA) that define a completely different bin-in and bin-out process than in the existing nine lanes. CS Parts also changed the supplier of conveyor technology and the material flow calculator. PSIums therefore needs to consider two different types of machine control together with numerous handover points and physical interfaces between the old and new automated systems, and coordinate the processes accordingly during real operations.

### Pick rate virtually doubled

In addition to increasing capacity, CS Parts also banked on the plant extension resulting in additional process efficiency through highly optimised strategies. For instance, PSIums coordinates a balanced load distribution between the lanes of the ASPW and an evenly redundant article distribution on the basis of A, B, C and D criteria. To avoid later relocations, PSIums optimises the journeys of the rack operating machines (ROM) so that corresponding container pairs are formed on the conveyor routes themselves.

The requirements for supplying the six new picking stations and the connected commissioner, a newly installed and ful-

ly automated order collection buffer with 320 container places, have also been optimised. Containers from the ASPW are supplied sequentially to the picking stations. Employees pick and pack 12 containers each, supported by newly designed dialog templates and pick-to-light processes. If necessary, PSIums controls a parallel picking process. The commissioner then forwards the containers to the packing stations in the correct sequence, based on the specifications provided by PSIums. PSIums employs specially optimised call strategies for this purpose. As a result, CS

The Transport Control function enables forklift trucks to automatically drive to the target position via the fastest route. “We expect these optimisation measures to result in up to 25 % more storage movement and picking performance”, the IT manager explains.

The multi-site capability that comes as standard with PSIums already largely covers another pending optimisation measure at CS Parts: The satellite warehouse set up in February 2014 for reserve stock of “slow movers” and other items can also be managed via PSIums.



Automatic small parts warehouse.

Parts was able to significantly increase order processing and further stabilise its processes. “Instead of the previous 600 picks per hour, we can now manage up to 1100 picks per hour thanks to the extended IT software with the ASPW, the collection buffer and the modern picking stations”, says Pietrowski.

### Autopilot for SLS Transport Control

Additionally, an autopilot function was integrated into Transport Control, the forklift truck guidance system in PSIums.

The adapted processes and optimised control were integrated in the PSIums within six months, during which operations continued uninterrupted. 

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Customer report: Planning and control in production

## KPI-controlled optimisation using PSIPenta/Finite Capacity Scheduling with Qualicision®

One of the decisive tasks of production control is to combine production factors in a manner that ensures compliance with delivery deadlines and the efficient use of capacities and resources. KPIs can be used to describe economic efficiency. Qualicision® optimisation logic helps ensure that these KPIs are utilised during production control instead of determining them retrospectively. Qualicision® sees KPIs as optimisation targets and gives the controller an opportunity to influence them. Qualicision® technology is a form of fuzzy logic that balances the pros and cons of different solutions by means of a special extension. The underlying Qualicision® technology, tried and tested around the world in planning and controlling automotive production processes as well as in other areas of application, is now also available in PSIPenta/Finite Capacity Scheduling from PSIPENTA.

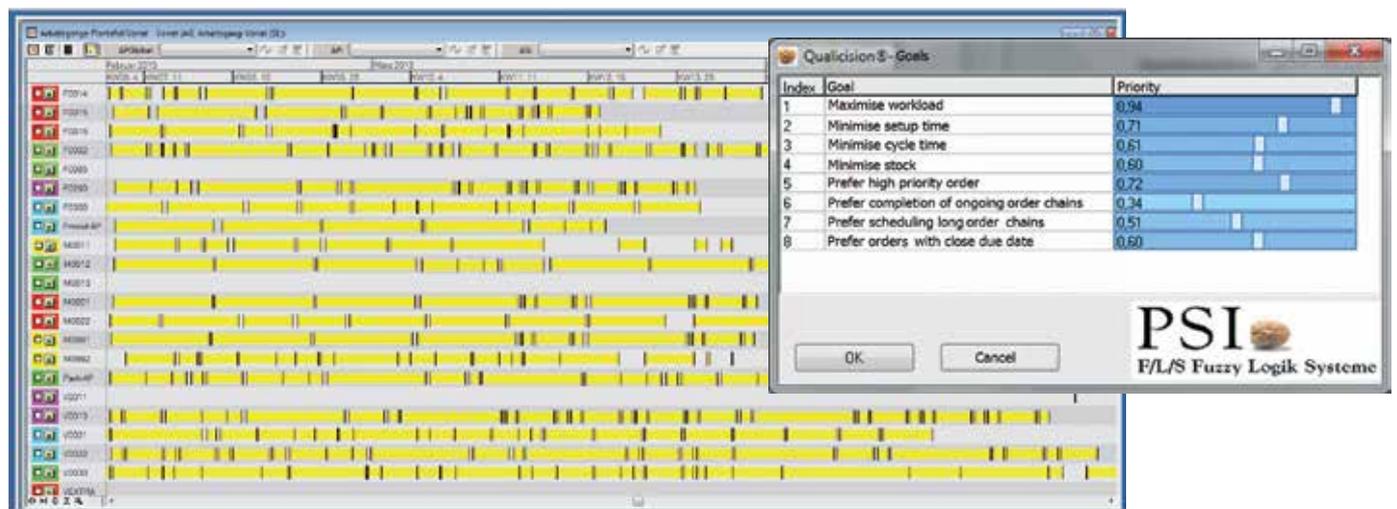
PSIPenta/Finite Capacity Scheduling supports users in developing detailed plans of the order situation in the short to mid-term range. The focus is on harmonised processes and the efficient use of production resources. Optimum resource allocation depends on a variety of param-

eters. The tried and tested Qualicision® technology makes it possible to view multiple optimisation objectives simultaneously. Target functions are mapped by key performance indicators (KPI). The KPIs can be derived from business objectives or other up-to-date specifications. Examples of optimisation

fine-planning production depending on a given situation. The user can also make manual adjustments to the occupation plan when automatic planning is complete. This achieves the greatest possible flexibility during production planning while taking individual circumstances into account. It is also possible to add project or customer-related optimisation objects to those already listed above. Examples of customer-related optimisation objectives include “maximise energy efficiency” and “minimise labour during off-peak times”.

### Supporting the production scheduler with learned priorities

Complex correlations between the target functions of optimisation and the given



Shop floor plan with Qualicision® objectives in PSIPenta/Finite Capacity Scheduling.

eters. The objectives often have opposite effects, i.e. the optimisation of one parameter simultaneously can have a negative impact one or more other parameters. Classic planning algorithms either do not function at all or only to a certain extent under these conditions. The tried and

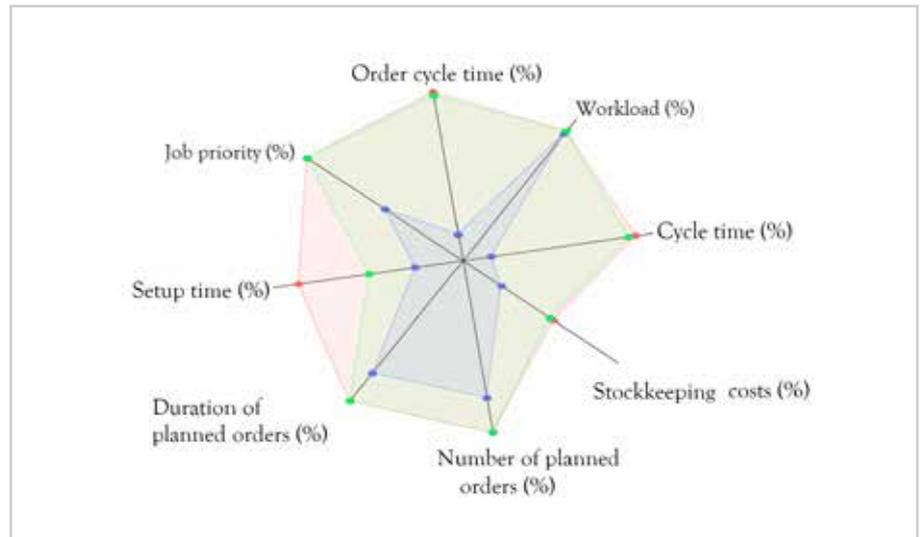
objectives include, for example, maximise workload, minimise stock, minimise cycle time, minimise setup times, prefer high priority order and prefer orders with close due date. Optimisation objectives are weighted from 0 to 100. This enables priorities to be taken into account when

production situations can make it difficult to determine suitable priorities for the specified KPIs. Changing order situations and different specifications need to be weighed up and suitable prioritisations determined to enable the best possible achievement of objectives. To help

planners find suitable priority settings for KPIs, a heuristic algorithm can be integrated to analyse occupation plans that have been optimised according to different KPIs on the basis of different priority settings, in order to maximise the key data generated by the system. The results of KPI optimisation can be visualised as a spider chart in an explanatory component. The maximum characteristics (utopia points) that can be achieved for each KPI during the learning phase are shown in the red area. To help select a particular priority setting, the planner can enter a preference pattern (blue area on the diagram) and is then automatically shown the best priority setting (green area on the diagram). The Qualicision® planning module is integrated in PSIpenta/Finite Capacity Scheduling. Additional key data can be included to customise optimisation.

#### Use of KPI-based optimisation in other areas of application

The F/L/S solution for order sequencing in the automotive industry has been



Results of KPI optimisation as a spider diagram.

in use for nearly 20 years. The original solution was further developed as part of a collaboration project between PSIPENTA and F/L/S, and resulted in the creation of PSIJis. PSIJis transfers relevant aspects of sequencing to the needs of automotive suppliers. For example, the sequence of orders to be produced by a machine and plant manufacturer is determined during portfolio planning. The task lies in selecting “good” and “suitable” orders from an order pool to grant

as much consideration as possible to the manufacturer’s own production capacities and restrictions. When evaluating suppliers on the basis of various criteria, such as price, compliance with delivery deadlines, quality and technology, the system creates KPIs relating to supplier criteria that must be taken into consideration. These KPIs can flow with differing priorities into the classification system of Class A, B or C suppliers. Using Qualicision® as a classification method makes it possible to include all the data logged in the ERP system for the purpose of supplier evaluation.

PSIpenta/Finite Capacity Scheduling features Qualicision® technology, alongside other Qualicision® applications that will be presented at the PSIPENTA stand at CeBIT from 10–14 March 2014 and at the Hannover Messe trade fair from 7–11 April 2014. 

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Presentation of the Qualicision® technology featured in the PSIpenta/Finite Capacity Scheduling module.

**Current topics: Numerous new orders for ERP and MES projects**

## Manufacturing companies rely on modular ERP software solution

In 2013, PSIPENTA Software Systems GmbH was appointed by numerous companies, including AWG Fittings GmbH and HMP Heinrich Müller Maschinenfabrik GmbH, to install the integrated PSIPenta solution for the manufacturing industry.

The service portfolio ranges from classic Enterprise Resource Planning (ERP) and Manufacturing Execution System (MES) components, right through to highly specialised applications such as

service provider of fire-fighting fittings, fire protection systems and hydraulic rescue equipment, AWG Fittings provide mature and innovative products to fire-fighting services, industrial corpora-

company will also make use of the Advanced Planning and Scheduling (APS) modules and the shop-floor data collection function of the MES portfolio.

HMP Heinrich Müller Maschinenfabrik GmbH in Pforzheim designs and builds machines and production facilities for the automotive industry, its suppliers and a variety of other segments. The make-to-order manufacturer will initially use PSIPenta/ERP Standard in conjunction with the PSIPenta/Professional project management module, the PSIPenta/Finance commerce modules and PSIPenta/MES modules for logging operational data and personnel work time. 



AWG Fittings GmbH have placed their trust in PSIPenta/ERP Standard since June 2013.

Supply Chain Management (SCM) for the automotive industry. AWG Fittings GmbH is one of the world's leading manufacturers of mobile and stationary fire protection. As a full

tions and other users around the world. Following a very short introductory period, the company has trusted in the PSIPenta/ERP Standard to optimise its business processes since June 2013. The

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**7.–11. April 2014**  
**Hanover • Germany**  
hannovermesse.de  
PSIPENTA Software  
Systems GmbH  
Hall 7 | Stand A26

Get new technology first 

**Event: Railway Forum in Berlin****PSI solutions for the railway industry**

PSI Transcom GmbH and PSIPENTA Software Systems GmbH jointly presented their solution portfolio at this year's Railway Forum, that took place at the Estrel Convention Centre in Berlin from 17–18 March 2014.

The accompanying conference senior managers and executives from Corporate Purchasing at the German national rail company, Deutsche Bahn, discussed the future prospects and courses of action open to the railway industry with experts from industry, commerce and politics. The globalisation of procurement and innovation management in the railway industry were focal points of the discussion. Jörg Manegold, Chief Procurement Officer (CPO) at Deutsche

Bahn AG, was the patron of the conference programme.

PSIPENTA presented the PSImaintenance software solution for managing and maintaining complex technical

systems. The comprehensive solution monitors service cycles and co-ordinates the maintenance of machines, complex

systems, vehicles and other technical equipment. PSI Transcom provided information on managing costs, delivery deadlines and quality during the workshop "Quality assurance in conjunction with the procurement of infrastructure services".

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**Event calendar**

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



7 April–8 April 2014	ESTAD & JSI	Paris, France	PSI Metals   Room 8/Stand 11
7 April–11 April 2014	Hannover Messe trade fair 2014	Hanover, Germany	PSIPENTA   Hall 7/Stand A26
5 May–9 May 2014	AISTech	Indianapolis, USA	PSI Metals   Stand 1607
7 May–8 May 2014	topsoft 2014	Zurich, Switzerland	PSI Switzerland   Exhibitor
13 May 2014	IPA Süd I	Augsburg, Germany	PSIPENTA   Customer conference
15 May 2014	IPA Süd II	Ingelfingen, Germany	PSIPENTA   Customer conference
19 May 2014	IPA West	Verlbert, Germany	PSIPENTA   Customer conference
20 May–21 May 2014	PSImetals user group	Berlin, Germany	PSI Metals   Customer conference
20 May–21 May	ILA Berlin Airshow	Berlin, Germany	PSIPENTA   Hall 1/Stand 1821
21 May 2014	IPA Ost	Bad Düren, Germany	PSIPENTA   Customer conference

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