

production manager

Journal for Logistics & Production

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Optimum machine utilisation through PSIpenta

Source: Voith Turbo BHS Getriebe GmbH

Dynamic manufacturing control with PSIpenta adaptive

Recognise hazards – increase sales

Economic production and optimised warehousing are two basic prerequisites for taking on international competition. For this reason many mechanical and plant engineering companies are currently investigating in software selection and reengineering projects. For example, turbo transmission manufacturer Voith BHS, from Sonthofen, Germany, has used the new, extended ERP standard PSIpenta adaptive to minimise the danger of falling behind on orders due to bottlenecks anywhere in its entire logistics chain, which would result in the loss of sales.

Stationary industrial transmissions such as parallel shaft gears, planetary gears and integral gears are the core competence of globally active enterprise Voith Turbo BHS Getriebe GmbH from Sonthofen. Running on plain bearings they reach speeds of 35,000 to 40,000 rpm, and can even manage 80,000 rpm if required.

Users of these gears are found in the energy sector, gas and oil production and in the petrochemical industry as well as other areas. The contract manufacturer has 24 regional representatives on all five continents. The company holds a 25% share in the global turbo transmissions

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News ticker

+++ PSI wins the Simon Group as a new client. The group has decided on the comprehensive ERP solution from PSIpenta for all four companies
 +++ PSI awarded contract for energy trading system from Salzburg AG. The energy supply company is banking on PSImarket as its core system for electricity and gas
 +++ PSI receives order from international logistics provider, Reiner Bohnen for a Warehouse Management System for contract logistics in the beverage industry
 +++ PSI successfully integrates rail carriage logistics for Swiss Steel. The PSImetals Production Management System optimises rail carriage requirements/circulation
 +++ PSI wins logistics service provider as new strategic customer. Warehouse Management System PSIwms for HUETTEMANN
 +++ Another order for a steel works management system strengthens PSI's leading market position. Peiner Träger decides in favour of Source: PSImetals +++

Imprint

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 Printed by: Repro- & Druck-Werkstatt

Editorial



Software for faster reflexes

The ability for an organism to perceive its environment, to process it automatically and to develop adequate reactions to specific stimuli in the form of interaction between sensory organs, nerves and muscles are all prerequisites for the occurrence of reflexes.

If we consider our customers from the capital goods and automotive industry to be organisms as described above and their markets as a global environment, we can see that today, these organisations need significantly greater powers of perception with regard to market requirements and movements.

The classic phrase "It's not a case of big fish eats little fish, but rather fast fish eats slow fish" is experiencing a comeback these days, as it really is the case that previous reaction speeds or reflexes, to stay with the example above, in reaction to the financial and economic crisis were not enough to provide an adequate response to the sudden downturn. The sheer overwhelming demand for industrial goods in emerging countries caused companies to concentrate on expanding their capacities rather than on their organisation. However, today's organisational structure and flow is aligned with the value adding chain; integrated software solutions, workflows and automatisms are the central nervous system, which has to make the right decisions to specific market changes faster than the competition.

Read for yourself how "considered reflexes" occur.

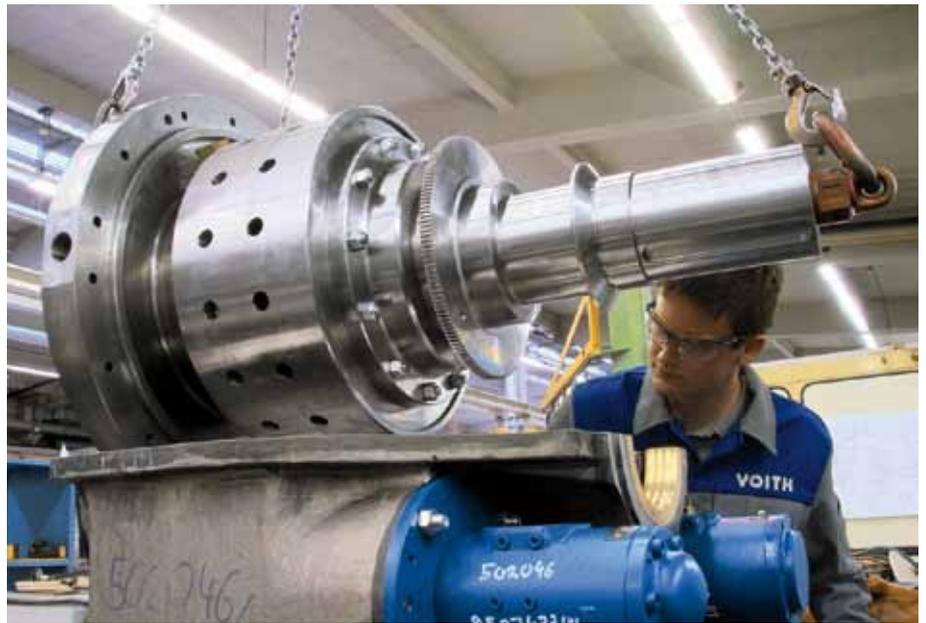
Alfred M. Keseberg
 Managing director
 PSIPENTA Software Systems GmbH

		Schedule
06/10–08/10/2009	it & business, Stuttgart, Germany www.itandbusiness.de	PSIPENTA Hall 1, Stand 1F42
13/10–14/10/2009	4th Deutscher Maschinenbaugipfel (4th German Engineering Summit), Berlin, Germany www.maschinenbau-gipfel.de	PSIPENTA Stand 4
21/10–23/10/2009	26th Deutscher Logistik-Kongress (26th German Logistics Congress), Berlin, Germany www.bvl.de	PSI Logistics Stand 07, Foyer Potsdam Havanna Lounge, Room Tiergarten 1
12/11/2009	STAHL 2009, Dusseldorf, Germany www.stahl2009.de	PSI BT & 4Production Pavillion

market and its 370 employees and 45 apprentices achieved a turnover of more than 80 million euros in 2007/2008. A change in senior management in 2002 led to new corporate strategies, investments and structural measures. In 2003, for instance, production switched from a conventional centralised organisation with departments and maintenance areas to material flow and service-oriented departments, resulting in the "100% Delivery Date Compliance" project. The company had already implemented the ERP standard of Berlin's industry specialist PSIPENTA Software Systems GmbH in 2008. There followed a joint analysis of information technology options and, subsequently, the development of new functionalities.

Dynamic planning required

For an order processing time of 6 to 13 months, an order spends 4 months in production at the most. The lion's share is taken up by the design phase, including material procurement, in which schedule-related commitments and the strain placed



Consistent ability to deliver with AMC

Source: Voith Turbo BHS Getriebe GmbH

on resources in the fine planning system cannot be seen. "We were often unaware that we had a combination of orders being processed that would lead to an overload of resources in the near future", says Andreas Lingg, Manager of Production at Sonthofen, describing previous conditions. Production control at the time was based on the past, i.e. the order that had been waiting the longest was processed first.

The situation called for dynamic planning that reacts to events as they occur and also for capacity utilisation for rough planning. A decision was made in favour of the Adaptive Manufacturing Control (AMC) function package, a new development by PSIPENTA. It is integrated in the standard ERP PSIPenta *adaptive* and its core components utilise algorithms from control loop technology to control adaptive manufacturing. The AMC functions – self-regulating mechanisms, delivery dates established on the basis of Capable-to-Promise and dynamic production comparison – are aimed at achieving the greatest possible data transparency within real processes, optimum utilisation of machines and employees and constant deliverability combined with minimum capital binding.

Informative key data

Firstly, backlog processing and mandatory materials were integrated into the ERP system. Backlog-free production had already been achieved in 2005. A key data monitor, or so-called dashboard, was developed based on specifications



Greatest possible data transparency on the test bench

Source: Voith Turbo BHS Getriebe GmbH

provided by Voith. "We realised that a particular hexagon bolt, for instance, that was unavailable in production can mean we are unable to realise sales worth 100,000 euros. However, these interrelations impacting a delay are not something you detect without effort", explains Lingg. The dashboard consolidates all the information contained as standard in the ERP system and presents it as key data. This provides the responsible departments and management with targeted access to problem points in the supply chain. Based on a pie chart representing the various function areas and their share in events – for instance a delivery delay – as values and percentages, it is possible to click through to the point in the chain that is the cause of the delay. This could be a manufacturing cell, a specific configuration unit, an employee in purchasing, missing design drawings or an external supplier. The problem is always evaluated in terms of sales value, regardless of whether it concerns a screw worth two cents or a casted component worth 60,000 euros.



The lever to success

"This is the first software to provide us with the possibility of pin-pointing precisely where a problem lies and how much delay it is causing, allowing us to then apply the correct lever. This is all done in real time", comments Lingg. Thus, every station with an impact on adding value can be concisely evaluated in its area of operation on the basis of key data. The purchaser does not need to search through every order and evaluate each one separately, as the dashboard presents him with a clear key data overview. A product line manager involved more in commercial and sales-oriented activities will soon locate who

Andreas Lingg, production manager at the Sonthofen-based company, has successfully implemented the "100% Delivery Date Compliance" project. Source: Voith Turbo BHS Getriebe GmbH

or what is causing a problem in a specific function sector. At Voith this led not only to an improved adherence to delivery schedules but also to an increase in operating results. "We need fewer emergency operations and less overtime and outsourcing to meet sales targets", says the production manager. Well-aligned material planning and production results in the optimum utilisation of employees and machinery. Synchronising materials management and production also leads to reduced stock levels and shorter processing times. This also reduces capital commitment.

The success has led Lingg to initiate further plans with his software partner in the field of assembly and adaptive rough planning. ☺

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User report: Optimised memory management

Service-oriented data storage with administration software

Virtualisation will remain one of the most important computer centre trends until 2012 and it will also affect memory environments. This is the conclusion reached by the Gartner Group whilst also drawing attention to the growing complexity of memory management¹. Business Volume Qualicision (BVQ), an administration software package developed by Wiesbaden system integrator System Vertrieb Alexander GmbH (SVA) in cooperation with F/L/S Fuzzy Logik Systeme GmbH, a subsidiary of PSI AG, significantly simplifies and improves the utilisation of virtualised Tiered Storage Architectures: Users can save up to 20% on hardware, energy and administration costs.

A growing number of enterprises² are utilising virtualised, multi-level memory infrastructures (Tiered Storage) whose memory classes are distinguished by performance and costs. In addition, memory management should be as simple and transparent as possible. Issues

concerning the required capacity and its chronological utilisation often remain open, as do performance optimisation and classification. The results are unused resources, unexpected bottlenecks, difficult problem analysis, poor load distribution and increased personnel costs.

Thus, the savings potential offered by the memory concept is not fully exploited. Analyses show that only 25% to 40% of the performance capacity of Tiered Storage Infrastructures is actually used.

Memory management based on business needs

The memory experts at SVA and F/L/S have developed an intelligent solution to these problems in the form of Business Volume Qualicision (BVQ). It enables the placing of virtual drives (volumes) based on Service Levels, which are derived from actual business needs. The targeted Service Level of the application data in these Business Volumes is classified via the data class, whilst the memory class defines the memory value in accordance with predetermined price/performance categories. The optimisation process works on the principle of a control loop as shown in figure 1. A comparison between both classes reveals which combinations are expedient and meet business requirements or indicate where a new placing is needed. The purpose of the Qualicision module from F/L/S is to realise a self-optimising approach in the future.

Supplement to the IBM strategy

BVQ offers an interface to IBM's "SAN Volume Controller" (IBM SVC) virtualisation solution. The required performance measurement values and topology information relating to the Tiered Storage Infrastructure of IBM SVC are collected virtually in real time. This information is then extended in BVQ according to levels, costs, performance and compliance

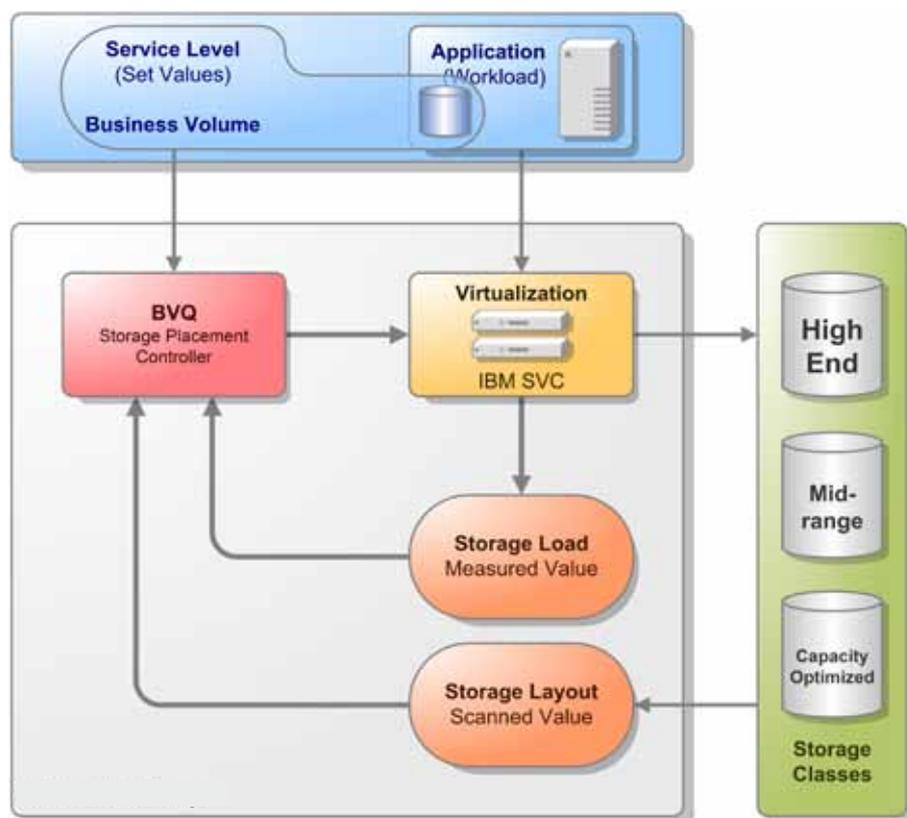


Figure 1: BVQ control loop

Source: F/L/S Fuzzy Logik Systeme GmbH

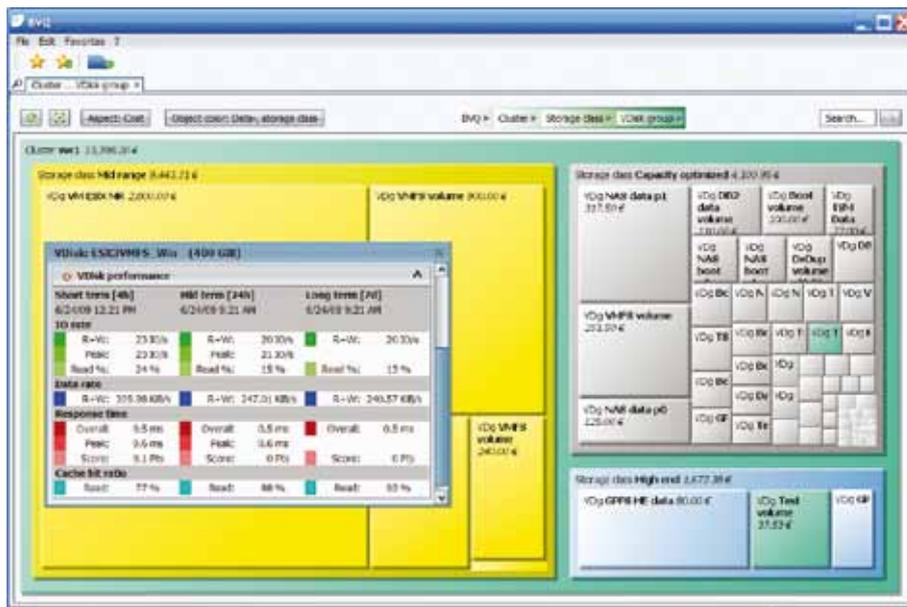


Figure 2: BVQ "Tree Map"

Source: F/L/S Fuzzy Logik Systeme GmbH

specifications. Figure 2 shows some of this information in the BVQ "Tree Map" view. BVQ therefore represents an ideal supplement to the IBM Enterprise Management Strategy and can be fully integrated into the IBM Service Management Framework.

Fast Return on Investment

Measured long-term growth rates for capacity and transaction load form the basis for planning requirement-oriented memory purchases. One concrete customer situation analysed by BVQ revealed that 70% of the high-end memory capacity was hardly used. Performance-optimised capacity extension dimensioning reduced the investment volume by 14%.

Coupling service levels to memory costs enables performance-related accounting and cost control. Additionally, automated reporting functions significantly reduce documentation costs, whilst analysis functions with placement recommendations prevent unnecessary and costly downtimes. Thus, Business Volume Qualification significantly

increases the efficiency of SVC-based memory virtualisation. 

¹ Philip Dawson: "Virtualization Changes Virtually Everything". Fringe lecture at the Gartner Strategy & Technology Conference, December 2008, Frankfurt am Main, Germany.

² Sabine Prehl: "Worldwide CIO Survey: Users Invest in IT Despite Crisis", in: Computerwoche Online dated 15/01/2009

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Company

System Vertrieb Alexander GmbH

SVA GmbH is one of Germany's leading system integrators in the field of data centre infrastructure. SVA's commercial goal is to couple high-quality IT products from various manufacturers with the project know-how, services and flexibility of SVA to provide customers with ideal solutions.

SVA is a Premier Business Partner of IBM in Germany and a TrueNorth Platinum Solutions Partner of HDS. The company's certified "System Storage Solution Center" in Wiesbaden provides SVA experts and customers with comprehensive demonstration, development and training scenarios with all the hardware and software solutions currently available from various manufacturers.

Core topics:

- High-availability architectures
- High performance computing
- Data backup and disaster recovery
- Storage area networks
- Virtualisation solutions in server and SAN environments
- Consulting and outtasking

Locations:

Wiesbaden, Berlin, Hamburg, Munich, Dresden, Hannover, Saarbrücken, Dusseldorf, Karlsruhe, Stuttgart

Employees: 150

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User report: Production management system for foundries

Management and employees enthusiastic about process optimisation

The completely new production management system (PMS) developed by 4Production AG went live at the Hydro foundry in Hamburg after a project period of just one year. PSImetals was designed specifically for intuitive, easy handling in a foundry environment and for optimised process support. Hydro once again decided in favour of solutions provided by its long-standing partner 4Production for the implementation strategy, engineering and realisation of the PMS. Due to the metal processing specialist, a high rate of acceptance among employees, a smooth transition and best possible economic efficiency could be achieved. The project was well-received by all involved.



Full employee backing

Source: Hydro Aluminium GmbH

Norwegian aluminium enterprise Norsk Hydro has been the sole owner of the foundry at the HAW aluminium plant in Hamburg since 2006. The refinery, which has an annual capacity of 170,000 metric tons, produces rolled billets manufactured from aluminium ingots, scrap and liquid aluminium that are then supplied to the neighbouring rolling mill in Hamburg-Finkenwerder.

Investments of 12 million euros

A completely paper-based production and a data-processing system dating back from the 1980s were replaced and integration with the Hydro Group's SAP/R3 system implemented to secure competitive ability. The plant was originally designed for processing liquid metals which necessitated extensive

conversions to and new investments in foundry operations: A new two-chamber furnace, an ingot saw and a homogenising furnace were integrated.

The 4Production team used its knowledge of the aluminium industry in particular to develop the overall concept that enabled end-to-end material control, the staggered replacement of old systems and the safe integration of new investments.

The implementation strategy was staged in three phases: the first phase consisted of engineering the foundry solution, including the definition of requirements specifications and the adaptation of development processes; this was followed by replacing the existing data processing system and relocating some processes to SAP/R3; Level 2 integration/connection of production followed in a third phase.

Energy and environmental efficiency

The two-chamber furnace, smelter, fully automated ingot saw and the homogenising furnace were integrated into PSImetals Level 2 connections in stages. 4Production was able to provide a worldwide unique solution in this particular combination. The foundry workers were very open-minded and committed in preparing themselves for their new system. The big day finally arrived on 1 February 2009. The first ingots produced with the new system were delivered and billed to customers just six days after commissioning. Commercial plant manager at Hydro Hamburg, Stephan Marleaux, is delighted by the work of the project team: "Replacing the old systems was a very low-key operation and did not disrupt ongoing production at all."



Hydro wheel loader: Direct data transfer via WLAN Source: Hydro Aluminium GmbH

High acceptance among employees

Production and fine planning at the foundry are now supported by the tried and tested PSI*metals* system: From incoming goods via metal warehousing to dispatch, all processes are seamlessly integrated with SAP R/3, which takes care of the commercial side of operations. Diggers, wheel loaders and fork-lift trucks are now equipped with weighing devices and mobile computers so that transportation relevant to stock-levels can be weighed directly and posted via WLAN. Material flow is mapped with a quality never achieved before. "We are now really up-to-date", says an employee at the Hamburg foundry of the PMS. "I have never before experienced such a degree of enthusiasm for the implementation of new processes in any other project", says Oliver Trotter, project manager at the Hamburg plant. The real-time integration of actual analysis measurements during smelting

is another highlight. Exact knowledge of the furnace sump and furnace utilisation enables the optimisation of batch composition and alloying. Furthermore, tool management can, for instance, significantly increase the lifetime of the moulds.

These extensive measures will in future increase throughput and yield and reduce stocks significantly. The risk of defective batches has been eliminated. "High economic efficiency and process stability make the plant more competitive and environmentally friendly", says Dr. Axel Brand, plant manager at Hydro Hamburg.

The next steps at a glance

The solutions provided by 4Production can do even more and the next step is already the subject of consideration. PMS provides details of current stock levels and knows the planned arrival of scrap on the horizon of one to two days. This knowledge can be used to proactively control composition optimisation to compose follow-on batches, thereby reducing costs through significantly less use of fresh metal whilst keeping scrap stock levels low. ☺

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Company

Hydro Aluminium Germany GmbH

Hydro is a leading provider of aluminium and aluminium products and is also operative in the fields of hydro-electricity and solar power. The company's headquarters are in Norway and it employs 23,000 people at locations in 40 countries on every continent across the globe.

Germany is one of the leading consumers of aluminium. Hydro provides the majority of the metal. Hydro provides a huge variety of products to the majority of its customers from 13 locations in Germany.

The plant for hot and cold aluminium rolling in Hamburg has belonged to Hydro since 2002 and has since been totally renewed through investments totalling 50 million euros. Hydro acquired the rolled ingot foundry located on the same site in 2006. The company employs a total of 640 staff at its aluminium plant in Hamburg.

Business areas:

- Aluminium
- Aluminium products
- Energy

Locations: Achim-Uphusen, Bellenberg, Bonn, Dormagen, Grevenbroich, Hamburg, Hannover, Neuss, Rackwitz, Ulm, Unterschleissheim, Wackersdorf

Employees: 23.000 (6,000 in Germany)

4P/PSI customer since: 1999

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Products and solutions: Transport cost optimisation with freight cost check-up

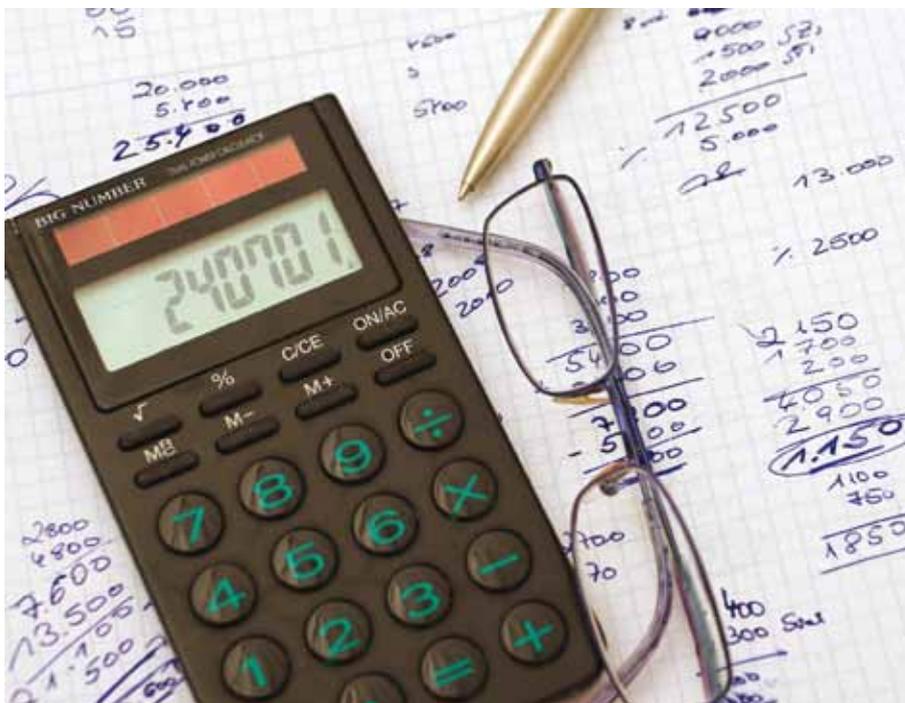
Transparency reduces cost of transport

Reducing transport costs is an important issue for service providers and companies that plan and implement logistic projects – and not only in times of crisis. However, a lack of cost transparency in the operative and administrative areas make it difficult for logistic managers to recognise the potential for savings. PSI Logistics GmbH offers a comprehensive freight cost check-up to do just that. Their two solutions, *PSI_{ims}* and *PSI_{global}*, are both highly effective instruments that enable sustainable planning along the entire value-adding chain of logistics.

not only with operative aspects such as fleet management, fuel costs and taxes, toll, duties, commissions and personnel costs, etc. In many regards, the area is influenced by cost implications arising from the structure of a largely networked logistic service – from choice of location and warehousing costs to the degree of service and sustainability.

Systematic cost allocation, or alignment with cost-oriented transfer prices, takes more than just cost consciousness and cost control. It also requires a high degree of transparency with regard to performance characteristics, performance functions and their corresponding shares in total costs. The more detailed the knowledge of individual costs sectors, the more reliable and economical the calculation of logistics tariff for orders, or the basic make or buy for individual requirements. However, logistics service providers do not necessarily design their tariff structures sufficiently transparent to make them comparable with others. In addition, the basic data captured in many companies is less detailed, basically isolated and hardly transparent.

According to the "Trends and Strategies in Logistics" study, published in October 2008 by Bundesvereinigung Logistik (BVL), Germany's federal association for logistics, and Technischen Universität (TU) (Technical University) of Berlin, around 40% of businesses do not know the exact costs of their supply chain (fig.1). Strictly speaking, the primary object of interest in the optimisation view is not the cost of transport but rather economic efficiency, as transport logistics are subjected to the optimisation approach of overall corporate success. Ideal economic efficiency is always characterised by



Transport cost check-up increases savings potential

Source: Fotolia

Cost reduction adopts a more significant role in times of economic downturn. Transparently describing, analysing and optimising cost blocks is a well-founded method of adapting business situations to accommodate current conditions. In addition to intra-logistics, the main issue here is the cost of transport. With this in mind, PSI Logistics now offers a freight cost check-up. A flat fee is sufficient to obtain an independent and neutral analysis and check-up of dispatch processes, transport organisation, freight service purchasing and IT systems on the basis of actual data and to derive

corresponding measures. Not only can these efforts reduce costs but can also result in cash advantages in the short term.

Reliable calculations

This subject is of interest not only to fleet operators and transport service providers, shippers and contract logisticians can also realize significant saving potentials by sustainably planning and structuring the transport measures they require. After all, transport cost optimisation is concerned

a number of parameters, some of which compete with one another.

Improved methods of organisation could save around 20% of transport costs, according to an estimation published by the Fraunhofer Institute (IML) in Dortmund, Germany. Improved methods of organisation are virtually always equivalent to the utilisation of IT systems. Thus, transport costs can be significantly reduced through the use of modern software developed specifically for the purpose. Two efficient software programs offered by PSI Logistics, the Transportation Management System *PSI_{ims}* and *PSI_{global}*, the IT system for analysing, planning, controlling and optimising multi-level, multimodal logistics networks, were developed to achieve optimum results in the areas of transportation costs, economic efficiency and network optimisation. These systems provide the necessary transparency and weighting for operative (*PSI_{ims}*) and structural (*PSI_{global}*) cost factors and offer both a profound basis for planning and decision-making as well as an efficient controlling and monitoring tool.

Planning and control across multiple sites

Advantages: Orders and their cost structures taken from the transactional systems can be analysed in detail and optimised. They can even be broken down into individual sectors for negotiation, tendering or assigning in-house. *PSI_{ims}* also allows operative processes from route planning to resource utilisation to be planned across multiple sites, via a multi-site control centre with access to data and information from every site. *PSI_{global}* compares structure-related transport costs in three stages across all aspects, from network analysis to strategic optimisation

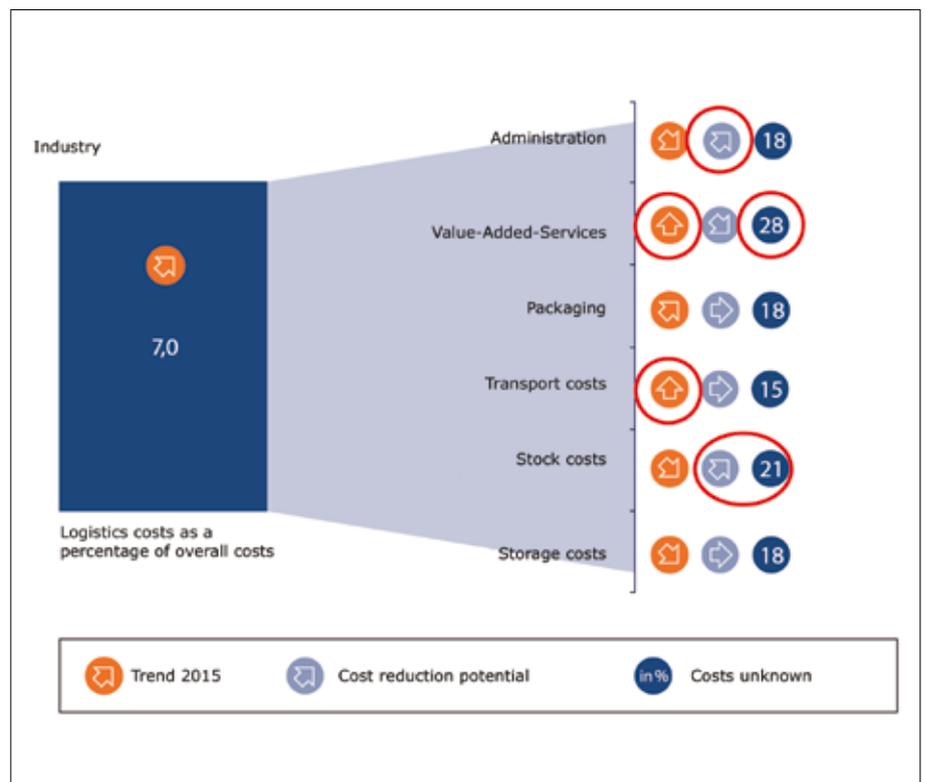


Figure 1: Many logistics managers do not know every cost factor Source: "Trends & Strategies in Logistics" study, October 2008; Bundesvereinigung Logistik, Technische Universität Berlin, Germany

to tactical resource planning and control, and optimises the costs as necessary.

Enterprises need to adopt new strategic approaches to transportation in times of economic difficulty. They do not only represent a challenge but also a basis for cost reduction and future-oriented optimisation. 

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Products and solutions: Planning under consideration of capacity and temperature with PSI*metals*

Temperature-controlled planning for energy optimisation in steel plants

With regard to the holistic optimisation of production processes in steel production, PSI cooperates closely with leading technological partners such as the applied research institute VDEh-Betriebsforschungsinstitut (BFI) in Dusseldorf and has integrated the latter's analytical-mathematical online process models in its production management system, PSI*metals*. Current collaborations are aimed at energy-optimised facility planning under consideration of available capacity and the heat temperatures required during the production process. The main focus is on integrating the BFI temperature model in PSI*metals* to enable temperature-controlled scheduling for steel plants. The system ensures that the heat is handed over for continuous casting on time and with the right temperature, depending on the aim of optimisation (maximum throughput or minimum energy costs).

The problems concerning energy buffers for process control

The steel production process (from manufacturing crude steel in a converter or electric arc furnace to complex treatment in secondary metallurgy to casting the steel in continuous casting machines) is very energy-intensive. Starting from the target temperature required at the continuous casting machine, production processes usually incorporate energy buffers for every

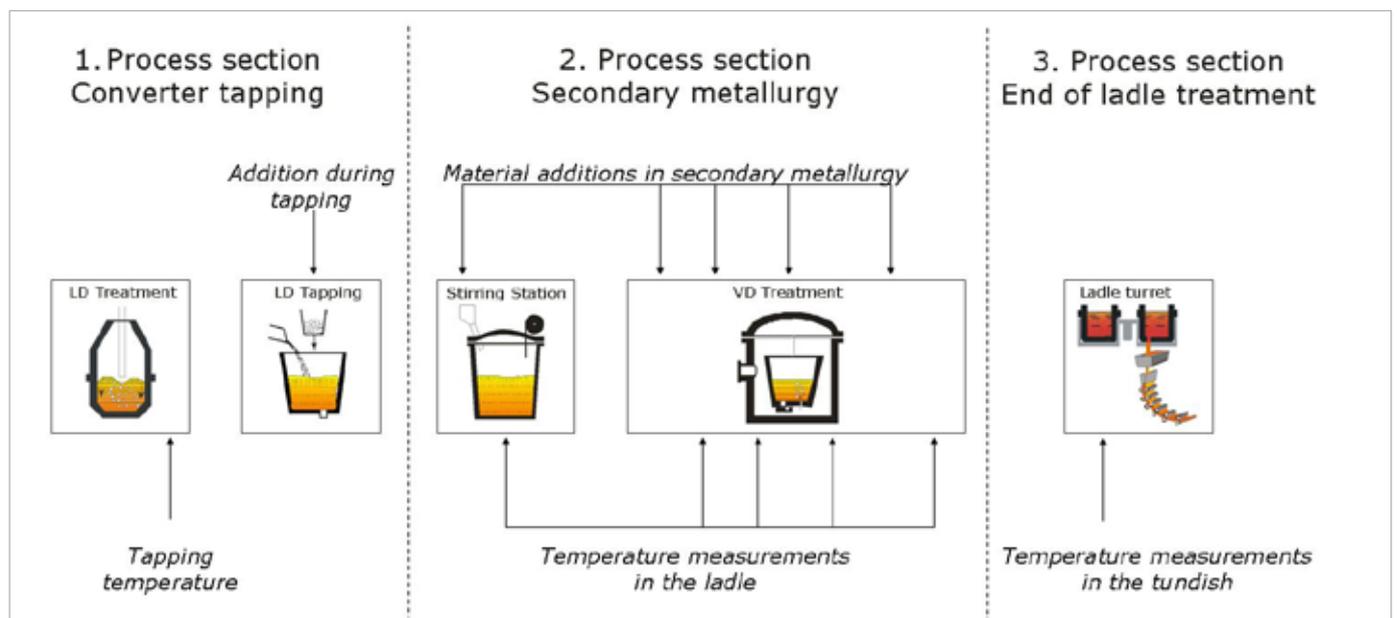
upstream facility to compensate for the temperature losses occurring between tapping and treatment including waiting time and to cover unforeseen production interruptions.

The energy buffers required to reach the target temperature, in particular in steel plants without a ladle furnace, are often over-dimensioned for precautionary reasons; this means taking longer stirring times and even the addition of cooling scrap to achieve the right target temperature

into account when the process is running without interruption. If delays in process flow lead to waiting times and thus to temperature losses (due to an insufficient energy buffer) the heat becomes too cold for casting and needs to be reheated in the ladle furnace under high energy expenditure, or even re-charge in the primary facility if there is no ladle furnace. The situation offers significant potential for energy cost reduction through optimised planning.

Temperature as a major planning variable

The planning solutions for steel plants available on the market focus on time schedules, capacity and sequence as restrictions for planning. However, the temperature as a major process variable and how it changes during production process in comparison to the required target temperature is left unconsidered. When steel is produced without a ladle



Interaction between material feed and temperature changes in the individual process stages of steel production

Source: PSI/BFI

furnace the assessment as to whether the casting temperature will be attained at the end of the process or if there is a danger of having to stop casting depends on the experience and competence of the operators and dispatchers; it also requires internal coordination to correctly evaluate the impact on follow-up production orders and facilities.

This gap in the market has now been closed by the integration of the BFI temperature model in *PSImetals* which takes the temperature into account as a significant basic restriction. All temperature-relevant variables are stored in the process instructions of *PSImetals*. Other factors influencing the temperature in addition to the temperature losses occurring during production flow, such as alloying and other material additions, are also calculated and taken into consideration. The logistic tracking of every single ladle in the steel plant by *PSImetals* enables the BFI model also to exactly consider its thermal condition and its impact on the temperature development.

Dynamic online prediction of temperature development

The BFI temperature model calculates online the current temperature of the liquid steel in the facilities, considering all material additions and treatment steps. Furthermore, the model also ensures the heat reaches the target temperature required for continuous casting based on a given tap temperature. The model's input variables are, on the one hand, specifications provided by *PSImetals* for treatment and transportation times as well as calculated target values for material additions, electrical energy input, etc., and on the other hand, the ladle temperature loss rate and losses through heat treatment



Batching liquefied steel in an electric furnace

Source: SMS Group

and material additions. To achieve the target temperature, the model predicts the heat temperature for the remaining treatment steps on the basis of the current process condition determined via online monitoring. The prediction is updated cyclically and event-driven when laboratory analyses and new temperature measurements become available and when materials are added and treatment steps are finished.

Temperature-guided planning with *PSImetals*

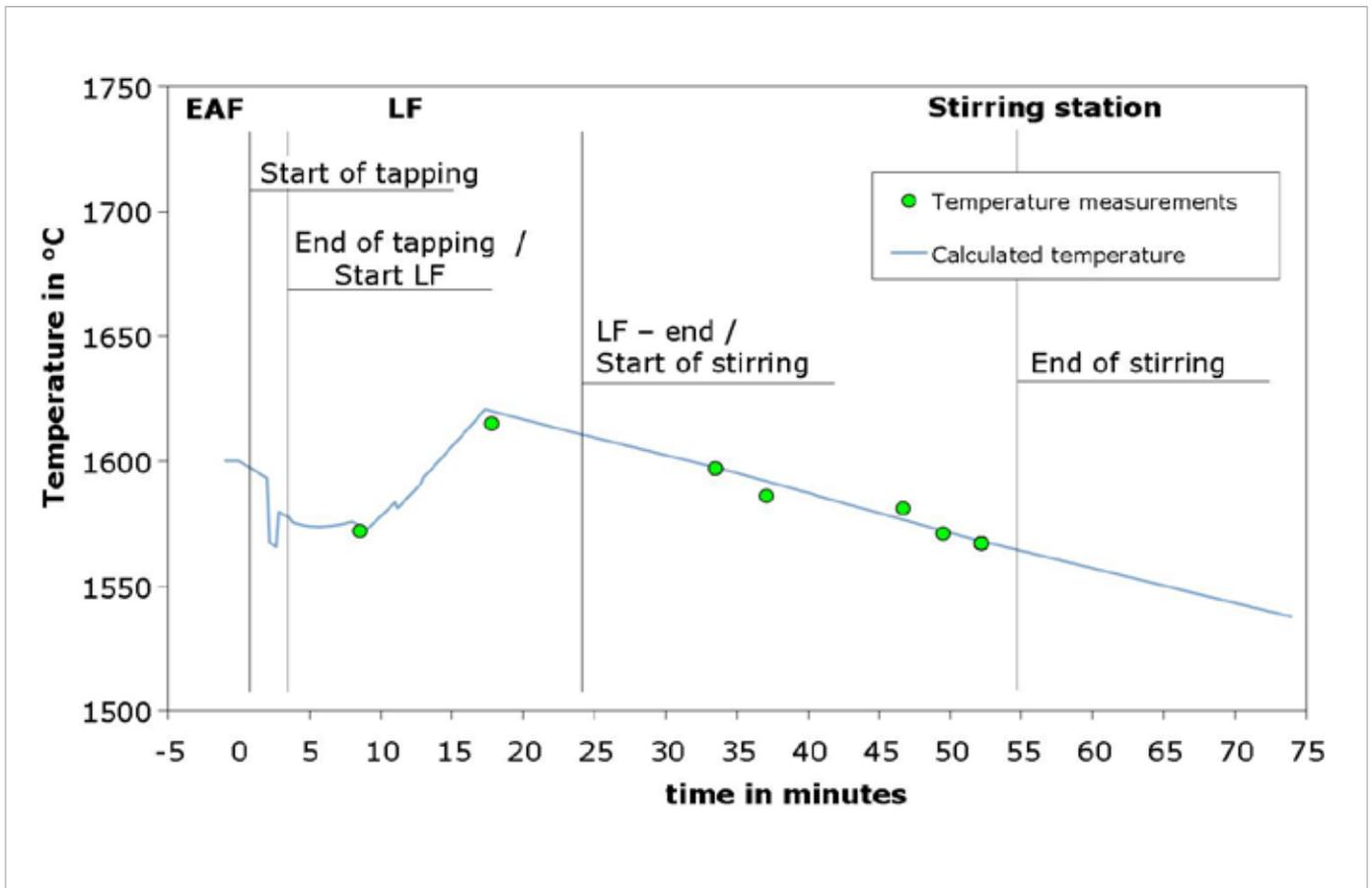
The planning process for the steel plants defines a sequential schedule for treating the heats with optimised temperature buffers for all facilities upstream from continuous casting on the basis of target treatment times and target temperatures. Changes in production flow lead to new predictions which are visualised

in *PSImetals*. This is important to the extent that every chronological change in production flow has a direct impact on temperature. Temperature-guided planning allows temperature changes to be taken into consideration during planning to optimise the entire time frame of a heat production order.

Planning the ladle circulation also plays an important role as ladles that are empty for any significant amount of time not only cool down but also cause a higher temperature loss rate. *PSImetals* optimises ladle circulation with the aim of keeping every ladle in the cycle (taking ladle history into consideration) to reduce the average ladle re heating and circulation times.

Handling option for more efficiency

Depending on the processing route (converter steel plants, electric steel



Comparison of calculated temperature development and temperature measurements in process flow using the BFI temperature model Source: PSI/BFI

plants, ladle furnace yes/no) PSImetals enables the scheduler to optimise various targets with regard to quality, cost, time and productivity. For instance, throughput optimisation usually requires greater energy expenditure to treat as many heats as possible when the facilities are working to capacity. This can be expedient when the order books are full and profits are sufficient to cover the higher cost of energy. The response to a drop in demand is a continuous reduced facility output whilst maintaining throughput with a focus on energy cost minimisation.

PSImetals will make recommendations on what can be influenced by the dispatcher depending on the optimisation target. Can existing buffers be used up? Should the tapping temperature be reduced? Should casting speed be increased? PSImetals calculates the effects of

changes to the speed of casting and how and when buffer times and temperatures can be utilised.

The direct integration of the BFI temperature model in PSImetals enables the temperature development in any production stage to be taken into consideration during scheduling. Energy buffers that "feel right" but are in fact too high can be reduced, treatment times cut and the overall energy costs of the treatment process lowered without

increasing the risk of production downtimes. ☺

► **Information**

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STAHL 2009
12th November

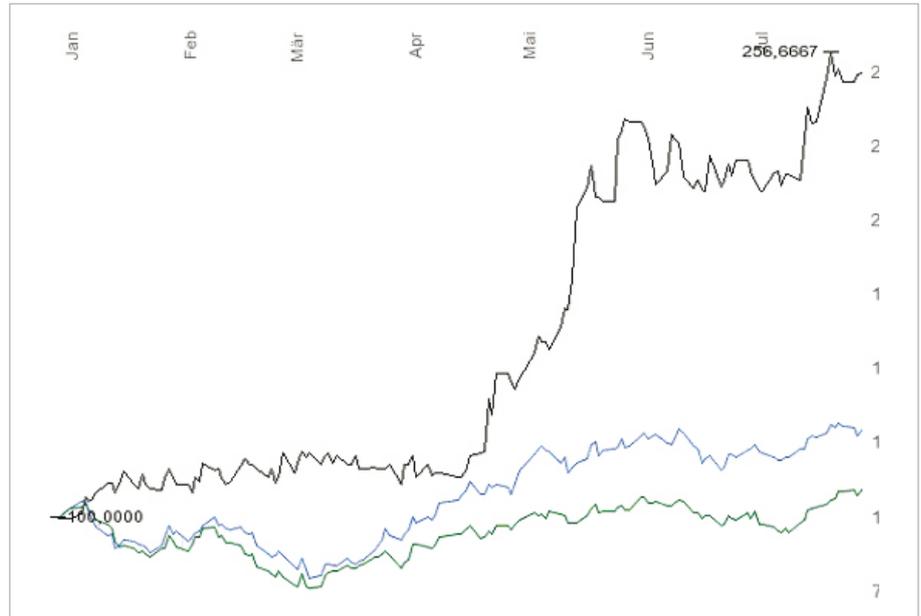
Chancen und Perspektiven
Opportunities and prospects

Significant interest from the press and media

PSI among the stock market's favourites for the year

PSI is among the stock-market favourites in the year it celebrates its 40th anniversary. The PSI share has gained 150% since the turn of the year and has left all comparison indices far behind. The company's long-term strategic alignment in particular, along with the good results of the first two quarters have PSI at the centre of attention both in the press and in the public eye.

PSI solutions for rationalising production and logistics processes increase efficiency and lead to a fast return on investment, particularly in times of economic difficulty. Energy management solutions from PSI help providers and network operators to remain successful in an energy market characterised by ever-increasing complexity. This is confirmed not only by the development of PSI share but also by economic journalists as



PSI share development in comparison to the DAX (green) and TecDAX (blue) Source: PSI AG

reflected in positive articles published in 2009 in media such as the Frankfurter Allgemeinen Zeitung, Börsenzeitung, Financial Times Deutschland, Capital and even in German television's

news program ARD Tagesschau. The commentators are all in agreement: PSI solutions face a bright future also after the company's 40th year. ☺

Further increase in orders received

PSI Group shows further growth in first half of the year

The PSI Group has increased its operating result in the first half of the year in 2009 by 30% to 3.5 million Euros in comparison to the same period during the previous year. Group results improved by 36% to 2.6 million Euros and group sales increased by 13% to 65.3 million Euros. The volume of new orders increased by 9% to 85 million Euros and the order backlog grew by 21% to 119 million Euros.

The renewed increase in orders received has been generated primarily

in the production management and infrastructure management sectors. PSI has noted a strong demand on the domestic market for solutions aimed at rationalisation and improving energy efficiency. Large export orders in the energy management sector and a consistently high demand for production and infrastructure management solutions are anticipated for the second half of the year.

The current annual forecast for operating earnings (EBIT) will therefore be raised by 15% from 7.5 million to more than

8.5 million euros. The management will decide on a further increase of the forecast during the third quarter or after the conclusion of strategically significant major contracts. ☺

► Information

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