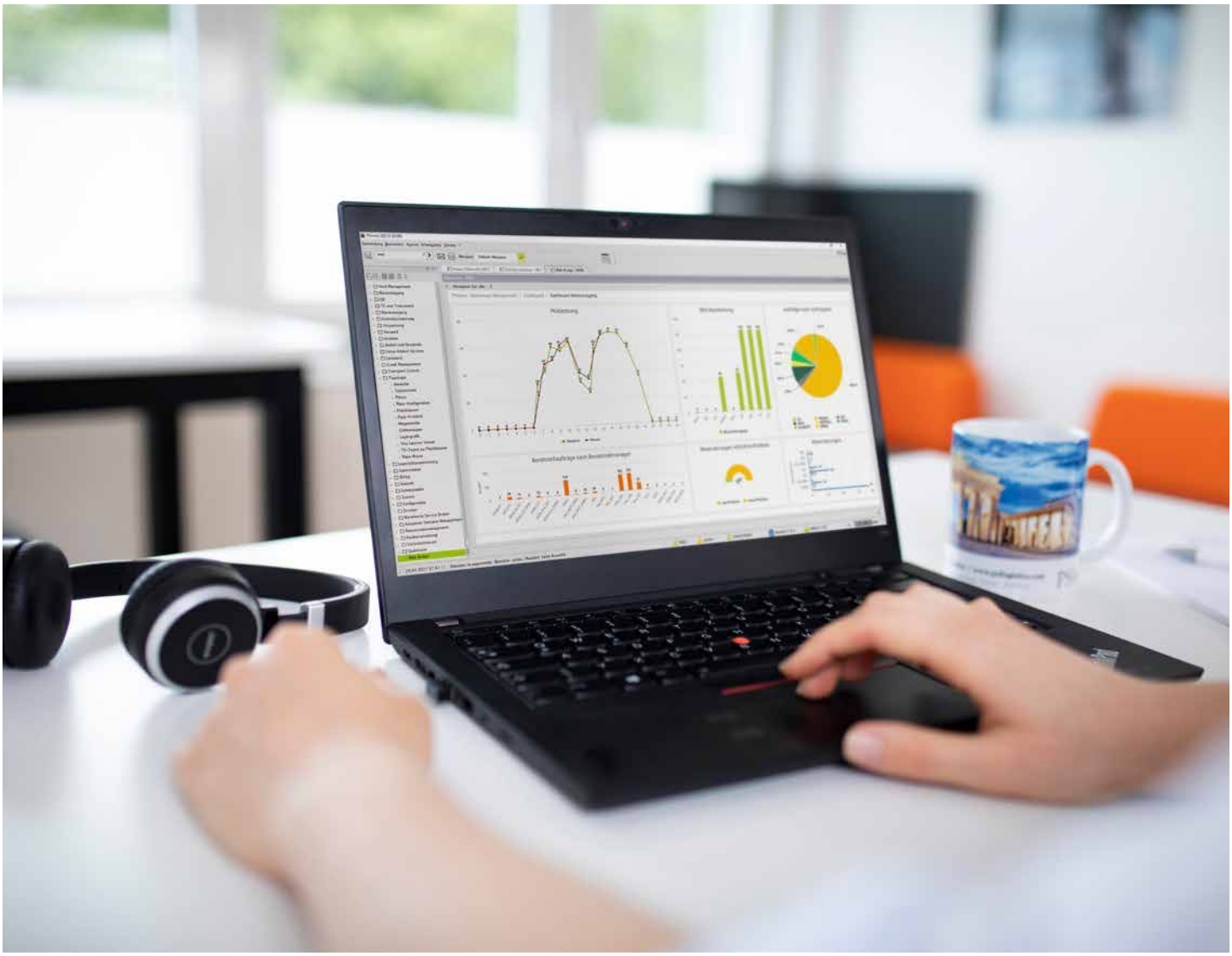
3 / 2022

PRODUCTION manager

Magazine for logistics & production



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PSI

EDITORIAL

Dear Readers,

One more summer of record heat and drought, the ongoing pandemic, and multiple global dislocations are emphatic reminders of the importance of sustainability and the future-proofing of business processes and supply chains. Enablers for these are powerful software systems. With a varied cross-section of topics, the current Production manager shows which diverse developments and trends of our PSI software are implemented on the uniform platform for customers.

PSI's software products are optimized for energy efficiency. The joint product report of PSI Metals and PSI Fuzzy Logic & Neuro Systems illustrates intelligent, energy-efficient production

in the metals industry. The project report on the new digital manufacturing architecture at Slovenian steel manufacturer SIJ Metal Ravne documents how an IT solution from PSI Metals enables improved integration of manufacturing and business processes as well as higher quality standards and more efficient customer support.

In a product and a project report, PSI Automotive Industry describes the concrete advantages of ERP-supported processes and structured ERP implementation. And last but not least, we discuss in an interview what effects the pandemic revealed on the project business and product development activities of PSI Logistics.

We hope, we have provided an up-to-date selection of useful information and wish you an enjoyable lecture.

Prestifilippo

Dr. Giovanni Prestifilippo
Sascha Tepuric
Managing Directors
PSI Logistics GmbH

You can also read the Production manager online:
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Impact of the pandemic on project business and product development

For Continuous Improvements at Customers

In an interview with the Production manager, the Managing Directors of PSI Logistics GmbH, Dr. Giovanni Prestifilippo and Sascha Tepuric, illustrate the impact of the pandemic on project business and product development.

Dr. Prestifilippo, Mr. Tepuric, Covid-19 is now already shaping the public and economic life for the third year. Has the pandemic had an impact on your business performance?

Dr. Prestifilippo: With our products, we are present in various industries. Due to the pandemic, some industries have experienced ups and downs. However, PSI Logistics has a stable order situation and overall will emerge stronger from the pandemic.

Tepuric: After the first vaccines were approved, the number of projects in the market grew to such an extent that we were hardly able to serve them. Drivers were both e-commerce and the need to better hedge supply chain instability through higher storage capacity.

Dr. Prestifilippo: And, in terms of project management, the pandemic also showed that it is often possible without traveling. Although we as a software house had been familiar with web meetings for a long time, there has been a turning point in this regard. Web meetings have changed both the communication with the customer and the internal communication and have clearly shaped the working world.

Did you subsequently increase your personnel capacities?

Tepuric: Unfortunately, that was difficult in Germany in 2021. Due to the pandemic, both the IT and logistics sectors experienced an extreme demand. At the same time, many potential candidates were uncertain due to the home office situation and less open to seeking new opportunities by changing jobs. In the current year, we have started well and expect further good growth.

So how are you currently managing this despite the current shortage of skilled workers?

Tepuric: We rely on the fact that participation in the design and ongoing development of our products as well as the good working atmosphere with personal support and a high level of personal responsibility remain im-

Emissions calculation with PSIglobal.

portant decision-making criteria for candidates.

Dr. Prestifilippo: Through our awards, our DNA has become even more visible to others. PSI Logistics is also heavily involved in research and development projects. This links us to industry up-and-comers in a number of areas.

For several industries, Corona has seriously changed the demand situation. Are you also noticing a change in the order situation for your software systems for warehousing and supply chain network design, which indicate, for example, changed supply chains and further automated material flows in the warehouse?

Dr. Prestifilippo: Based on the established market position of our company and our standard products, there are signs of extensive stability in our market activities and results, even in times of the pandemic. For example, our risk management system, PSIglobal, is receiving significantly more attention than before. It has become an omnipresent topic in webinars.

And when it comes to product development, has Corona changed the development focus of your software systems?

Dr. Prestifilippo: The main development trends and activities at PSI Logistics are strategically aligned and largely independent of influences such as the Corona pandemic. The synchronization in the teams has become faster in communication due to regular and fast meetings via the web.

Tepuric: With the trend towards online ordering, the share of e-commerce has increased massively. Therefore, we have improved the processes and work dialogs in the warehouse management system PSIwms by simplifying and optimizing them so they can be activated via sets of rules.

Dr. Prestifilippo, the pandemic and the war of aggression on Ukraine have interrupted many logistics chains. Based on your supply chain network design software, PSIglobal, how and how quickly can affected companies develop alternative solutions?

Dr. Prestifilippo: Especially our customers with a focus on the manufacturing and automotive sectors used PSIglobal intensively to examine and implement alternative supply chains.

PSIwms in use at Kärcher.

Mr. Tepuric, you presented a new omnichannel template at LogiMAT 2022. How did this development come about and what is the solution all about?

Tepuric: For many of our customers—especially logistics service providers—the share of e-commerce orders has grown strongly in recent years. Therefore, it was a natural development for us to invest further in PSIwms together with our customers in this direction. It was important to us to not only offer a "picking system" from a shelf warehouse for orders in a package. We wanted to present an omnichannel WMS that is also attractive for large customers or e-commerce general cargo shipments. In other words, a solution that plays to the strengths of PSIwms.

With which customers are you pursuing the development of such market-driven functionalities and further developments of your software products?

Tepuric: We received the strongest impulses from logistics service providers, who have to quickly add new clients in the most dynamic way and serve them very efficiently in a competitive environment. The cooperation with the members of the PSIwms customer advisory board, which includes customers such as Fiege, NOSTA, Zufall, HUETTEMANN as well as RMD, was particularly intense.

How important is the Omnichannel template regarding your further strategic product development?

Tepuric: As part of our "Digital Sales & Service Initiative", we are offering this edition of PSIwms in the PSI App

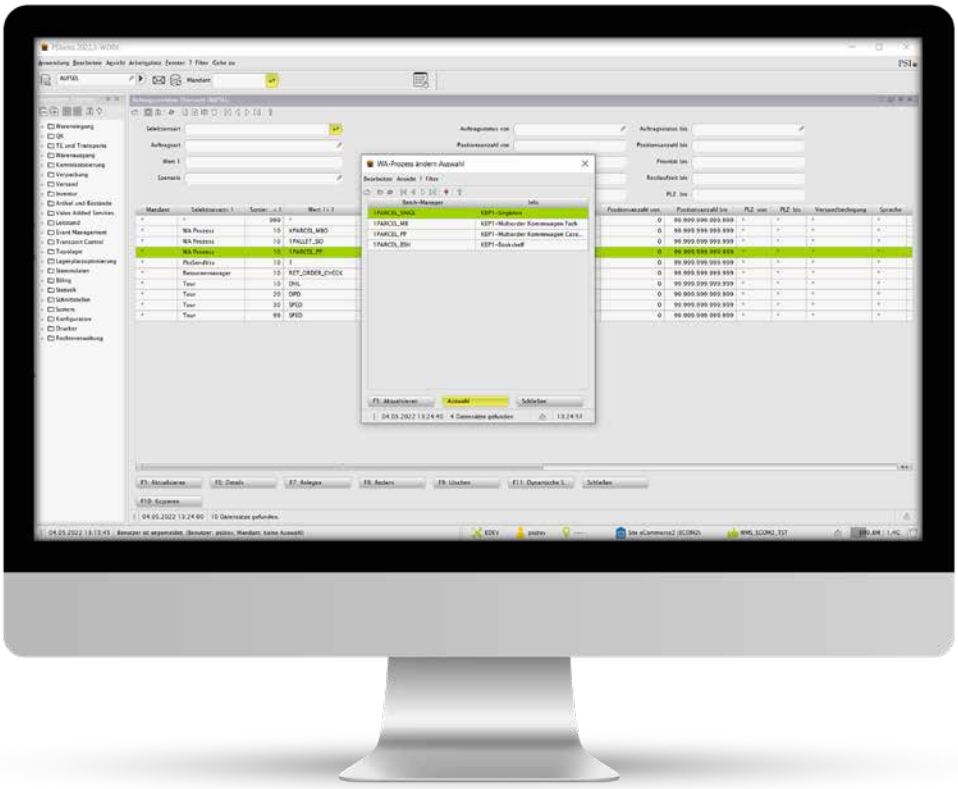
Store. This allows our system to be deployed from the cloud in the shortest possible time and with flexible remuneration models. We expect our highest growth rates in this segment and thus would like to enable even more partners to implement it.

Dr. Prestifilippo: Corresponding solutions mark the entry into the future of IT systems and applications. The demands of the further development work of PSI Logistics involve being able to offer a comprehensive range of outstanding software solutions as services to customers from this bandwidth.

Dr. Prestifilippo, with smart routing services you presented another innovation in your product portfolio at the LogiMAT 2022. What is this all about—and how is this service integrated into the transport management system?

Dr. Prestifilippo: The smart routing service PSIsrs is a generic component from PSItms and PSIglobal. It can be integrated into other program systems in a completely detached manner. Third-party providers can use this solution without buying a complete PSItms. With the solution, transports can be planned much more efficiently with reliable arrival times or transport times. The service not only takes into account historical and recurring traffic disruptions, but also special and individual routing rules for industry-specific transports in the areas of security, hazardous goods, heavy loads, courier transports and more.

In general, what kind of IT needs do you see for your customers in the future?



PSIwms Omnichannel template.

Tepuric: The last few years in the home office have accelerated digitalization. The high shortage of skilled workers in logistics, which will continue in the coming years, continues to demand an increase in digitalization and automation.

Dr. Prestifilippo: As far as our standard products are concerned, customers will then "only" need reliable internet access in the future. Thus, they connect their technical systems with our applications, which run in a cloud individually for each customer. Digital solution offerings and services—from app store models and cloud-based solutions to remote maintenance of plants and systems—continue to gain in importance.

How do you implement this specifically in your further product developments?

Tepuric: We are continuing to invest strongly in the expansion of our logistics functionality, as well as in technical improvements based on the Group's PSI Java platform. On this basis, we bring innovations to our customers as digitalized services and thus contribute to their continuous improvement. Our strategy is to enable customers themselves to easily adapt our software to their needs, without the necessary involvement of PSI experts.

Dr. Prestifilippo, Mr. Tepuric, thank you very much for this insight and overview.

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Product report: KPI-based Online Heat Scheduler and AI optimize melting operations sustainably

Decarbonizing Steel Production

Steel plant's operations are complex, as all production steps are partially interdependent and impossible to isolate. This makes it challenging to simultaneously optimize production processes, save energy and comply with CO_2 regulations and stay competitive with changing market demands. Planning, scheduling and logistics require innovative production management solutions for efficient production. PSI Metals has integrated new features to their solutions to support customers in their decarbonization journey.

This applies particularly to the transformation of steelmaking, from the classic BOF route to a combination of BOF and EAF route using green DRI/HBI which comes with a hybrid operation of these technologies in years, if not decades to come. With these newly integrated features, PSI is supporting the transformation path towards sustainable and decarbonized production in line with reduced production and material costs.

Online Heat Scheduler generates optimized heat schedule

Heats as well as casting sequences received from the planning systems and managed in the Schedule Execution Management on Shop floor level form the basis for online and reactive scheduling of heats and production equipment allocation in the melt shop. Based on this input, Online Heat Scheduler (OHS), which is now migrated to PSI's Service Platform (SP), creates a detailed work schedule for all planned heats which consists of all required treatment and transport steps, their durations, and the assignment of required production facilities and operating equipment where these treatments can be performed. This new solution (OHS SP) automatically reacts to all changes and delays during production to always ensure the delivery of the heats of a sequence to the caster at the required time.

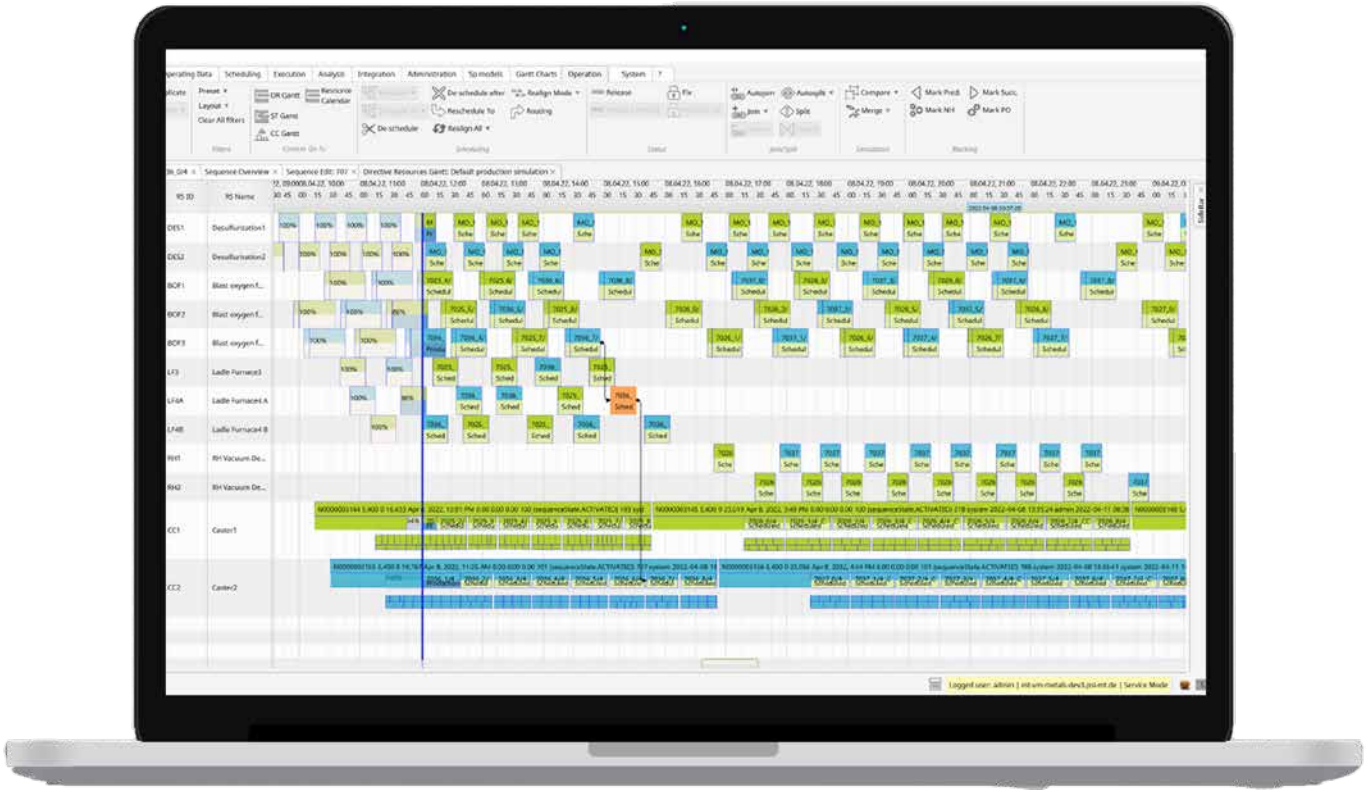
For this purpose, a detailed schedule is calculated for the entire heat treatment from the primary facility via secondary metallurgy to the continuous caster. The correct equipment and available operating resources are selected, and the start and end times for each necessary production and transport step are determined. This is done for each heat in the casting sequences released for production.

Visualization of the process flow in the Gantt chart

This scheduling process is repeated whenever necessary and reacts to all kinds of events like start/end of steps, treatment delays which could be due to e.g., longer heating times or additional necessary steps. The durations of the treatment steps for heating or alloying as well as the transports are automatically adjusted within the permitted tolerances in order to adapt the subsequent production to the current situation at any time. The OHS SP naturally allows operator intervention, e.g., to change the heat sequence, the treatment steps or production line assignment.

A Gantt chart is used to visualize the present and future process flow. This chart shows plant utilization by the individual heats as well as problems like late arrival of a heat and downtimes or delays.

> *The KPI-based heat schedule optimization not only enables early prediction of bottlenecks and the impact of production delays, such as the late arrival of heats at the caster, and their transparent visualization in an interactive Gantt chart, but above all also offers a decision-making support in finding the right balance between economic and ecological melt shop planning. This is an important added feature for our customers, on their transformation path to sustainable and CO_2-free steel production.*
>
> **Heinz-Josef Ponten**
> PSI Metals Product Manager Liquid & Energy



Visualization of the process flow in the Gantt chart.

Melt shop optimization not only offers savings potential

The functionality of OHS enables the continuous supply of the caster lines and prevents casting discontinuity. An unpredicted discontinuity can result not only in throughput problems and sequence interruption but also in more energy consumption due to additional heating or higher tapping temperature, hence increased CO_2 emissions.

A mathematical model optimizes the navigation of all current heats through the facilities of the melt shop. The respective restrictions with regard to throughput optimization and the coordination of bottleneck equipment like cranes are presented. At the same time, a transparent overview of the availability of ladles and lines/facilities is ensured. In addition, planned downtime/maintenance work and plant problems, as well as Hot Metal, DRI or oxygen availability, energy demand forecast including the current energy situation can be displayed and taken into account.

Processes in future hybrid steel plant will become more complex forecasting of Hot Metal, Scrap, DRI or HBI and Energy, considering the availability as well as the transport logistics, will become important Key Performance Indicators (KPIs) for scheduling and facilities dispatching. The results of this steel plant optimization are not only savings in production and material costs but supports the future decarbonisation goals of steel production. Already today, some global steel makers have successfully integrated Online Heat Scheduler in their steel plants.

Towards green KPI-driven steel mill optimization

Decarbonization and digitalization are two factors that are crucial in today's production. In the coming decades, steel producers have to cope with pressure to reduce their carbon footprint. Besides the pressure coming from these factors, recent studies reveal that 14 percent of steel companies' potential value are at risk if active measures are not taken to decarbonize steel production. Hence, the need for green melt shop optimization that is driven by targeted KPIs. Excellent production starts with intelligent product design and enhanced features and continues with excellent and intelligent production management.

For this, PSImetals OHS SP offers features that support the customer to optimize green KPI-driven melt shop. This enables them to better optimize the tapping temperature, reduce buffer times, avoid unnecessary heating or cooling through transparent time management, and prioritize heats and sequences. In this way, the hot connect rate can be increased, media consumption can be forecast, and these

forecasts can be made available to energy management systems and utilities. To provide the best possible support to customers, PSImetals OHS SP with a stand-alone service architecture via PSIbus standard interfaces allows simplified integration into existing IT landscapes.

Advanced configuration options allow individual adaptations

Flexibility is an indispensable feature in schedule management during steel production. A new functionality in the Advanced Schedule Management Platform provides for increased transparency and responsiveness during production. Enhanced configuration capabilities of the Gantt chart allow users to configure their individual information which is visualized in the bars while accessing all available attributes in the database.

There is also enhanced configuration and transparent visualization of alternate line allocation of facilities depending on the planned throughput, hot metal, energy or media demand and availability. A newly integrated drag and drop feature for all the heat movements enables customers to move heat positions in sequence including moving follow-up of sequences which further offers additional flexibility to move heat from one production line to another.

AI-based decision support in the steel mill

Companies rely on data and KPIs in order to achieve their strategic production and business goals. PSIqualicision was designed to ensure and optimize the process quality by means of intelligent data collection, analysis and balance between goal and criteria conflicts.

AI-based scheduling with PSIqualicision.

The AI-based decision support by OHS/PSIqualicision, involves three simple workflow steps structured to optimize process quality: automatically analyze inputs /set up constraints and business goals, run the solver, analyze and balance KPIs with Qualicision AI, and finally iterate, compare and release Qualicision AI-based scenario management.

Optimization of times reduces energy consumption and the carbon footprint

Scenario Management means that the operator can simulate different scenarios to solve a problem, e.g., by adding re-work steps, changing the sequence of heats or shortening treatment, transport or buffer times. Especially, optimization in terms of times has significant impact in reducing energy consumption and thus the carbon footprint. Scenarios can be compared to find the right solution.

Balance between economic and ecological production benefits

First, strategic business and production goals are measured against a specific KPI goal. Then automated evaluations of the raw process data are used to create qualitative labels for optimization. And finally, the KPI-oriented Qualitative Labeling which could be KPI modelling by Qualicision tolerance and non-tolerance functions, qualifying the KPIs and giving them elementary labels using the Qualicision Labeling Functions and setting the KPI preferences using sliders.

The PSIqualicision AI Solver enhances the qualification of (raw) process data into value-adding information. It further analyzes business processes according to incompatible KPIs & non-symmetrical goal relations while also improving the learning sensitivity analysis of the adjustable KPI preferences.

For Online Heat Scheduler, the AI

Solver makes it easier to deal with bottleneck facilities as it allows multi-criteria monitoring and optimization. The solution offers combination of benefits that allows maximizing efficiency and optimized heat scheduling. For example, the "ladle make span" (tap-to-cast time) can be optimized. Improved and thus more reliable time management ultimately also enables lower tapping temperatures and thus significant energy and CO_2 savings.

But, what do you do in case of production disruptions? For this purpose, the relaxation of "hard" constraints is also taken into account where the scheduler indicates possible delays in the handover to the caster. This provides the operators with a transparent overview of the current and future planning situation at all times and gives them sufficient time to compensate for disruptions and time losses.

Internal logistics are supported and improved by deriving specific transport orders for the cranes to transport steel and pig iron ladles or scrap baskets. Customers are thus supported in finding the right balance between economic and ecological production benefits.

[1]GLOSSARY

BOF stands for Basic Oxygen Furnace (LD converter), today's classic method of steelmaking, whereby a mix of pig iron and scrap is "refreshed" by the addition of oxygen, i.e. the reduction of carbon and other accompanying elements.

DRI stands for Direct Reduced Iron—a porous sponge iron produced by direct reduction processes—still widely used today using natural gas, but in the future using green hydrogen.

EAF stands for Electric Arc Furnace, on the so-called scrap-based route; recycled steel scrap is re-melted in the furnace mainly for the production of special steels. The EAF is therefore already more environmentally friendly than the classic BOF and will be charged in the future with a mix of pig iron, DRI/HBI and scrap.

HBI stands for Hot Briquetted Iron, sponge iron pressed into briquettes after the reduction process.

Conclusion: Steel production at the crossroads of decarbonization and digitalization

Steel is one of the most important engineering materials to date due to its qualities. Decarbonization and digitalization are keys to some of the industry's challenges. Although software cannot change the steel making process, digitalization of the process, like the use of the new PSImetals Online Heat Scheduler with integrated PSIqualicision AI Solver, helps reducing carbon footprint, including material and production costs, optimize energy consumption and efficient utilization of steel plants.

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Customer report: World market leader Wemhöner pursues long-term IT roadmap

An ERP-MES Roadmap Makes the Difference

Regardless of how good the ERP-MES implementation methods are, if expectations and feasibility do not match, a project will quickly falter. This is especially true if many functions are introduced at once and both the complexity and scope of the tasks overwhelm teams and budgets. In many respects, a long-term strategy is the better approach.

High standards matter

When companies are looking for an ERP MES solution, expectations are high. Likewise, the requirements specification, which precisely describes all functions and processes, is as long. However, the astonishment of the required licenses of the various providers forecast based on these specifications is sometimes also huge. The good news: In the rarest cases it is necessary to actually implement all the described modules from the beginning. Modern systems such as PSIpenta, cover, for example, many industry requirements in their basic ERP system as well as through individually configurable workflows. This is where the wheat is separated from the chaff and it is more than worthwhile to opt for standard systems suitable for the industry.

A good ERP basis forms the foundation

It is also advisable to avoid specialized solution modules in implementation projects. Currently, this applies in particular to popular planning tools such as control center, project management, sales planning or business intelligence (BI) solutions. They promise additional, particularly positive effects that companies do not want to do without. That is certainly understandable. However, it is a fact that the meaningful use of such functionalities first requires a solid (ERP) database, which is rarely available at the beginning of a project.

Another ongoing issue for medium-sized mechanical and plant engineering companies is the much desired establishment of both a project management system as well as a control desk. During the implementation process, many of those responsible realize that the use of both graphical planning solutions does not make sense in their specific case. For this reason, it is also advisable to select and integrate certain modules only after the implementation phase. Last but not least, the human factor comes into play in this context: Key users usually have to fulfill their role on top of their daily tasks during the complex ERP implementation. Especially in the most intensive phases of the implementation, they are exposed to a high level of stress. Consequently, a realistic project scope makes a significant contribution to ensuring that users are not overwhelmed and remain motivated in the long term.

Holistic IT roadmaps are considered a recipe for success

When looking at the practical side of things, it becomes clear that the most successful companies develop, continuously refine and consistently implement holistic IT roadmaps. Thus, the scope or future viability of the provider's overall ERP-MES portfolio is undoubtedly of decisive importance.

However, it is important for long-term success to let a system grow functionally and to pick up key users and all other users step by step. Incidentally, this is also in line with the reality of IT budgets. The advice: companies should first concentrate on the basic system and then develop it functionally and technologically step by step. In practice, the procedure of breaking down the ERP project both commercially and technically has also proven successful: into essential functionalities as well as requirements that the team can easily digest in addition to all other tasks.

Long-term IT roadmap of Wemhöner.

Press line at Wemhöner.

World market leader Wemhöner pursues long-term IT roadmap

Wemhöner Surface Technologies (Wemhöner) shows what such a roadmap can look like. Their story is representative of many PSIpenta customers who develop and successfully implement their own roadmap over 10, 15 or 20 years. In 2001, the manufacturer of finishing plants for wood-based materials, special presses as well as special plants for the production of high-tech composite and layered composites decided in favor of the ERP MES solution PSIpenta. Starting with the basic ERP system, cost accounting as well as production data acquisition (PDA) and personnel time recording, the overall system was supplemented by specialized PSI modules and partner solutions in over 20 years of trusting cooperation.

Starting signal for a long-term strategy

This way, the system was successively adapted to the requirements of the company—including expansion. The integration of automated processes and communication with suppliers are good examples of many other milestones. For Wemhöner, for example, it was clear from the beginning that communication via EDI would be established in the medium term. Because not only in good negotiations in purchasing, but also in the processes themselves can great potentials be leveraged, especially since in addition to materials, (wage) services are often purchased by outsourcing. Five years after the introduction of PSIpenta, the EDI connection was made via the established platform myOpenFactory, which also offers its own purchasing and supplier cockpits. Wemhöner uses these cockpits to exchange additional information, such as drawings, with its suppliers in an automated manner and precisely in line with the process.

"With PSIpenta, we have successfully integrated the entire process chain, from design and production planning to the manufacturing level, step by step in one system. From our point of view, it is important to be aware that an ERP project is not a completed project, but rather the starting signal for a long-term strategy," describes Norbert Wagner, IT Manager at Wemhöner. He adds, "Certainly, to the extent that we live this, it does not apply to every company, but in principle it does."

Focus on the success of the company

ERP MES implementation projects are still preceded by a rather difficult reputation for various reasons. To avoid surprises, a practical IT roadmap should be developed right from the start, with a team focused on the implementation of a basic ERP system. This approach is not only proven with many PSIpenta customers such as Wemhöner. Many prospective customers also appreciate this consulting approach, which focuses exclusively on the success of the company.

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Customer report: Gränges and PSI Metals—Impressive Results through Partnership

A Journey towards a Common Solution

Gränges AB has made significant investments by expanding its aluminum rolling operations in the USA. PSI delivered a software solution based on the PSImetals Planning, Order Dressing, Production, Quality and Logistics modules. In collaboration with PSI Metals in 2017, Gränges also implemented a new production management solution in Gränges Sweden AB (Finspång). The go-live of the Americas project was in 2019 and this progression towards one common solution, for all Gränges sites, has proven to be a successful and equally beneficial relationship.

Gränges AB is a successful and highly rated international aluminum company, with a focus on rolled products. Headquartered in Stockholm, the company has production facilities and conducts sales in three continents: Asia, Europe and America.

In 2018, Gränges made a major investment towards the expansion of the aluminum rolling operations at their Huntingdon, Tennessee facility. This new "Viking" mill expansion required new software solutions to support its operation. Additionally, the increasing instability of the previous legacy Manufacturing Execution System (MES) solution at Huntingdon prompted the implementation of a new state-of-the-art integrated Production Management Solution (PMS) to replace the legacy MES and to support the additional production requirements associated with the plant expansion. The goal was to improve how orders are dressed, planned, produced, and moved. It was achieved by providing superior decision support capability, better optimization, higher level of automation, and real-time information in an integrated way.

The new "Viking" rolling mill in Huntingdon, Tennessee, USA.

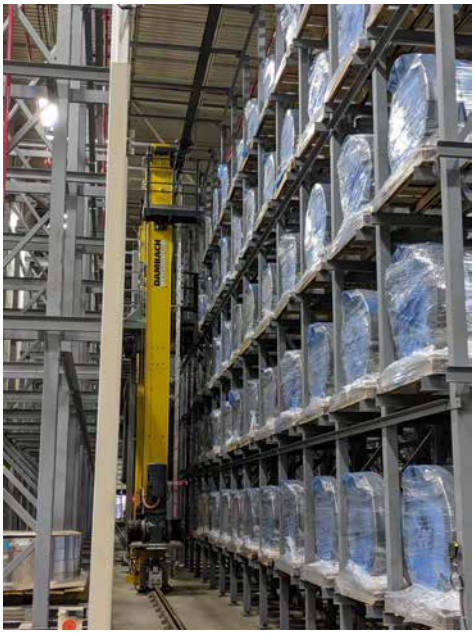
Building-up a basis

Prior to this project, PSI Metals did the implementation of the new production management solution in the Gränges subsidiary in Finspång, Sweden, focusing on system integration. This assisted with harmonization and identification of a common Gränges configuration, which served as a basis for the Gränges Americas project, making it a notable step closer to all multiple global facilities existing on a common business platform. Accordingly, the PSImetals solution provided at Gränges in Huntingdon was to deliver certain capabilities and benefits which included but were not limited to operational flexibility, process change adaptation, multiple dressing options for cost optimization, ability to de-expedite individual pieces, optimization of planning objectives, and user-friendly GUI which is showing real-time production status. Besides the integration of the Project Viking expansion (Caster, Cold Rolling Mill, Annealing, Slitter, ASRS expansion, PFG ASRS) and the existing legacy (in-house developed) Enterprise Resource Planning (ERP) system, previously automated L2 systems were either to be integrated or replaced.

Increased financial benefits through collaborations

After 15 months of implementation, the system went live on May 29, 2019 while the final sign-off took place on

November 20, 2019. "Since then, the project results have contributed to financial benefits," said Bill Markut, Gränges IT Development Manager, during the PSImetals User Group 2021 event, in Pittsburgh, PA. These project results include the replacement of the legacy MES, resulting in improved coil movement tracking, the pre-scheduling of annealing, better tracking and investigation of material defects with additional data, remote processing and error validation with Target Actual Comparison (TAC) at mills and slitting, and the provision of better production route processing through order dressing. Other notable project results that have also added financial benefits are due to the implementation of PSImetals Line Scheduler, which assists in tracking when materials are ready for processing while providing the ability to access the schedules of multiple lines, as well as interrupt and adjust to a different schedule at the mills.



In addition to the general crane process optimization, the new system monitors the transport orders between the horizontal and vertical warehouse and the packaged finished goods area.

Gränges AB's proud team after producing the first coil in the new production facility.

Collaboration results in improved technical performance

Some of the technical benefits derived from the project included the proven reliability of the new PSImetals system in comparison to the old one. The new system also automatically monitors the transport orders between Horizontal Storage area, Vertical Storage area, and Packed Finish Goods area. Also noticeable was the crane optimization improvement, increased interface reliability (both office GUI and personal digital assistant PDA), as well as an improvement on error logging and overall auditing. Further important results are the increase in quality and efficiency, and the automated data collection at the mill and annealing.

Happy customers and long lasting relationships

Harald Henning, PSI Metals Director, prides himself with overseeing projects from start to finish. Through this journey, he says: "The teamwork and cooperation between PSI and Gränges in this project was so fantastic that very quickly after go-live, the Gränges IT team was fully capable of supporting the bulk of user requests and questions with only moderate maintenance support from PSI." With such recorded success, the show must go on, hence the anticipated next steps of continuous improvements to data integrity, data visibility, and line functionality via PDA application and integration with L2 vendor systems (new casters and slitting hole detectors). "We anticipate, with great enthusiasm, the implementation of PSImetals software solutions at three additional plants: Huntingdon East Rolling Mill, Newport Rolling Mill, and Salisbury Rolling Mill in later phases. This is an example of PSI Metals' commitment to provide efficient solutions that lead to happy customers and long lasting relationships," Harald concludes.

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Interview: Tim Kröger, Head of Consulting, Automotive Division

How E-Car Manufacturers Profit from ERP, MES & Co.

The transformation to emission-free drives is without alternative. Especially electromobility is already on the rise. Studies show that without exception, all OEMs are planning to expand their portfolio of electrified models. At the same time, established production structures are changing and with them the supporting IT systems. Software from PSI Automotive & Industry has already been in use at electric car manufacturers for several years. In the context of the traffic turnaround, we spoke with our Head of Consulting in the Automotive Division, Tim Kröger, about the distinguishing features of this solution.

Mr. Kröger, in an e-car there is of course neither an internal combustion engine nor an exhaust system. Thus, a whole range of parts or modules have to be replaced and production processes have to be adapted accordingly. However, much more is happening on the factory floor. For example, the familiar assembly line systems are disappearing step by step. Why are these gradually disappearing and what impact does this development have on the industry?

The reason for this development is the physical restrictions of the static assembly lines, which no longer meet the requirements of today's variety in series production. You have to imagine that hardly one car is the same as another when it leaves the production hall. Each vehicle is almost unique in its own way. This trend began many years ago—quite independently of the drive technology. Initially, manufacturers adapted to this with just-in-time and just-in-sequence processes.
But even these systems are reaching their limits. For example, the first manufacturers have replaced assembly lines with driverless systems that transport the vehicles from workstation to workstation in an optimized cycle. The control is based on BPMN workflows, which allow immediate reaction to changes in the production flow. This means that instead of rigid and very costly program adjustments, manufacturers simply change the workflows at runtime.

So the disappearance of assembly lines still began in the age of "combustion engines." Why are these new production scenarios so relevant for e-vehicle production in particular?

Exactly, this development is not new, but it is more topical than ever. In the context of the supply chain crisis, for example, many industries had to painfully experience how important it is to be able to quickly and radically adapt processes and structures. This is exactly what the new production systems described above do. In the automotive industry, however, several issues overlap, making the pressure to adapt particularly high: on the one hand, we have the increasingly individual customer wishes and, on the other, both supply chain problems and the challenge to convert to the new drive technologies as quickly as possible.

You already mentioned that the control of the transport systems is carried out via BPMN workflows and enables great flexibility. What advantage does the workflow-based ERP solution PSIpenta offer specifically for electric car manufacturers?

PSI's systems have the decisive competitive advantage that they map the entire value chain and the various planning and execution levels. In this respect, it is not just about an ERP system here, but about the holistic support and close networking of all processes—starting with production planning and production implementation through to results control. This means that both our industry-specific ERP-MES solution PSIpenta and integrated logistics modules, AI methods and other PSI solution modules come into play.

> *Every vehicle is almost unique in its expression—regardless of the drive technology.*
>
> **Tim Kröger**
> Consulting Manager of the Automotive Division
> PSI Automotive & Industry GmbH

EV charging station for electric cars in concept of green energy and green power from sustainable source.

Could you outline a few examples that illustrate this holistic approach?

I am thinking, for example, of the individual support for the workers. In the future, they will not simply carry out their work processes, but will be guided through each work step by our software and a special cockpit with image support. This means that in addition to written instructions, meaningful images will also be added for certain processes. Even hardware can be specifically integrated, e.g. the control of EC screwdrivers with the appropriate torque.
And for the control center, complex production processes are visualized by means of a modern SCADA system. Fault conditions and deteriorations in the status of active production systems can thus be detected immediately and with foresight. And last but not least, AI methods can be integrated into the PSI system, enabling planning with countless target criteria. This is because the number of decision criteria for forming optimized sequences in production will continue to increase in the future. The burning issue, for example, is energy costs. Classic calculation methods can no longer keep up.

Finally, allow us to ask you a visionary but slightly personal question. If you could pick it at will: What will your car look like in 2035?

In the future, I'll be driving a 100 percent alternatively powered car that I can charge almost anywhere in the world without any problems thanks to a dense and standardized charging infrastructure. One charge will be super-fast and will stretch from Berlin to Munich. Neither rare earths nor other harmful substances are used in the battery. And once the car has completed its service life, I can be sure that the materials and components used will be dismantled, disposed of and reused as part of the overall sustainable concept. For vacation trips with my family, I specifically order map updates for the navigation system and an entertainment system. On the highway, I then regularly switch to fully autonomous driving.

That sounds really good. Thank you for these exciting insights and your time.

Scan the QR code and read more on our blog as well.

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News: Würth Elektronik eiSos Upgrades Warehouse Management System PSIwms

Upgrade as Basis for Strategic Rollout

The electronics manufacturer Würth Elektronik eiSos has awarded PSI Logistics GmbH with the upgrade to the current version 2022 of the Warehouse Management System PSIwms. This will serve to prepare the strategic rollout of the system to further locations of the Würth Elektronik eiSos Group.

The upgrade-as-a-service, which has also been commissioned, will shorten the release cycles for PSIwms and ensure that it is always up to date. The latest MDT versions (mobile data terminals), for example, can also be connected, ensuring technological development and the security standard.

Based on a long-standing trusting partnership, Würth Elektronik eiSos has already been managing the almost fully automated processes at the Waldenburg site with PSIwms since 2011. In addition, the partially automated warehousing at the Lyon site in France is connected to the logistics software. Würth Elektronik eiSos relies on the deep process know-how of PSI to ensure reliable operation even with increasing performance requirements.

The current upgrade offers Würth Elektronik eiSos additional interfaces to material flow computers of TGW Logistics Group GmbH and Savoye Sasu which are available as a web service. Additional functionalities such as the innovative PSI click design enable users to independently adapt the user interface to their individual requirements via click and drag-and-drop. In addition, numerous dialog masks can be used in the web client in the future.

Würth Elektronik eiSos is one of the leading manufacturers of electronic and electromechanical components in Europe with 17 production sites worldwide and direct sales in 43 countries.

PSIwms automates the processes at Würth.

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News: Manufacturing Service Provider ROLF Sp. z o.o. relies on PSIasm

Digitalization of Production Processes

PSI Polska Sp. z o.o. has been commissioned by the manufacturing service provider ROLF Sp. z o.o. with the delivery of the production management system PSIasm Version 3. This will allow the production processes to be planned and controlled in an optimized manner. The implementation will be carried out with the Quick-Start model.

Due to the rapid growth of the company, ROLF decided to implement the PSIasm software. The delivery includes the system modules Advanced Production Scheduling (APS), Manufacturing Execution for production monitoring (MES) and SCADA for the control of the production process. This is to ensure faster reactions to sudden changes in production planning, tighter control of production processes and analyses of employee performance based on OLE (Object Linking and Embedding) reports.

Metal processing at ROLF.

The applied Quick Start model supports the fast and effective optimization of production processes. The model is based on AGILE implementation methods and includes a special implementation package. After the implementation of the system, users gain access to additional service packages which support system improvements and broader adaptation to the challenges of the customer's ongoing business operations.

ROLF Sp. z o.o., based in Szamotuły, Poland, specializes in manufacturing services in the metal industry—from design to final completion. The company provides comprehensive metalworking services such as bending, cutting and welding using the latest high-tech equipment and optimal control of production processes.

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News: SIJ Metal Ravne and PSI Metals implement new digital production architecture

Broader Integration of Production Processes

Together with SIJ Metal Ravne, the second largest steel company in SIJ—Slovenian Steel Group, PSI Metals has implemented a new digital production architecture. This project implementation demonstrates PSI Metals' commitment to continue providing innovative and sustainable solutions for its customers.

With this project, SIJ Metal Ravne has acquired a fully integrated digital production architecture: from a customer to a resource management system, along with a new production management system that also includes a technology management system for the steel plant. "But that's not where the digitalization of SIJ Group's production stops," explains Vladimir Arshinov, IT Manager at SIJ Group. "We are clearly observing that our strategy of further digitizing manufacturing processes is the only right concept for the future!"

SIJ Metal Ravne and PSI Metals implement new digital production architecture.

Stability of the entire process

One of the main benefits of the new system is broader integration of manufacturing processes, as it offers even more data for planning and optimizing manufacturing processes, including a higher level of automation in order processing and higher quality control standards during the process. "The main advantage is the stability of the whole process," says Jernej Monik, Managing Director, SIJ Metal Ravne, adding, "This IT solution is a standard in the steel industry and we want to optimize our processes with its implementation. It is equally important that we can control the new IT system ourselves, as a team of our employees participated in the development of the system. The fact that we have this knowledge is certainly the greatest added value!"

The road to digital production

To help SIJ Ravne on its way to digital production, the experts at PSI Metals familiarized themselves extensively with the company's requirements and developed the best possible solution. Myriam Mensing, Head of Business Unit TAP at PSI Metals, explains, "The project was driven throughout by a highly motivated SIJ team to take ownership of the PSImetals solution in the end. The success was based on professional project management on both sides and particularly good support from the management, which helped us overcome some difficulties. I am very proud of how mature our product is. It allows the customer to continue to maintain and expand the solution according to their requirements."

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News: Swiss DELTRON AG relies on PSIpenta

Lean Production Processes

PSI Automotive & Industry GmbH has been commissioned by the Swiss DELTRON AG to deliver the ERP system PSIpenta 9.4.

Along with order management, the delivery includes the additional modules service and quality management as well as the Smart Planning & Analytics solution and the production control center for the approximately 25 PSIpenta users. In addition, the ONE 200 financial and payroll accounting system from the Swiss partner company INFONIQA will be used.

In a comprehensive evaluation process that began in November 2021, PSI was finally able to prevail over well-known competitors. One of the decisive factors for the decision was that the software products used could best implement the requirements for the lean processes desired by Deltron. After an on-site workshop in May 2022, the contract was signed in July 2022.

Deltron AG, based in Kirchberg, Switzerland, has been producing electronic and electromechanical components since 1978. Its core business includes the customer-specific production of D-Sub connectors and accessories in a wide variety of designs.

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Customized D-Sub connectors.

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The PSI blog features more interesting and in-depth articles on production, logistics, AI, energy and mobility.

IMPRINT

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10178 Berlin (Mitte)
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