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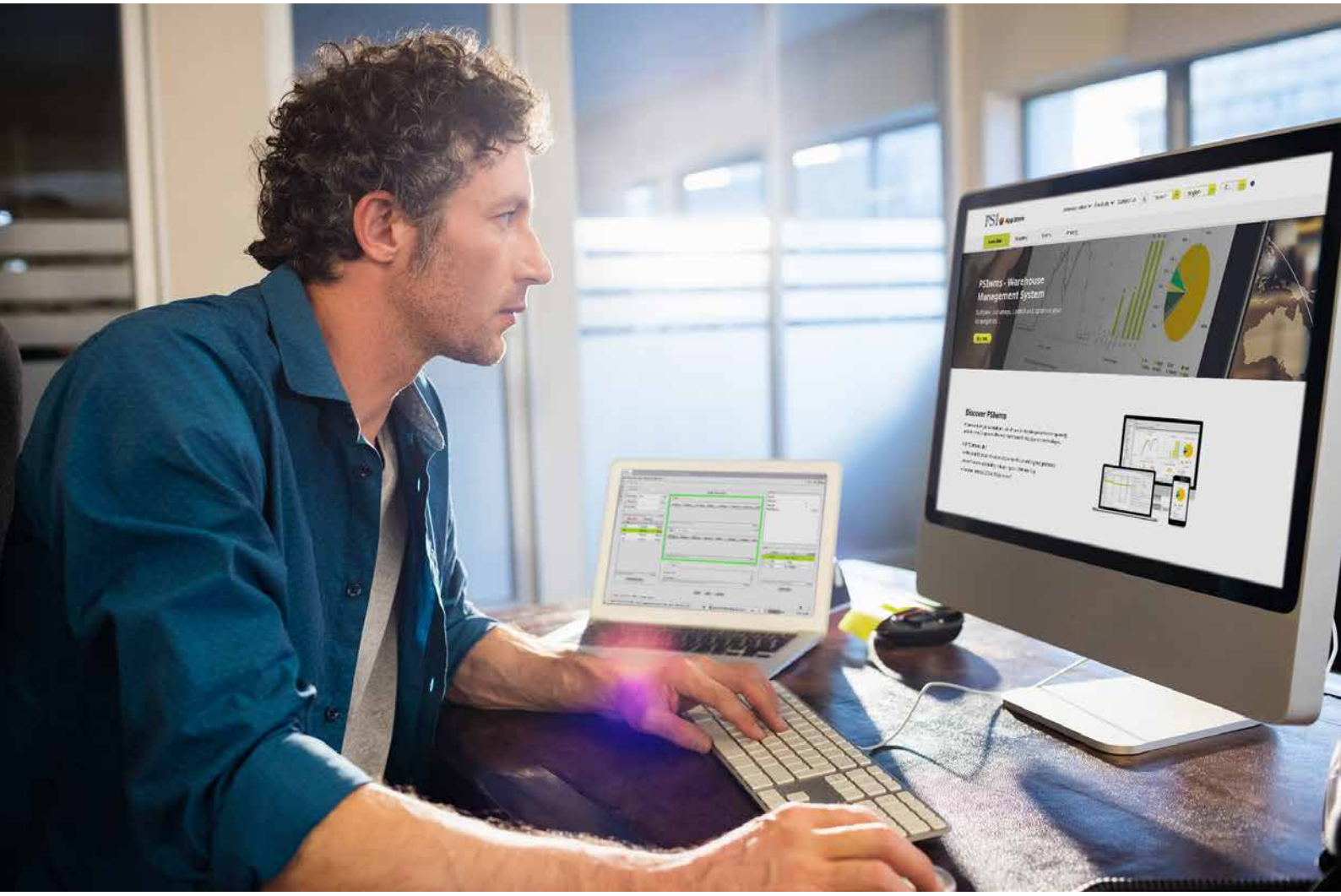
PRODUCTION manager

Magazine for production & logistics



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PSI

EDITORIAL

Dear Reader,

When the economy weakens, automation and efficient processes can maintain competitiveness. Enablers for this are modern software systems. With our comprehensive product range, we are excellently positioned within PSI in this segment. In addition, we are consistently developing the systems, for example by integrating artificial intelligence (AI). The focus is always on customer benefits and customer proximity. This is demonstrated by the current innovations and background information that we have compiled for you in this issue of Production manager.

Our lead article outlines the role that the PSI App Store plays for partners and customers as well as in the strategic orientation of PSI throughout the Group. In addition, Christian Kaas, Head of Standard Development at PSI Logistics, explains the background of the PSI App Store in more detail in an interview. The best practice report on the Austrian voestalpine Stahl GmbH illustrates the advantages of the upgrade and release capability of the PSI standard systems for customers.

Furthermore, you will learn how the PSI Industrial App "Employee Self Service" can be used as a mobile add-on to the MES module Personnel Time Recording to open up additional information and communication options. Another product report shows the possibilities that PSI software with generative AI opens up for customers in the targeted processing of huge amounts of data. Overall, effective tools to maintain your competitiveness.

We wish you an exciting, varied read.

Dr. Giovanni Prestifilippo Sascha Tepuric

Managing Directors PSI Logistics GmbH

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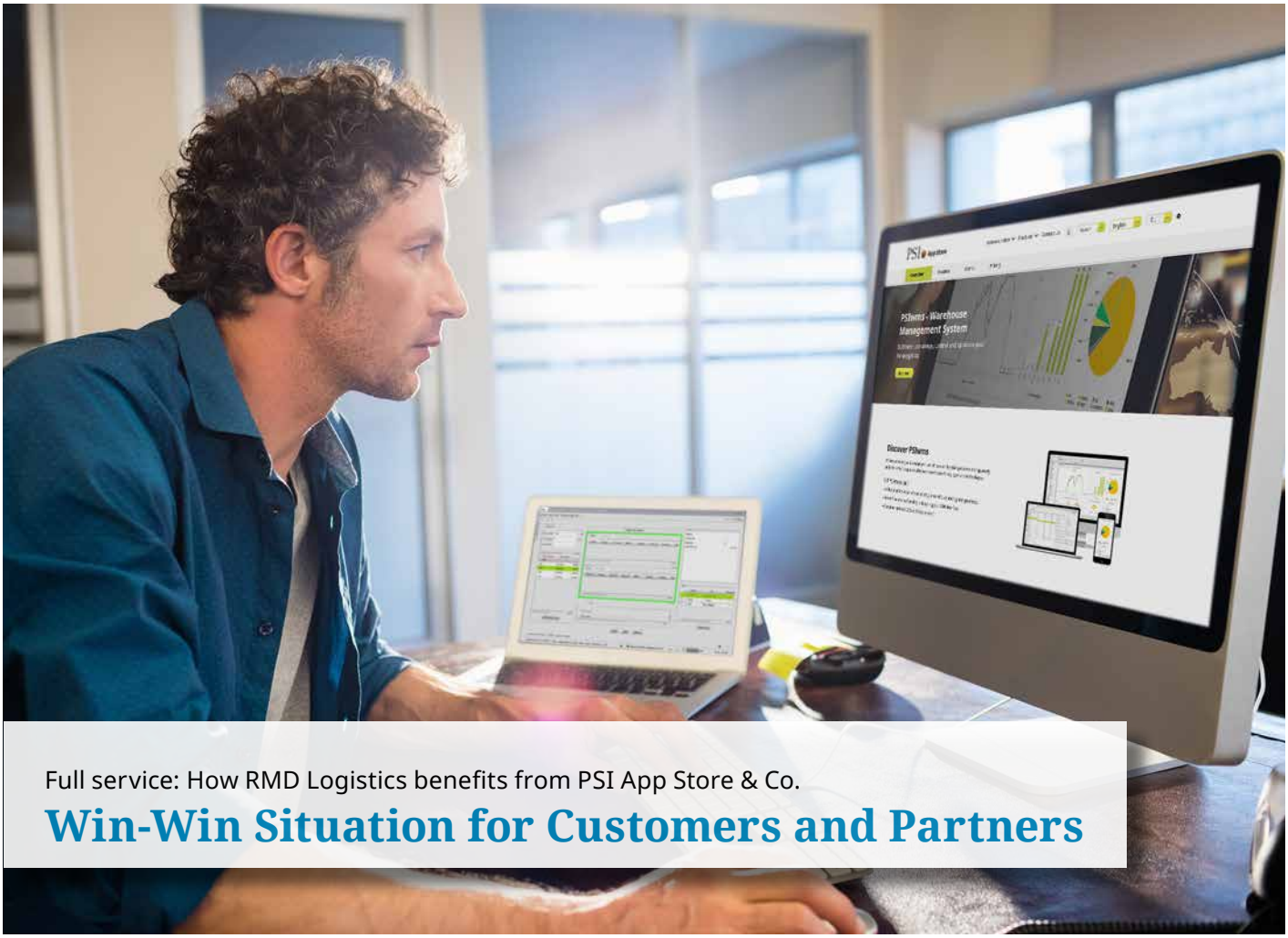


Full service: How RMD Logistics benefits from PSI App Store & Co.

Win-Win Situation for Customers and Partners

With an efficient combination of PSI App Store, cloud-based technology and a comprehensive collaboration environment, PSI offers its customers and partners a unique model for selecting and purchasing a suitable software solution. This combination ensures quick and easy use as well as customization and, in addition, offers a complete service around the products. Everyone benefits from this. The example of the logistics service provider RMD Logistics, which ordered and uses all current editions of the Warehouse Management System via the PSI App Store, shows how.

The business climate is cloudy for the logistics service provider RMD Logistics GmbH, headquartered in Mainaschaff near Aschaffenburg, southeast of Frankfurt/Main. The service provider, which specializes in e-commerce, wholesale and advertising materials, operates almost 100000 m² of logistics space at three locations in the Rhine-Main region. The owner-managed family business offers customers such as Bundesliga team Eintracht Frankfurt, fashion designer Hugo Boss and ophthalmologist Alcon the professional implementation of comprehensive individual logistics solutions with warehousing, shipping and returns processing right through to web apps.

RMD also recently launched the Fullfilmate business model with fashion supplier Homeboy. The logistics service provider takes over warehousing and order processing with same-day shipping. With ready-made interfaces, Homeboy is directly integrated into the warehouse management system and was able to dock its online store within a few minutes without in-depth IT knowledge.

The basis for this is the warehouse management system PSIwms, which RMD is using to replace its individual legacy system. In order to be able to react flexibly and on a daily basis to fluctuations in customer business, RMD was the first customer to opt for the new editions of PSIwms from the PSI App Store. With PSIwms GO, PSIwms FLEX and PSIwms PRO, three cloud-based, pre-configured editions of the warehouse management sys-

tem with different functionalities and configuration options are offered there.

> *Quickly executable with short implementation times instead of lengthy time-consuming IT projects and a set of tools to quickly respond to changing market requirements. We have always been looking for such system options.*
>
> **Kerstin Bouguet, Project Manager at RMD Logistics**

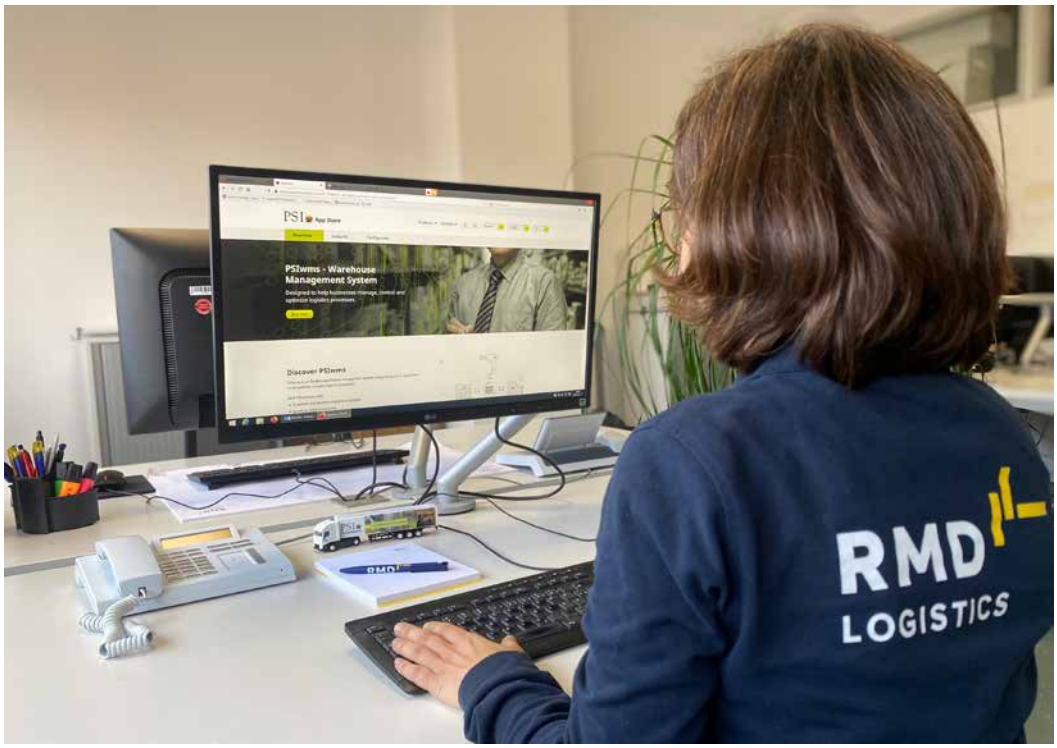
PSI Logistics thus offers preconfigured packages that can be selected in the App Store. "Quickly executable with short implementation times instead of lengthy time-consuming IT projects and a set of tools to quickly respond to changing market requirements," judges Kerstin Bouguet, project manager at RMD Logistics. "We have always been looking for such system options." In addition, Update-as-a-Service is included. "This means that PSIwms always remains up to date," adds Christian Kaas, Head of DevOps PSI Logistics (see interview on p. 6). "All future product enhancements to improve logistics processes and customer satisfaction are available to users."

Clients networked with just a few clicks

For RMD's Fulfillmate offering, the PSIwms editions from the cloud offer another advantage: the store systems of customers such as Homeboy are networked with just a few clicks via an API connection and benefit from the automatic data integration of products and orders.

Thanks to the preconfigured processes, RMD can integrate the clients into the PSIwms edition, such as assigning functions and setting up dialogs, as well as configuring and implementing the entire project on its own, without any programming knowledge, and support the clients in the process. This allows partners like RMD to offer their own solutions to their clients. "The preconfigured standard processes enable rapid onboarding of clients, with PSIwms GO within two weeks," explains Bouguet. "These are optimal conditions for contract logistics providers."

Against this background, RMD Logistics and PSI Logistics have agreed on a far-reaching strategic cooperation in the future development of new, practical modules and functions for the PSIwms editions. In the process, RMD will be available as a pilot customer for the use of new software technologies in controlled live operation.



Downloading PSIwms from the PSI App Store at RMD.

60 customers in the PSI App Store in the first year

The example of RMD underscores the strategic dimension of the PSI App Store. In the coming years, PSI will successively provide the entire range of products and services in the App Store—and develop additional business models in the process. The advantages of this range of solutions are increasingly scoring points with partners and customers. In the past year, throughout the Group 60 new and existing PSI customers placed orders via the new PSI App Store.

The largest single order had a volume of 1.5 million euros. Overall, the App Store has already exceeded the sales targets for 2022 by 50 percent.

As a customer-oriented service and sales platform, the PSI App Store facilitates the path to the right software solution. Discover, test, buy or update is the formula for success of the offer. Partner companies can use it to supplement existing PSI software components and industry products with their own applications based on PSI Click Design. Existing and new customers can easily select software and add additional products or services at any time. They order a test version of the selected software and receive access to a virtual warehouse and can thus test it conveniently. If a purchase decision is made, the software is ordered from the App Store and is available for use from the cloud. If new requirements arise during use, additional services and features can be quickly added and activated.

Insight into the dashboard view of PSIwms.

Complete service for all products

The efficient combination of cloud-based technology and collaboration environment ensures fast, simple use and adaptation of the software systems from the App Store. It includes know-how training and integrated training via the PSI Academy as well as intuitive tools such as the PSI Click design for individual customization of user interfaces. The PSI Collaboration Space, which is closely interlinked with the PSI App Store, is a central instrument for knowledge transfer of the software products and other functionalities that are important in the operational business, as it is the case with the logistics service provider RMD. It rounds off the service around the products and also includes online workflow documentation.

RMD now uses all three editions of PSIwms via the cloud in order to be able to immediately offer clients of different sizes and logistical requirements a WMS with optimally preconfigured tailoring and integrating them into it. “The cloud application is running stable,” explains Bouguet. “And if clients need more functions or specifications, we can transfer them to one of the other two editions based on the logics of PSIwms GO and configure the processing types accordingly.”

The project implementation is being carried out using agile methods in order to be able to quickly switch on clients and respond dynamically to the logistics service provider’s business, which is geared towards high individual service. This includes supplementary functionalities that RMD can add via web service to existing logic and modules already developed in-house, such as the interface converter. In doing so, RMD’s Fulfillmate web app provides clients with a real-time overview of inventory and orders.

“RMD can take on the project planning very independently—and almost becomes something like a sales and implementation partner for PSIwms GO from the App Store,” Christian Kaas sums up. “Overall, the PSI App Store marks a win-win situation for PSI, partners and customers. It thus creates the conditions for further digitalization, automation, process efficiency and growth on both sides. And it opens up long-term potential for sustainable business models.”

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Interview: Christian Kaas explains the advantages of a collaborative offering for warehousing

Closer to the Customer via PSI App Store

In an interview with Production manager, Christian Kaas, Head of Standard Development at PSI Logistics in the Warehousing Division, explains the background to the PSI App Store and the associated benefits for both customers and partners.

Mr. Kaas, PSI has developed a group-wide App Store. What is it all about?

Christian Kaas: The development of the cloud-based PSI App Store and the complementary collaboration environment is one of the important factors in PSI's strategic focus on future-proof usage and billing models. We have thus created a portal for digital sales and services. Our solutions will gradually be delivered to customers from the App Store in an automated manner. Tools such as e-learning, a virtual warehouse, PSI click design and graphic workflows are also available in the collaboration environment. This allows customers and partners to try out, license and learn the software quickly and easily.

What are the goals of this collaborative approach?

Christian Kaas: Currently, we are using it to support our customer proximity and thus deepen customer relationships. We are also promoting user freedom with the App Store and the software products available there.

> *As part of the growth strategy of our customers from online and omnichannel retail, our logistics service providers, for example, benefit from the increasingly standardized products and accompanying services.*

How is that meant exactly?

Christian Kaas: On the one hand, partners and potential customers can use the PSI App Store to get to know the systems online, complete e-learning sessions in our virtual warehouse and work with us during the configuration of the systems. On the other hand, the systems can be ordered via the App Store and used cloud-based. Overall, the App Store offers easy accessibility as well as usability. It also improves the product overview and transparency

Christian Kaas, Head of Standard Development at PSI Logistics.

of the respective functional scopes as well as flexibility in documentation.

What does this mean for PSI Logistics?

Christian Kaas: In the dynamic logistics industry, the configurability and scalability of the software are decisive success factors. As part of the growth strategy of our customers from the online and omnichannel trade, our logistics service providers, for example, benefit from the increasingly standardized products and the accompanying services. PSI Logistics has developed industry-specific preconfigured versions for PSIwms. This has resulted in three editions, PSIwms GO, PSIwms FLEX and PSIwms PRO, which cover the warehousing requirements of small and medium-sized companies through to market leaders by offering different standard functions and configuration options.

What are the advantages for customers?

Christian Kaas: In addition to rapid availability with short project runtimes, the systems are designed in such a way that users can adapt and configure the systems themselves as their requirements change, even without programming knowledge. In addition, the editions remain up-to-date with our Update-as-a-Service. In addition, it is possible to switch to a more comprehensive edition as

functional requirements grow. Individual configurations are retained.

Independent system adaptations and configurations without programming knowledge—how do you imagine that?

Christian Kaas: With PSI Click Design, interfaces can be individually configured. In the process, customers are supported with the graphical workflows in the PSI Collaboration Space for independent process adjustments. In addition, services are available in the PSI Academy with which we train users to enable further customization in the system. If interesting adjustments arise that are also attractive for the system standard, these will flow into the standard with the next update and thus become available to all users.

Mr. Kaas, thank you very much for this insight and overview.

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News: PSI Logistics delivers supply chain software to Viessmann Logistik International

PSIglobal Analyzes and Optimizes Warehouse Structure

PSI Logistics GmbH has been awarded by Viessmann Logistik International GmbH with the delivery of the strategic supply chain software PSIglobal. This is intended to gradually analyze and optimize the existing warehouse structure at country level based on the expected market demand as well as the available capacities.

Supply Chain Software PSIglobal offers intelligent analysis and optimization functions for location optimization and inventory planning as well to strong network transparency and higher visualization options for decision-making. Additionally, transport costs can be reduced plus an improved service level can be achieved for end customers through optimized locations.

Warehouse at Viessmann Logistik.

Viessmann Logistik International GmbH decided in favor of the PSI software based on the initial positive experiences from two projects with the Forschungsinstitut für Rationalisierung (Research Institute for Rationalization) (FIR) e. V. at the RWTH Aachen within the partner management. Moreover, the possible module extensions and the accompanying coaching by PSI were decisive. The software acquired in March 2022 has been in use at Viessmann for about a year after a three-month pilot project.

The family-owned company Viessmann was founded in 1917 as a workshop for heating technology and is today a global, broadly diversified group with over 14500 employees and total sales of around 4 billion euros. The two largest business units, Climate Solutions and Refrigeration Solutions, include sustainable solutions in the areas of heating, cooling, water and air quality. Production takes place in 22 plants in eleven countries. In addition, 49 sales companies, 35 sales partners in 58 countries and sales activities in 74 countries and 120 sales offices belong to the Viessmann Group.

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User report: Austrian voestalpine Stahl GmbH commissions PSI with an upgrade

Future-Proofed Upgrade for Optimized Production

In 2020, voestalpine Stahl GmbH commissioned PSI Metals with the upgrade of their outdated software solution to a more modern version of production management system PSImetals 5.21. In January 2023, the upgrade went live successfully, meeting the future business and production targets of voestalpine Stahl, including enhancing efficient transition to EAF hybrid meltshop production in the future.

Founded in 1938 in Austria, voestalpine is a globally leading steel and technology group. The Steel Divison, voestalpine Group's largest division in terms of revenue, operates as a global manufacturer of high quality steel products. Renowned automotive manufacturers and component suppliers rely on the Steel Division for highest quality steel strip. The Division manufactures heavy plates and cast products for applications under the most difficult conditions in the energy industry.

Plant of voestalpine Stahl GmbH.

The upgraded PSImetals 5.21 covers the production process in the melt shop, including basic oxygen furnaces, secondary metallurgy lines, continuous casting as well as mold casting.

Situation before solution implementation

voestalpine Stahl GmbH, the lead company of the Steel Division, was looking for reliable, and as close as possible to the standard solution, based on future-proofed platform, which they can use on a long term and a company that would provide constant support from larger team.

As their CAQC (Computer Aided Quality Control system) was getting outdated, it became difficult to upgrade and develop necessary extensions. The CAQC is used in the melt shop for configuration and calculation of treatment practices as well as for quality control of the production process.

voestalpine Stahl GmbH produces about 6 million tons of high quality steel annually and thus needs to manage several different treatments practices in a flexible and efficient way. To allow for accurate quality evaluation of their production, they also needed to carry out high degree of integration into existing IT landscapes through numerous interfaces to several Level 2 and Level 4 systems. This involved dozens of telegrams, part of which are very generic and cover many use cases.

The production situation at voestalpine also required that they implement a solution that has many advanced functions of a standard product, making it a major challenge for the new upgraded solution.

Another complex requirement for the solution implementation was upgrading the human interface in such a way that the existing look-and-feel of it as well as main workflow had to be left unchanged. Not changing it caused minimal adaption needed for the pulpit operators.

voestalpine Stahl GmbH is very satisfied with the professionally realized upgrade, which substantially increases efficiency and optimization of its production and quality execution. The updated solution allows them to meet future needs, especially the launch of the elec-

tric arc furnace (EAF) in the coming years.

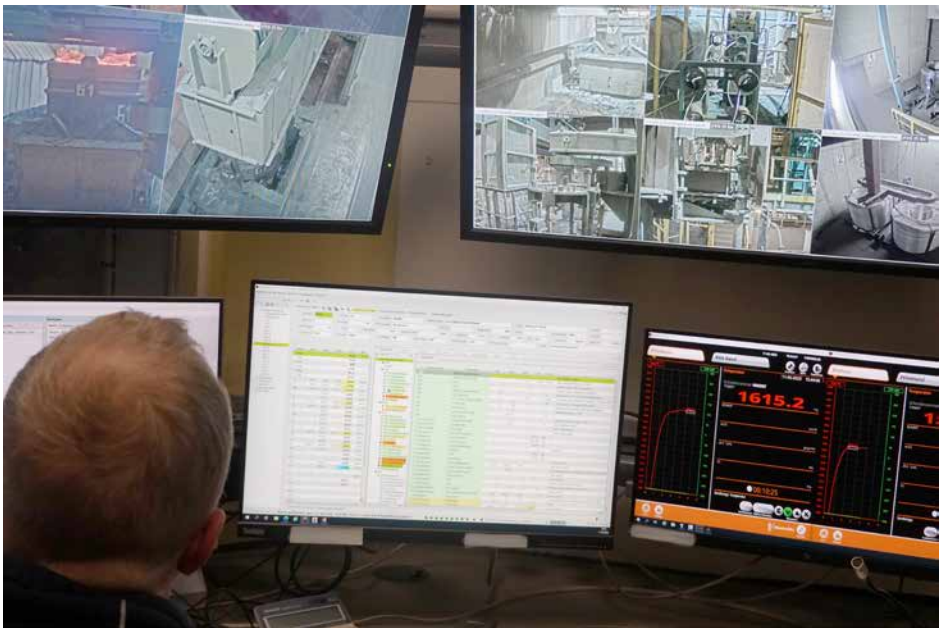
PSImetals Academy supports

The voestalpine team was eager to begin their own configuration of specific HMI dialogues. Thus, several training measures were taken, beginning with e-learning courses at the PSImetals Academy. Several workshops followed, and were reinforced with side-by-side support from the PSI Metals team during the solution implementation. Through the expert training from the Academy, voestalpine team became deeply conversant with the features of the new PSImetals 5.21. This turned out to be a highly fruitful approach in the overall success of the solution implementation.

Implementation is smooth and successful

To enhance successful solution implementation, voestalpine has high technically skilled team with detailed background of the existing CAQC. PSI Metals team adds to this with their in-depth knowledge of PSImetals Standard. These factors enhanced smooth project collaborations all through the implementation phases.

Following carefully elaborated implementation plan, long lasting phase of parallel production was executed, right after the successful Factory Acceptance Test. During this phase, software excellence was improved to the highest level. The go-live was very smooth such that surrounding systems did not recognize that the old system was replaced.



Upgraded PSImetals 5.21 running smoothly at voestalpine plant.

With the implementation, voestalpine Stahl GmbH now ensures that it will be able to upgrade their system seamlessly with new PSImetals future product releases.

Planning for the future

During the project, voestalpine already initiated numerous improvements of PSImetals standard. They will continue to accomplish such improvements on their path to acquiring upgradable software solutions. And after two years of the migration project, continuous improvements are already in the pipeline for realization. This autumn, PSImetals 5.26 will be released and the PSImetals User-Group event will take place, which voestalpine plans to attend. The current system will be upgraded to PSImetals 5.26 in early 2024.

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Ask and Answer with Qualicision A2

Most PSI software tools are equipped with optimization and decision components based on Qualicision AI. Using Qualicision AI Generative now a connectable product component is available that based on a text processing as well as text generating language model (large language model) allows targeted training of topic specific texts.

The product Qualicision A2 (A2 stands for Ask and Answer) allows to add any information available in text form about products, application areas as well as the associated user manuals or other documents for an existing application. In this way, the requirements can be created to equip software tools and applications with an explanation component that allows text-based conversations with the application or with the associated software tool. Figure 1 shows in what form Qualicision A2 can be integrated in Qualicision AI.

Switchable topic priorities control response behavior

Moreover, Qualicision A2 allows to influence by means of the Qualitative Labeling technology the response behavior regarding user asks by using of topic priorities. Topic priorities emerge by using user-defined catalogs of important keywords via Qualicision AI from the special texts qualitative labels are learned. The learned qualitative labels are then linked to sliders that can be set on the interface. The settings chosen in this way allow the response behavior to be adapted to the Qualicision A2 component being trained in each case. In cooperation with a learning software that monitors the system behavior, confirming and rejecting user interactions can also be used for automated retraining. Figure 2 shows the system architecture of Qualicision A2 with the connection to the Qualitative Labeling.

Integration as library and switchable via the basic tool Qualicision AI

Qualicision A2 will be available both as a library and as a component that can be switched and controlled via the Qualicision AI GUI. This also applies to all PSI products and to all existing customer applications. New applications are also possible, including those that have not previously been in contact with PSI products. In this respect, the market for the tool is completely open here.

An example: Qualicision A2 texts about Qualicision AI

To illustrate working with Qualicision A2, the following shows how user-led conversations about the topic of Qualicision AI technology can arise when applied to itself. To do this, the system was trained to select texts consisting of (mostly) English-language user-oriented articles about Qualicision AI technology that PSI FLS has published. These articles can be viewed at https://www.fuzzy.de/en/news-events/presses-timmen.html. Figure 3 shows some Asks and Answers of the system.

In addition to the generated text outputs, the system also provides

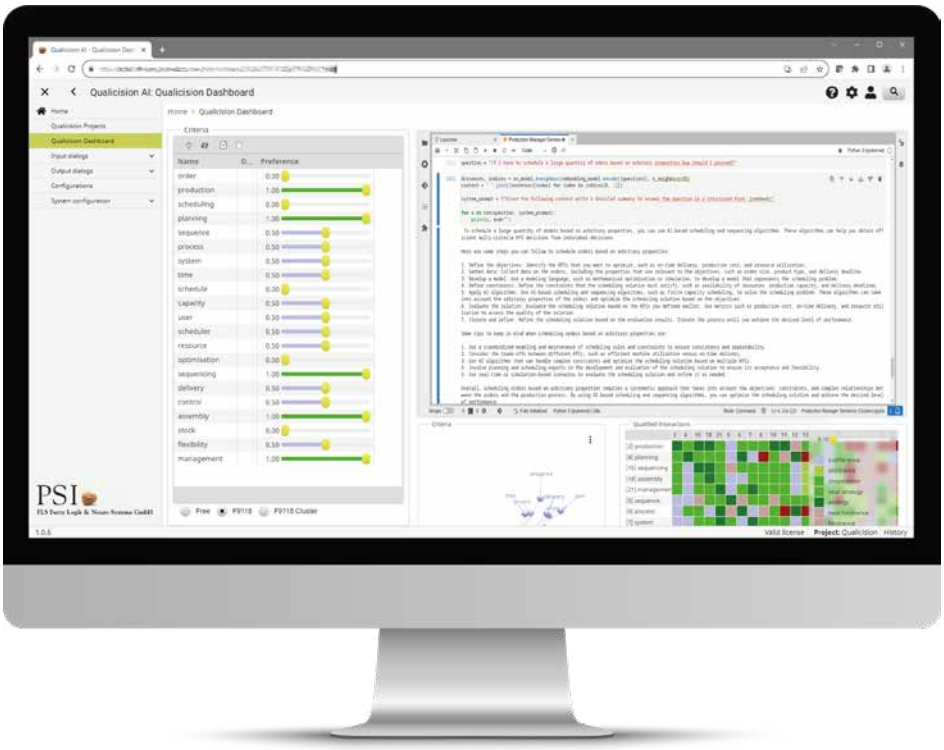

Figure 1: Qualicision A2 as component of the Qualicision AI GUI with integrated Chat component and slider for preference setting of keywords at training.

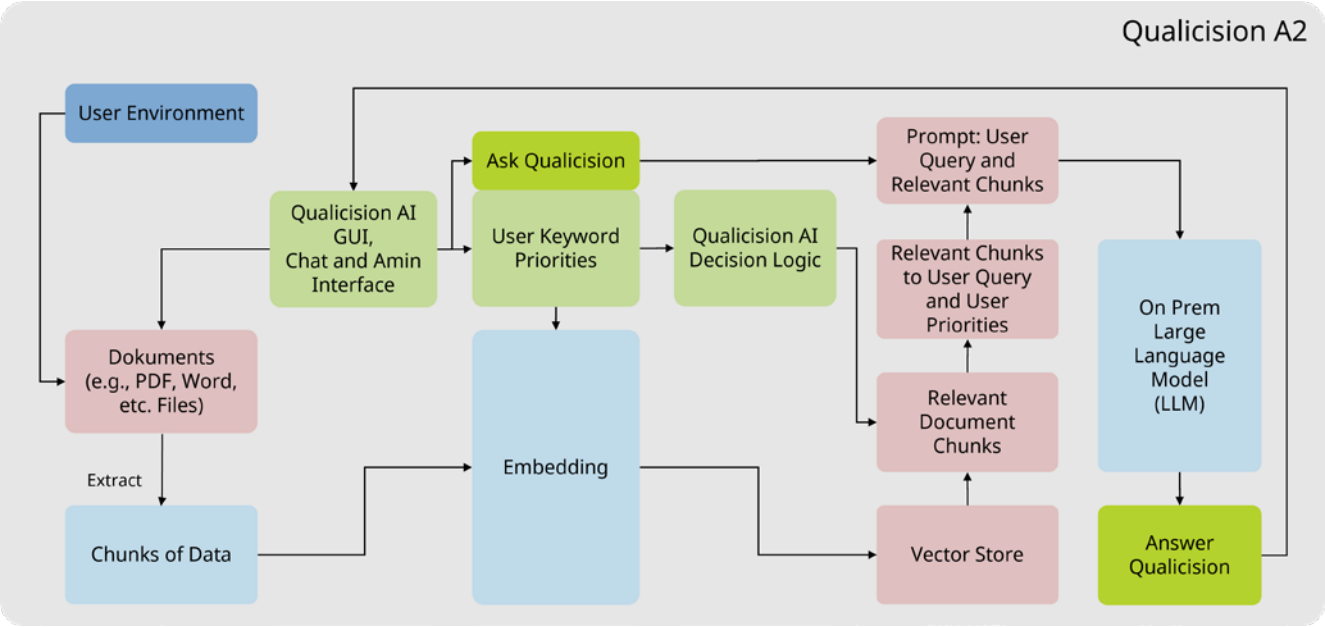

Figure 2: System architecture of Qualicision A2.

information about the text sources that had the strongest relevance in generating the answer. Therefore, the dialogs additionally provide links to the most relevant documents from which the generated texts are derived. This is particularly important in systems that are based on classic documentation such as user manuals or other product documentation such as maintenance documentation, concept papers, etc. and that provide users with information on which documents contain further information. In this way, any combination of dialog behaviors can be generated generically via any texts which are composed of text outputs and document references.

How a concrete system is ultimately configured for a concrete application situation can be decided individually from task to task and parameterized independently by the customers or users. Qualicision A2 and Qualicision AI Generative provide the framework for this.

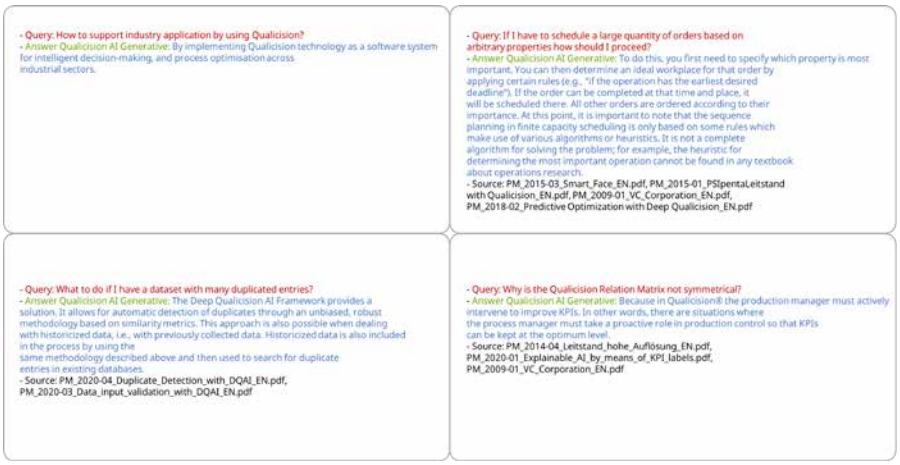

Figure 3: Examples of Asks and Answers with Qualicision AI itself generates by means of Qualicision A2.

Technical parameters and integration into a customer environment

The most important argument for using our product from the perspective of customers, besides the actual functionality, will be the advantage that Qualicision A2 is organized in such a way that all training processes and applications themselves remain within the infrastructure of the respective customer environment as well as completely under the control of the applying company. Regarding the infrastructure, the requirements can also be modeled. The training processes at PSI FLS currently run on the following architecture,

- CPU: Intel(R) Core (TM) i9-7920X CPU @ 2.90GHz, Memory: 64 GB
- GPU: 2x NVIDIA GeForce RTX 4090 24 GB, Memory: 1 TB SSD 2x 4 TB HDD.

Depending on the volume of training data, training times of a few hours are feasible. The response times of the system are in the range of an average write speed. Accelerations can be made possible by the corresponding hardware.

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Time Accounting with the Smartphone App

Precise personnel time recording is mandatory for all companies. The PSI Industrial App "Employee Self Service" enables particularly flexible yet consistent control and implementation—for all employee groups and not just for the HR department. The app can be integrated into the PSI MES and scores with numerous options.

The topic of personnel time recording is well known—also in industry. However, the EU law on the seamless recording of working hours has changed a lot. Companies are faced with additional work, but this remains manageable with the PSI smartphone app, as it can be integrated into the MES module "Personnel Time Recording (PZ)".

Personnel time recording is also possible using a smartphone.

The new law obliges companies to provide all employees with access to a system with which they can record working and break times quickly and easily. This applies to employees both in the field and in the office as well as those working from home. According to the European Court of Justice (ECJ), the recording process must be reliable, objective, audit-proof and easily accessible. Although this does not necessarily have to be done electronically, digital time recording streamlines all related processes through an intuitive recording process and the integration of all employee groups.

One app covers all

This is not the only reason why customers who use the PSIpenta software rely on the mobile add-on in the PSI Industrial App "Employee Self Service", which controls the processes in the background. In this way, all stamps can be submitted via mobile end devices or permanently installed terminals. The app also gives employees as well as team leaders access to functional areas where further processes can be significantly simplified.

In times of working from home and other forms of location-independent working, the option of mobile personnel time recording seems almost indispensable. At the same time, integration into the MES module minimises the additional work for all involved.

Legally-compliant time accounting

"Coming", "Going" and "Going for a reason": Employees can use the app to quickly and easily make all relevant clock-in/out entries via smartphone in the field, via a permanently installed device in the company, or via PC at their office workstation. When "Going for a reason", they can also select the relevant reason from a drop-down menu. This simple solution and handling speed up the processes and guarantee precise, practical and thus legally-compliant "time accounting".

Flexible self-disclosure

In addition, the app offers the functional area "Personal Information", in which employees can independently view and edit information or submit or reject applications. For this purpose, the app is divided into five categories: account, calendar, monthly overview, news and PZ checklist. With just a few clicks, approval applications can be processed and sent from the calendar view.

The team at a glance

The third area, "Team Information", is exclusively for team lead-

ers. Via the categories Team and Team Calendar, they can, for example, check the capacity calendar and obtain an overview of the staff times of individual employees or daily absences in the team view at any time. In the News category, they have the option of viewing and editing approval requests. This is supported by an additional search function, which leads to quick and precise results by means of two-stage filter options.

Summary: Modern staff time recording

With the Industrial App, companies not only fulfill all legal requirements for simple and intuitive personnel time recording. Through integration into the MES module "Personnel Time Recording" as well as the areas of self-disclosure and team information, further related processes are also simplified and accelerated. This meets the growing expectation for employers to offer the use of modern and digital solutions for internal processes.

Advantages

- ✓ Location-independent recording and processing of personnel time data in real time
- ✓ Efficient support of daily personnel time recording processes
- ✓ Reducing errors in recording data
- ✓ Simplification and acceleration of approval application processes
- ✓ Easing the burden on the personnel department through information and processing options for employees
- ✓ High degree of employee satisfaction

About the author

René Kirsch heads the area of Smart Production and is the product owner of PSI Industrial Apps. Colleagues and customers alike value his expertise when it comes to the digitalisation of production processes in general and MES in particular. What drives him: "Software must simplify processes, thereby creating real added value for companies."

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The Decisive Input for Optimized Planning

Highly integrated steel plants have complex planning. To meet diverse customer demands and manage complexity, they require modern Order Dressing solution that provides the required flexibility.

Steel producers often face difficult planning scenarios that can lead to delayed delivery times, lower productivity and ultimately lower throughput. But is this an optimal way to compete in the steel industry? For manufacturers with increasingly dynamic global customer requirements and complex work schedules, this is a clear no.

In production planning, traditional software solutions use static bill of materials and routing definitions that provide very limited or no support for alternative routings in complex scenarios. This can lead to delivery delays. To improve this, modern planning solutions require a highly dynamic order book as main input. To manage deviations, plant managers need all alternative routes in advance and a reactive component to adjust downstream orders. This can be achieved with Dynamic Order Dressing.

Dynamic Order Dressing alternative routings

The starting point for PSImetals Order Dressing is the receipt of a dressing request, usually a Sales Order Item. This is a sales order item for a particular finished product from the Enterprise Resource Planning. This request leads to initial production order generation with all potential routes modeled as production order variants. The resulting order book is an important input for any planning solution, as it significantly increases flexibility.

Dynamic Order Dressing provides a centralized, consistent and versatile knowledge base that simplifies the maintenance of complex configurations and is the single source of information. At runtime, the engine of the Dynamic Order Dressing calculates any kind of request, such as a sales order, initial request or incomplete production order, using information from the central knowledge base.

Dynamic Order Dressing alternative intermediate materials

Additionally, more solutions for planning are possible if alternative intermediate material dimensions are taken into account for material allocation and foundry planning. Depending on the plant configuration, it is possible to cast alternative slab dimensions that can still be transformed into the desired end product. This enables better casting sequences.

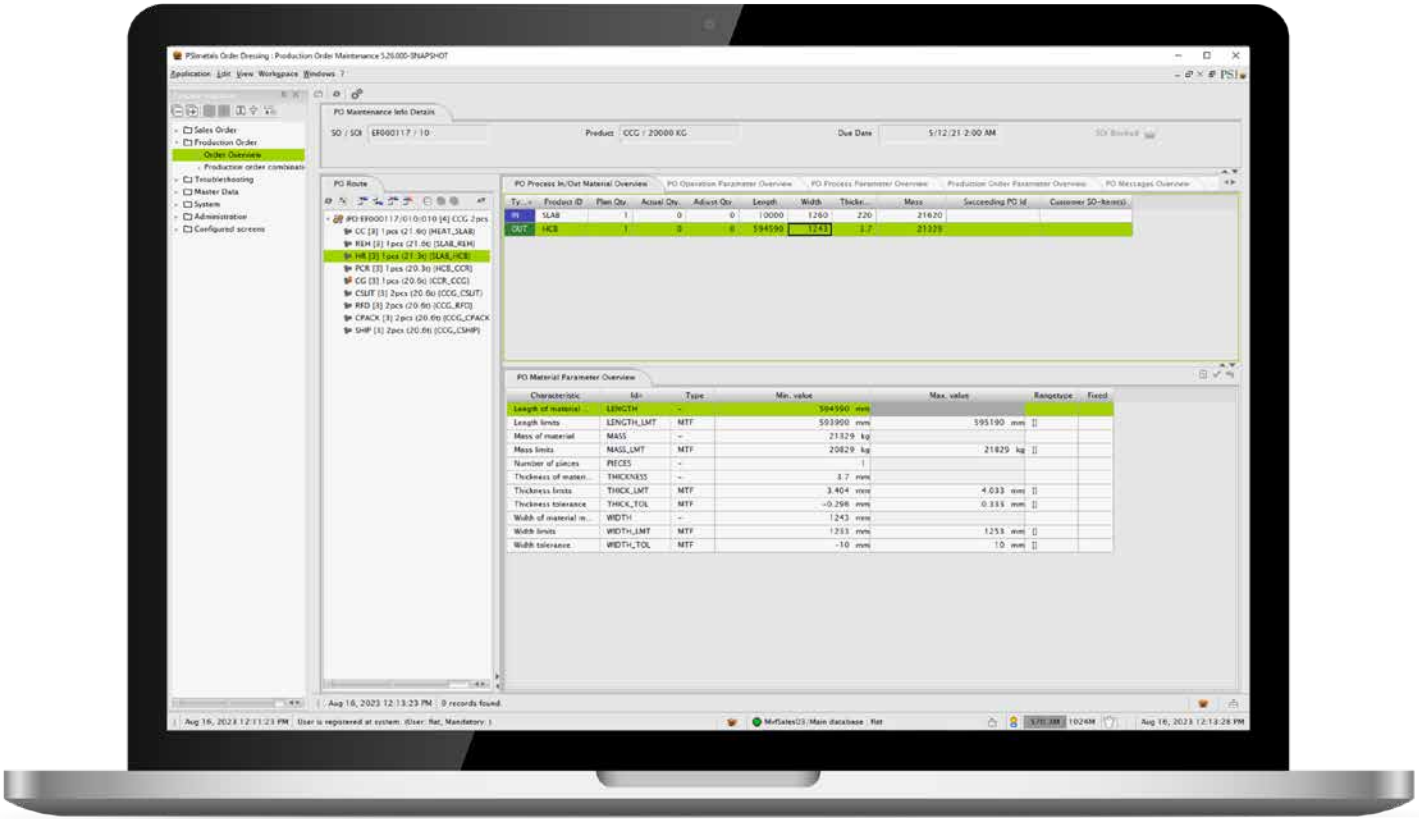
Stocks that are free due to quality problems, overproduction or additional purchases are made available to the material assignment by transferring alternative intermediate materials to planning. This reduces unused capital and inventories.

Dynamic Order Dressing forward dressing for alternative materials

If the material assignment uses alternative intermediate materials, in most cases, the original production order no longer fits one hundred percent. So there is a need for adjustment here to meet the requirements of the final product requirements, such as the adjustment of the routing, cutting and target data. The solution to this problem is Forward Dressing, which provides a material-specific production order (MAT PO) for a selected material dynamically. This can be generated according to an alternative mate-

Dynamic Order Dressing has several advanced features which, when combined into the proper overall system architecture, can make the difference:

- The sales order line item is elaborated into several alternative production order variants, each of which represents an individual routing alternative.
- Within each production order variant, Order Dressing calculates multiple material requirements variants (modeling of alternative dimensions, depending on yield and cutting factors) using fully configurable mathematical models.
- The material requirement variants can either be combined to further production order variants or as alternative material requirements variants separately (e.g. for allocation applications).

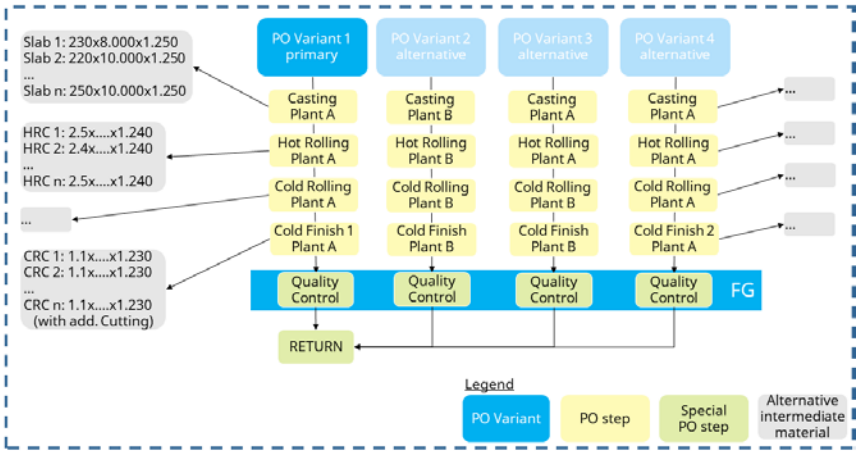


Routing of a flat PO (galvanized cold rolled coil).

rial demand variant or even “any” material that does not directly fit to the original production order. In this case the MAT PO is calculated directly after the allocation taking into account both the actual material properties as well as the ordered end product. For balancing reasons, it is linked with its parent object (the original production order).

Dynamic Order Dressing forward dressing for quality deviations

Forward dressing for quality deviations allows an early response to any kind of quality problem, thereby avoiding deallocation or downgrading, which can significantly reduce production costs. In situations where qualitative production data, laboratory tests, visual inspections or quality indicators, so-called predictive models, reach a limit or hard limits, forward dressing can be triggered to create an adaptive MAT PO. This ensures that the final quality specifications are achieved.



Routing of a flat steel order from casting to galvanizing.

Steel mills increasingly rely on PSImetals Order Dressing

Steel producers’ manufacturing strategy for optimized planning needs to change in the face of complex plant layouts and varying customer requirements as well as global market pressures. A better approach requires a proactive and modern software solution that can be easily adapted to different production scenarios. PSImetals Order Dressing is currently used in the planning of many steel plants worldwide. The result is improved production performance.

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An Unbeatable Team: AI and ERP

There is a growing interest in Artificial Intelligence (AI), including in connection with ERP systems. But the fear of the supposed black box is still real. We spoke to Dr Rudolf Felix, CEO PSI FLS Fuzzy Logik & Neuro Systeme, about why nobody needs to fear AI decisions and where AI and ERP form an unbeatable team.

Dr Felix, integrating Artificial Intelligence processes into software for industry has already been a firm component of the PSI product strategy for many years and has been tried and tested in practice for just as long. Where does the Qualicision AI software already complement the PSIpenta ERP system today?

Dr. Rudolf Felix.

Dr Rudolf Felix: Based to a large extent on ERP data, the optimisation of production sequences in series production is practically a classic procedure. In view of the continuing large number of variants due to product individuality and the simultaneous high volatility of the markets, a very large amount of data needs to flow into the productive decision-making process—including the balancing of conflicting targets, for example, in relation to utilisation and scheduling or inventory KPIs. In addition, all of this happens in real time or continuously in order to be able to react flexibly and quickly even to short-term changes.

The interaction of PSIpenta/ERP modules and Qualicision AI has already proven itself many times over. In addition, the AI integration enables qualitative labelling and the analysis of business process data in the areas of multi-criteria supplier evaluation and analysis as well as predictive maintenance. We have software tools for this that can be combined with PSIpenta/ERP.

I can well imagine that some readers will be surprised to learn that these integrations already exist in practice—and not just since yesterday. After all, especially in small and medium-sized businesses, there are still great reservations when it comes to the use of artificial intelligence. Because the corresponding expert knowledge is lacking and no one wants to trust a black box. Conversely, does this mean that the designated customers have AI know-how?

Dr Rudolf Felix: That is a good and very important question, as there is an urgent need for clarification here. Many and especially our AI applications can be integrated into other systems in a comprehensible and explainable way. This means that neither the introduction and operation of the solutions nor the interpretation of the software decisions require AI know-how.

By displaying key performance indicators (KPIs) and their interactions, the integrated application enables users to understand, evaluate and control all AI decision recommendations solely from the context of their business process. The fact that this form of use is Qualicision AI-supported need not be the main focus; after all, AI is also software. Only it is programmed somewhat differently than usual, namely much more by the provision of suitably prepared data. This is precisely where the qualitative labelling in our tools provides support.

Optimising production sequences, evaluating suppliers, predictive maintenance—these are the areas of action in which AI and ERP already work well together. But let's take a look to the future: what ERP functional areas do you think are also predestined for AI integration?

Dr Rudolf Felix: Basically, all processes whose data companies record and manage in an ERP system are suitable. All corresponding functional areas can also be supported

Using AI-based software in manufacturing

by ERP-centric AI—from procurement and production to delivery and after-sales tracking.

One particularly relevant future topic for many companies is certainly that they can use an integration of Qualicision AI to combine all data with classic and new sustainability parameters, such as efficiency and resource conservation, and thus consistently align processes with sustainability goals. One component is, for example, data analyses on the process-related efficient use of operating resources – linked to energy efficiency goals.

These not only have a positive effect on reducing energy consumption, but also help to fulfil sustainability criteria. All process steps and results can also be systematically tracked and traced automatically. All in all, the integration of AI will enable a new quality of ERP and further develop the management of data in the direction of ERP data-supported forecasts and active decision support.

And we are already on the right track. Thank you very much for this interesting conversation, Dr Felix!

Dr Rudolf Felix founded PSI FLS Fuzzy Logik & Neuro Systeme GmbH in 1992. This company has been part of the PSI Group since 2008 and offers industrial software for KPI-based decision support, learning process data analyses, predictive monitoring and value-added production optimisation, independent of industry and context, using its Qualicision AI technology.

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Optimal control of aluminum samples

PSI Metals has successfully implemented the software solution PSImetals with the modules Production, Logistics and Planning at the Austrian aluminum manufacturer AMAG Austria Metall AG. This enables AMAG to optimally control its aluminum sample production in the new fully automated material testing laboratory called the Smart Factory.

The highly efficient Smart Factory can test up to 500000 material samples annually by meeting latest Industry 4.0 standards. It is capable of self-organizing and managing units, service-oriented architecture and local intelligence of machines. The implemented PSImetals solution enables dynamic planning and control of production capacities, the adherence to deadlines and an improved exchange of information with the shop floor. The implementation also includes the integration of the Level 2 and Level 4 components.

AMAG Smart Factory.

200000 different planning objects to be processed at once via the short- and long-term planning of

> *AMAG has built this innovative plant from scratch. It is the first of its kind in aluminum production. PSI Metals has successfully implemented the software solution in line with our digital strategy and thus the right partner for digitalization. We are thus setting new standards in terms of plannability, quality, reproducibility, processing speed and flexibility.*
>
> **Dr. Werner Aumayr, Chief Information Officer at AMAG**

The use of PSImetals Planning and the Industrial AI-based Qualicision solver technology allows more than

complete sample laboratories. Machines can be easily integrated into the overall plant via PSImetals Service Platform by linking it to the self-organized Smart Factory.

Dr. Werner Aumayr, Chief Information Officer at AMAG, says: “AMAG has built this innovative plant from scratch. It is the first of its kind in aluminum production. PSI Metals has successfully implemented the software solution in line with our digital strategy and thus the right partner for digitalization. We are thus setting new standards in terms of plannability, quality, reproducibility, processing speed and flexibility.”

Dr Ramona Tosone, Head of R&D at AMAG Rolling adds: “This system enables us to run our sample production and tensile testing lab for sheet products 7x24 round the clock without adding more human resources.”

AMAG is a leading premium supplier of high-quality cast and flat-rolled aluminum products for a wide range of industries.

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News: Inter Cars optimizes warehouse logistics with PSIwms

WMS for around 400 Warehouses

PSI Polska Sp. z o.o. has been awarded by Inter Cars SA, the largest distributor of spare parts for cars, vans and trucks in Central and Eastern Europe, with the delivery of the Warehouse Management System PSIwms for its international markets. The new system will control the European warehouses and will replace the previous system.

PSI Polska is also responsible for the configurations of several warehouses types for the nearly 400 warehouses in 16 countries of Middle-Eastern Europe. In order to enable Inter Cars to maintain the system on its own, the consultants will also be trained.

The Inter Cars Capital Group is a Polish distributor of automotive spare parts operating in a number of European markets. Due to the dynamic development of the company, Inter Cars decided in favor of the Warehouse Management System PSIwms which already supports some of its warehouses in Poland.

"We were looking for a scalable solution which would allow us to further develop the company," explains Krzysztof Lutrowicz, Director of Supply Chain at ILS Sp. z.o.o that is providing comprehensive logistics services related to warehousing and distribution for Inter Cars Group entities and external companies. "PSI's fundamental experience and the guarantee of maintaining a stable team during the implementation and after the production launch were also of great importance to us. PSIwms is an advanced solution with rich configurability that will meet our current and future needs," Krzysztof Lutrowicz adds.

Warehouse at Inter Cars.

The project started mid-2023 and assumes a work schedule for the next six years.

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