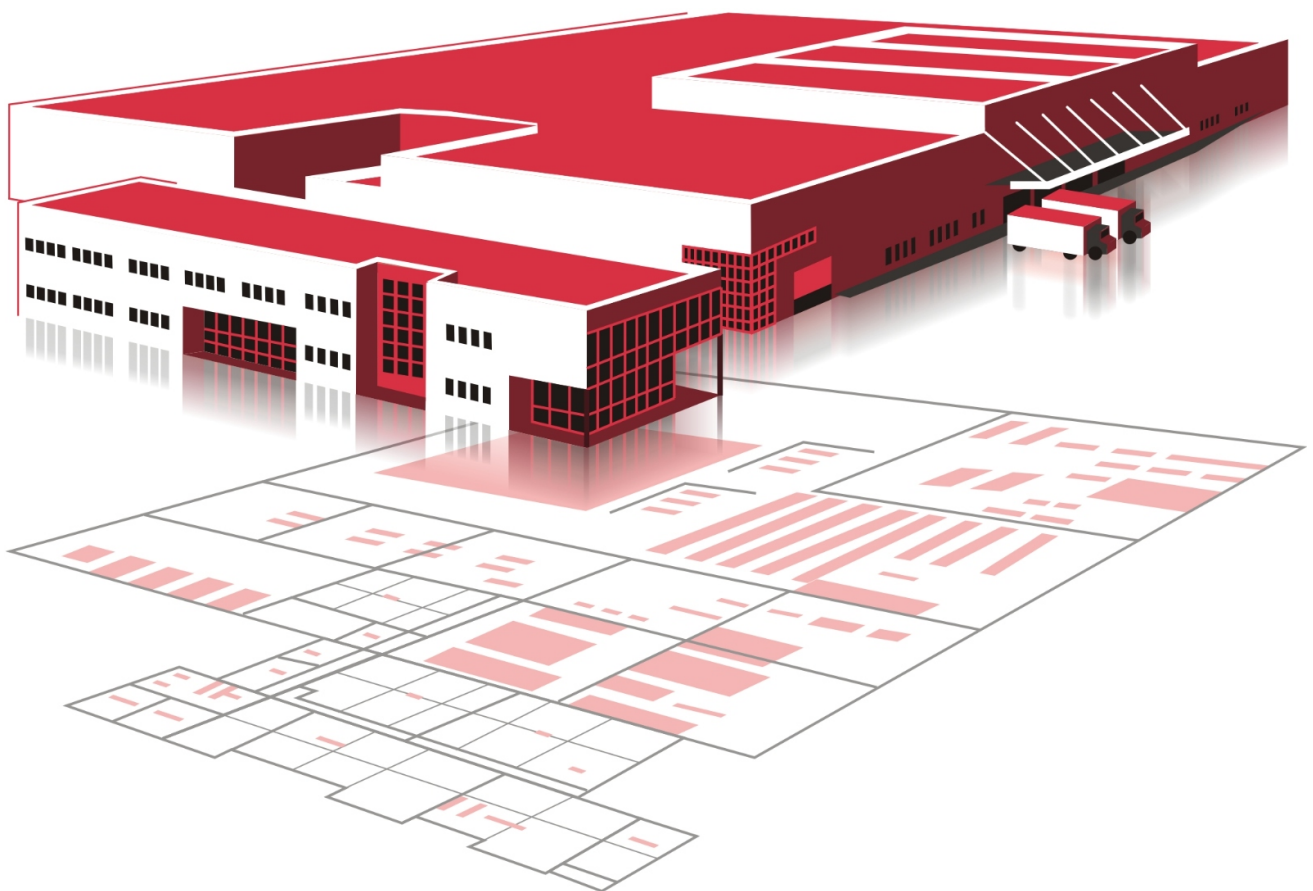


SOLUTION

4BDE for shopfloor data collection

Order, operating and personnel time tracking
in real time on the shopfloor



Order, operating and personnel time tracking in real time on the shopfloor

software4production GmbH is a specialist for MES, APS and Industry 4.0 with more than 20 years of experience in manufacturing digitalisation. With 4BDE we deliver a modern worker-guidance solution for digital shopfloor data collection that consolidates production data, times, quantities, quality and downtimes in real time across the shopfloor.

This brochure introduces the 4BDE solution on s4p.de and a curated selection of industrial customers who successfully rely on 4BDE.

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4BDE – Shop-floor data collection

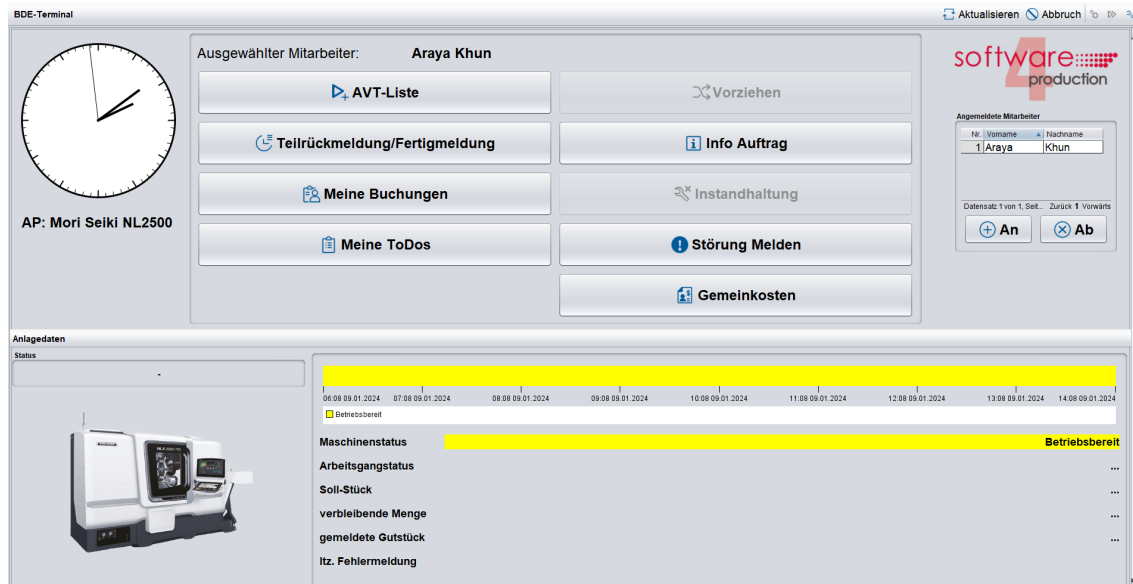
Solution 7

Digital order, operating and personnel time tracking

Real-time production data, worker guidance and paperless manufacturing

Times, quantities, scrap, faults and quality data on the BDE terminal

Barcode, RFID, touch or fingerprint, ERP/PPS/MES integration



Initial situation

Industrial companies today need to capture production data, times, quantities, scrap, faults and quality information digitally and in real time. In many operations, shop-floor data collection is still performed inaccurately or with considerable manual effort — often supported only by Excel or paper-based forms. Employees spend a lot of time on manual booking, updates cannot be automated and management lacks a reliable data basis. However, times, quantities and quality metrics have to be visible at all times to safeguard competitiveness and to keep the company on course in a demanding manufacturing environment. Digital shop-floor data collection with 4BDE turns fragmented reports into a consistent, real-time view of production.

Challenge

Manual shop-floor data collection is prone to errors, delivers delayed feedback and easily leads to wrong conclusions. Target and actual times are not aligned, so-called data graveyards accumulate and cause unnecessarily high costs. Paper-based processes prevent central, traceable data — feedback loops break down and manual transmission errors damage quality and reliability. What companies need is a system that consolidates shop-floor feedback, ERP, PPS, MES and worker guidance into one transparent data flow, works reliably around the clock and can be operated by every employee on the shop floor without extensive training.

Solution

4BDE is a modern worker-guidance system for intelligent shop-floor data collection with a user-friendly interface and real-time visualisation of production data. It captures production data, times, quantities, scrap, faults and quality data directly at the BDE terminal and connects shop-floor feedback with ERP, PPS, MES and worker guidance in a transparent data flow. Data can be imported from existing PPS, ERP and warehouse management systems, so 4BDE integrates cleanly into your existing IT landscape. Feedback can be provided manually, by mouse/keyboard, touch, barcode, RFID or fingerprint. 4BDE replaces paper-based processes with up-to-date, traceable and centrally available production data and supports fully paperless manufacturing. The solution can be individualised to specific needs, combined with other systems without difficulty and extended if required with 4MDE for machine data collection and deeper ERP integration.

Results and benefits

With 4BDE, industrial companies achieve higher productivity, real-time information, complete reporting capability, precise post-calculation and a new level of transparency across the shop floor. Software-supported shop-floor data collection keeps times, quantities and quality data in view at all times and improves business and value-creation processes through real-time visualisation of production data. 4BDE reduces manual entry and transmission errors, enables precise capture of target and actual times and assigns them to local production processes — the basis for reliable post-calculation and targeted quality assurance. The solution is compliant with DIN/ISO 9001 and works-council requirements and is suitable for small, medium and large industrial companies.

03 · CUSTOMERS

Customer references with 4BDE

Excerpt from our customers using 4BDE

Selected industrial companies

Mechanical engineering

18 references



Metallverarbeitung

15 references



Anlagenbau

12 references



Automotive

7 references



Antriebstechnik

5 references



Metal processing

4 references



Werkzeugbau

4 references



94469 Deggendorf, Deutschland

Industry: Automotive, precision parts, injection systems, component manufacturing, metalworking

Products: Diesel and gas injectors, injection systems, micro-precision parts, automotive components

S4P solutions: 4APS, 4BDE, 4MDE, 4PRO



Initial situation

The climate-controlled production at Liebherr-Components Deggendorf is characterised by highest precision, cleanroom assembly, complex processes and demanding manufacturing conditions. In this environment, the need for continuous real-time information from production grows in order to assess statuses, progress and deviations quickly and reliably.

Challenge

After the company was founded in 2015, growth in 2018 led to the following situation: despite the ERP system Infor:LN and a Forcam MES, the lack of transparency in production and machine data made it increasingly difficult to monitor manufacturing processes reliably, detect faults early and take well-founded decisions on the shop floor and in production control. In this complex production environment with high quality requirements a digital link between planning, production and data acquisition was needed. In a lengthy and intensive system selection process with competitor benchmarks, reference visits and a proof of concept, the final decision was taken in 2019 to introduce the MES/APS solutions from S4P and Inform from Aachen, who have been an OEM partner of S4P since 2012 and market the complete S4P portfolio under the name FELIOS|MES.

Solution

Together with Inform, S4P introduced the following solutions in dedicated sub-projects: bidirectional interfaces to the Infor:LN ERP, FELIOS|APS for day-accurate multi-resource planning, FELIOS|SPE for shift planning, FELIOS|FLS for real-time multi-resource planning, FELIOS|BDE for shop-floor data collection, FELIOS|SPC for statistical process control and claim tables, FELIOS|MDE for manual machine data acquisition, FELIOS|PRO for warehouse management (WMS) and logistics control, plus the integration of e-labels, handhelds, RTLS object tracking and Liebherr applications. Together these modules provide production feedback, machine states and relevant manufacturing information within a fully integrated digital environment.

Results and benefits

Better availability and usability of production data enable processes to be steered and evaluated with greater transparency. This supports faster reactions to deviations, improves the information basis for shop-floor management and creates an important foundation for more efficient workflows, higher process reliability and data-driven production improvement.

86405 Meitingen, Deutschland

Industry: Automotive, carbon-ceramic brakes, series production

Products: Carbon-ceramic brake discs, high-performance brakes and brake system components for sports and premium...

S4P solutions: 4APS, 4BDE, 4MDE, 4PRO



Initial situation

The production of carbon-ceramic brake discs is characterised by long, multi-stage process chains, high quality requirements and full traceability. Commercial and logistical processes are handled in SAP. For finer planning and end-to-end data acquisition along the manufacturing chain – from initial raw material preparation to final inspection – standard SAP tools alone were not sufficient. With around 650 employees at the Meitingen site, reliable production control is decisive to maintain on-time delivery and quality levels.

Challenge

What was required was realistic fine planning of the complex manufacturing steps, reliable acquisition of operating and machine data and transparent KPIs for continuous process optimisation. The solution had to fit seamlessly into the existing SAP landscape and meet the high quality standards of the automotive industry. In addition, bottleneck machines had to be identified early, downtimes reduced and a solid basis for OEE analysis established. Integrating several solution modules required a carefully designed interface architecture and close coordination between IT, planning and shop floor.

Solution

The S4P solutions are used along the entire manufacturing chain: 4APS for digital, real-time production planning with a graphical Gantt board and simulation-based sequence optimisation; 4BDE for shop-floor data collection with order feedback and good/scrap quantity control at the terminals; 4MDE for automatic machine data acquisition with state and downtime analysis as well as OEE calculation; and 4PRO for process data collection covering quality data and traceability. All modules integrate bidirectionally with the existing SAP environment: order and master data flow from SAP into the S4P solutions, feedback data is automatically returned. Operators, shift supervisors and manufacturing management access tailored terminal views according to their role.

Results and benefits

Brembo SGL Carbon Ceramic Brakes benefits from a transparent, finely planned production with complete data acquisition. Machine and operating states are visible in real time; KPIs such as OEE, on-time delivery and scrap rates are reliably calculated. Quality data and process parameters are fully traceable, which simplifies audits and forms the basis for continuous improvement of availability, performance and quality along the entire carbon-ceramic process chain. Planning-reliable order confirmations and a faster reaction to disruptions strengthen delivery performance towards the automotive OEMs.

71336 Waiblingen, Deutschland

Industry: Additive manufacturing, metalworking, electronics

Products: Chainsaws and motorized garden tools

S4P solutions: 4AVO, 4APS, 4BDE



Initial situation

Production at STIHL is characterised by complex processes, high part variety and demanding planning requirements. Production data was not consistently available in a structured form, which made transparency, fine planning and the analysis of process deviations more difficult. Reliable feedback loops and a common data basis for planning, execution and improvement were missing across many manufacturing steps.

Challenge

In such a demanding environment, decisions about capacity, scheduling and quality need to be based on real-time data. Manual data collection is not sufficient – it is too slow, prone to errors and does not create the transparency required. To support operation planning, fine planning and continuous improvement, an end-to-end digital solution had to be introduced that seamlessly connects shop-floor data with the higher-level ERP and PPC systems.

Solution

S4P delivered solutions for operation planning, fine planning and the structured capture of production data in order to improve transparency across the manufacturing processes. This creates a reliable data basis for production control, the analysis of process deviations and continuous improvement on the shop floor. The modules used mainly comprised tools for operation planning (4AVO), advanced fine planning (4APS) and shop-floor data collection (4BDE). These modules support the planning, control and feedback of relevant manufacturing information within an end-to-end digital environment.

Results and benefits

Better availability and usability of production data make it possible to plan, control and evaluate processes with greater transparency. This supports faster reactions to deviations, improves the information basis for fine planning and creates an important foundation for efficient workflows, higher process reliability and data-based process improvement.

88161 Lindenberg, Deutschland

Industry: Aerospace, Luftfahrtzulieferer, Komponentenfertigung, Metal processing

Products: Fahrwerke, Flugsteuerungs- und Betätigungssysteme, Getriebe, Elektronik und Komponenten für die Luftfahrt

S4P solutions: 4BDE



Initial situation

The manufacture of safety-critical aerospace components is subject to the highest quality and documentation requirements. Liebherr–Aerospace Lindenberg GmbH, with around 3,000 employees, required end-to-end shop-floor data collection to make production processes fully traceable and to complement its existing Infor:LN environment with real-time data from the shop floor. Landing gear, flight control and actuation systems as well as gearbox and electronic components must be documented to a standard that meets the stringent requirements of aviation authorities.

Challenge

In aerospace manufacturing, every process step must be precisely captured and documented. The goal was to record operating data in real time, increase transparency over manufacturing progress and create a reliable data basis for traceability and evidence requirements. Operating over 900 BDE terminals and 150 order cockpits demanded a scalable, stable architecture that runs smoothly alongside the Infor:LN ERP environment and the existing subsystems for personnel time and logistics. In addition, different roles — from shop-floor level to manufacturing management — needed to be equipped with appropriate user interfaces and access rights.

Solution

FELIOS|BDE powered by 4BDE is deployed for end-to-end shop-floor data collection. More than 900 BDE terminals and 150 order cockpits are in operation. The solution integrates seamlessly into the existing Infor:LN ERP environment alongside GECOSOFT for personnel time recording and WAMAS for logistics. Order and feedback data are exchanged bidirectionally between all systems, so that scheduling, shift supervisors and manufacturing management always have a current overview of order progress, times and quantities. The terminals guide operators securely through booking processes, support documentation obligations and reduce manual recording to a minimum.

Results and benefits

With the S4P solution, Liebherr–Aerospace Lindenberg GmbH achieves gap-free capture of production data, improved traceability and a reliable data basis for the continuous optimisation of manufacturing processes. Real-time transparency over order and operating states supports shop-floor management in making rapid decisions. Manual data-entry effort has been significantly reduced, documentation quality has improved and the requirements for traceability and evidence management in the regulated aerospace environment are reliably met.

45884 Gelsenkirchen, Deutschland

Industry: Metallverarbeitung, Schrauben, Verbindungstechnik, Automotive

Products: Schrauben, Muttern, Verbindungselemente, Spezialschrauben und kaltumgeformte Metallteile

S4P solutions: 4BDE, 4MDE



Initial situation

German fastener manufacturers currently face high cost pressure — including energy and raw materials — and transformation pressures alongside a stable or slightly declining demand environment with strong international competition. Friedberg had long been operating the ERP system SoftM (now Comarch) together with the production planning system FELIOS|APS and the MES system Hydra by MPDV. Over the years, a need arose on the shop floor for further digital transformation to provide employees with suitable assistance systems for productivity improvement. After an intensive selection process, Hydra was replaced by FELIOS|BDE and FELIOS|MDE powered by S4P. The decisive factors were the customisability and integration capability of the solutions in a mature brownfield environment.

Challenge

In a highly competitive market for fasteners with international competition and rising cost pressure, end-to-end transparency on the shop floor was essential. Without comprehensive operating and machine data collection, utilisation rates, fault reasons and production KPIs could only be determined with significant manual effort. The goal was to map production in real time, detect faults early and substantially improve the quality of feedback data to the ERP system Comarch.

Solution

To optimise its manufacturing processes, August Friedberg GmbH relies on the solutions from S4P. Manual feedback is provided at more than 150 BDE terminals in the final expansion stage. The operating and machine data captured end-to-end are transmitted to the ERP system Comarch via REST web services, evaluated and enable transparent, reliable and cross-site production control. Modules in use: 4BDE — shop-floor data collection for transparent capture and evaluation of order and operating data; 4MDE — machine data collection for gap-free recording of quantities, states and fault reasons.

Results and benefits

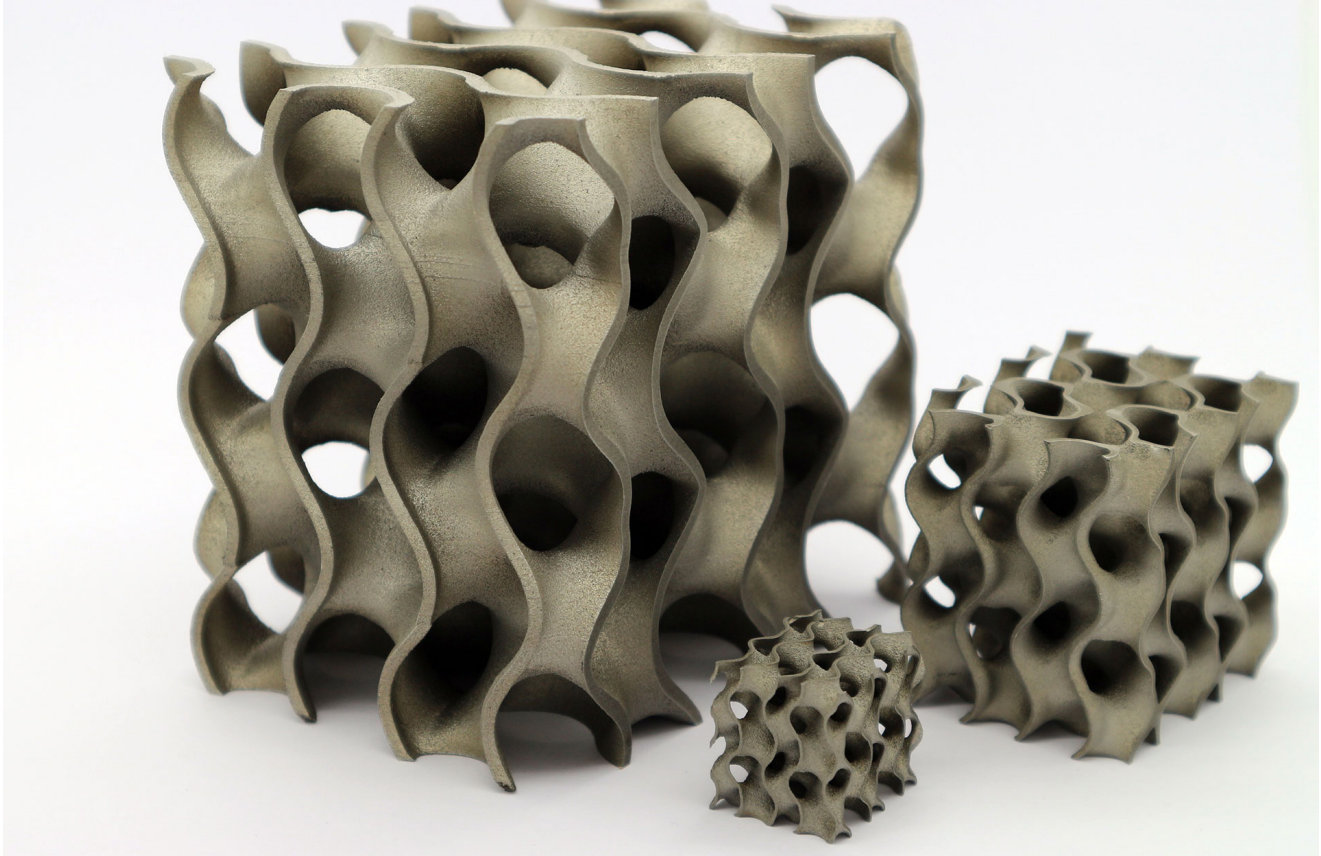
With the S4P solutions, August Friedberg GmbH achieved higher transparency and productivity in production and a more reliable data basis for production control. Operating and machine data are captured reliably, utilisation and faults are detected early and manual data-entry effort has been reduced — delivering greater efficiency and on-time delivery performance.

86159 Augsburg, Deutschland

Industry: Research, additive manufacturing

Products: Additive components for industry and research

S4P solutions: 4APS, 4BDE, 4MDE, 4PRO



Initial situation

For additive manufacturing at Fraunhofer IGCV, end-to-end digital order handling and data acquisition of the production processes were required. The goal was complete traceability of AM orders, powder batches and machine and manufacturing data as a complement to the existing SAP ERP, in which only purchase orders, delivery notes and invoices are captured for customer orders.

Challenge

The complex process chains of additive manufacturing and the requirements for reproducibility and documentation demanded end-to-end integration of order, raw material, operating and machine data. Without integrated digital control, the transparency and controllability of AM production remained limited.

Solution

With the software4production solutions, end-to-end traceability for AM orders and the powder was implemented. Shop-floor and machine data acquisition and warehouse management – from goods receipt to shipping of parts – interlock seamlessly. Modules deployed: 4APS – Advanced Planning and Scheduling for graphical fine planning; 4BDE – shop-floor data collection; 4MDE – machine data acquisition via MQTT to all RP systems; 4PRO – warehouse and batch management, goods receipt and picking.

Results and benefits

With the software4production solutions, Fraunhofer IGCV achieves end-to-end digital control and transparency in additive manufacturing. Orders, machines and manufacturing data are captured and controllable in real time – enabling efficient and traceable production.

89081 Ulm, Deutschland

Industry: Battery, energy, hydrogen, electronics, automotive, research

Products: Battery cells, fuel cells, electrolyzers, solar technology, hydrogen and energy storage technologies

S4P solutions: 4AVO, 4BDE, 4MDE, 4PRO



Initial situation

ZSW required end-to-end and transparent control of its research and production processes for battery cells. The goal was reliable planning and complete acquisition of operating data as a complement to the existing ERP system AP P2Plus.

Challenge

Complex research and manufacturing processes for battery cells, a lack of transparency over current order and machine data and manual, time-consuming data acquisition in production required end-to-end production control based on real-time data.

Solution

To optimise its processes, ZSW uses the solutions from software4production: 4AVO for work preparation and order management, 4BDE for real-time shop-floor data collection, 4MDE for real-time machine data acquisition and 4PRO for warehouse management with serial and batch numbers, goods receipt, picking and transport.

Results and benefits

ZSW benefits from transparent, end-to-end control of manufacturing, a real-time overview of machine and order data, reduced manual data acquisition effort and a significantly improved planning reliability of its research and production processes.

31551 Belišće, Kroatien

Industry: Mechanical engineering, Anlagenbau, Gummiindustrie, Reifenindustrie, Pressenbau, Metallverarbeitung

Products: Gummi- und Reifenmaschinen, Pressen, Mischer, Extruder und Anlagen für die gummiverarbeitende Industrie

S4P solutions: 4BDE



Initial situation

Manufacturing at Harburg Freudenberger Belišće d.o.o., with around 650 employees, is characterised by complex processes and demanding quality requirements in mechanical and plant engineering for the rubber and tyre industry. Rubber extruders, mixers, presses and tyre machinery are produced in elaborate manufacturing processes. With the ERP system SAP ERP as the central data source, production and shop-floor data collection were to be more closely integrated and transparency in manufacturing increased. Manual feedback routes between the shop floor and ERP led to information delays and made a reliable evaluation of manufacturing progress and capacities difficult.

Challenge

In mechanical and plant engineering for the rubber and tyre industry, complex manufacturing orders with high quality standards must be controlled and documented reliably. Manual data records did not provide a timely view of manufacturing progress and made well-founded decision-making on the shop floor difficult. The goal was to capture operating data directly at workstations, increase transparency over order status and capacity utilisation and create a reliable data basis for production control in conjunction with SAP ERP.

Solution

To optimise its manufacturing processes, Harburg Freudenberger Belišće d.o.o. relies on the solutions from S4P. Through integration with the ERP system SAP ERP, order, production and operating data are used end-to-end to enable reliable shop-floor data collection and transparent production control. Module in use: 4BDE — shop-floor data collection for transparent and current production control. Operators report order times, good and scrap quantities and fault reasons directly at the shop-floor terminal; data is exchanged bidirectionally with SAP ERP. Shift supervisors and manufacturing management receive a real-time overview of order progress and capacity utilisation.

Results and benefits

With the S4P solutions, Harburg Freudenberger Belišće d.o.o. achieved greater transparency in manufacturing. Production data is captured in real time, processes are better understood and deadlines are met more reliably — delivering higher on-time delivery performance and efficiency. Manual records have been largely replaced, data quality in SAP ERP has improved and a solid foundation for evaluations and continuous improvement of manufacturing processes in mechanical and plant engineering has been established.

73432 Aalen-Ebnat, Deutschland

Industry: Plastics processing, Schaumstoffe, Holzverarbeitung, Aerospace, Dämmstoffe

Products: Leichtschaumplatten, Sandwichplatten, technische Schaumstoffe, Verpackungen, Dämm- und Leichtbaukom...

S4P solutions: 4APS, 4BDE, 4MDE



Initial situation

Manufacturing at Gaugler & Lutz GmbH & Co. KG is characterised by variant-rich products and demanding quality requirements in lightweight and sandwich construction. The ERP system Sage 100 covers commercial and order-related processes. Standard tools were insufficient for realistic planning and transparent control of around 150 employees across the various processing lines. Lightweight foam boards, sandwich panels and technical foams for aerospace and insulation applications require precise coordination of cutting, bonding and finishing processes.

Challenge

Variant-rich orders, fluctuating workloads and high quality requirements across different sectors placed high demands on production planning. Without end-to-end fine planning and shop-floor data collection, bottlenecks and scheduling conflicts were difficult to identify and manage early. Short-notice order changes or machine faults could not be incorporated into planning quickly enough, leading to delays and unnecessary setup effort. In addition, a reliable data basis for utilisation evaluations and the assessment of on-time delivery and machine efficiency was missing.

Solution

To optimise production planning, Gaugler & Lutz GmbH & Co. KG relies on the solutions from S4P. Through integration with the ERP system Sage 100, order, production and feedback data are used end-to-end to enable realistic and transparent production control. Modules in use: 4APS — graphical fine planning with bottleneck detection and sequence optimisation; 4BDE — shop-floor data collection with order, quantity and time feedback directly at the shop-floor terminal; 4MDE — automatic machine data collection and OEE evaluation. Planners and shift supervisors always have a current overview of capacity utilisation and order progress.

Results and benefits

With the S4P solutions, Gaugler & Lutz GmbH & Co. KG achieves greater planning reliability and transparency in manufacturing. Bottlenecks are detected early, capacities are better utilised and deadlines are met more reliably — delivering higher on-time delivery performance and efficiency. Machine KPIs such as OEE, availability and performance are available for evaluations and provide the foundation for data-driven optimisation of processing operations in lightweight construction manufacturing.

3860 Heidenreichstein, Österreich

Industry: Mechanical engineering, Anlagenbau, Werkzeugbau, Automotive, Metallverarbeitung

Products: Präzisionsteile, Baugruppen, Brauereianlagen, Werkzeugbau- und Automotive-Komponenten

S4P solutions: 4AVO, 4APS, 4BDE



Initial situation

Manufacturing at Bühler Heidenreichstein MKE GmbH is characterised by complex workflows, high variant diversity and demanding manufacturing conditions in metalworking and toolmaking. With around 220 employees, precision parts, assemblies and automotive components are produced. In this environment, there is a growing need for continuous real-time data from production to assess states, progress and deviations quickly and reliably. The ERP system Sage Farmac covers the commercial core processes; a complementary solution for work preparation, fine planning and shop-floor data collection was required.

Challenge

Without sufficient transparency over production and machine data, it becomes considerably more difficult to monitor manufacturing processes reliably, detect faults early and make well-founded decisions for fine planning and production control. In a complex production environment with diverse customer projects and different lot sizes, this required a continuous digital connection between work preparation, planning and shop-floor feedback. Manual data entry was error-prone, time-delayed and made reliable capacity planning as well as the analysis of process deviations difficult.

Solution

S4P provided solutions for work preparation, fine planning and structured capture of production data to improve transparency across manufacturing processes. This creates a reliable data basis for production control, the analysis of process deviations and continuous shop-floor improvement. Modules in use: 4AVO — work preparation and structuring of manufacturing orders; 4APS — advanced fine planning with bottleneck detection and a graphical scheduling board; 4BDE — shop-floor data collection for order, quantity and time feedback. All modules are connected to the ERP system Sage Farmac and support planning, control and feedback of relevant production data within a continuous digital environment.

Results and benefits

Greater availability and usability of production data enable processes to be planned, controlled and evaluated with higher transparency. This supports faster responses to deviations, improves the data basis for fine planning and creates an important foundation for more efficient workflows, greater process reliability and data-driven production improvement at the Heidenreichstein site.

28816 Stuhr, Deutschland

Industry: Mechanical engineering, Anlagenbau, Metallverarbeitung, Aerospace, Sondermaschinenbau

Products: Sondermaschinen, Automatisierungslösungen, Montageanlagen, Vorrichtungen und Metallbaugruppen

S4P solutions: 4APS, 4BDE



Initial situation

UTS Maschinenbau GmbH & Co. KG, with around 40 employees, required end-to-end production planning and shop-floor data collection to control its project-based manufacturing of special-purpose machines and automation solutions transparently and on schedule. The existing ams.erp environment was to be supplemented with real-time fine planning and data collection capability. In special-purpose machine manufacturing with small lot sizes and customer-specific projects, a precise capacity overview is decisive for meeting delivery dates reliably and deploying resources optimally.

Challenge

The manufacture of special-purpose machines and automation solutions demands high planning accuracy and gap-free transparency. The goal was to utilise capacities optimally, capture manufacturing progress in real time and sustainably improve on-time delivery to customers. Without graphical fine planning and digital shop-floor data collection, bottlenecks and scheduling risks were only identifiable with significant manual effort. The solution had to integrate seamlessly into ams.erp without requiring extensive modifications to the ERP core installation.

Solution

The solution deployed is ams.leitstand powered by 4APS for digital production planning in real time and 4BDE for end-to-end shop-floor data collection. The ams.leitstand provides a graphical scheduling board with drag-and-drop functionality and enables resource-optimised sequence planning for all manufacturing orders. 4BDE captures order feedback, times and quantities directly at the terminal on the shop floor. Both solutions integrate seamlessly into the existing ams.erp environment so that order and master data are exchanged bidirectionally.

Results and benefits

With the S4P solutions, UTS Maschinenbau GmbH & Co. KG achieves improved capacity utilisation, gap-free capture of production data and higher on-time delivery in special-purpose machine manufacturing. Planning-reliable order confirmations to customers become possible, bottlenecks are detected early and manual data-entry effort is significantly reduced. The end-to-end data basis from planning and feedback creates transparency for manufacturing management and scheduling.

67227 Frankenthal, Deutschland

Industry: Turbomaschinen, Mechanical engineering, Anlagenbau, Service, Montage, Metallverarbeitung

Products: Turbokompressoren, Dampfturbinen, Turbogebläse, Service- und Ersatzteilkomponenten für Turbomaschinen

SAP solutions: 4BDE



Initial situation

Manufacturing at Howden Turbo GmbH is characterised by complex processes and demanding quality requirements in turbomachinery and plant engineering. With around 580 employees, turbocompressors, steam turbines and turbo blowers are manufactured. With the ERP system SAP ERP as the central data source, production and shop-floor data collection were to be more closely integrated and transparency in manufacturing increased. Manual feedback routes between the shop floor and ERP led to information delays and increased entry effort.

Challenge

Without continuous, current capture of production data, actual manufacturing progress and possible delays were difficult to track in a timely manner. The goal was to capture operating data directly in the manufacturing process and evaluate it transparently. In the complex turbomachinery environment with long lead times and high quality standards, reliable feedback from production was decisive for meeting delivery commitments and reacting early to deviations. In addition, the solution had to cover the interface to SAP ERP and the existing APS system seamlessly.

Solution

To optimise its manufacturing processes, Howden Turbo GmbH relies on FELIOS|BDE powered by 4BDE, connected to the leading SAP ERP system as well as the FELIOS|APS planning system. Order, production and operating data are thereby used end-to-end to enable transparent production control and pre- and post-calculation. Feedback is captured directly at the shop-floor terminal; data flows automatically back into SAP and is available for evaluations, deadline monitoring and cost analysis. Shift supervisors and manufacturing management always have a current overview of order progress and capacity utilisation.

Results and benefits

With the flexible shop-floor data collection solution, Howden Turbo GmbH achieved higher transparency in manufacturing. Production data is captured in real time, processes are better understood and deadlines are met more reliably — delivering greater on-time delivery performance and efficiency. Manual records have been largely replaced, data quality for SAP feedback improved and a solid basis for the analysis of lead times and production costs established.

77933 Lahr, Deutschland

Industry: Werkzeugbau, Präzisionswerkzeuge, Metallverarbeitung, Machining

Products: Präzisionswerkzeuge, Fräs- und Verzahnungswerkzeuge, Sonderwerkzeuge und Komponenten für die Zerspanu...

S4P solutions: 4BDE, 4MDE



Initial situation

LMT Kieninger GmbH & Co. KG, with around 500 employees, required end-to-end and transparent capture of operating and machine data in its tool manufacturing. The goal was a reliable real-time data basis for order and machine status integrated with the existing ERP system SAP ERP. As a manufacturer of high-precision milling and gear cutting tools, quality and on-time delivery are central priorities, making reliable digital feedback from manufacturing indispensable.

Challenge

As a manufacturer of high-precision tools with complex manufacturing processes, the company required reliable feedback from production. Manual data capture was error-prone and did not deliver timely information on current manufacturing progress. Machine states, downtime and utilisation KPIs were not available in a structured, evaluable form, which made analysis of bottlenecks and targeted optimisation of machine utilisation difficult. Seamless integration of shop-floor data into SAP ERP was mandatory to avoid duplicate entries and to create a consistent data basis.

Solution

With shop-floor data collection 4BDE and machine data collection 4MDE from S4P, LMT Kieninger GmbH & Co. KG captures order, operating and machine data directly at the point of origin. Both solutions are connected to the existing ERP system SAP ERP. At the shop-floor terminal, operators report order times, good and scrap quantities; 4MDE automatically captures machine states, downtime reasons and performance KPIs for OEE calculation. Shift supervisors and manufacturing management receive a current overview of utilisation and production progress via a management dashboard.

Results and benefits

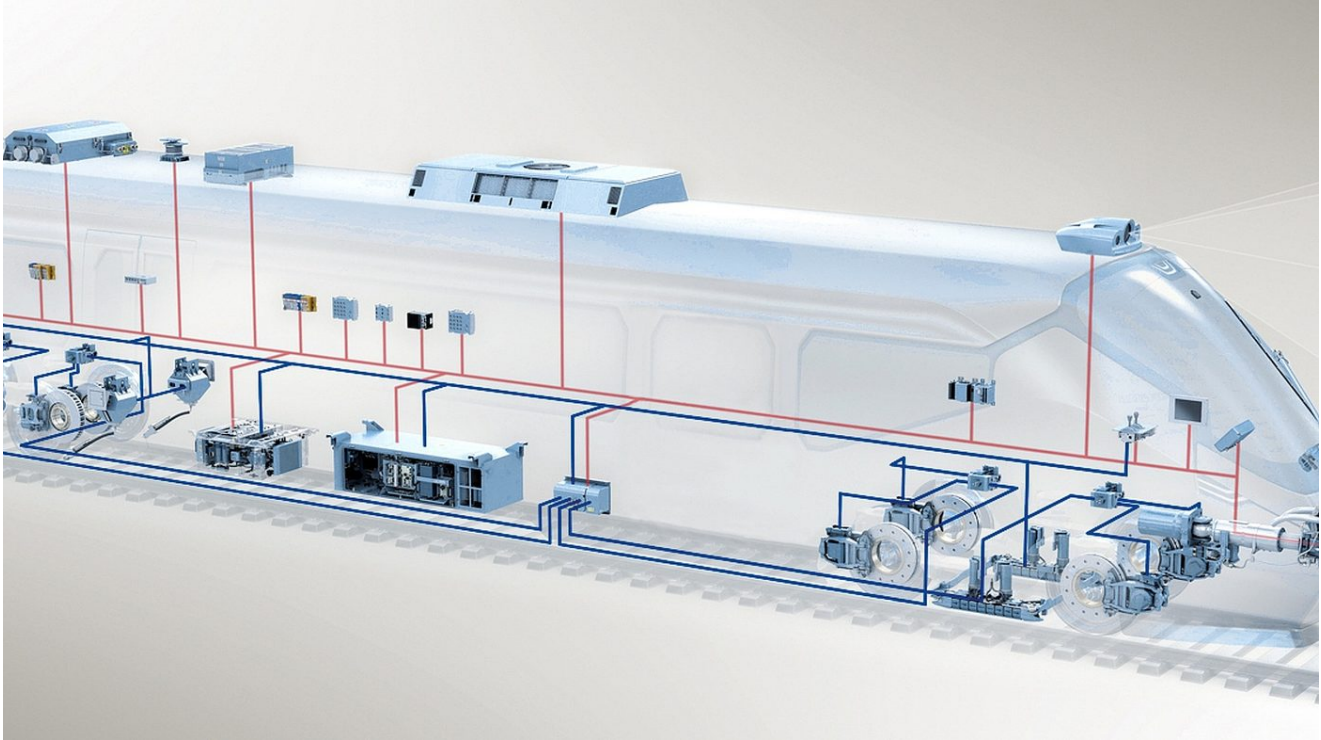
Manufacturing now has a transparent and current data basis. Order and machine status are traceable at any time, data quality has improved and manual entry effort has been significantly reduced. OEE KPIs are available for evaluations and targeted improvement measures, faults are detected early and the foundation for data-driven optimisation of tool manufacturing has been laid.

40599 Düsseldorf, Deutschland

Industry: Elektrotechnik, Schienenverkehr, Antriebstechnik, Electronics, Mobilität

Products: Elektrische Traktionsausrüstung, Stromabnehmer, Bordnetze, Türsteuerungen und Ladeinfrastruktur für Bus un...

S4P solutions: 4BDE, 4MDE



Initial situation

Kiepe Electric GmbH, with around 700 employees, required end-to-end and transparent capture of operating and machine data from test equipment in its manufacturing and assembly of electrical traction technology. The goal was a reliable real-time data basis for order and machine status as a complement to the existing ERP system PSIPenta. The production of electrical traction equipment, current collectors and charging infrastructure for bus and rail requires precise feedback from manufacturing and seamless quality documentation.

Challenge

As a manufacturer of complex electrical drive systems with high product variety, the company required reliable feedback from production. Manual data capture was error-prone and did not deliver current data on manufacturing progress. In particular, test processes lacked automated capture of test results and machine states. Integration of shop-floor data into PSIPenta had to be bidirectional and free of manual intervention in order to maintain a consistent data basis for production control and evaluations.

Solution

With shop-floor data collection 4BDE and machine data collection 4MDE from S4P, Kiepe Electric GmbH captures order, operating and machine data directly at the point of origin. Both solutions are connected to the existing ERP system PSIPenta. Test equipment is connected automatically; test results and machine states are captured in real time and prepared for OEE evaluations. At the shop-floor terminal, operators and test technicians report order times and results; data flows automatically back into PSIPenta.

Results and benefits

Manufacturing now has a transparent and current data basis. Order and machine status are traceable at any time, data quality has improved and manual entry effort has been significantly reduced. Test results and machine KPIs are available in real time for evaluations, which sustainably supports quality assurance in the production of electrical traction technology and lays the foundation for continuous process improvement.

42499 Hückeswagen, Deutschland

Industry: Metal processing, Stahlhandel, Anarbeitung, ERP, Sage 100

Products: Stahlprodukte, Zuschnitte, Sägeabschnitte, Brennteile, Anarbeitung und Stahlhandelsleistungen

S4P solutions: 4APS, 4BDE



Initial situation

Manufacturing at Goldammer Wasserfuhr Stahl GmbH, with around 65 employees, is characterised by variant-rich processes and demanding quality requirements in metalworking and steel trading. Cut-to-length pieces, saw cuts, flame-cut parts and processing services are produced in customer-specific order manufacturing. With the ERP system Sage 100 as the central data source, planning and shop-floor data collection were to be more closely integrated and transparency in production increased. Fluctuating order volumes and tight delivery deadlines required capable digital fine planning and reliable shop-floor feedback.

Challenge

In steel trading and processing, variant-rich orders, fluctuating workloads and tight scheduling windows coincide. Without end-to-end fine planning and shop-floor data collection, capacity bottlenecks and scheduling risks were only identifiable with significant manual effort. The goal was to map order and production data in real time, to automate feedback from production to the ERP system Sage 100 and to create a reliable basis for planning-secure order confirmations to customers.

Solution

To optimise its manufacturing processes, Goldammer Wasserfuhr Stahl GmbH relies on S4P solutions. Through integration with the ERP system Sage 100, order, production and operating data are used end-to-end to enable realistic and transparent fine planning as well as reliable shop-floor data collection. Modules in use: 4APS — Advanced Planning and Scheduling for graphical fine planning and capacity management, and 4BDE — shop-floor data collection for transparent and current production control. All modules are bidirectionally connected to Sage 100.

Results and benefits

With the S4P solutions, Goldammer Wasserfuhr Stahl GmbH achieved higher planning reliability and transparency in production. Bottlenecks are detected early, capacities are better utilised and deadlines are met more reliably — delivering greater on-time delivery performance and efficiency. Planning-reliable order confirmations to customers are possible, manual feedback effort has been reduced and a solid data basis for evaluations and process improvements in metalworking and steel trading has been established.

61130 Nidderau, Deutschland

Industry: Mechanical engineering, Anlagenbau, Armaturen, Metallverarbeitung

Products: Industriearmaturen, Kugelhähne, Absperr- und Regelarmaturen, Komponenten für Anlagen- und Verfahrenstec...

S4P solutions: 4BDE



Initial situation

Perrin GmbH, with around 120 employees, required seamless and transparent capture of production data in its manufacturing of industrial valves and control fittings. The goal was a reliable real-time overview of ongoing production as a complement to the existing ERP system PSIPenta. Ball valves, shut-off and control valves for process and plant engineering must be manufactured precisely and documented reliably — an environment in which digital shop-floor data creates immediate value for quality and on-time delivery.

Challenge

The demanding manufacture of measurement and control technology required end-to-end capture of production data. Without digital shop-floor data collection, current KPIs on orders, machines and manufacturing times were difficult to obtain in real time. Manual feedback provided delayed and sometimes incomplete information, which made well-founded shop-floor control difficult. Integration with PSIPenta had to be bidirectional to avoid duplicate data entry and to create a consistent data basis for order control and post-calculation.

Solution

With FELIOS|BDE powered by 4BDE, end-to-end digital capture of production data was realised. The solution integrates seamlessly into the existing PSIPenta ERP environment and delivers current KPIs directly from manufacturing. Operators report order times, good and scrap quantities as well as fault reasons at the shop-floor terminal; data flows automatically back into PSIPenta and is available for evaluations and post-calculation. Shift supervisors and manufacturing management receive a real-time overview of order progress and capacity status.

Results and benefits

With FELIOS|BDE powered by 4BDE, Perrin GmbH achieves a reliable real-time overview of ongoing production. Operating data is captured transparently, KPIs are always up to date and production control is sustainably improved. Manual feedback effort has been reduced, the quality of production data in PSIPenta improved and a solid basis for evaluations, deadline monitoring and continuous process improvement established.

90587 Obermichelbach, Deutschland

Industry: Mechanical engineering, Metallverarbeitung, Präzisionsteile, Anlagenbau

Products: Präzisionsrollenlager, Sonderlager, Führungsrollen, Metallkomponenten und Maschinenbau-Präzisionsteile

S4P solutions: 4AVO, 4APS, 4BDE



Initial situation

The manufacture of precision roller bearings at INTERPRECISE Donath GmbH, with around 100 employees, demands exact planning and coordination of sophisticated machining steps. With the ERP system Alphaplan and its connection to S4P solutions, work preparation, fine planning and shop-floor data collection are integrated end-to-end. Guide rollers, special bearings and metal components with tight tolerances require precise coordination of turning, grinding and assembly processes as well as reliable documentation of all manufacturing steps.

Challenge

Complex manufacturing processes with high accuracy requirements led to significant planning effort. A continuous link between work preparation, production planning and shop-floor feedback was missing. Bottlenecks and capacity utilisation were difficult to identify in real time, which made reliable delivery commitments to customers challenging. Manual maintenance of routings and planning data was time-consuming and error-prone; end-to-end digitalisation from order receipt to manufacturing feedback was therefore urgently needed.

Solution

Together with S4P, the ERP system Alphaplan was extended with the following modules: 4AVO for work preparation, 4APS for digital production planning in real time and 4BDE for shop-floor data collection. Work preparation provides structured preparation of manufacturing orders; the APS system enables graphical fine planning with bottleneck detection; and the BDE terminals capture order times, good and scrap quantities directly on the shop floor. All modules are bidirectionally connected to Alphaplan so that order and master data are synchronised automatically.

Results and benefits

Through end-to-end digitalisation of planning and feedback, INTERPRECISE Donath GmbH has significantly increased transparency across the entire manufacturing process. Realistic fine planning improves on-time delivery, while real-time operating data enables rapid response to deviations. Planning-reliable order confirmations to customers are now possible, manual entry effort has been reduced and a solid data basis for post-calculation and continuous improvement of precision manufacturing has been established.

86159 Augsburg, Deutschland

Industry: Forschung, Learning factory, Produktionstechnik, Industrie 4.0, Weiterbildung

Products: Lernfabrik-Module, Demonstratoren, Forschungsanlagen und Schulungsumgebungen für Digitalisierung und Ind...

S4P solutions: 4AVO, 4APS, 4BDE



Initial situation

The learning factory at Fraunhofer Institute for Casting, Composite and Processing Technology IGCV maps real production workflows to research and demonstrate methods of digitalisation and networked manufacturing. Based on SAP ERP, an end-to-end planning and data acquisition solution was required that supports research and teaching in a realistic setting. With around 100 employees and varying research and teaching scenarios, the institute has high demands for flexibility in production software and for suitability in training and demonstration contexts.

Challenge

Variant-rich orders, changing scenarios and the ambition to make digitalisation tangible placed high demands on planning and data acquisition. An integrated solution was required that seamlessly connects work preparation, fine planning and shop-floor data collection while embedding SAP ERP as the leading system. For training purposes it was important that the solution allows different planning scenarios to be simulated and typical Industry 4.0 questions — such as bottleneck management, OEE evaluation and sequence optimisation — to be demonstrated in a practical way.

Solution

To support the learning factory, Fraunhofer IGCV relies on S4P solutions. Through integration with SAP ERP, order, planning and feedback data are used end-to-end — from work preparation through fine planning to shop-floor data collection. Modules in use: 4AVO for work preparation and order structuring, 4APS for graphical fine planning with simulation scenarios and a scheduling board, and 4BDE for shop-floor data collection at terminals with order feedback and KPI evaluation. The solution enables different manufacturing scenarios to be mapped live and prepared for didactic use.

Results and benefits

With the S4P solutions, Fraunhofer IGCV can map and convey digitalisation in production in a realistic and practical way. End-to-end data from planning to feedback creates transparency and makes the learning factory a hands-on platform for research and teaching. Planning scenarios can be simulated, KPIs evaluated in real time and typical shop-floor challenges demonstrated. The solution supports the institute in giving companies practical insights into the capabilities of modern MES and APS solutions.

30519 Hannover, Deutschland

Industry: Mechanical engineering, Anlagenbau, Extrusion, Gummiindustrie, Montage

Products: Extrusionsanlagen, Gummiextruder, Kabelmaschinen, Walzwerke und Anlagen für Gummi- und Kunststoffvera...

S4P solutions: 4BDE



Initial situation

In mechanical engineering at TROESTER GmbH & Co. KG, with around 700 employees, complex manufacturing orders, high quality requirements and the need for greater transparency in production converge. Extrusion plants, rubber extruders, cable machines and rolling mills are produced in demanding assembly and manufacturing processes. Operating data from manufacturing was to be reliably captured and integrated with the ERP system SAP to make order and operating data transparent in real time, reduce manual capture effort and evaluate manufacturing utilisation reliably. Of particular importance is the operator guidance system for complex bill-of-materials bookings in assembly.

Challenge

In mechanical engineering with complex bills of materials and long lead times, gapless shop-floor data collection was essential to reliably document manufacturing progress, times and material feedback. Without a digital BDE solution, manual feedback was error-prone and delayed. A particular challenge: assembly processes require an operator guidance system that controls the booking of complex BOMs and their components, thereby minimising assembly errors. Integration with SAP ERP had to be bidirectional and audit-proof.

Solution

To optimise manufacturing processes, TROESTER GmbH & Co. KG relies on FELIOS|BDE powered by 4BDE. Integrated with SAP ERP, a new operator guidance system is deployed specifically for assembly to handle the booking of complex bills of materials and their components. This enables end-to-end capture and evaluation of order and operating data for transparent and reliable production control.

Results and benefits

With FELIOS|BDE powered by 4BDE, TROESTER GmbH & Co. KG achieved higher transparency in manufacturing and a reliable data basis for production control. Operating data is captured reliably, utilisation and disruptions are identified early and manual capture effort was reduced – for greater efficiency and on-time delivery. The operator guidance system for complex BOM bookings reduces assembly errors and sustainably improves the quality of feedback data in SAP ERP.

86674 Baar, Deutschland

Industry: Metallverarbeitung, Schalldämpfer, Plant engineering, TopM ERP, digitale Arbeitsvorbereitung

Products: Industrieschalldämpfer, Abgasschalldämpfer, Schallschutzsysteme und Anlagenbau-Komponenten

S4P solutions: 4AVO, 4APS, 4BDE



Initial situation

In metalworking, varying orders, high quality requirements and the desire for greater transparency in manufacturing converge. Work preparation, production planning and shop-floor data collection were to be more closely integrated with the ERP system TopM to efficiently prepare orders, reliably plan capacities and make operating data transparent in real time.

Challenge

In the manufacturing of industrial silencers with high variant diversity and individual customer requirements, a continuous link between work preparation, fine planning and shop-floor data collection was required. Without this integration, manual transfer effort, information gaps and scheduling risks emerged. The goal was to closely integrate planning and feedback processes with the ERP system TopM, map capacities transparently and capture operating data directly from manufacturing.

Solution

To optimise manufacturing processes, Furtak & Salvenmoser GmbH relies on solutions from S4P. Through integration with the ERP system TopM, work preparation, production planning and shop-floor data collection are mapped end-to-end to enable transparent and reliable control of manufacturing. Modules deployed: 4AVO – digital work preparation for efficient planning and preparation of manufacturing orders; 4APS – production planning for transparent scheduling of manufacturing orders and capacities; 4BDE – shop-floor data collection for transparent capture and evaluation of order and operating data.

Results and benefits

With the solutions from S4P, Furtak & Salvenmoser GmbH achieved higher transparency in manufacturing and a reliable data basis for production control. Orders are prepared efficiently, capacities planned optimally and operating data captured reliably – for greater efficiency and on-time delivery. The end-to-end integration of work preparation, planning and feedback into TopM eliminates information gaps, reduces manual effort and creates a solid foundation for planning-reliable order confirmations in industrial silencer manufacturing.

51597 Morsbach, Deutschland

Industry: Metal processing, Beschlagtechnik, Glasbeschläge, Bauzulieferer

Products: Glasbeschläge, Geländersysteme, Duschenbeschläge, Vordachsysteme und Verbindungstechnik für Glasbau

S4P solutions: 4APS, 4BDE



Initial situation

Pauli + Sohn GmbH, with around 150 employees, required optimised fine planning and transparent shop-floor data collection in its manufacturing of fastener technology for glazing applications. The goal was end-to-end and traceable production control based on the existing ERP system SAP ERP. Glass fittings, railing systems and shower fittings are produced in high variant diversity, requiring precise coordination of machining, assembly and inspection processes.

Challenge

As a manufacturer of fastener technology with high variant diversity, the company required reliable planning and feedback from manufacturing. Manual processes were time-consuming and did not deliver timely data on current production status. Bottlenecks and capacity utilisation were difficult to anticipate without graphical fine planning. The integration of both solutions into SAP ERP had to be seamless to avoid duplicate data entry and ensure a consistent data basis.

Solution

With fine planning solution 4APS and shop-floor data collection 4BDE from S4P, Pauli + Sohn GmbH controls its manufacturing end-to-end. Both solutions are connected to the existing ERP system SAP ERP. The graphical scheduling board of 4APS gives dispatchers a current overview of capacities, dates and open orders at all times. 4BDE captures order times, good and scrap quantities directly at the shop-floor terminal and returns the data automatically to SAP. Shift supervisors and manufacturing management receive reliable real-time insight into production status.

Results and benefits

Manufacturing now has a transparent and current data basis. Fine planning and order status are traceable at any time, planning quality has improved and manual effort was significantly reduced. Capacities are optimally utilised, bottlenecks identified early and delivery dates met more reliably. The foundation for planning-reliable order confirmations and data-driven improvement of glass fitting manufacturing has been established.

89165 Dietenheim, Deutschland

Industry: Metallverarbeitung, Kaltumformung, Werkzeugbau, Automotive, Verbindungstechnik

Products: Massivumformteile, Kaltfließpressteile, Verbindungselemente, Automotive-Komponenten und Werkzeugbaule...

S4P solutions: 4AVO, 4APS, 4BDE



Initial situation

Winning CoFo – Räuchle GmbH, with around 200 employees, required end-to-end and transparent control of its manufacturing of solid formed parts and cold-formed parts. The goal was reliable planning and gapless capture of operating and machine data as a complement to the existing ERP system PSIPenta. Automotive components and fasteners with high quality requirements demand precise control of forming, heat treatment and inspection processes.

Challenge

Complex manufacturing processes with high schedule pressure and strict quality standards required end-to-end digitalisation of the shop floor. Lack of transparency over current machine and order states as well as manual, time-consuming data capture made reliable control and evaluation of manufacturing difficult. Without digital fine planning, capacity bottlenecks were difficult to identify at an early stage, placing a burden on on-time delivery to automotive customers.

Solution

To optimise manufacturing processes, Winning CoFo – Räuchle GmbH relies on solutions from software4production: 4APS for Advanced Planning and Scheduling with graphical fine planning and bottleneck management, 4AVO for work preparation and order management, and 4BDE for real-time operating and machine data collection. All modules are bidirectionally connected to PSIPenta, so that order and master data are automatically synchronised and feedback data is returned. Shift supervisors and dispatchers receive an up-to-date overview of order progress and machine utilisation.

Results and benefits

Winning CoFo – Räuchle GmbH benefits from transparent and reliable fine planning of manufacturing and a real-time overview of machine and order data. Manual capture effort was reduced, on-time delivery improved and supply capability to automotive customers increased. Key performance indicators for capacity utilisation and manufacturing progress are available at all times for evaluations and well-founded decisions.

48268 Greven, Deutschland

Industry: Plastics processing, Verpackung, Spritzguss, Industriekomponenten

Products: Kunststoffkomponenten, technische Spritzgussteile, Schlauch- und Drucklufttechnik, Betriebsbedarf

S4P solutions: 4AVO, 4APS, 4BDE



Initial situation

Carl Nolte Technik GmbH develops and manufactures products for hose and pneumatic technology as well as operating supplies with around 50 employees. Plastic components, technical injection moulded parts and pneumatic accessories are produced in variant-rich order manufacturing. In plastics processing, reliable production data and transparent manufacturing control are decisive for on-time delivery, quality and operational efficiency. Work preparation, fine planning and shop-floor feedback were to be integrated into a seamless end-to-end solution.

Challenge

As a manufacturer of hose and pneumatic technology with variant-rich plastics production and small to medium batch sizes, close interlocking of work preparation, planning and shop-floor feedback was essential. Manual interfaces between work preparation, planning and manufacturing led to information gaps and scheduling risks. The goal was end-to-end digitalisation that incorporates Alphaplan as the leading ERP system and covers all relevant production processes without gaps.

Solution

Carl Nolte Technik GmbH relies on the integrated solutions 4AVO, 4APS and 4BDE from S4P, fully integrated with the ERP system Alphaplan by CVS. This links work preparation, production planning and shop-floor data collection end-to-end, so that the entire production is controlled and transparently mapped by S4P from a single source. Orders, operations, capacities and feedback interlock seamlessly, creating a reliable basis for efficient, plannable and responsive manufacturing processes.

Results and benefits

Through the integrated deployment of 4AVO, 4APS and 4BDE in conjunction with Alphaplan, Carl Nolte Technik benefits from end-to-end and transparent control of the entire production. Coordination between work preparation, planning and manufacturing improved significantly, manual interfaces were reduced and data quality sustainably increased. The company gains greater planning reliability, higher on-time delivery rates and more efficient production control – from work preparation through to shop-floor feedback.

86343 Königsbrunn, Deutschland

Industry: Mechanical engineering, Anlagenbau, Reinigungstechnik, Metallverarbeitung

Products: Teilereinigungsanlagen, industrielle Reinigungsmaschinen, Lösemittel- und wässrige Reinigungssysteme

S4P solutions: 4BDE



Initial situation

Pero AG, with around 200 employees, required timely and complete capture of its production data to transparently control the order-related manufacturing of its cleaning systems and reliably meet delivery deadlines. The existing Individual ERP environment was to be extended with a capable shop-floor data collection system. Parts cleaning systems, solvent and aqueous cleaning systems are manufactured in project-based single-unit production – an environment where manufacturing progress and deadline control are particularly important.

Challenge

In plant engineering, manufacturing orders, feedback and machine times must be recorded precisely. Manual records were error-prone and did not provide a current view of manufacturing progress. The goal was continuous, digital capture of operating data directly on the shop floor, seamlessly integrated into the existing Individual ERP environment. Especially for complex plant projects with long lead times, reliable feedback from manufacturing was essential to honour delivery commitments.

Solution

With 4BDE, Pero AG gains end-to-end shop-floor data collection that captures order, time and quantity feedback directly at the workstation. The captured data is transferred seamlessly to the existing Individual ERP environment. Operators book times, good and scrap quantities as well as fault reasons at the shop-floor terminal; data flows automatically back into the ERP. Shift supervisors and manufacturing management receive an up-to-date overview of order progress and capacity status.

Results and benefits

With the S4P solution, Pero AG achieves complete capture of production data, greater transparency in the manufacturing process and improved on-time delivery in the production of its cleaning systems. Manual feedback effort was reduced, data quality in the Individual ERP improved and a solid data basis for evaluations and continuous process optimisation in plant engineering was established. Manufacturing progress and capacity status are transparently visible to shift supervisors and management at all times.

8940 Liezen, Österreich

Industry: Mechanical engineering, Gießerei, Metallverarbeitung, Automotive, Eisenbahn, Energie

Products: Gussteile, Schweißbaugruppen, Maschinenbaukomponenten, Einzelteile und Baugruppen für Industrieanlagen

S4P solutions: 4BDE



Initial situation

Maschinenfabrik Liezen und Gießerei GesmbH, with around 700 employees, required end-to-end and transparent capture of operating data in its production of individual parts and assemblies for the automotive, rail and energy sectors. The goal was a reliable, real-time data basis for order status as a complement to the existing ERP system SAP ERP. Cast parts, welded assemblies and mechanical engineering components demand precise production control and reliable feedback from the shop floor.

Challenge

As a manufacturer of complex individual parts and assemblies for multiple industries, the company required reliable feedback from manufacturing. Manual data entry was error-prone and did not deliver timely information on current production progress. Order status and capacity utilisation were only traceable with considerable effort, placing a burden on shop-floor control and on-time delivery to customers. Seamless integration with SAP ERP was essential to avoid duplicate data entry.

Solution

With 4BDE from S4P, Maschinenfabrik Liezen und Gießerei GesmbH captures order and operating data directly at the point of origin. The solution is bidirectionally connected to the existing ERP system SAP ERP. Operators book order times, good and scrap quantities as well as fault reasons at the shop-floor terminal; data flows automatically back into SAP and is available for evaluations, post-calculation and deadline monitoring. Shift supervisors and manufacturing management receive an up-to-date overview at all times.

Results and benefits

Manufacturing now has a transparent and current data basis. Order status is traceable at any time, data quality in SAP ERP has improved and manual entry effort has been significantly reduced. Capacity utilisation and manufacturing progress are visible in real time, enabling well-founded decisions in shop-floor management and improved on-time delivery to customers.

73035 Göppingen, Deutschland

Industry: Mechanical engineering, Hydrostatische Systeme, Präzisionsmaschinen, Anlagenbau

Products: Hydrostatische Führungen, Spindeln, Lager, Rundtische und Präzisionskomponenten für Werkzeugmaschinen

S4P solutions: 4BDE



Initial situation

Manufacturing at Hyprostatik Schönfeld GmbH, with around 150 employees, is characterised by complex processes and high quality requirements in the production of hydrostatic guides and precision machines. With Unipps as the central ERP data source, the goal was to link production and shop-floor data collection more closely and increase transparency across the factory floor. Hydrostatic spindles, bearings and rotary tables require the highest manufacturing precision and a reliable documentation of all production processes.

Challenge

Without continuous, up-to-date capture of production data, actual manufacturing progress and potential delays were difficult to monitor in a timely manner. The objective was to capture operating data directly in the manufacturing process and evaluate it transparently. Integration with Unipps had to be seamless while also enabling connectivity to the existing APS planning system, so that planning and feedback could be combined in a single, unbroken data chain.

Solution

To optimise its manufacturing processes, Hyprostatik Schönfeld GmbH relies on FELIOS|BDE powered by 4BDE. Through integration with the ERP system Unipps and the FELIOS|APS planning system, order, manufacturing and operating data are used end-to-end to enable reliable shop-floor data collection and transparent production control. Operators report order times and quantities at the shop-floor terminal; data flows automatically back into Unipps. Shift supervisors receive an up-to-date overview of order progress and capacity utilisation.

Results and benefits

With the S4P solution, Hyprostatik Schönfeld GmbH achieved significantly higher transparency in manufacturing. Production data is captured in real time, processes are better understood, and deadlines are met more reliably – resulting in improved on-time delivery and efficiency. Manual feedback effort was reduced, data quality in Unipps improved, and a solid basis for evaluations and continuous process optimisation in precision machine manufacturing was established.

99830 Treffurt, Deutschland

Industry: Hebetechnik, Mechanical engineering, Anlagenbau, Lifttechnik, Metallverarbeitung

Products: Lift- und Hebetechnik, Plattformlifte, Hebebühnen, Sonderhebetechnik und barrierefreie Zugangslösungen

S4P solutions: 4BDE



Initial situation

Manufacturing at HETEK Lift- und Hebetechnik GmbH, with around 50 employees, is characterised by complex processes and demanding quality requirements in mechanical and plant engineering for lifting technology. Platform lifts, lifting platforms and accessibility access solutions are manufactured in project-based single-unit production. With the ERP system MyFactory as the central data basis, production and shop-floor data collection were to be more closely integrated and transparency in manufacturing was to be increased.

Challenge

Without end-to-end, up-to-date acquisition of manufacturing data, actual production progress and possible delays were difficult to track in a timely manner. The goal was to capture operating data directly in the manufacturing process and evaluate it transparently. In special-purpose machine building with small lot sizes and high quality requirements, reliable feedback from manufacturing was decisive in order to meet delivery commitments and make production progress traceable for customers.

Solution

To optimise its manufacturing processes, HETEK Lift- und Hebetechnik GmbH relies on the solutions from S4P. Through integration with the ERP system MyFactory, order, manufacturing and operating data are used end-to-end in order to enable reliable shop-floor data collection and transparent manufacturing control. Modules deployed: 4BDE – shop-floor data collection for transparent and complete feedback of all order times, quantities and fault reasons directly at the shop-floor terminal. The data is transferred automatically to MyFactory.

Results and benefits

With the solutions from S4P, HETEK Lift- und Hebetechnik GmbH achieved greater transparency in manufacturing. Manufacturing data is captured in real time, processes are better understood and deadlines are met more reliably – for more delivery reliability and efficiency. Manual feedback effort was reduced, data quality in MyFactory was improved and a solid basis for evaluations and schedule monitoring in lifting technology manufacturing was created. The solution strengthens the responsiveness to customers and supports manufacturing management in daily production control.

79427 Eschbach, Deutschland

Industry: Präzisionstechnik, Photonik, Elektronik, Positioniersysteme, Mechanical engineering

Products: Präzisionspositioniersysteme, Lineartische, Hexapoden, Mikroskopie- und Photonik-Positioniertechnik

S4P solutions: 4BDE



Initial situation

For the manufacture of precision positioning systems and photonics components at PI miCos GmbH, with around 120 employees, complete and transparent acquisition of operating data was required. The goal was a reliable real-time overview of ongoing production as a complement to the existing ERP system Infor:LN. Hexapods, linear stages and microscopy positioning technology are produced in a high variant mix and in small lot sizes, which requires precise documentation of each manufacturing step.

Challenge

The high variant mix and demanding precision requirements called for end-to-end acquisition of production data. Without digital shop-floor data collection, up-to-date KPIs on orders, machines and manufacturing times were difficult to obtain in real time. Manual feedback was error-prone and delayed, which made well-founded shop-floor control difficult. The seamless integration with Infor:LN was mandatory in order to ensure a consistent data basis between ERP and the shop floor.

Solution

With FELIOS|BDE powered by 4BDE, an end-to-end digital acquisition of production data was implemented. The solution integrates seamlessly with the existing Infor:LN ERP landscape and delivers up-to-date KPIs directly from manufacturing. Operators book order times, good and scrap quantities as well as fault reasons at the shop-floor terminal; the data is transferred automatically to Infor:LN. Manufacturing management and shift supervisors gain a real-time overview of order progress and capacity utilisation.

Results and benefits

With FELIOS|BDE powered by 4BDE, PI miCos GmbH achieves a reliable real-time overview of ongoing production. Operating data are captured transparently, KPIs are available up to date and manufacturing control is sustainably improved. Manual feedback effort was reduced, data quality in Infor:LN was improved and a solid foundation was created for evaluations and continuous improvements in precision technology manufacturing.

63762 Großostheim, Deutschland

Industry: Mechanical engineering, Anlagenbau, Dosiertechnik, Kunststofftechnik, Montage

Products: Dosier- und Mischtechnik, Zahnradpumpen, Granuliersysteme, Kunststoff- und Chemieanlagen-Komponenten

S4P solutions: 4BDE



Initial situation

In mechanical engineering, complex manufacturing orders, high quality requirements and the desire for more transparency in production come together. The operating data of manufacturing was to be captured reliably and combined with the Oracle ERP system in order to make order and operating data transparent in real time, reduce manual acquisition effort and reliably evaluate the utilisation of manufacturing.

Challenge

In mechanical and plant engineering for dosing and plastics technology with long lead times and complex manufacturing orders, complete shop-floor data collection was decisive in order to reliably control manufacturing progress and capacity utilisation. Manual feedback provided no up-to-date view of the shop floor. The goal was end-to-end integration between Oracle ERP and the FELIOS|APS planning system via a powerful BDE solution that makes order and operating data available in real time.

Solution

To optimise its manufacturing processes, Maag Germany GmbH relies on FELIOS|BDE powered by 4BDE, connected to the Oracle ERP system and the FELIOS|APS planning system. Through the integrations, order and operating data are captured and evaluated end-to-end to enable transparent and reliable manufacturing control. Modules deployed: 4BDE – shop-floor data collection for transparent capture and evaluation of order and operating data. Operators book times, good and scrap quantities as well as fault reasons at the shop-floor terminal; the data flows automatically back into Oracle and is available for evaluations, post-calculation and schedule monitoring. Shift supervisors and manufacturing management gain an up-to-date overview of order progress and capacity utilisation at any time.

Results and benefits

With FELIOS|BDE powered by 4BDE, Maag Germany achieves greater transparency in manufacturing and a reliable data basis for production control. Operating data are captured reliably, utilisation and disturbances are detected early and manual acquisition effort is reduced – for more efficiency and on-time delivery. The end-to-end integration of BDE, APS and Oracle ERP creates a consistent data basis for well-founded decisions in planning and manufacturing control.

33399 Rietberg, Deutschland

Industry: Metal processing, Stahlbau, Lagertechnik, Logistik, Sage 100

Products: Stahlprofile, Lagertechnik, Regalsysteme, Stahlbaukomponenten und individuelle Metallkonstruktionen

S4P solutions: 4APS, 4BDE



Initial situation

In metalworking and steel construction at Großewinkelmann GmbH & Co. KG, with around 65 employees, changing orders, high quality requirements and the desire for more transparency in manufacturing come together. Steel profiles, racking systems, storage technology and customised metal structures are manufactured in customer-specific order production. Production planning and shop-floor data collection were to be more closely integrated with the ERP system Sage 100 in order to plan capacities reliably, control orders on schedule and make operating data transparent in real time.

Challenge

In metalworking and steel construction, changing orders, high quality requirements and the desire for more transparency in manufacturing come together. Without end-to-end fine planning and shop-floor data collection, capacity bottlenecks and schedule risks were difficult to detect early. The goal was to closely integrate production planning and shop-floor data collection with the ERP system Sage 100, reduce manual feedback effort and enable planning-reliable control of steel construction and storage technology manufacturing.

Solution

To optimise its manufacturing processes, Großewinkelmann GmbH & Co. KG relies on the solutions from S4P. Through integration with the ERP system Sage 100, production planning and shop-floor data collection are mapped end-to-end in order to enable transparent and reliable manufacturing control. Modules deployed: 4APS – production planning for transparent planning and scheduling of manufacturing orders and capacities; 4BDE – shop-floor data collection for transparent capture and evaluation of order and operating data.

Results and benefits

With the solutions from S4P, Großewinkelmann GmbH & Co. KG achieved greater transparency in manufacturing and a reliable data basis for production control. Capacities are planned optimally, operating data are captured reliably and manufacturing orders are scheduled dependably – for more efficiency and on-time delivery. Manual feedback effort was reduced and a solid basis for planning-reliable order confirmations towards customers in steel construction and storage technology manufacturing was created.

86720 Nördlingen, Deutschland

Industry: Mechatronik, Antriebstechnik, Mechanical engineering, Abas ERP, Produktionsplanung

Products: Präzisionsgetriebe, Verzahnungen, mechatronische Antriebssysteme, Getriebemotoren und Sonderantriebe

S4P solutions: 4BDE



Initial situation

SPN Schwaben Präzision Fritz Hopf GmbH, headquartered in Nördlingen, develops and manufactures customer-specific gearboxes, gearing components, drive systems and mechatronic components with around 300 employees. For more than 100 years, SPN has delivered tailored drive solutions for mechanical engineering, automation, aerospace, energy and medical technology.

Challenge

As a manufacturer of customer-specific gearboxes and mechatronic drive systems with a high variant mix and long lead times, end-to-end digitalisation of fine planning and shop-floor data collection was needed. The previous solutions from Etargis (planning) and Tisoware (BDE) were to be replaced by an integrated, more powerful solution. The goal was complete real-time acquisition of all manufacturing data on the shop floor as well as automatic fine planning of all order networks, fully integrated with the leading Abas ERP system.

Solution

With FELIOS|APS replacing the Etargis planning solution and FELIOS|BDE powered by 4BDE replacing the Tisoware BDE, the leading Abas ERP becomes more powerful: the solutions ensure complete real-time acquisition of all manufacturing data on the shop floor as well as automatic fine planning of all order networks. FELIOS|APS provides a graphical Gantt board with bottleneck detection and sequence optimisation; FELIOS|BDE captures order times, good and scrap quantities as well as fault reasons directly at the terminal. All data flow bidirectionally back into Abas ERP and are available for post-calculation, evaluations and quality proof.

Results and benefits

The goal of the introduction was to significantly increase transparency in production and to sustainably improve production planning. Manual acquisition effort was reduced, lead times optimised and a data basis for well-founded decisions created. Higher transparency over order and machine status in real time, improved on-time delivery through optimised fine planning with order networks, reduction of manual acquisition and maintenance effort as well as solid KPIs as a foundation for continuous improvement are the key results. The seamless replacement of the Etargis and Tisoware predecessor systems ensured a smooth introduction without operational interruption.

86159 Augsburg, Deutschland

Industry: Further education, learning factory, Industry 4.0, training, production technology

Products: Learning factories, training facilities, Industry 4.0 training systems and didactic production modules

S4P solutions: 4AVO, 4APS, 4BDE, 4MDE, 4PRO



Initial situation

Operating the learning factories at Inoyad GmbH requires a realistic representation of industrial production and planning processes. With the ERP system from S4P, order-related and planning workflows are covered end-to-end, so that participants experience an authentic industrial environment. With around 5 employees, Inoyad operates training facilities and Industry 4.0 training systems that reproduce real production processes together with all relevant MES modules.

Challenge

Fluctuating course occupancy, short-term changes and the need to make optimum use of scarce resources placed high demands on planning. Without end-to-end, graphical fine planning and integrated acquisition of operating and machine data, bottlenecks and scheduling conflicts were difficult to detect and manage early. For training purposes it was essential that all relevant S4P modules – from work preparation to process data acquisition – were available in a realistic, comprehensible and integrated environment.

Solution

To optimise its processes, Inoyad GmbH relies on the S4P solutions. Through their end-to-end integration, order, manufacturing and operating data are used to enable realistic and transparent planning and control. Modules deployed: 4AVO – work preparation for efficient order and manufacturing preparation; 4APS – Advanced Planning and Scheduling for graphical fine planning; 4BDE – shop-floor data collection at the terminal; 4MDE – machine data acquisition with OEE analysis; 4PRO – process data collection and warehouse management. All modules are fully integrated and form a realistic industrial environment for training and demonstrations.

Results and benefits

With the S4P solutions, Inoyad GmbH achieves greater planning reliability and transparency. Bottlenecks are detected early, resources are better utilised and workflows are managed more reliably – for a realistic learning environment and more efficiency. The fully integrated S4P learning factory offers participants an authentic insight into modern MES and APS processes and creates a practical basis for Industry 4.0 qualification.

52425 Jülich, Deutschland

Industry: Forschung, Großforschung, Werkstätten, SAP, Betriebsdatenerfassung

Products: Forschungsanlagen, wissenschaftliche Instrumente, Werkstattteile, Prototypen und technische Versuchskom...

S4P solutions: 4BDE



Initial situation

Forschungszentrum Jülich GmbH, located in Jülich, is one of the largest interdisciplinary research institutions in Europe with around 7,200 employees. In its in-house workshops and metalworking facilities, highly specialised components and experimental set-ups are manufactured for research. The existing, largely manual acquisition of manufacturing data made a transparent overview of order progress and machine utilisation difficult. Media breaks between the SAP ERP system and the shop floor as well as an insufficient data basis stood in the way of efficient production control.

Challenge

In the in-house workshops of Forschungszentrum Jülich – with around 7,200 employees – highly specialised components and experimental set-ups are manufactured in the smallest lot sizes. The largely manual acquisition of manufacturing data made a transparent overview of order progress, machine utilisation and resource availability difficult. The goal was end-to-end shop-floor data collection seamlessly integrated with SAP ERP and providing a solid basis for control, evaluation and cost tracking in the workshops.

Solution

Together with software4production, end-to-end shop-floor and machine data collection (BDE) was introduced, seamlessly integrated with the existing SAP ERP system. The S4P solution enables complete acquisition of all relevant manufacturing data in real time directly on the shop floor and thereby creates the basis for transparent and efficient workshop control. Real-time acquisition of operating data (BDE) directly on the shop floor, end-to-end integration with the existing SAP ERP system and with FELIOS|APS for backlog-free production planning, transparent overview of order progress and machine utilisation as well as order-related traceability and documentation are core building blocks.

Results and benefits

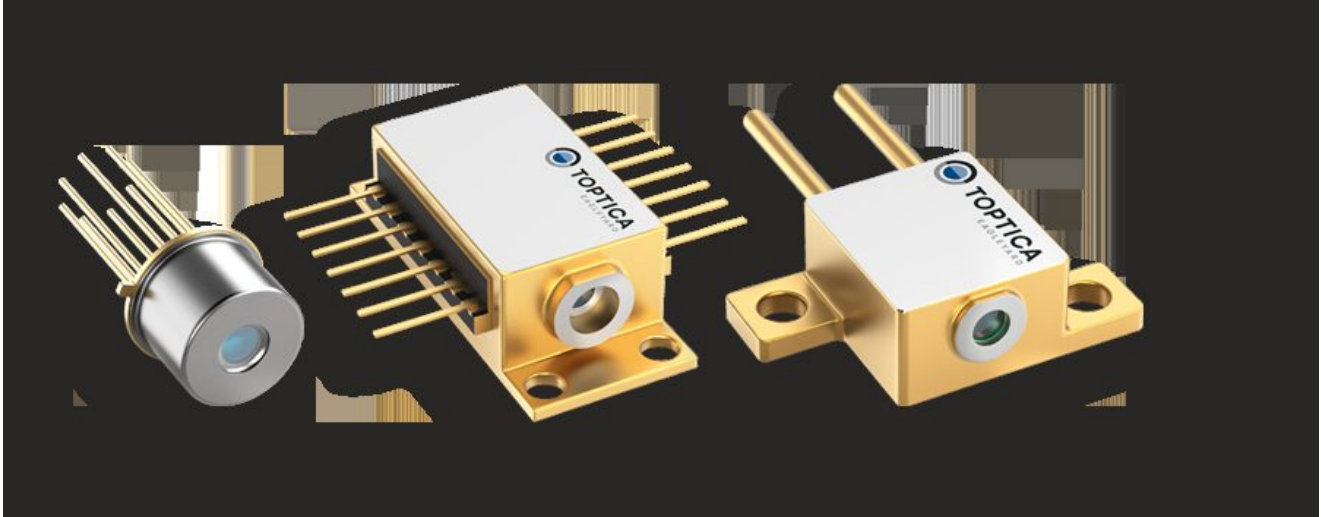
With the introduction of FELIOS|BDE, Forschungszentrum Jülich significantly increases transparency in manufacturing and noticeably improves workshop control. Manual acquisition effort was reduced and a solid data basis for well-founded decisions was created. Higher transparency over order and machine status in real time, reduction of manual acquisition and maintenance effort, an improved planning and decision-making basis and solid KPIs as a foundation for continuous improvement are the key results.

12489 Berlin, Deutschland

Industry: Photonik, Halbleiter, Electronics, Laserdioden, Optoelektronik

Products: Hochleistungs-Laserdioden, Halbleiterlaser, Photonik- und Optoelektronik-Komponenten

S4P solutions: 4APS, 4BDE



Initial situation

Manufacturing at Eagleyard Photonics GmbH, with around 75 employees, is characterised by high-precision processes and demanding quality requirements in semiconductor and laser diode production. High-power laser diodes, semiconductor lasers and photonics components require precise process control and complete quality documentation. On top of the ERP system Sage 100, fine planning and shop-floor data collection had to be integrated end-to-end.

Challenge

The production of laser diodes requires reliable fine planning of complex manufacturing steps and complete acquisition of operating data. The goal was to utilise capacities optimally, shorten lead times and increase transparency over manufacturing progress. Without graphical fine planning and digital shop-floor data collection, bottlenecks and schedule risks were difficult to detect early. Both solutions had to integrate seamlessly with Sage 100 in order to create a consistent data basis.

Solution

Modules deployed: 4APS, 4BDE. With the Advanced Planning and Scheduling system 4APS and the shop-floor data collection 4BDE, an end-to-end, transparent production control was established at Eagleyard Photonics GmbH. The solutions provide transparency over capacities and order progress and are closely integrated with Sage 100. Order and master data are synchronised automatically; operators book times and quantities at the shop-floor terminal. The graphical Gantt board in 4APS gives planners an up-to-date view of capacities and delivery dates at any time.

Results and benefits

By deploying 4APS and 4BDE, Eagleyard Photonics GmbH benefits from optimally utilised capacities, shorter lead times and improved on-time delivery. Complete shop-floor data collection creates transparency and increases operational efficiency. Manual feedback effort was reduced, data quality in Sage 100 was improved and a solid foundation was created for evaluations and process optimisation in photonics manufacturing.

48499 Salzbergen, Deutschland

Industry: Antriebstechnik, Electronics, Elektromotoren, Industrieantriebe

Products: Elektromotoren, Servomotoren, Getriebemotoren, Direktantriebe und Industrieantriebssysteme

S4P solutions: 4BDE



Initial situation

Manufacturing at CEDS Duradrive GmbH, with around 150 employees, is characterised by complex processes, a wide variant mix and high requirements for quality and on-time delivery in the production of electric and servo motors. Feedback from production was available only with delays and gaps, making a reliable assessment of manufacturing progress difficult. The ERP system proALPHA covers commercial processes; a complementary shop-floor solution was needed.

Challenge

A solution was sought that captures production data in real time, makes manufacturing progress transparent and reduces manual effort. The goal was a reliable data basis for control, evaluation and continuous improvement of production. A key requirement was seamless integration with proALPHA so that order and master data are exchanged bidirectionally and no double entries are needed. The solution had to run robustly on the shop floor and be intuitive for operators and shift supervisors.

Solution

Together with S4P, a shop-floor data collection solution was introduced at CEDS Duradrive GmbH, seamlessly integrated with the existing ERP system proALPHA. With 4BDE, production data is captured and reported in real time. Operators book order times, good and scrap quantities as well as fault reasons at the shop-floor terminal; the data flows automatically back into proALPHA and is available for evaluations and post-calculation. Shift supervisors and manufacturing management gain an up-to-date overview of order progress and capacity utilisation.

Results and benefits

Better availability and usability of production data enable processes to be planned, controlled and evaluated with greater transparency. This supports faster reactions to deviations, improves the data basis for fine planning and creates an important foundation for more efficient workflows, higher process reliability and data-driven production improvement. Manual feedback effort was reduced and the control of electric and servo motor manufacturing sustainably improved.

48485 Neuenkirchen, Deutschland

Industry: Pneumatik, Hydraulik, Antriebstechnik, Mechanical engineering

Products: Pneumatikpumpen, Vakuumpumpen, Dosiertechnik, Hydraulik- und Antriebskomponenten

S4P solutions: 4AVO, 4APS, 4BDE



Initial situation

Timmer GmbH, with around 150 employees, needed end-to-end and transparent control of its manufacturing of pneumatic and vacuum technology. The goal was reliable fine planning and complete acquisition of operating data as a complement to the existing ERP system Alphaplan. Pneumatic pumps, vacuum pumps and dosing technology are produced in variant-rich order manufacturing, which requires precise capacity and schedule planning.

Challenge

Variant-rich manufacturing with high schedule pressure and a growing order mix required end-to-end digitalisation of planning and shop-floor feedback. A lack of transparency over current machine and order data as well as manual, time-consuming data acquisition made reliable control difficult. An integrated solution was required that closely combines work preparation, fine planning and shop-floor data collection with Alphaplan and enables planning-reliable order confirmations towards customers.

Solution

To optimise its manufacturing processes, Timmer GmbH relies on the solutions from software4production: 4APS – Advanced Planning and Scheduling for graphical fine planning with a Gantt board and bottleneck detection, 4AVO – work preparation and order management, and 4BDE – shop-floor and machine data collection in real time. All modules are bidirectionally connected to Alphaplan; order and master data are synchronised automatically and feedback data is returned in real time. Planners, shift supervisors and manufacturing management receive role-specific views of capacities, order progress and machine states.

Results and benefits

Timmer GmbH benefits from transparent, reliable fine planning and a real-time overview of machine and order data. Manual acquisition effort was reduced, on-time delivery improved and delivery capability in pneumatic and vacuum technology manufacturing strengthened. Planning-reliable order confirmations and a solid data basis for continuous improvements are the result of the integrated solution.

33649 Bielefeld, Deutschland

Industry: Armaturen, Ventiltechnik, Antriebstechnik, Mechanical engineering, Kraftwerkstechnik

Products: Spezialregelventile, Dampfumformventile, Umleitstationen und Armaturen für Kraftwerke und Prozessanlagen

S4P solutions: 4BDE



Initial situation

Welland & Tuxhorn AG, with around 200 employees, required gapless and timely capture of its production data to transparently control the manufacturing of special control valves and reliably meet delivery deadlines. The existing Microsoft Dynamics AX environment was to be extended with a capable shop-floor data collection system. Steam conditioning valves, bypass stations and fittings for power plants and process installations demand the highest manufacturing quality and reliable documentation of every production step.

Challenge

In the demanding power plant environment, manufacturing orders, feedback and machine times must be recorded precisely. Manual records were error-prone and did not provide a current view of manufacturing progress. The goal was continuous, digital capture of operating data directly at the workstation, seamlessly integrated into Microsoft Dynamics AX. Particularly for urgent orders and schedule changes, an up-to-date view of open orders and capacities was indispensable for production control.

Solution

With 4BDE, Welland & Tuxhorn AG gains end-to-end shop-floor data collection that captures order, time and quantity feedback directly at the workstation. The captured data is transferred seamlessly to the existing Microsoft Dynamics AX environment. Operators book times, good and scrap quantities as well as fault reasons at the shop-floor terminal; data flows automatically back into Dynamics AX and is available for evaluations, post-calculation and deadline monitoring. Shift supervisors and manufacturing management receive an up-to-date overview at all times.

Results and benefits

With the S4P solution, Welland & Tuxhorn AG achieves gapless capture of production data, higher transparency in the manufacturing process and improved on-time delivery in the production of its special control valves. Manual feedback effort was reduced, data quality in Dynamics AX improved and a solid data basis for evaluations and continuous process improvements in the power plant fitting environment was established.

21465 Reinbek, Deutschland

Industry: Mechanical engineering, Anlagenbau, Futtermitteltechnik, Verfahrenstechnik, Metallverarbeitung

Products: Pelletpressen, Extruder, Trockner, Mühlen und Anlagen für Futtermittel, Biomasse, Recycling und Verfahrenstec...

S4P solutions: 4BDE



Initial situation

Manufacturing at Amandus Kahl GmbH & Co. KG, with around 500 employees, is characterised by complex workflows, high variant diversity and demanding requirements in machine and plant engineering. Pellet presses, extruders, dryers and mills for feed, biomass and recycling applications are produced in extensive manufacturing projects. In this environment, the need for continuous real-time data from production is growing, to assess states, progress and deviations quickly and reliably. The ERP system SAP ERP covers commercial core processes; a complementary solution for transparent shop-floor data collection was required.

Challenge

Without sufficient transparency in production data, it becomes considerably more difficult to reliably monitor manufacturing processes, detect disruptions early and make well-founded decisions for shop-floor management and production control. In a complex production environment with high quality requirements and long lead times, a digital connection between ERP and shop floor was essential. Manual feedback was time-delayed, error-prone and did not provide a reliable basis for post-calculation and deadline monitoring.

Solution

S4P delivered a solution for structured capture and use of production data to improve transparency across manufacturing processes. This creates a reliable data basis for production control, process deviation analysis and continuous improvement on the shop floor. FELIOS|BDE powered by 4BDE is bidirectionally connected to SAP ERP: order and master data flow automatically into the BDE solution, feedback data is reliably returned to SAP. Operators report times, quantities and fault reasons directly at the terminal; shift supervisors and manufacturing management receive a current overview of order progress and capacity utilisation.

Results and benefits

Greater availability and usability of production data enable processes to be controlled and evaluated with higher transparency. This supports faster responses to deviations, improves the data basis for shop-floor management and creates an important foundation for more efficient workflows and data-driven production improvement. Disruptions are detected earlier, capacities are planned more effectively and the quality of SAP feedback data is sustainably enhanced.

89601 Schelklingen, Deutschland

Industry: Electronics, Elektrotechnik, Industrieelektronik, Fertigung

Products: Wasserzähler, Messkapseln, elektronische Zähler, Funkmodule und Systemtechnik für Verbrauchsdatenerfassung...

S4P solutions: 4AVO, 4APS, 4BDE



Initial situation

Lorenz GmbH & Co. KG, with around 200 employees, required efficient work preparation, optimised fine planning and transparent shop-floor data collection in its manufacturing of water meters, electronic meters and radio modules. The goal was end-to-end and traceable production control based on the ERP system SAP Business One. The production of smart water meters in an Industry 4.0 manufacturing system demands close integration of planning, assembly and quality assurance.

Challenge

As a manufacturer of smart water meters with high volumes and variant diversity, the company required reliable planning and feedback from its Industry 4.0 production system. Manual processes were time-consuming and did not deliver timely data on current production progress. A particular challenge was the transition from conventional assembly to a cyber-physical system in which work preparation, fine planning and shop-floor data collection interlock seamlessly and are integrated with SAP Business One.

Solution

Together with partner Software Factory, Lorenz converted its conventional assembly to an Industry 4.0-capable system. With 4AVO for work preparation and order management, 4APS for fine planning and 4BDE for shop-floor data collection, Lorenz GmbH & Co. KG controls its manufacturing end-to-end. All modules are connected to the existing ERP system SAP Business One, so that order and master data are synchronised automatically. At the assembly terminal, order feedback and quality data are captured and automatically returned to SAP Business One.

Results and benefits

Manufacturing now has a transparent and current data basis. Work plans, fine planning and order status are traceable at all times, planning quality has improved and manual effort has been significantly reduced. The Industry 4.0 assembly system enables complete traceability of meter components, improves quality assurance and provides a solid data basis for continuous improvement in meter production.

37574 Einbeck, Deutschland

Industry: Werkzeugbau, Metallverarbeitung, Gewindetechnik, Mechanical engineering

Products: Schneckenelemente, Gewindespindeln, Verzahnungen, Sondergewinde und Komponenten für Extrusionsmasch...

S4P solutions: 4APS, 4BDE



Initial situation

Production at Burgsmüller GmbH is characterised by complex workflows, high variant diversity and demanding manufacturing conditions in mechanical machining. Specialised suppliers are also integrated into the value chain. In this environment, the need for continuous real-time data from production is growing, to assess states, progress and deviations quickly and reliably.

Challenge

In the course of constructing a new factory at Burgsmüller, real-time control and automation also became relevant topics. Without sufficient transparency, it is difficult to reliably monitor manufacturing processes, detect disruptions early and make well-founded decisions. In a complex production environment with high quality requirements, this demands a digital connection between work preparation, planning, production and data collection – in close integration with the existing ERP system SAP ERP.

Solution

Alongside the day-current planning system FELIOS|APS, a real-time fine planning system was required, and FELIOS|FLS powered by 4APS was selected. Particularly important for Burgsmüller is the dynamic setup optimisation in FELIOS|FLS, as production was simultaneously converted to a container-based workflow. FELIOS|PRO powered by 4PRO was introduced to uniquely identify containers, manage storage locations, and provide suppliers with unique container numbers on SAP delivery notes – enabling traceability for end-to-end container-based value creation. Simultaneously, two DMG lathes were equipped with a KUKA robot and a roller conveyor system as an autonomous manufacturing cell by KraussMaffei Automation. S4P was commissioned to handle control, automation and networking of the cell.

Results and benefits

The closed control loop between planning and execution produces a reliable data basis for production control and enables continuous improvement. This allows processes to be planned, controlled and evaluated with greater transparency. Faster responses to deviations provide an important foundation for more efficient workflows, higher process reliability and sustained production improvements.

78465 Dettingen / Konstanz, Deutschland

Industry: Batterietechnik, Energiespeicher, Elektronik, Automotive

Products: Batteriezellen, Akkupacks, Energiespeicher, Batteriemodule und Entwicklungslösungen für Elektromobilität

S4P solutions: 4AVO, 4APS, 4BDE



Initial situation

Manufacturing at DYNAMIS Batterien GmbH, with around 50 employees, is characterised by demanding quality requirements and high process complexity in the production of battery cells and accumulator packs for electric mobility. Battery modules and energy storage systems require precise process control and gap-free documentation. Based on the ERP system Alphaplan, the objective was to integrate work preparation, fine planning and shop-floor data collection into a continuous digital workflow.

Challenge

The production of battery cells and accumulator packs demands precise work preparation, reliable fine planning and gap-free capture of operating data. The goal was to plan capacities optimally, reduce lead times and increase transparency over manufacturing progress. A particular requirement was the integration of all three modules into Alphaplan to avoid duplicate data entry and create a unified data basis for planning, order feedback and quality assurance in battery technology manufacturing.

Solution

With 4AVO for work preparation, 4APS for advanced planning and scheduling, and 4BDE for shop-floor data collection, DYNAMIS Batterien GmbH established a continuous, transparent production control environment. All three modules are tightly integrated with Alphaplan ERP. Order and master data are synchronised automatically; feedback data flows back in real time and is available for evaluations and quality evidence in battery technology manufacturing.

Results and benefits

Through the use of 4AVO, 4APS and 4BDE, DYNAMIS Batterien GmbH achieves optimally planned capacities, shorter lead times and higher on-time delivery performance. Gap-free shop-floor data collection creates transparency and improves operational efficiency. A reliable data basis for quality evidence, process evaluations and continuous improvement of battery cell manufacturing has been established. Manual data-entry effort has been reduced and scheduling quality has been sustainably improved.

Let's talk.

We look forward to your enquiry on digital manufacturing.

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