

SUCCESS STORY



Mechanical Engineering | ORBIS MES | KUBOTA Baumaschinen GmbH



With ORBIS MES: KUBOTA Baumaschinen digitalizes and integrates shop floor processes into SAP ERP

KUBOTA Baumaschinen GmbH uses ORBIS MES to link the shop floor process with the processes in SAP ERP, thus creating a clear view of the production. In addition, the MES uses a range of interfaces to make data from the ERP available to an external solution for sequence and time planning of production. Digital recording of EC screwdriver data and quality assurance data resulted in further process optimization in production. The MES also supports efficient processing in the newly-created production area for options and add-on parts.



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Excavation work in road construction, house building, horticulture, agriculture or public facilities is often quite cramped. This is exactly where the maneuverable, powerful and flexible mini and short tail excavators or the compact wheel loaders of KUBOTA Baumaschinen GmbH can come in.

KUBOTA Baumaschinen GmbH

Sector: Construction Machinery Sector

Production Location Europe: Zweibrücken

Products: Mini and short tail excavators along with compact wheel loaders

Employees: global company employing around 39,000 people

<https://kbm.kubota-eu.com/>

ORBIS MES networks shop floor and SAP world

The company, which makes up part of the Japanese KUBOTA Group, manufactures excavators and wheel loaders for the European market in Zweibrücken, Rhineland-Palatinate. In stringent competition within a dynamically-developing market, continuous product innovations and highly modern production form part of the factors relevant to competition at KUBOTA, in precisely the same way as transparent and efficient business processes.

For this reason, the company has been depicting its entire production processes along with logistic and business flows in a SAP ERP system since 2017. The SAP system involves a European central solution, in which all seven KUBOTA companies based in Europe participate and which centrally manages a Business Innovation Center from Paris.

Running parallel to the introduction of SAP ERP, KUBOTA in Zweibrücken implemented the SAP-based ORBIS Manufacturing Execution System (ORBIS MES), which seamlessly and release-safely integrates with SAP ERP and links the processes on the shop floor with those in ERP. *"This gives us a clear view on the shop floor and the production data, while at the same time, ensuring that employees are efficiently supported in their tasks"*, says Christoph Ehl, IT Inhouse Consultant at KUBOTA Baumaschinen GmbH.

Feedback through MES directly in SAP ERP

With its modern, easy-to-operate web interfaces,

ORBIS MES clearly displays to the worker the SAP production orders planned for processing in sequence in the worklist. Transactions are used to transfer feedback from the MES to the ERP and the usage of the material is triggered in SAP.

ORBIS MES Queues control a range of interfaces that take on data exchange between SAP and the external planning tool. The third-party planning tool controls the complex production in Zweibrücken, which is based on the one-piece flow principle, without using inventory management of semi-finished products. All data relevant to the planning tool is transferred from SAP ERP via the ORBIS MES into the planning tool, and likewise the planning results back to the SAP ERP.

Increase the digitalization grade in production

With the implementation of ORBIS MES, the construction machinery manufacturer commissioned ORBIS AG, which impressed them with its process and consulting expertise during production. The Saarbrücken-based IT service



ORBIS MES in operation, source: Kubota

provider was also entrusted with expanding the MES in order to increase the digitalization grade in the shop floor processes.

This includes the automatic recording and documentation of safety-relevant screwdriver data from EC screwdrivers in assembly and repair, the digital recording of quality assurance data (QA data) on the excavator line and during final inspection, as well as efficient process support in the production of optional and add-on parts. Thanks to the outstanding collaboration of all those involved, the individual projects that were partly carried out in parallel were completed in the prescribed deadline despite the coronavirus pandemic.

„Because smooth production operations are our top priority, the digitalization of the EC screwdriver data and the QA data needed to be implemented during ongoing operations. Accordingly, no downtime was permitted during go-live. This challenge was one that the ORBIS experts impressively mastered“, explains Lucas Steibert, IT Inhouse Consultant at KUBOTA Baumaschinen GmbH.

Trace screw connections without gaps

Connecting the EC screwdrivers to the MES was achieved using the ORBIS Multi Process Interface (ORBIS MPI), utilizing Open Protocol technology. Because information on safety-relevant bolted connections on an excavator, such as torque and angle of rotation, flows directly into the MES and is transferred from there to the equipment master data in SAP, this data can be easily evaluated at any time.

“We meet the legal requirements and improve our ability to provide information when it comes to our customers. This, along with the fact that the entire process is IT-supported and runs automatically, rather than manually as it did until now, making it significantly easier, more efficient and safer, is a real added value”, explains Christoph Ehl.

Efficient production of optional add-on parts

In addition, ORBIS MES allows KUBOTA employees in a newly-created workshop area, a simple, systematic and efficient handling of the manufacturing process of optional and add-on parts for excavators and wheel loaders. These include attachment hammers, headlights, safety valves or radio devices. By switching from external procurement to in-house production of optional parts, KUBOTA primarily aims to increase the product quality, minimize delivery times and ultimately also reduce costs.

The MES digitally displays both the order stock and the working instructions to the worker. Confirming an operation in the MES results in to material consumption on the production order in SAP and as a result, triggers the replenishment processes in SAP ERP automatically. Because the production order quantity can be divided into partial quantities/ intervals as desired, KUBOTA can act highly flexibly here and according to demand - another plus point. *“We have been able to significantly facilitate the picking and assembly process for production workers by printing picking lists and component labels straight from the MES”* says Lucas Steibert.

Increase product and process quality

Quality management benefits from the digital, highly

“Precise information on whether certain errors occur disproportionately often, or for which models and at which workplaces the error rate is conspicuously high, provides us with important starting points for reducing defects, avoiding expensive rework and increasing product and process quality”, explains Christoph Ehl.

detailed recording of QA data on the excavator line and in the final inspection based on “NOK characteristics” (out of order) in ORBIS MES, which are transferred and documented directly in SAP ERP together with the photo and repair times. Thanks to the continuous process, the data quality and in turn, the precision and significance of the error analyses in the SAP ERP reports are significantly increased – a real benefit for the company.

Plenty achieved and plenty still ahead

KUBOTA Baumaschinen has achieved plenty when it comes to the digitalization of production with ORBIS MES, and still has plenty ahead: In the future, the company wishes to digitally record the values of non-safety relevant screwdrivers from EC screwdrivers and chart the parallel use of several screwdrivers at a single operation or workstation in the MES. A further plan is to also utilize ORBIS MES for the digital recording of screwing values and QA data in the wheel loader area. In addition, the use of screwdrivers from another supplier is planned alongside EC screwdrivers from the existing supplier, which are also to be connected to the MES via an adapted open-protocol structure.



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More Information



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