



“FOR SOME CUSTOMERS, WE DEVELOPED FROM A TIER III SUPPLIER TO A FULL-FLEDGED PARTNER.”

BART KROESBERGEN, JOOP VAN ZANTEN

Bart Kroesbergen, managing director for Joop van Zanten, is leading a multi-stage transformation that will digitalize the Dutch service center.

A DIGITAL JOURNEY

Service center adopts Industry 4.0, sets new standards for a new age

BY JOERG TOBERNA, MESSER CUTTING SYSTEMS

Joop van Zanten, a 108,000-square-foot service center in Veenendaal, the Netherlands, services such end user markets as marine, energy, heavy equipment, construction and transportation. Services include plasma burning, welding, bending and machining.

“When I joined the company in 2018, Joop van Zanten was a traditional company that cut heavy-gauge metal; it would certainly have survived by doing that for a while,” says Bart Kroesbergen, managing director. “But in order to stand up to the high cost pressure of Asian markets, to compensate for the lack of skilled workers in the future, and to meet customers’ demands for a fast, high-quality, one-stop shop, a break with the existing situation was needed.”

It soon became clear that individual actions, such as a new resource planning system or

optimizing the factory’s layout, did not bring the desired outcome. For Kroesbergen, this meant that automation and digitalization of the entire production process, including the business processes, would be the only solution. With that idea, Joop van Zanten’s journey to Industry 4.0 began. The change from a traditional service center and job shop to a high-tech company with 24/7 automated production within 10 years is an ambitious goal.

PROJECT SCOPE

Having a vision is one thing, but finding the right partners is quite another. Initial approaches with existing suppliers failed until Messer Cutting Systems was brought on board, Kroesbergen says.

For years, Messer Cutting Systems has been supplying cutting machines with complete solutions from a single source,

including maintenance, service and software. Kroesbergen says Messer’s team was surprised by the scope of the project, as none of its customers previously requested such a solution in Europe. “We wanted a supplier capable of delivering the full range of specialized machine equipment. This includes state-of-the-art technologies for laser and plasma processes as well as software and material handling,” he says.

After extensive discussions and meetings, Messer Cutting Systems offered a new automation system for Joop van Zanten. “It was clear we were in for a long journey that would require a high level of concentration,” says Bas Sanders von Well, business unit manager for Benelux at Messer Cutting Systems.

INTEGRATION IS KEY

The core of the solution is the software and Industry 4.0 intelligence that links everything together. The goal was a process that maps and automates cutting and further processing

in one workflow. The superordinate unit is the Ridder IQ ERP system. HiCAD (developed by ISD Software und Systeme GmbH) functions as the CAD/CAM environment. MesserSoft's OmniFab Software Suite digitalizes the processes as an integration and data refinement tool.

"Integration was one of the most elementary steps toward digitalizing the complete automation. If we can implement the automated path consistently, the rest is easy," Kroesbergen says.

OmniFab is the central element of automation. The suite connects the various software systems, cutting machines and the material handling system via various interfaces.

DIGITAL COMMUNICATIONS

As soon as Joop van Zanten receives customer files with the component 3D models, HiCAD checks and computes how the component is to be manufactured. The software recognizes whether the components are to be cut, edged, drilled or milled. The file is then imported into the design and nesting software, OmniWin (via OmniFab ERP Connect) takes over. OmniWin calculates the machining time with cutting times, drilling times and material consumption and sends the results back to the ERP system, which calculates the price from the data.

In the offer phase, a fully integrated analysis and calculation software structure makes it possible to calculate the cost price and the preplanning production and machine programming. If customers agree, all of preplanning and the production process can start immediately. This saves a lot of time and creates the possibility for quick delivery.

At this moment, the company is working with several customers in an EDI solution. This will connect the production capacity and production data directly to the engineering and purchasing departments of users' customers.

If a customer requests an order, the data runs again via OmniFab ERP Connect to OmniWin, where the nesting plan is plotted on the plate. OmniFab generates the job, and then takes over the order control, process data selection, automated production, and loading and unloading processes.

CUTTING TECHNOLOGY

Messer installed two new machines at Joop van Zanten. One is the PowerBlade 6500



The OmniMat 6500 features two HiFocus 360I, Skew Delta plasma bevel heads, OmniScript and drilling unit with 24-tool changer.



An operator in the control room monitors all cutting operations and related tasks.

with a 6kW laser with bevel head, a drilling unit with 24 tool changer and LNC nozzle changer. Second is the OmniMat 6500 with two HiFocus 360I, Skew Delta plasma bevel heads, OmniScript and drilling unit with 24-tool changer.

"Both machines meet all our expectations for easy handling, low cost and high reliability," Kroesbergen says.

On the two new Messer machines, the scheduled jobs are displayed at the loading station. From here, the operator selects the job to be cut, brings the appropriate material to the loading station, which moves the material on a shuttle to the storage tower. As soon as the scheduled machine is available, OmniFab Material Flow automatically steers the matching pallet to the machine and initiates the cutting process. After cutting, the pallet automatically returns to the tower.

OmniFab reports all the information about

the nesting plan to the ERP system and confirms that the materials were cut successfully. At the unloading station, the operator sees all the finished jobs and requests them from the tower for unloading. From there, parts enter stages of additional processing such as blasting, sanding, edging, etc.

UNDER CONTROL

Today, production at Joop van Zanten is automated and controlled exclusively from a control room. The plant operators have an overview of the entire plant, including an interior view of the enclosed machines via control monitors. In addition to the transmission of the machine work screens, there is also an OmniWin programming station for nesting as well as for order, material and job management.

"We always have an up-to-the-minute overview of which jobs need to be cut and cleared," says Johnathan Jacobus, project manager for automation and head of purchasing at Joop van Zanten.

At the loading station, a control terminal reads out the required material, which is loaded onto the pallet and fed into the process. At the unloading station, an operator uses a tablet to monitor the finished cut material on the transport shuttles. Via the tablet, he can query information about the individual components while good and bad parts can be booked into the system. The operating terminals directly at the machine are now only used for maintenance, testing and setting up complex new programs.

TEAMWORK

Matthias Breitwieser, manager of Advanced Engineering Global R&D for Messer Cutting Systems, formed a developer partnership with Joop van Zanten. As a result, "We learned a lot from each other," Breitwieser says. Of course, there were challenges and some delays. "COVID-19 made the work of

the teams on site much more difficult.”

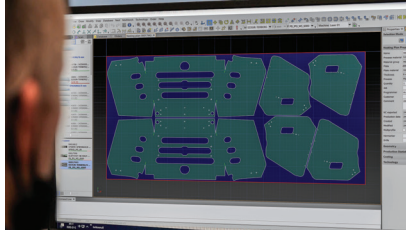
Kroesbergen says it was an exciting journey with a few surprises. “Setbacks have not affected us; they have advanced us.”

The 3D model of the entire project in the production factory, requested by Kroesbergen, gave Messer some “decisive insights,” Breitwieser recalls. “It allowed us to see how we needed to optimally position the machine and its components,” such as cabling and gas supply.

FAR-REACHING DEVELOPMENT

Despite being in use for a short time, everyone in the company, from sales to planning, production to logistics, is benefiting from the project. Routine tasks are automatically finished in a noticeably short time without disruption and errors. A production planner monitors two machines simultaneously and becomes the automation controller responsible for the entire system.

Several work steps are finished on one machine. The reduction of logistical steps speeds up the completion of orders. Joop van



Files are imported into the design and Messer Cutting’s nesting software, OmniWin, takes over.

Zanten has gone to 24-hour production so that orders can be processed overnight without dedicated personnel.

Software digitalization has led to a considerable reduction in the overall production throughput time. Industry 4.0 offers greater utilization of the machines and lowers costs for personnel, logistics and consumables.

Joop van Zanten has improved its market position with automation. “For some customers, we developed from a Tier III supplier to a full-fledged partner and in some cases even to a service partner. We

are recommended by customers to others because we are innovative,” Kroesbergen says.

“We would certainly choose Messer Cutting Systems again,” he says. “Even if we have not quite reached our final goal yet, we will push ahead. We accepted from the outset that this is a transformation process instead of a normal investment project. The logistical goal for 2022 is to deliver at least 80 percent of orders within 48 hours after ordering,” Kroesbergen notes.

In the future, he plans a completely integrated shop for cutting, machining and material handling of larger parts. This includes system expansion with automated unloading, including transport to the next production step. ■

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