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## Shortage of skilled workers forces automation



**Kimmel GmbH & Co. KG started automating manufacturing processes more than 20 years ago. Today, this great experience is of particular benefit to the supplier of sheet metal components and powder-coated metal parts. By using a panel bender RAS Multibend-Center ECO with a working length of 2560 mm, the sheet metal parts specialist from Simbach in Bavaria, Germany, is able to react very flexible to order peaks.**

Like many other suppliers in sheet metal fabrication, Kimmel is struggling with a problem that is becoming increasingly important. The order books are full and the company would like to hire additional staff, but the market for qualified skilled workers is empty.

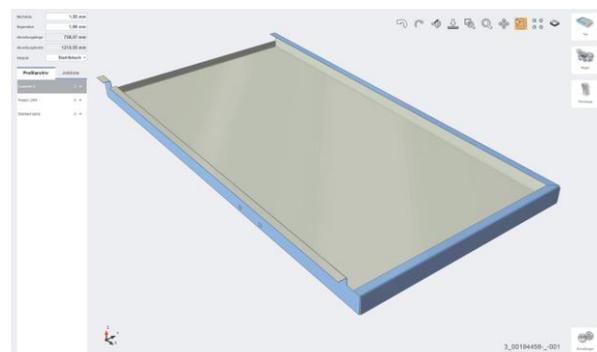


So what can be done to keep up with promised delivery times and customer demands? The answer is automation. However, Managing Director Volker Kimmel took a measured approach to his investment plans and had his production specialists analyze the order mix in detail. Since there are many parameters defining the sensible degree of automation for a company.

A company that manufactures its own products and knows its part types will arrive at different results than a contract manufacturer, who may receive orders of different nature every day. The batch sizes in production, the stock levels requested by customers and the call quantities also have a significant influence on the type of automation. The production team at Kimmel decided that the automation target should be focused entirely on the actual bending process.

With the RAS panel bender, all processes directly related to folding should be automated. However, blank loading and removal of the bent parts should be handled manually.

This concept led the bending specialists at Kimmel to the RAS Multibend-Center ECO. This bending center addresses exactly the requirements of many contract manufacturers, as it shifts all the operator skill required with manual press brakes or folders to the automatic bending process. This means that even unskilled machine operators can produce perfect parts. Volker Kimmel says, "When we have to bend parts for a larger jobs, a specialist loads the bending program and starts the machine. After that, unskilled employees can load the blanks into the machine and manually remove and stack the bent parts."



Speaking of bending programs. As a contract manufacturer, Kimmel usually receives the part geometries from its customers in the form of dxf files. In addition to STEP and dxf files, geo-files

are also a format that the Bendex programming software can import. Kimmel already uses geo-files for programming the blanks. To program the bending sequences, Stephan Wohlmannstetter, responsible for the metal bending department, simply drags and drops a geo-file onto the surface of the Bendex software. This is done in the office so that the production flow on the machine is not disturbed. The Bendex software programs simple and medium-complex bending sequences with a single mouse click. As a result, the software shows various bending sequence alternatives and, already suggests the probably the best sequence with a 5-star rating. In a 3D simulation, the software visualizes the subsequent sequences on the machine. For very complex bent parts, the employee can add special functions in a downstream step. Stephan Wohlmannstetter confirms: "For a control cabinet door with different positive and negative bends, programming from import to the verified simulation takes about 10 minutes. This also includes the entire handling sequences in the machine and the tool setup."



After a program start on the machine, the tool changer automatically sets up the upper beam tools. If a part requires a second or third tool set-up within the bending sequence, another tool change can also take place within the bending sequence. Simultaneously to the tool setup the Magic Eye scanner measures the notches of the blank. The software uses these measurement results together with the manipulators to position the blank exactly on the bending line. Fast programming of the bending sequences combined with automatic tool set-up is exactly what Kimmel had in mind when they were looking for cost-effective automation. This solution allows flexible and demand-driven production, and even an interruption of an order for a rush job does not cause any headaches for the benders at Kimmel.

The bending cell shows the full flexibility of Up-Down metal folding. Bending up and down without blank flipping, automatic bending sequences,



automatic rotation and positioning of the parts, a single tool set for the entire range of parts, and high-speed bending are just a few aspects. Machine operator Peter Smyk explains: "Flange dimensions and angles always fit!" It makes almost no difference which sheet metal batch the blanks come from, which sheet thickness and which material type is used. Even with repeat orders, the very first part is usually within the required tolerances. And in terms of speed, no other bending process comes even close to the productivity of the Multibend Center. Underlining this statement, Peter Smyk shows a clip panel with three bends where the sole bending time at the Multibend Center is 9.5 seconds, adding, "If we bend the same part on an automated press brake, it takes 2 minutes."



Stephan Wohlmannstetter also explains the criteria according a component will be bent either on the Multibend-Center or on the manual or robotized press brakes. "Especially for large-size and partially perforated doors, as well as parts with many up and down bends, we prefer the bending center." In the past, the same part required two tool setups on the press brakes. First, all parts were bent with the first tool setup and stacked after the first sequence. After the second setup, all parts had to be picked up again and completed. In total, this additional time summarized to a production time of about 10 minutes per part for small production batches. In addition, it requires two operators to bend the 1900 mm long parts on the front side. The Multibend Center does this job in 40-45 seconds.



The bending professionals also rely on the RAS bending center for large production batches of less complex bent parts. A machine operator on a press may keep up with the speed of the panel bender, but with 200 pieces, the concentration and thus the speed drops and bending errors may occur. Consistency in the processes, as well as fast and repeatable bending sequences are the outstanding features of the Multibend-Center ECO. ECO stands for a machine concept in which the blanks are loaded in and the bent parts are removed from the same side of the machine. Space saving and designed to meet the flexibility requirements of contract manufacturers.



Quality is a prominent evaluation criterion for the bent parts. "Our bent parts must be extremely accurate in terms of angles, dimensions and fit. Otherwise we have a problem during welding or riveting," explains Stephan Wohlmannstetter. In addition, surface quality is also a critical ordering criterion for customers. The RAS Multibend-Center with its scratch-free bending process not only forms the individual flanges without scratching the surface, but also eliminates tool wear. Volker Kimmel concludes: "With the RAS bending center, we have achieved all our objectives. Easy operation, flexible response to new challenges, low space requirements, and automation within bounds to counteract the increasingly critical labor shortage."

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