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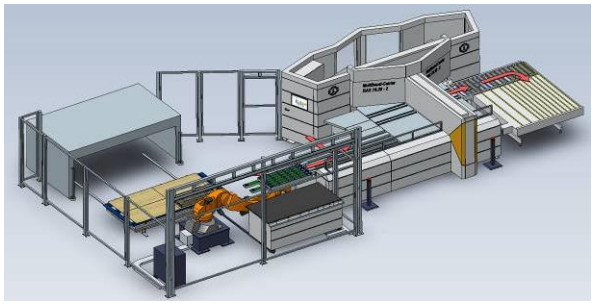
Speed counts

Salzmann Formblechtechnik GmbH is one of the leading job shops for sheet metal parts in the border triangle Austria-Germany-Switzerland. Like any major sheet metal specialist, Salzmann uses a wide range of manually operated as well as automated press brakes for bending. However, it is outstanding that Salzmann operates no less than four machines with the folding technology. These include two RAS Multibend-Center panel benders and a GIGAbend heavy-duty folding machine.

Metal folding and die press brake bending complement each other perfectly at Salzmann and the sheet metal experts know exactly which parts should be bent on which technology. Very small and very thick parts are often assigned to the press brakes, although a RAS GIGAbend folding machine designed for 6 mm steel sheets handles cassette- and profile-type components up to 4 mm sheet thickness.

For bending panels and cassettes up to 2560 mm bending length and up to 2 mm mild steel, 3 mm aluminum or 1.5 mm stainless steel Salzmann uses the two RAS panel benders. Due to long-term supply contracts with major customers, batch sizes at Salzmann are often in the range of 100 parts or more. When walking through the various production halls, you will also see much smaller batch sizes. These are often repeat orders. Here, fast tool changes are required to keep setup times low and production times high. In addition, new part programs have to be tested.

The RAS Multibend Center panel bender is prepared for all situations. In volume production, it is connected to an automated storage system that supplies punched parts. Several stacks of punched blanks can be located on one shelf. An intelligent loading robot picks up the top blank from the desired stack, separates it and feeds it, usually rotated, to the bending center. Intelligent means that the robot calculates the path from the blank pickup to the delivery to the bending center by itself. There is no need to teach or program the robot and the system is exceptionally flexible for all loading applications.



For smaller production batches, however, an ordinary wooden pallet with blanks can also be moved sideways into the loading area. In such cases, the loading robot picks up the blanks from the wooden pallet and the stacker crane of the storage system in the meantime can be used for other jobs. In both volume production and small batch production, the robot can flip the blanks before feeding them to the Multibend-Center. This is useful for punched parts when the punching burr should point toward the inside of the bent parts. With laser parts and precoated sheets, the visible side of the blank is also turned to the outside. The situation is different for blanks with embossings. If these embossings should face to the inside of the bent part, may not be flipped before bending. Using a moveable shuttle table, this can also be done fully automatically. And when it finally comes to single-part production, blanks can also be fed manually to the bending center. The Multibend-Center shows its enormous flexibility right from the loading process.

An optical blank scanner measures the position of the fed blank with an accuracy of a hundredth of a millimeter. This is done in parallel while the previous part is still being bent. The bending center relies on this measuring accuracy during the subsequent bending process. There is no additional time-consuming part gauging for any single bend with the RAS Multibend Center. The main manipulator positions and rotates the part for each fold. With a hundredth of a millimeter positioning accuracy and a thousandth of an angular degree of rotational accuracy, even the most oblique part shapes are produced with a repetition rate comparable to that of identical twins.

Before the blank reaches the bending line, the tool changer has set up the tool segments for the upcoming job. In the bending cell, the folding beam automatically performs the programmed positive and negative bends. This eliminates the need to flip the parts when the folding direction changes. Blank rotation and positioning are also automatic. Further tool changes can take place within the bending sequence. Bernd Hagspiel, responsible for the entire bending department, tells us, "We have complex bent parts where several tool changes are performed within the program sequence." A new tool setup within the bending sequence for example is needed if the long side of the part has to be bent before the short side. Another example are parts that are not rectangular have an angled base shape. Here another aspect comes into play. Small flanges from the neighboring part sides protrude above the bending line and may not be bent. This is where the RAS panel bender uses the UpDown-Tools. They automatically fold in on themselves and thus allow segmented bending operations.

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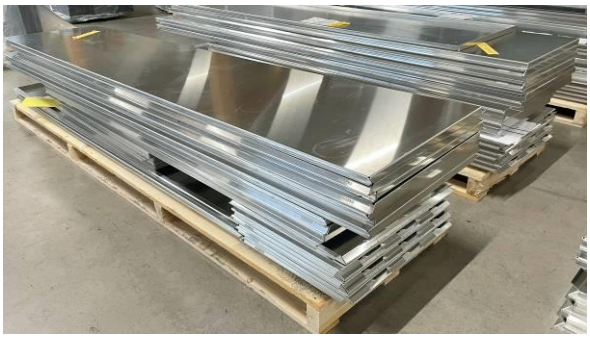
The bending programs can be created with offline programming software in the office without blocking the runtime of the machine. The Bendex software programs the bending sequences automatically. Salzmann's bending team uses the geo data of the part geometries as a starting point.

For very complex parts the programming sequence can be individually adjusted and optimized with the CellControl software.

Despite all the flexibility, the most important evaluation criteria for the efficiency of the bending cell is its speed. In relation to the typically high volume of production batches at Salzmann, a one-time setup would not be particularly significant. However, tool changes within the bending sequence would cause a second machine on conventional press brake bending. Alternatively, a partial sequence could be bent, the parts then need to be put down, the machine retooled, the parts picked up again, and the bending continued until the next tool change. What sounds cumbersome is also very time-consuming in practice. In the case of large parts, such sequences are also easily associated with the use of several machine operators and assistants.

To be fair, we therefore only want to compare the speed of the panel bender with automated press brakes. Bernd Hagspiel confirms "Whenever a component is suitable for the bending center, we also bend it on it, because the cycle times are four times faster than with the automated press brakes." Aluminum facade cassettes show the difference. In a facade, you can find different dimensions of geometrically identical facade elements. All parts up to 2560 mm bending length go through the Multibend-Center. However, some panels are significantly longer and have to be bent on automated press brakes. Here, again, you will find the 4:1 speed ratio.



Machine operator Bernadette Golacz-Rupnik mentions another aspect: "As a machinist, I learned the profession. But it is becoming increasingly difficult to find suitable skilled staff." This development is particularly noticeable in the triangle of Austria, Germany, and Switzerland. Therefore, Salzmann relies on automation whenever it is possible and economical. Stefanie Salzmann, responsible for human resources and finance adds, "Automation also allows us to employ semi-skilled workers on complex machines."

The parts of Salzmann Formblechtechnik GmbH can be found, among other industrial applications, in coverings for gas boilers, facades, ski lifts and machine cladding. With its two RAS panel benders, other folding machines and a variety of conventional and automated press brakes, Salzmann can handle almost any punching, laser cutting, bending, coating and assembly job for sheet metal components.

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