

# ABB gives STROS a helping arm

**An innovative process arm is what sold Czech hoist manufacturer STROS on ABB's IRB 1600ID robot solution. Not only does the arm provide multiple-axis movements, it can rotate 360 degrees, and includes an integrated welding cable.**

> Located near the sleepy town of Sedlčany about an hour's drive south of Prague, STROS-sedlčanské strojírný's premises look nondescript from the outside, but inside its production hall an impressive manufacturing operation is at work. With 50 years in the business, STROS is one of the world's leading suppliers of hoist machinery for building sites. It supplies high-quality work platforms as well as customized personnel and material hoists – hoists that can be expected to carry loads of up to 3,200 kilograms, speeds of up to 90 metres per minute and heights of up to 350 metres. Thus its tetrahedral vertical masts are a crucial component. As each mast section needs a total of 222 reliable welds, manufacturing them is an extremely labor intensive process.

Until recently, STROS had to use highly skilled welders to make these sections. Although it has been using robots for 25 years, these machines could not manage the complex arc welds in narrow spaces needed for these particular components. Consequently, in order to produce a satisfactory number of mast sections it had to employ three welders per shift at three separate workstations to make these pieces.

Apart from the obvious outlay this required in terms of manpower and space, STROS found it increasingly difficult to recruit the highly qualified welders needed for this work. That's why in 2007 the company decided to hold a tender for the complete robotization of its manufacturing process for mast sections. Of the four firms who participated, only the ABB group could fulfill all its requirements.

"ABB was the only one who could supply the entire workstation," says STROS project manager Milan Škorpa. "We didn't just want to buy a robot. We wanted a completely robotized workplace, which would include a positioner and would handle the transfer of components. ABB also did all the programming for us, which means they effectively delivered a complete workstation."

The IRB 1600ID industrial robot with a process arm is a key feature of the robot automation system that is now in place at STROS. The machine's arm is extremely slim and can combine multiple-axis move-

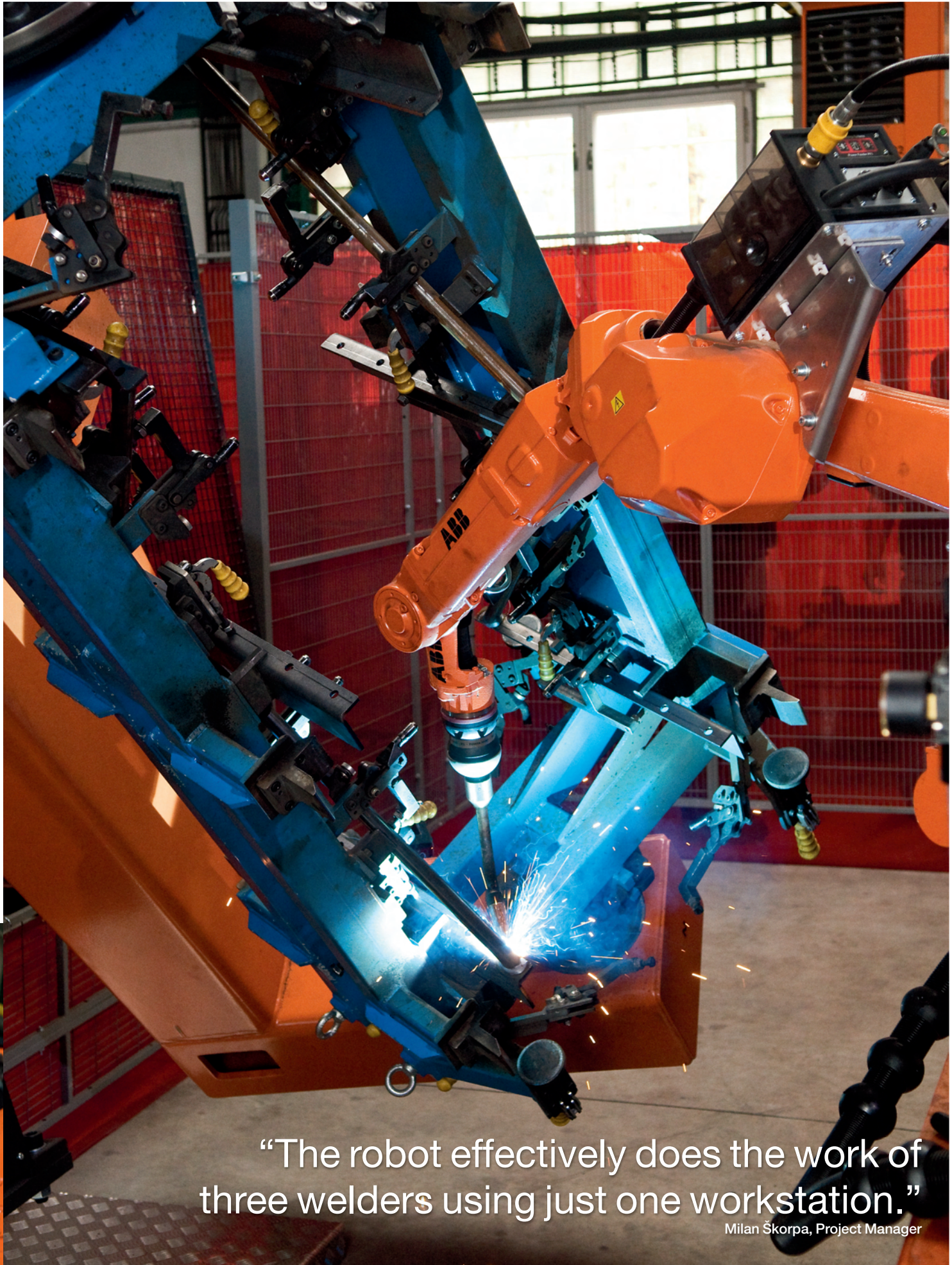
ments and rotate 360 degrees, which makes it ideal for entering narrow spaces and carrying out the complex arc welds that are needed to complete the mast sections. An integrated welding cable follows the arm's movements, which ensures that it doesn't get caught in any surrounding fixtures or workpieces. In addition to the process arm's maneuverability, Škorpa says ABB's positioners for holding the pieces to be welded were also a major selling point. "The fact that the positioner can turn on more than one axis was crucial," he says. "It's necessary to be able to coordinate the robot's movements on the track with the positioner."

**The process arm's** fluid interaction with the positioner is an impressive feat of balletic synchronicity, which according to Škorpa could not have been achieved without ABB's readiness to work closely with STROS in designing the system. "The workers who make the mast sections had to collaborate with the supplier so that the system could be put into operation the way we wanted it," he says. "First and foremost, the people at ABB were perfect experts. And they also willingly responded immediately to any problems we might have encountered." >

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STROS uses a rotating IRBP 500 D positioner with two workstations to hold the individual parts of the mast section that are to be welded before the final piece is completed. This means that the robot is in constant use, because an operator can prepare pieces for welding on one side of the positioner while the other part is being welded. The positioner then rotates and welding continues while the operator removes the completed part on the other side and prepares the next component. The standard combined cycle time for making one mast section is 54 minutes, which is three times quicker than the time required by a human welder to make the same piece. "The robot effectively does the work of three welders using just one workstation," says Škorpa.

**Such obvious savings** in space and time mean that Škorpa believes STROS's investment of CZK 7.5 million (EUR 300,000) in the robot system will have been recovered in two to three years, especially as the company was able to get 50 percent of the cost covered by a special EU grant for modernizing production technologies.

Besides these concrete benefits, Škorpa claims the system's intangible advantages are also significant. "There are important returns on the investment that can't be quantified," he says. "For instance, we now don't have to worry about trying to hire properly trained welders, who are in short supply these days because nobody wants to do this work anymore. It also pays off in terms of the quality of the welding. Even if you have a good welder, you are never going to get the same consistency that a machine gives you. And robots don't forget any welds." ☉



#### >FACTS

##### About STROS

- STROS is one of the world's leading suppliers of machinery for building sites.
- The company has been in business for more than 40 years and has a longstanding focus on manufacturing hoists for material and personnel, working platforms and other steel structures.
- It employs 220 people and exports its products to 35 countries in Europe, Asia, the Middle East and the Americas.

##### Benefits

- One tailor-made robotized workstation produces the same number of pieces per eight-hour shift as three human welders would.
- Robot welding systems ensure consistent high-quality welds without any of the deviations produced by human welders.
- They eliminate the need to recruit qualified welders, who are in increasingly short supply.
- Welding mast sections with robots guarantees constant high levels of geometric precision, which means that the sections fit perfectly with each other when being used to assemble hoists.
- The systems can be easily reprogrammed to produce other parts.