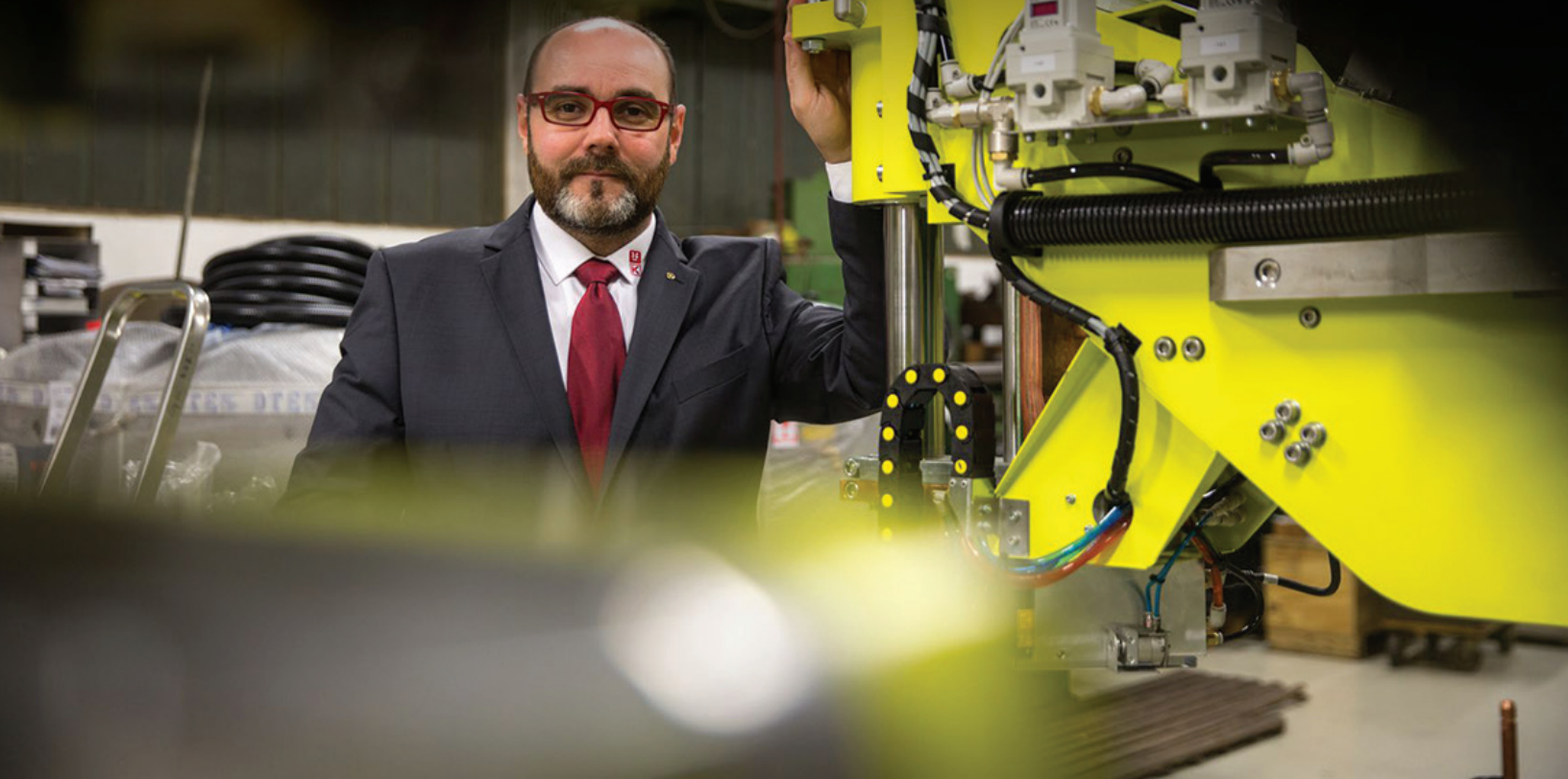


KOČEVAR D.O.O. IMPROVING DEVELOPMENT OF WORLD'S LARGEST WELDING GUNS WITH SOLIDWORKS

Case Study



KOČEVAR relies on SOLIDWORKS design tools to produce the largest custom-made welding guns in the world, which are designed for joining together large components of passenger train cars.

Challenge:

Achieve a competitive edge by reducing weight and optimizing performance of the the world's largest customer-developed welding guns.

Solution:

Implement SOLIDWORKS 3D mechanical design software.

Results:

- Cut development/delivery time by a factor of 10
- Reduced weight of largest welding gun by 60 percent
- Eliminated cost of repetitive prototyping
- Improved product performance and profit margins

KOČEVAR d.o.o. develops and manufactures some of the largest custom-designed welding guns in the world. Established in 1969 to produce industrial spot, projection, and seam welding machines, the Slovenian company has expanded its offering to include single-phase AC linear action, DC three-phase linear action, and MFDC medium-frequency linear action welding machines, as well as robotic spot and seam welding guns, rocker-arm pedestal spot welders, multi-spot projection welding machines, resistance welding automation systems, resistance welding consumables (electrode caps, shanks, laminated shunts, etc.), and measuring equipment.

The welding system manufacturer is well-known for producing the largest custom-made welding guns in the world, which are designed for joining together large components of passenger train cars. Managing Director Jožef Kočevár Jr. credits the company's success to its emphasis on innovation, dedication to improving resistance welding technology, and commitment to leveraging 3D design and engineering technologies.

To address the challenges associated with developing and producing custom-made welding equipment, KOČEVAR needs to maintain a competitive edge, which is why the company was an early adopter of 3D CAD technology when it replaced its Caddie® 2D software with the SOLIDWORKS® 3D mechanical design system in 1998. The company standardized on SOLIDWORKS software because it's easy to use, provides access to simulation tools, and supports KOČEVAR's efforts to shorten delivery times.

"The reason that we use SOLIDWORKS is that we are always looking for a competitive edge," Kočevár notes. "When I consider how SOLIDWORKS has impacted our custom-development of large welding guns—and the time-saving efficiencies that the software provides—it's clear that SOLIDWORKS gives us that competitive edge. Without using SOLIDWORKS with all its capabilities, we would not be able to finish the types of projects that we frequently complete today."

SLASHING CUSTOM WELDING GUN DEVELOPMENT BY A FACTOR OF 10

Since implementing SOLIDWORKS, KOČEVAR has continuously reduced its development cycles and shortened its delivery times, resulting in a factor of 10 improvement over its development/

delivery times using 2D design tools. "To develop the welding guns that we produce now would have taken years working in 2D," Kočevár stresses.

"Using SOLIDWORKS, we have been able to reduce what would take years to months," Kočevár continues. "The main reason for these productivity gains is that it's so much easier to visualize the design and make changes in SOLIDWORKS. Whenever we need to make a design change in SOLIDWORKS, all of the related drawings and technical documentation update automatically. A similar change in 2D would require a month or more of rework. Custom-designed machines are our core business, which is why we use SOLIDWORKS for every project—it allows us to make changes quickly and easily."



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— Jožef Kočevár Jr., Managing Director

REDUCING WEIGHT, OPTIMIZING PERFORMANCE

The greatest challenge to designing and building the largest welding guns in the world is reducing the weight of the guns and optimizing load capacity. To overcome this challenge, KOČEVAR leverages SOLIDWORKS SimulationXpress™ finite element analysis (FEA) tools to calculate the weight and simulate the performance of every component, resulting in a 60-percent reduction in weight while improving durability and performance.

"Weight is the key issue in developing large welding guns so that they can be controlled by off-the-shelf robotic systems and components," Kočevár explains. "To develop the lightest large welding guns in our industry, we ran over 100 simulations with SOLIDWORKS SimulationXpress and used those results to re-design components to reduce weight. We'd then run the simulations again and re-design until we reached the point at which the design was optimized, allowing us to reduce weight by more than 60 percent."

SAVING CUSTOMERS MONEY WHILE INCREASING PROFITS

By using SOLIDWORKS design and SOLIDWORKS SimulationXpress analysis tools to reduce the weight of its large welding guns, Kočevar is helping to save its customers money while simultaneously improving profit margins on each project. "Large welding guns are a robotic-controlled application, which is why it's so important to reduce the weight as much as possible," Kočevar says.

"The large welding guns of our competitors actually cost their customers a lot more because they are too heavy to be controlled by a standard off-the-shelf robot and require custom robotic development and manipulation," Kočevar adds. "Our lighter large welding guns save our customers money by allowing them to use standard robotic controllers. Because we use SOLIDWORKS simulation tools instead of manual calculations and trial-and-error physical prototyping to optimize our machines, our net earnings per machine is also increasing, allowing us to add innovations—such as jigless assemblies for weld pieces—to every machine that we make."

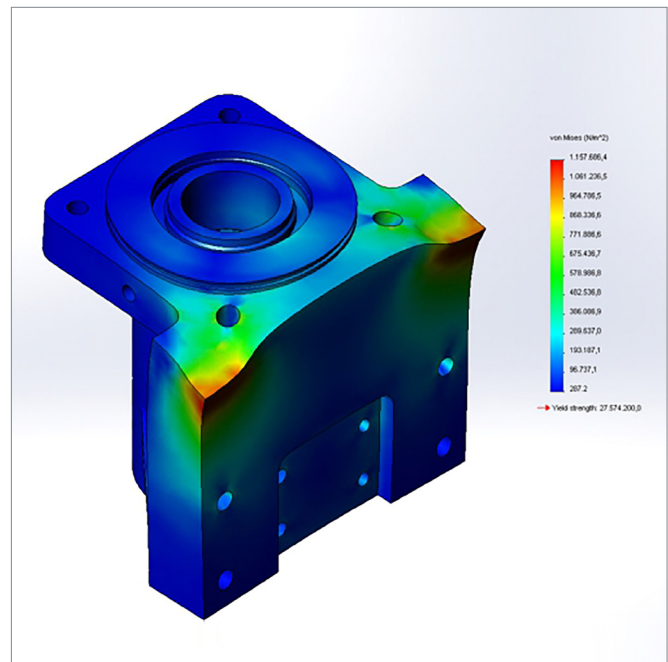


By moving from 2D to SOLIDWORKS 3D design, KOČEVAR has cut its development/delivery lead times by a factor of 10 and realized a 60-percent reduction in welding gun weight while improving durability and performance.

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