

SINAR SHEETMETAL SOLUTIONS PVT. LTD. ACCELERATING SHEET METAL LASER- CUTTING MACHINE DEVELOPMENT WITH SOLIDWORKS MECHANICAL AND ELECTRICAL DESIGN SOLUTIONS

Case Study



Using SOLIDWORKS mechanical and electrical design solutions, SINAR Sheetmetal Solutions can more efficiently develop both the mechanical and electrical aspects of its sheet metal fabrication machines—including electrical schematics—which has enabled the company to reduce machine development cycles by 20 percent and shorten product time to market by 30 percent.

Challenge:

Successfully enter the sheet metal laser cutting, bending, and welding machine markets by quickly and cost-effectively developing innovative, automated solutions for fabricating sheet metal parts.

Solution:

Implement SOLIDWORKS Premium 3D mechanical design, SOLIDWORKS Electrical Schematic design, and SOLIDWORKS Electrical 3D design solutions.

Results:

- Reduced design time by 20 percent
- Cut time to market by 30 percent
- Decreased development costs by 20 percent
- Improved quality, minimized scrap and rework by 20 percent

SINAR Sheetmetal Solutions Pvt. Ltd. is a leading Indian manufacturer of sheet metal fabrication and processing machines that is backed by a team with more than 40 years of experience in machine tool design and production. SINAR was founded in 2019 with the goal of becoming not only the top sheet metal laser-cutting, bending, and welding machine solutions manufacturer in the Indian market, but also a leading exporter of sheet metal fabrication machines around the world.

SINAR designs and manufactures laser-cutting, bending and welding machines to meet international industry manufacturing standards, as well as special-purpose machines for unique applications. The company is committed to providing its customers with innovative, comprehensive solutions that are competitive with or exceed the capabilities of other manufacturers. This commitment to quality is one of the reasons that SINAR chose the SOLIDWORKS® 3D product development system when the company was launched in 2019, according to Technical Director Dr. Laxmikant K.

"As a startup, we wanted 3D modeling software that is easy to learn and use; so we selected SOLIDWORKS," Dr. Laxmikant explains. "Moreover, the features included with our SOLIDWORKS Premium license helped us do motion analysis and also basic FEA [finite element analysis], which makes the design process quick, reliable, and efficient. We have also procured SOLIDWORKS Electrical Schematic and SOLIDWORKS Electrical 3D software, which are proving to be beneficial."

In addition to choosing SOLIDWORKS solutions for its user-friendly GUI and requiring shorter learning curve, SINAR values the software's large-assembly design capabilities, which have no performance lag; integrated SOLIDWORKS Visualize photo-realistic rendering tools, which support customer demands for 4K raster images for approval; and the SOLIDWORKS Toolbox

Library, which enables the drag-and-drop of fasteners and other components directly into assembly models.

INTEGRATED MECHANICAL AND ELECTRICAL DESIGN SAVES TIME AND MONEY

Using integrated SOLIDWORKS design tools to develop both the mechanical and electrical aspects of its sheet metal fabrication machines—including electrical schematics—SINAR is saving substantial amounts of time and money. "Overall, we have reduced both our machine development cycles and costs by 20 percent since implementing SOLIDWORKS software, enabling us to cut product time to market by 30 percent," Dr. Laxmikant notes.

"SOLIDWORKS mechanical design software helps us quickly develop the many assemblies in our machines, and SOLIDWORKS Electrical allows us to simplify and accelerate the creation of electrical schematics due to its integration with SOLIDWORKS software and intuitive interface," Dr. Laxmikant adds.



"SOLIDWORKS large-assembly and interference-detection tools were really helpful in resolving some complex issues in

assemblies, as were SOLIDWORKS motion analysis capabilities, which helped us select the appropriate motor [rpm and torque], drive components, and belt length and thickness for driving pulleys. Sheet metal design and weldments capabilities also helped us develop our design efficiently. All of these tools enabled us to maintain high levels of quality, resulting in a 20 percent reduction in scrap and rework."

—Dr. Laxmikant K, Director

DEVELOPING LARGE ASSEMBLIES QUICKLY AND EASILY

SINAR sheet metal fabrication machines require the development of large assembly designs—its laser-cutting machine includes 20 subassemblies—and the company's designers were able to create large assemblies in SOLIDWORKS quickly and easily because of the software's fast performance and interference detection tools. "We found top-down assembly design to be a very intuitive approach and one of the reasons that we became interested in SOLIDWORKS software," Product Designer Bharath NJ says.

"SOLIDWORKS also has no lagging performance issues when working with large assemblies," Bharath continues. "SOLIDWORKS large-assembly and interference-detection tools were really helpful in resolving some complex issues in assemblies, as were SOLIDWORKS motion analysis capabilities, which helped us select the appropriate motor [rpm and torque], drive components, and belt length and thickness for driving pulleys. Sheet metal design and weldments capabilities also helped us develop our design more quickly. All of these tools enabled us to maintain high levels of quality, resulting in a 20 percent reduction in scrap and rework," reiterates Director Dr. Laxmikant.

IMPROVING DESIGN VISUALIZATION, COST ESTIMATION, AND SOURCING

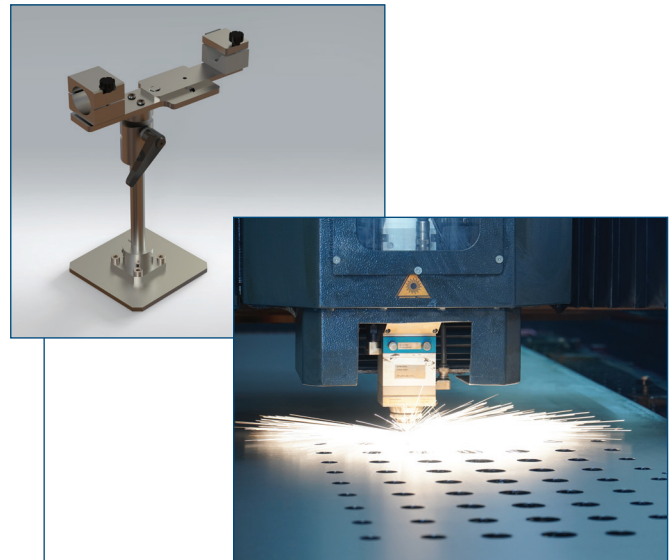
Also contributing to SINAR's efficiency in developing its laser-cutting machine were additional tools within SOLIDWORKS Premium software that support design visualization, production cost estimation, and online component sourcing via 3D ContentCentral®, a free online library of thousands of high-quality 3D CAD models from hundreds of suppliers. "With SOLIDWORKS Visualize, we can quickly create 4K raster images for design reviews, client approvals, and marketing purposes," Bharath stresses.

"By adopting SOLIDWORKS Costing, we learned the actual price of the product, including all operations defined for manufacturing, which saves a lot of time in terms of cost estimating," Bharath says. "With the help of SOLIDWORKS 3D ContentCentral, we quickly chose the motor and brand that works best for our design and directly import the model into our assembly. SOLIDWORKS gives us a range of capabilities that we need to succeed in the highly competitive sheet metal fabrication machine market."

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SINAR designers rely on SOLIDWORKS large-assembly design tools to quickly and easily create large assemblies because of the software's fast performance and interference-detection tools.

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