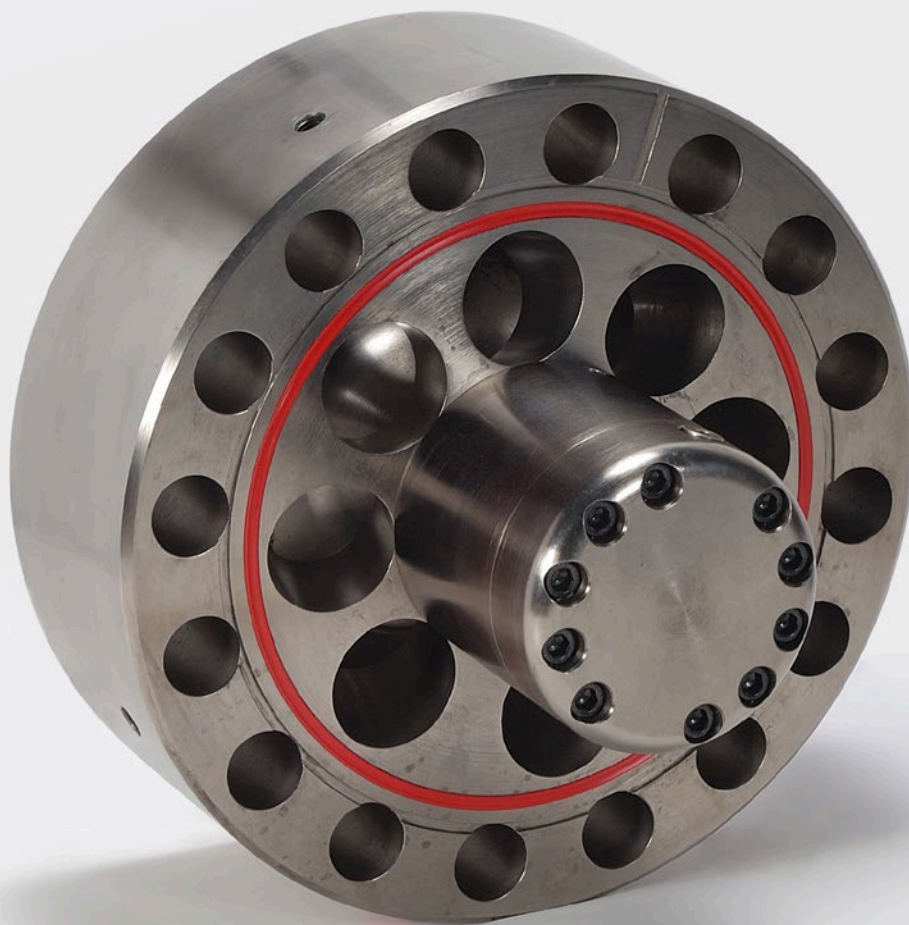


POLYHYDRON GROUP OF INDUSTRIES

ADVANCING HYDRAULIC PRODUCT DEVELOPMENT WITH SOLIDWORKS SOLUTIONS



Polyhydron Group companies rely on SOLIDWORKS design, SOLIDWORKS Simulation analysis, and SOLIDWORKS Flow Simulation computational fluid dynamics (CFD) analysis solutions to accelerate the development of hydraulic pumps, valves, and fittings while minimizing errors and avoiding the expense of costly test equipment.

Challenge:

Accelerate the development of custom high-volume and low-volume hydraulic pumps, valves, and fittings while minimizing errors and avoiding the expense of costly test equipment.

Solution:

Implement SOLIDWORKS design, SOLIDWORKS Simulation analysis, and SOLIDWORKS Flow Simulation computational fluid dynamics (CFD) analysis software.

Results:

- Shortened time-to-market by 75 percent
- Delivered custom products in two weeks
- Avoided test equipment cost using simulation tools
- Achieved right-the-first-time designs

The Polyhydron Group of Industries comprises leading manufacturers of a complete range of hydraulic systems and components. The four India-based companies within the Polyhydron Group serve every kind of hydraulic need and address all types of production requirements. Hyloc Hydrotechnic Pvt. Ltd. mass-produces hydraulic tube fittings. Polyhydron Pvt. Ltd. handles high-volume batch production of hydraulic pumps and valves. Polyhydron Systems Pvt. Ltd. creates custom-made, one-off electrohydraulic systems. Spica Hydraulics Pvt. Ltd. focuses on low-volume batch production of hydraulic manifolds.

Since its founding in 1974, the Polyhydron Group has built a reputation for providing quality products at affordable prices, which has helped the companies grow. Polyhydron Pvt. Ltd., for example, has maintained a compound growth rate of more than 30 percent. The flagship company of the Polyhydron Group, Polyhydron Pvt. Ltd., manufactures hydraulic radial piston pumps, industrial and mobile hydraulic valves, and hydraulic accessories.

Polyhydron Group companies once used the combination of AutoCAD® 2D design tools, empirical formulas, and rules of thumb to develop their products. Working in 2D, however, resulted in the tedious, time-consuming process of revising, editing, and correcting every drawing view for each assembly. Faced with growing customer demand for faster delivery times, greater design complexity, and the need to validate new hydraulic designs, the Polyhydron Group decided to move to a 3D development platform.

According to Managing Director of Spica Hydraulics Pvt. Ltd. Gautam Samant, Polyhydron initially attempted to use Autodesk® Mechanical Desktop® software, but the companies were unsuccessful with that solution, partly due to a lack of customer support. After evaluating the Solid Edge® and SOLIDWORKS® 3D design packages in 2002, Polyhydron chose to standardize on SOLIDWORKS CAD software because of its greater functionality, ability to handle more complex geometries, and high-quality reseller support. Polyhydron has since added SOLIDWORKS Simulation structural analysis and SOLIDWORKS Flow Simulation computational fluid dynamics (CFD) analysis solutions to optimize and validate new designs.

“Our designs increasingly involve complex geometries, which was what initially pushed Polyhydron towards 3D,” Samant explains. “We have a variety of product lines, and the versatility of SOLIDWORKS has led us to standardize on SOLIDWORKS software as our only modeling tool.”

GETTING IT RIGHT THE FIRST TIME

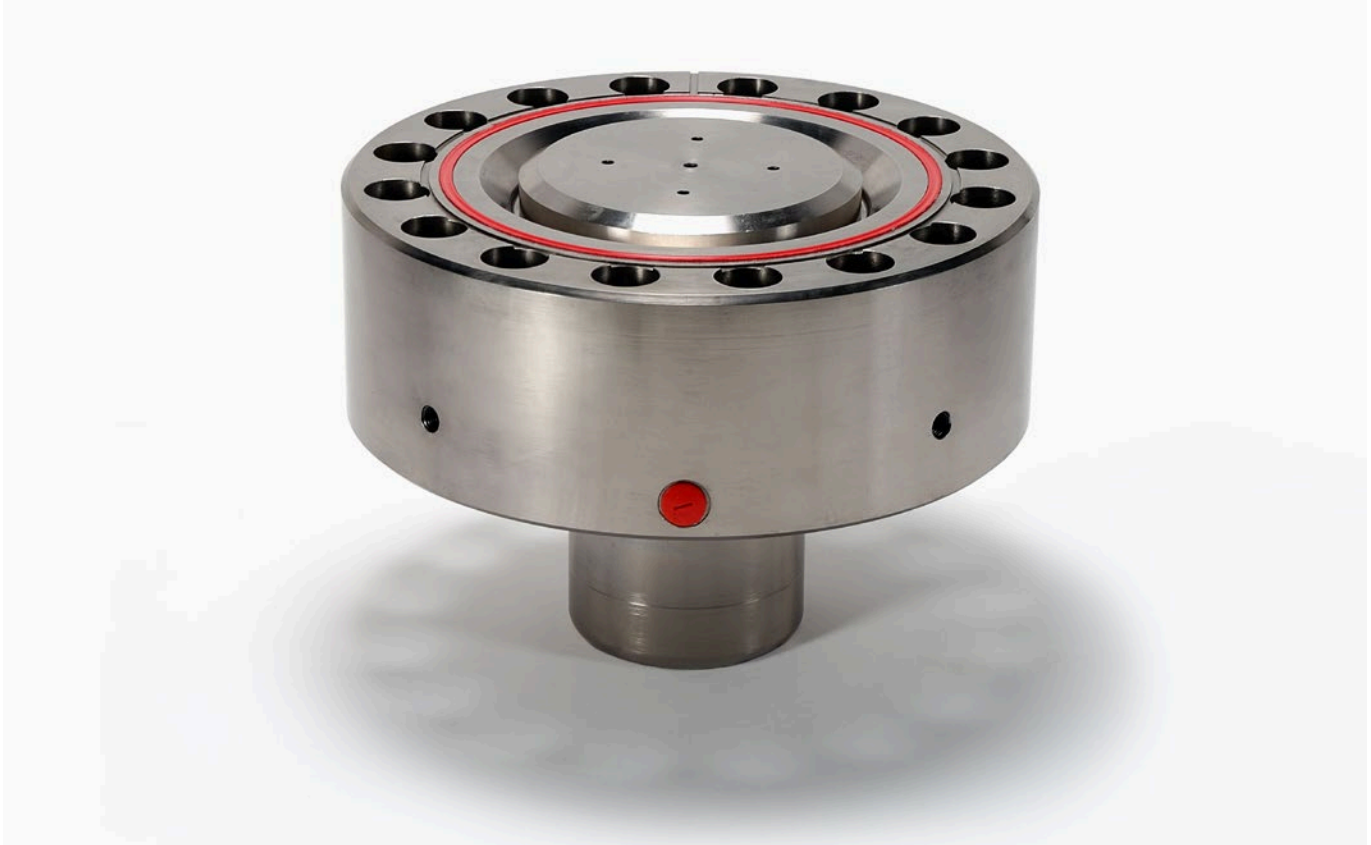
Since implementing SOLIDWORKS product development solutions, Polyhydron has cut its time-to-market by as much as 75 percent. The companies are able to complete design work and deliver product in one-fourth the time, primarily because SOLIDWORKS solutions allow their engineers to create right-the-first-time designs, drawing on the increased accuracy that results from using 3D parametric modeling and integrated design analysis and validation tools.



“SOLIDWORKS Simulation tools have enabled us to provide our customers with the best value for their money.”

— Gautam Samant, Managing Director
Spica Hydraulics Pvt. Ltd.

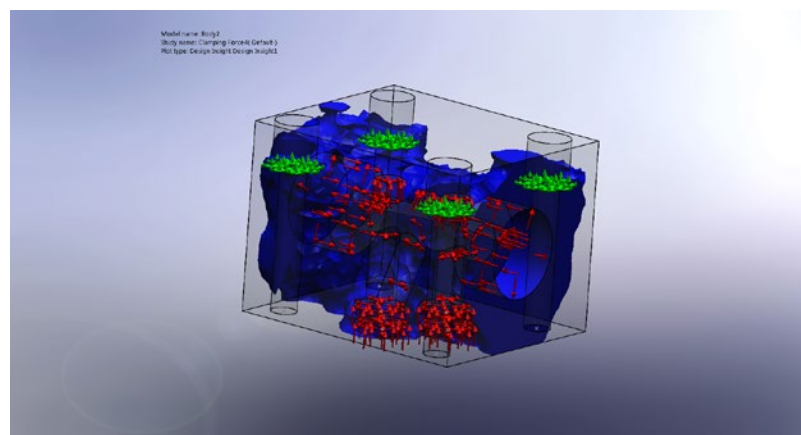
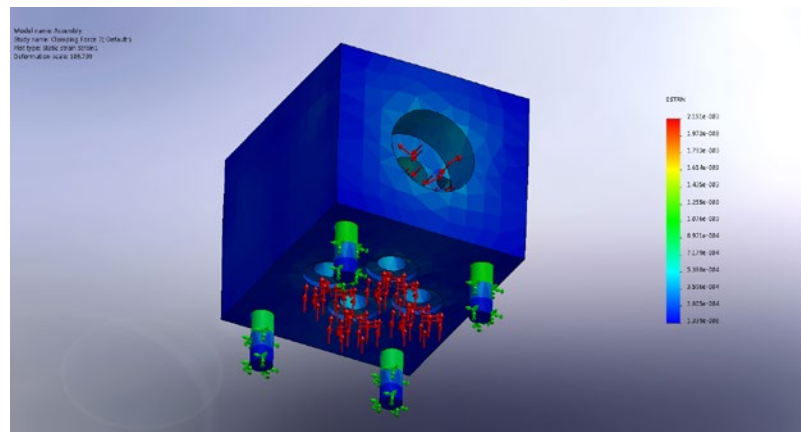
“In the earlier days, the first benefits resulted from parametric modeling,” Samant recalls. “But we continually find additional SOLIDWORKS tools that help us increase productivity, such as using the integrated SOLIDWORKS Simulation and SOLIDWORKS Flow Simulation applications to optimize and validate designs, leveraging design configurations, and using eDrawings® files on an Android™ tablet to improve visualization on the shop floor. The productivity gains made possible through SOLIDWORKS solutions have made us much faster. We can now deliver tailor-made, one-off products in as little as two weeks.”



CONFIGURATIONS DRIVE DEVELOPMENT

Due to the nature of its hydraulic products—which require differing sizes, capacities, and pressures—Polyhydron has heavily leveraged SOLIDWORKS design configuration capabilities to more efficiently develop its products. Using design tables inside SOLIDWORKS, Polyhydron engineers can create an entire family of products from a single design.

“Design tables are magic for us,” Samant stresses. “Hydraulic valves, tube fittings, and components are generally a series of products with minor changes. SOLIDWORKS design tables handle our products wonderfully, saving us a lot of time in the process.”



With SOLIDWORKS Simulation and SOLIDWORKS Flow Simulation software, Polyhydron can more efficiently and cost-effectively optimize and validate product designs, ensuring maximum performance without incurring the delays and expense associated with physical prototyping.

FLUID FLOW SIMULATION SAVES TIME AND MONEY

Polyhydron also realizes time and cost savings by using integrated SOLIDWORKS Simulation structural and SOLIDWORKS Flow Simulation CFD analysis solutions. Using these applications, Polyhydron has avoided the expense of costly test systems and the time required to conduct test regimens. In addition to providing time and cost savings, SOLIDWORKS Simulation tools let Polyhydron engineers analyze the performance of systems that would be practically impossible to physically test, as well as optimize product performance.

For example, the Polyhydron Prefill Valve requires a pressure drop across the valve, with the largest model designed to handle a flow of 10,000 liters per minute. "Using SOLIDWORKS Flow Simulation, we were able to optimize design performance before building the first prototype," Samant says. "SOLIDWORKS Simulation tools have enabled us to provide our customers with the best value for their money."

Focus on Polyhydron Pvt. Ltd.

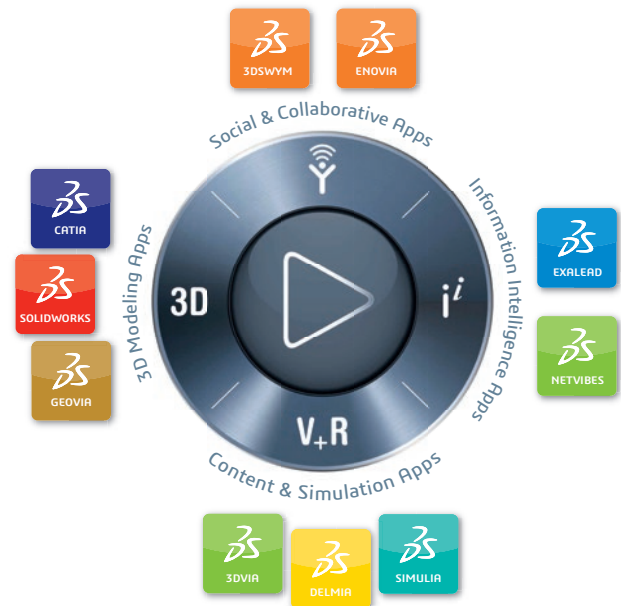
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