> Autodesk Simulation Moldflow offers a better approach for virtual product development with more advanced and accurate results for verification and optimization of molds. This ultimately has created more confidence in our clients for our services.
>
> —Mr. Sanjay Wani
>   Deputy General Manager, R&D
>   Varroc Polymers

Built for endurance.

Varroc Group relies on Autodesk Simulation Moldflow to make improvements to its auto parts designs faster and more cost-effectively.

Image courtesy of Varroc Group

Project Summary

Varroc Group is an emerging global auto components manufacturer headquartered in Aurangabad, India. To cater to the diversified requirements of the auto industry, the group is further divided into Varroc Polymers and Varroc Engineering. Varroc Polymers specializes in both interior and exterior vehicle components including bumpers, door panels, instrument panels, HVAC parts, four-wheeler mirror assemblies, air cleaner assemblies, seats, and two-wheeler mirrors.

Varroc Polymers has nine polymer plants throughout India and one technology center in Aurangabad. There are 64 professionals working in research and development (R&D) for the company, and 95 personnel who staff the tool room.

"We are dedicated to providing polymer-based solutions to clients who require lead-time sensitivity, product development, and complex tooling with complete validation and manufacturing all under one roof," says Mr. Ramchandra Shejwal, assistant vice president—Technical Center, Varroc Polymers.

Varroc Polymers is constantly enhancing its capacities and adding new technologies to cater to its original equipment manufacturers (OEMs) customers worldwide. "Our philosophy of 'being where the customer is' has helped to position us ahead of the competition. We have better coordination with clients. We also have shortened the product development cycle, and are prepared to support every need of the rapidly growing vehicle market in India," says Mr. Sanjay Wani, deputy general manager of R&D for Varroc Polymers.

The Challenge

Quality improvement and production cost reduction have become crucial for customers in the highly competitive automotive market. Many of Varroc's customers are looking to replace metallic parts for vehicles with less expensive but equally reliable substitute materials.

While working with one of the leading automotive companies in India, the engineers at Varroc Polymers faced a challenging situation in developing the front grill for India's first compact truck. The grill design featured alternate thin and thick strips connected to an outer frame. The company's objective was to overcome the problem of cracking and breaking of the thin strips due to weak weld lines in the center of the strips.

"There was 50 percent rejection reported due to the issue of breakage in the front grill strips," says Mr. Sanjay Wani. "Resolving the issue without altering the product shape was a challenging task for us."

Autodesk

Autodesk Simulation Moldflow helps Varroc Group's polymers unit verify and optimize molds more efficiently.

The Solution

Until 2006, Varroc Polymers had outsourced its analysis work to engineering service providers. But with ever-changing demands from its clients, it became difficult to respond timely to customers' needs. "We already had two decades of expertise in development and manufacturing, as well as an industry-leading tool room and development center. When we decided to bring every stage of product development in-house, we turned to Autodesk® Simulation Moldflow® plastic injection molding design software for our virtual product development," says Mr. Ramchandra Shejwal.

Varroc Polymers has three sets of advance solvers, and uses the most advanced gas, fiber, and other modules to ensure better quality, cost performance, reliability, and time to market.

"Autodesk Simulation Moldflow offers a better approach for virtual product development with more advanced and accurate results for verification and optimization of molds. This ultimately has created more confidence in our clients for our services," says Mr. Sanjay Wani.

The Result

Although the grill for the compact truck appears quite simple in its design, it was challenging to eliminate the problem of the cracking of the strips without altering the product's shape. The traditional trial-and-error approach would have been very costly and time consuming. But with Autodesk Simulation Moldflow, the engineers at Varroc Polymers were able to quickly identify the potential defect. In their revised design created with the software, the team shifted the weld lines to the corners by increasing the frame wall thickness on the top side by 0.5 mm, thus eliminating the cracking problem.
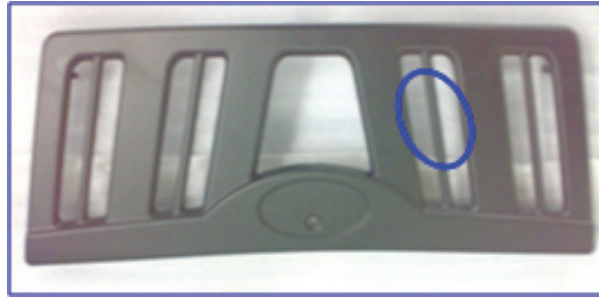

Image courtesy of Varroc Group

Autodesk Simulation Moldflow allowed Varroc Polymers to precisely predict the unbalanced thickness of the front grill that was affecting the strength of the strips by creating weak weld lines in the strips' centers.

"We were able to reduce the rejection due to the cracking of the strips from 50 percent to 0 percent, and realize significant savings annually," says Mr. Sanjay Wani. "Adopting Autodesk Simulation Moldflow was the best decision to increase our company's competitiveness and help ensure that we are providing high-quality designs to our customers."

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