

## COMPANY

**Plast-Pro Solutions**

## LOCATION

**Pune, India**

## SOFTWARE

**Autodesk® Moldflow®**

# Reduced Molding rejection

## Part aesthetic issue solved by Moldflow analysis.

"By using Autodesk Moldflow, we have achieved much more. It is a coherent environment, where our experts can engage in the project by communicating and discussing issues with the clients related to injection molding and help mold makers achieve optimal parts."

—**Mr. Narendra Alone**  
CEO  
Plast-Pro Solutions

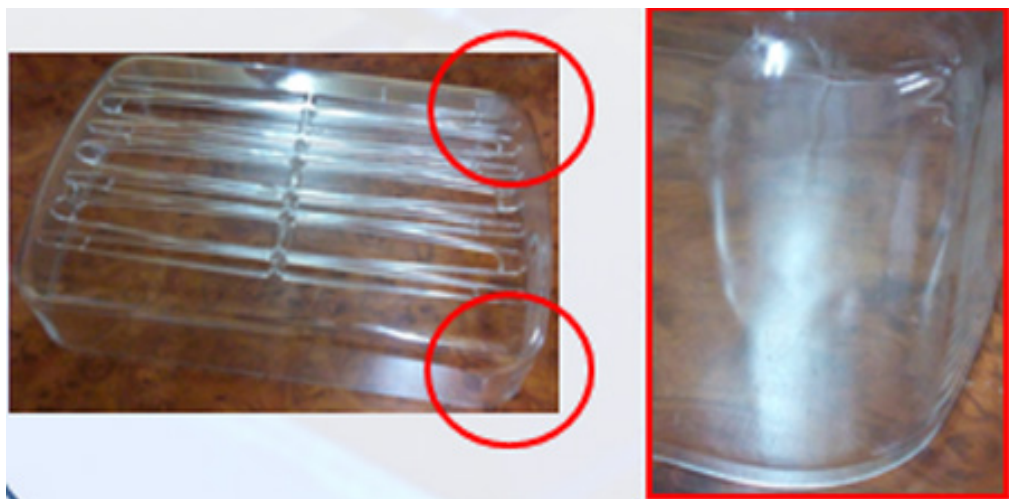


Image courtesy: Plast-Pro Solutions

**Established in 2015, Plast-Pro Solutions is a firm offering professional services in Moldflow analysis, plastic product development and plastic injection molding. In short time Plast-Pro Solutions has become a "one stop center for Moldflow services" working closely with the suppliers to produce top-quality solutions, improve time-to-market and lower the overall cost of production.**

The firm is located in Industrial town Pimpri-Chinchwad, Pune and provides Moldflow services for diverse and demanding industries such as automotive, medical appliance, consumer goods, toys and much more.

"Our goal is to ensure each and every client receives the highest possible level of quality for the Autodesk Moldflow services, at a rate well below what they would pay for in-house or domestic services." Said Mr. Narendra Alone, CEO Plast-Pro Solutions

With an experienced founder and highly skilled staff members available, representing a range of expertise, the firm can provide exceptional service no matter the complexity or size of the project. Plast-Pro Solutions strives to stay in touch with the latest technology within the Plastics Industry, applying their knowledge and experiences to the market/area of interest of their customers. This enables firm to support numerous customers to produce plastic components with high quality,

good consistency and cost efficiency.

### Challenges:

As the trend of plastic product designs moves towards smaller and thinner design concepts, it is important to strike a balance between the aesthetic appeal and the structural integrity when designing contemporary plastic parts.

Recently, one of the Korean companies having their manufacturing plant in Pune, India approached Plast-Pro Solutions to resolve the issue of sink mark on the cover of insect, fly killer machine mold. The transparent cover part was made up of PMMA material. Ribs were used to strengthen molds mechanical properties. However, surface defects such as sink and flow marks occurred on the right side curved surfaces. The uneven shrinkage was caused due to imbalance phenomenon in the filling results. As shown in the Fig there were sink marks on the curve surfaces that were severe enough to jeopardize the success of product. The client developed this mold using CAD solutions without applying the CAE technology to optimized processing conditions to reduce sink marks and relied on trial-and-error and the experiences of the molders.

Another constraint that added a layer of challenges was to use of cold sprue with gate, client do not want to consider the hot runner system. Primary observations showed very less scope in play with the gate location.

# Part aesthetic issue solved by Moldflow analysis.

## Solution:

The complexity of product designs and the fierce competition in today's manufacturing world, the old ways of product development such as trial-and-error or relying on the experiences of seasoned molders no longer support the fast turnaround time demanded by customers.

In order to tackle this sink mark issue on the curve surface and reduce mold-trial costs. First of all, through Moldflow simulation analyses on the original design, Plast-Pro engineers were able to detect a flow imbalance phenomenon in the filling result, which caused uneven product shrinkage.

Keeping the suggestion given by client in mind, Plast-Pro engineers proceeded to conduct the first design change (Revised 1) in order to directly address the issues on flow imbalance and long cycle time. The original two-point gating design would result in a flow imbalance issue, which ultimately contributed to the uneven product shrinkage. Thus, in order to improve this issue, Plast-Pro changed the two-point gating design to three gating design, after virtual testing in Moldflow there still exist the issue of flow imbalance that may have lead to other defects. So, it was decided to check the one-point gating design and set the center point of the product as the gating position, as shown in Fig. Also, the processing parameters were adjusted: the packing time was reduced and clamping pressure was reduced from 650T to 500T.

"We find Moldflow's capability for sink mark predictions has been greatly enhanced. Moldflow's recent versions provide an accurate and in-depth simulation analysis of the sink mark behavior caused by the uneven shrinkage. Autodesk Moldflow is a reliable and smart tool for product optimization and design validation." added Mr. Narendra Alone

## Results:

Plast-Pro engineers conducted an actual mold-trial experiment using one gate solution. When comparing the actual mold-trial results with those of Autodesk Moldflow simulation analyses, the simulation results closely reflected the real-life molding scenario and were validated by the mold-trial results.

The enhancement of the Sink Mark analysis is a strong evidence of Moldflow's continuous efforts in improving the software capabilities and simulation accuracy. The improved software predictions benefited engineers to visualize problematic areas and the firm was

able to effectively solve product deformation issues, improve product quality and maximize its aesthetic appeal to meet with the stringent product requirements. Moldflow helped in capturing the sink mark phenomenon of injection-molded parts and provided a valuable reference for product optimization and parameters adjustments prior to the actual production. As a result, Plast-Pro could successfully solve the critical sink mark issue in very less time and provided valuable guidance to the client.

"By using Autodesk Moldflow, we have achieved much more. It is a coherent environment, where our experts can engage in the project by communicating and discussing issues with the clients related to injection molding and help mold makers achieve optimal parts." Concludes Mr. Narendra Alone

"We find Moldflow's capability for sink mark predictions has been greatly enhanced. Moldflow's recent versions provide an accurate and in-depth simulation analysis of the sink mark behavior caused by the uneven shrinkage. Autodesk Moldflow is a reliable and smart tool for product optimization and design validation."

—Mr. Narendra Alone  
CEO  
Plast-Pro Solutions

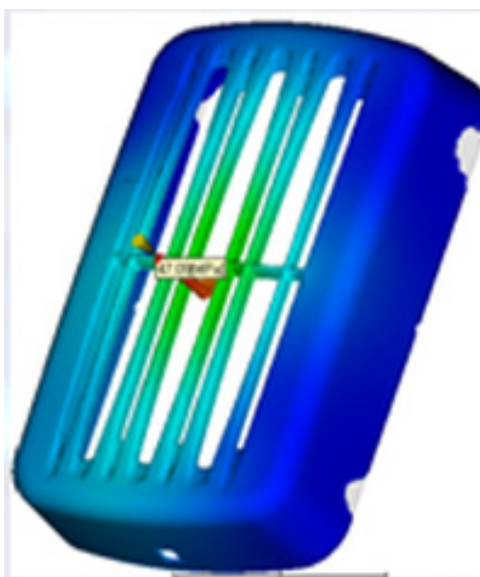


Image courtesy: Plast-Pro Solutions



"Our goal is to ensure each and every client receives the highest possible level of quality for the Autodesk Moldflow services, at a rate well below what they would pay for in-house or domestic services."

—Mr. Narendra Alone  
CEO  
Plast-Pro Solutions