COMPANY
Opptum Engineering Solutions Pvt Ltd.

LOCATION
Pune, India

SOFTWARE
Autodesk Moldflow

Moldflow – adding immense value to design and manufacture

> "By implementing Moldflow simulation in the design process, one can save time and resources, hence increasing efficiency and reducing cost as well as design-to-implementation cycle time. The qualitative and commercial advantages are obvious"
>
> —Krishnamurthy Mani Narayan
> Director
> Opptum Engineering Solutions Pvt Ltd.
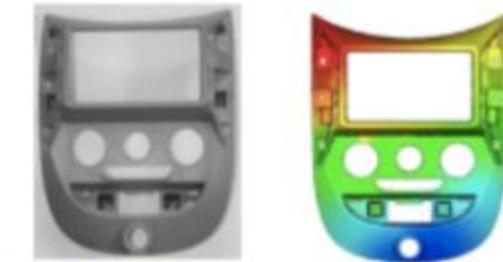
Image courtesy: Opptum Engineering Solutions

Opptum Engineering Solutions is an engineering design services company providing services mainly in the domain of moldflow analysis. Value added services are provided in the development and manufacture of complex plastic parts. The full suite of Moldflow software finds operation here to provide injection molding advice and moldflow simulation is undertaken across a wide genre of applications from the smallest medical device to the largest car instrumentation panel. This enables practical, quick and efficient solutions to complex injection molding problems.

The design process challenges:

The challenges vary from product to product under consideration though they would normally fall under one of the below categories:

1. Achieving vital, desired and preferred product quality - this is an ongoing process, looking at ways and means to enhance product quality and deliverable parameters.

2. Extended and stretched development time - Once a product is planned and accepted, the design and production team is under tremendous stress for the earliest possible delivery.

3. Strenuous molding trials - molding trials tend to get very strenuous and challenging with conflicting moments.

4. Manufacturing process optimization: An ongoing process of improvisation.

5. Design and Production Cost - a critical criterion in all commercial processes.

6. Customer expectations and their fulfilment.

Typical Use Case:

A client had Flow, Weldline and Haze issue in Bezel part. Conventional approaches presented a couple of options thrown up by the Fill+Pack+Warp analysis, but the warpage in either case was beyond the client specs as the part was an essential part.

The strategy was to decrease the warpage by optimizing the runner design such that by changing the gate location, warpage would decrease up to the target limit. The warpage was manipulated by running a series of iterations in the Autodesk Simulation Moldflow Insight. This also enabled the change in diameter of the runner for the gate. A backward process integration enabled additional strengthening through increase of the rib area. The result was the bringing down of the warpage to a level much below the client's specs.

The Autodesk Moldflow advantage:

Opptum has been using Autodesk Moldflow software and is able to address the above and other challenges in the following ways:

- It becomes much easier to identify the exact suitable material as Moldflow has an extensive material data base.
- Moldflow enables the optimization of the part's wall thickness to achieve a uniform filling.
- The optimal gate location for the part can be easily determined.
- Moldflow identifies and eliminates aesthetic defects such as sink marks, weld lines and air vents.
- Optimal weldline placement is achieved.
- Moldflow helps in arriving at a correct tool layout and indicates the runner designs required.
- Authentic, precise and detailed reporting eliminates the expensive and time-consuming process of trial & error.
- Quality injection molded parts are allowed to be created all time go of the process.

Other Benefits of using Moldflow compared to earlier process used at Opptum

- Efficient Process Conditions
- Balanced filling and pressure distribution
- Improved and Optimum Cooling
- Balanced runners and gates for minimising the scrap output.
- Position Weld Lines where one needs them.
- Elimination of Air Traps, Sink Marks & Burning.
- Optimum Feed system design to minimize Clamp Force Requirements.
- Control Fiber Orientation.

Moldflow – the cost advantage:

If we take the average results of Opptum service for its customers, customers saved two to four weeks in tooling time and reported enhanced efficiency of 20% by elimination of several Mold tryouts and rework.

Many of their molds were approved in the very first trial and customers managed to get quality parts during the very first time.

Krishnamurthy of Opptum is extremely pleased with the impact Moldflow has brought into his operations. He says, "By implementing Moldflow simulation in the design process, one can save time and resources, hence increasing efficiency and reducing cost as well as design-to-implementation cycle time. The qualitative and commercial advantages are obvious".

Pre Processing
Mesh Type: 3D mesh
Material : PC + ABS

Feed system with Part   Cooling Channel with Part
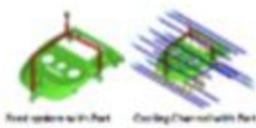
Image courtesy: Opptum Engineering Solutions

Molding Trial part fill pattern.

Moldflow Simulation fill pattern.

Image courtesy: Opptum Engineering Solutions

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