



Volvo “New VN” Bumper Assembly
 Entered by: Mack Molding Company

Molder
 Mack Molding Company
 10769 Asheville Highway
 Inman, SC 29349

Designer
 Volvo Trucks North America
 7900 National Service Road
 Greensboro, NC 27402

Moldmaker
 Delta Mold
 9415 Stockport Place
 Charlotte, NC 28273

 MSI Mold Builders
 12300 6th Street
 Cedar Rapid, IA 42404

Original Equipment Manufacturer (OEM)
 Volvo Heavy Trucks

Entry Description

The “ New VN” bumper assembly in its’ truck application, is a three-piece design, making repair and replacemtn of individual sections easier and more economical than ever before. This bumper design replaces a one-piece design, previously in a SMC process, with new fuel saving aerodynamics and more design options than ever before.

Assembled from 7 injection molded components in PC/ABS raw material, the class A surface requirements are maintained by molding the show surfaces with no core side features, thus avoiding sink and flow issues. The structure is maintained by use of a molded bucket type reinforcement, which is mounted via 2-component glue application between the back of the show surface and the edge of the reinforcement. During the assembly process, several steel stud plates and brackets are mounted internal to the glue process to assure secure mounting techniques direct to the truck frame rails.

The robotic glue application in the 2 component system incorporated a x,y,z control function programmed to speed and flow to match the rigorous continuous bead requirements of each of the three major subassemblies. After each of the sub assemblies is sufficiently cured, they are placed into a tightly toleranced master assembly fixture in which the final bracketry is added, and final width and bracket position are established to achieve minimal adjustment at the truck plant. Tolerances across the total bumper width span are held to less than +/- 4mm.

Why is this Part Innovative?

The product is shipped fully assembled in 7 different configurations including, with fog lamps, and large wheel opening options, sometimes in combination with each other. The bumper is painted in truck color in the Volvo assembly facility, without primer, along with a variety of other material on the surfaces of the truck including steel, SMC DCPD, and aluminum.

Molding process for the bumper includes 3000 Ton requirements, 2500 Ton requirements, and 1500 Ton requirements in addition to the robotic gluing and final tight tolerance assembly.

Process

Injection Molding

<p style="text-align: center;">Design</p> <p>❖ CAD</p>	<p style="text-align: center;">Tooling</p> <p>❖ Aluminum; Family tool consisting of 4 cavities</p> <p>❖ Molded in texture: No</p>
<p style="text-align: center;">Material</p> <p>PC/ABS was selected for its stiffness, ability to withstand high temperatures.</p>	<p style="text-align: center;">Finishing</p> <p>❖ N/a</p>