



CASCADE
engineering

shaping ideas in plastics™



FORD TURBO DIESEL CHARGE AIR COOLER DUCT



AUTOMOTIVE SOLUTIONS

FORD TURBO DIESEL CHARGE AIR COOLER DUCT

CHALLENGE

Ford Motor Company enlisted Cascade Engineering to develop a cost-efficient alternative to current air induction systems. The new design would replace metal tubing through the creative use of resins. The finished product had to simplify assembly as well as provide a proper, consistent seal.

SOLUTION

Using 3-D suction blow molding, Cascade Engineering employed sequential control of hard and soft material to tailor the part's physical properties. Co-extrusion of two separate materials allowed for the requisite strength, flexibility, and sealing characteristics. Parison manipulation was employed to ensure best use of materials. Mold functions accommodated the need to produce 3-D shapes with tight bends. A black resin finish with increased wall stock improved appearance and acoustical performance. Multiple point seals enhanced seal quality.

RESULTS

Cascade Engineering provided production intent parts for durability testing within four weeks of concept development and was in full-scale production nine months later. The new product offered immediate cost and assembly benefits:

- Eliminated four parts from previous design
- 3.3 pound weight reduction
- Reduced clamp connections by 50%
- Reduced unit cost by over \$6
- Improved sealing effectiveness
- Controlled wall thickness in all directions
- Increased wall stock reduces noise
- Seamless tube eliminates parting line flash and weak points
- Pre-attached fixed location clamps ease assembly

For additional information about this project or other Cascade Engineering case histories, visit our web site at cascadeng.com or call 800.968.2278.

