

Automotive Supplier Switches Gears, Takes the Lead

A customized compound, design services, and technical support from PolyOne combine to drive value and performance for a high-volume automotive application.

Situation

A noted Midwestern Tier 1 automotive supplier serves its global automotive OEM customer with a variety of high-performance modules that simplify assembly. One of the products it delivers to the OEM's assembly lines is an integrated HVAC ducting module installed behind the instrument panel and located under the hood. Each unit combines air ducts, air conditioning coils, filters, damper door mechanisms, and a blower motor. The supplier molds two housing components—one for the HVAC parts and one for the blower motor—then assembles all of the components to produce a single module that appears on several popular vehicle models.

For the molded housings, the supplier was using a 20% talc-filled PP material from a single vendor, and asked PolyOne to become a second source for the material. This dual source would ensure that HVAC units shipped to OEM plants always met delivery requirements regardless of any interruptions in material supply from one of the vendors.

The PolyOne Difference

PolyOne answered the request with pre-colored talc-filled Maxxam™ PP, custom compounded specifically for the application's requirements. The top two essential goals for this material were to provide heat resistance that exceeded even the OEM specification and to color match other underhood components to ensure visual harmony.

Heat deflection temperature (HDT) ratings for underhood components in most vehicles depend on where they are located. The HVAC component needed to be able to reach a 68°C HDT at a load of 264 psi.

The PolyOne team worked directly with engineers at both supplier and OEM to customize the material to meet this heat resistance requirement along with targets for physical properties, color, and processing parameters. While HVAC modules are not technically considered appearance parts, they had to match the color used by the OEM for underhood components. This ensured that when a prospective customer opened the hood of a vehicle, they would see a single shade of black. PolyOne's team also helped the supplier to develop a specification for this black color.



Delivering a Value-Added Solution

PolyOne supplied specialized polymer materials, services, and solutions that enabled this supplier to go beyond having a dual material source.

The custom solution PolyOne provided for this application brought a 40% cost performance improvement versus competitive materials.

In addition to developing a material to meet the application's requirements, PolyOne's team helped to optimize processing by suggesting a switch to a round underwater-cut pellet rather than the square pellet normally used. This shape processed more efficiently for a cycle time savings of 5 to 6 seconds.

As an added bonus, the round pellet also reduced wear and tear on material handling lines. The length of each line that runs from the silo to one of presses is over 500 feet. When the supplier used square pellets, multiple material handling lines and elbows were being patched or replaced every six months. With the round pellet, the replacements were significantly reduced, along with the labor cost required to make them.

Lastly, engineering support for this application included processing parameter recommendations along with part and tool design work regarding mold shrinkage to ensure that a new tool being produced would operate most efficiently.

Product choices often vary by region due to differences in regulatory and agency requirements, availability and other key factors. Please contact your nearest sales office for assistance in choosing the right solution for your locale.

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