MATERION

CASE STUDY

Interior trim component and tool utilizing MoldMAX HH.

This photo shows two molded parts: the upper part shows a dimensionally conforming part molded at 49 seconds with P-20. The lower part shows deformation as a result of running the same tool at a reduced 37 seconds. Most steel tools are slowed down to mask the effect of poor heat transfer on the molding process. However, with its superior thermal properties, a MoldMAX HH tool was implemented in the design, ran at 37 seconds, and produced a part that was dimensionally accurate and conforming.

MOLDMAX® APPLICATION:

MOLD COMPONENTS

PROFILE: ATLANTIC AUTOMOTIVE COMPONENTS

Atlantic Automotive Components (AAC) utilized MoldMAX HH (High Hardness – 40 HRC) to improve part quality and reduce costs in an automotive trim component application. By replacing P-20 slides with high conductivity MoldMAX, cycle times were reduced from 49 seconds to 37 seconds. This represents more than $100,000 in annual savings and will save over 1300 hours of molding time each year. Assuming a product life cycle of 5 years, the decision to use MoldMAX will save AAC $500,000 and 6500 hours of machine capacity over the life of the tool.

Another benefit is the improved quality of the molded component, due to the rapid and even removal of heat energy from the molded part, resulting in a part that met all dimensional requirements the very first time it was run. This saved substantial time getting the tool approved for production and freed up engineering resources to focus on other projects.

AAC continues to develop innovative ways to provide better value and quality for their customers. They achieved better part quality, reduced costs, and reduced time-to-market by investing in MoldMAX.

Choosing The Right Tooling Material

AAC contacted Ferro Corp-Stryker Division, a major supplier of compounded resin, to discuss part distortion that was occurring in the automotive trim part they were manufacturing. Ferro contacted Plastech Consulting to perform a mold filling analysis on AAC's part. Plastech's analysis concluded that the problem was slow heat transfer of the P-20 slide that formed a fitting channel that ran the length of the part. Recognizing the benefits that could be realized by using MoldMAX, John Hickman of Plastech Consulting suggested that the mold builder, Mach Mold, use MoldMAX HH in the slides in place of P-20. Mach Mold has extensive experience machining and effectively utilizing MoldMAX® in tools they have built. AAC and Ferro agreed with John Hickman's recommendations and enthusiastically moved forward with the design and build of the door trim mold, taking advantage of the many benefits of MoldMAX.

AAC participated in another service that Materion Performance Alloys offers: infrared imaging of molds and parts which identify opportunities to improve cycle time and part quality. The infrared images below compare molded parts from a tool using P-20 slides vs. MoldMAX® HH slides. These pictures are worth a thousand words. They illustrate how poorly the tool with

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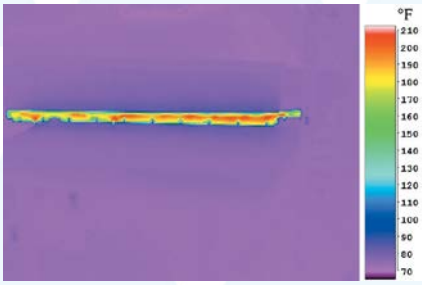
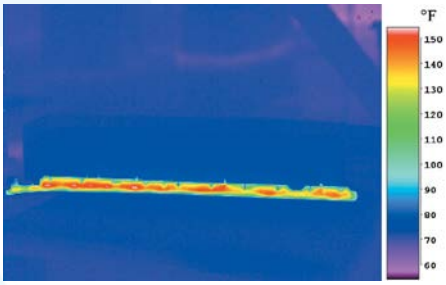
P-20 slides removed heat from the part when cycle times were reduced from 49 to 37 seconds. However, the MoldMAX® HH slides can easily remove the heat with a 37 second cycle time and produce a conforming part with even better quality than a part molded from the tool with P-20 slides running at an inefficient 49 second cycle time. Not only did MoldMAX® HH allow cycle times to be reduced by 25%, but the use of MoldMAX® also substantially increased part dimensional approval.

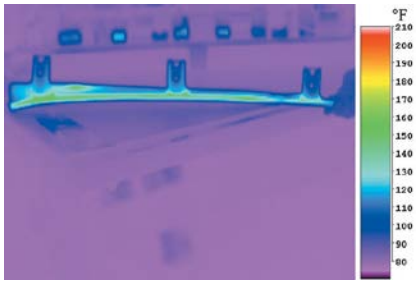
This case study shows how the whole supply chain benefits from implementing the available technology in the form of computer modeling, MoldMAX® high conductivity mold materials, and thermal imaging to reduce costs and lead times.



Part from tool using P-20 slides with a 49 second cycle time.



Part from same tool using P-20 slides with cycle times reduced to 37 seconds. Part is 50°F hotter and is distorted.



The tool using MoldMAX HH slides produces conforming parts with cycle times reduced to 37 seconds.

MOLDMAX®

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