OMIC ADDITIVE

OMP 412

RAPID TOOLING WITH ADDITIVE MANUFACTURING

As Additive Manufacturing (AM) becomes increasingly prominent in industrial manufacturing, ensuring the material integrity of the output products remains a significant concern. Creating a production-relevant mold and subjecting it to rigorous injection mold fatigue cycling is a crucial step in building this confidence.

OMIC R&D, in partnership with Daimler, created an injection mold for a dashboard component using GEFERTEC's Wire Arc AM technology. We subjected this mold to fatigue cycling by injection molding a high volume of parts.

Our research demonstrated the importance of using appropriate post-processing techniques to ensure that AM injection mold material integrity matches that of traditionally machined molds. This AM technique allowed us to incorporate cooling channels into the mold design that would not have been possible with traditional drilling methods. Additionally, the design made the mold modular and flexible enough to accommodate part families within a single mold base.

This work helps manufacturers gain confidence in adopting AM processes in their production environments, create enhanced designs, reduce material waste, improve sustainability, and ultimately lower total costs.

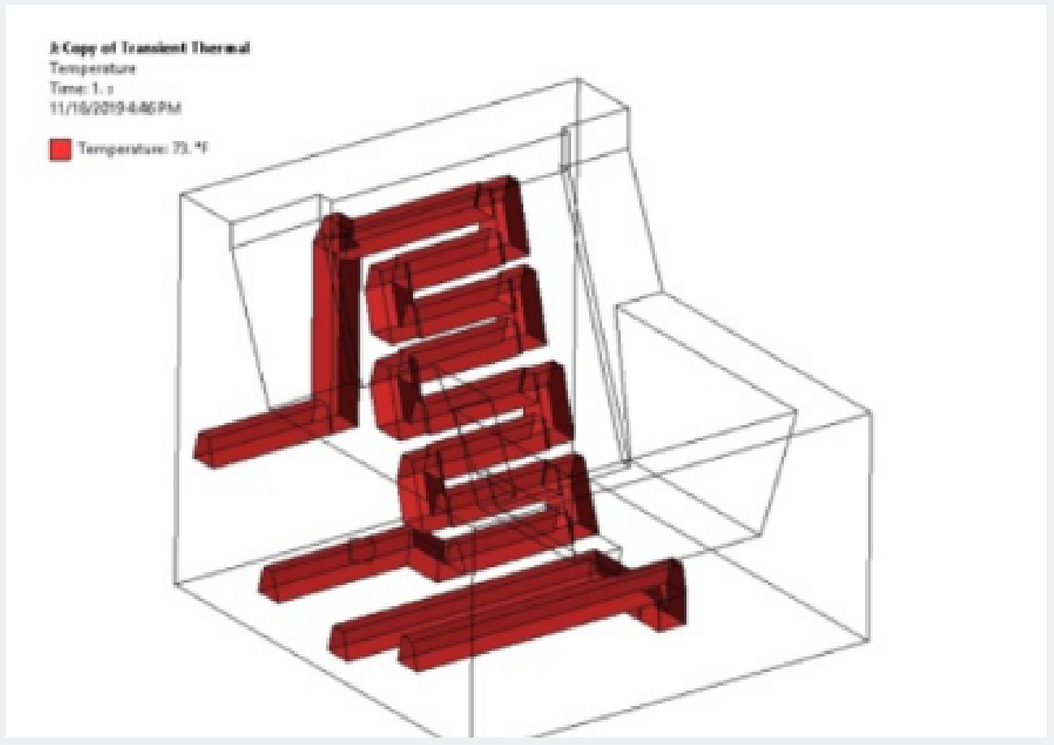

Fig 1 - Diagram of Cooling Channels

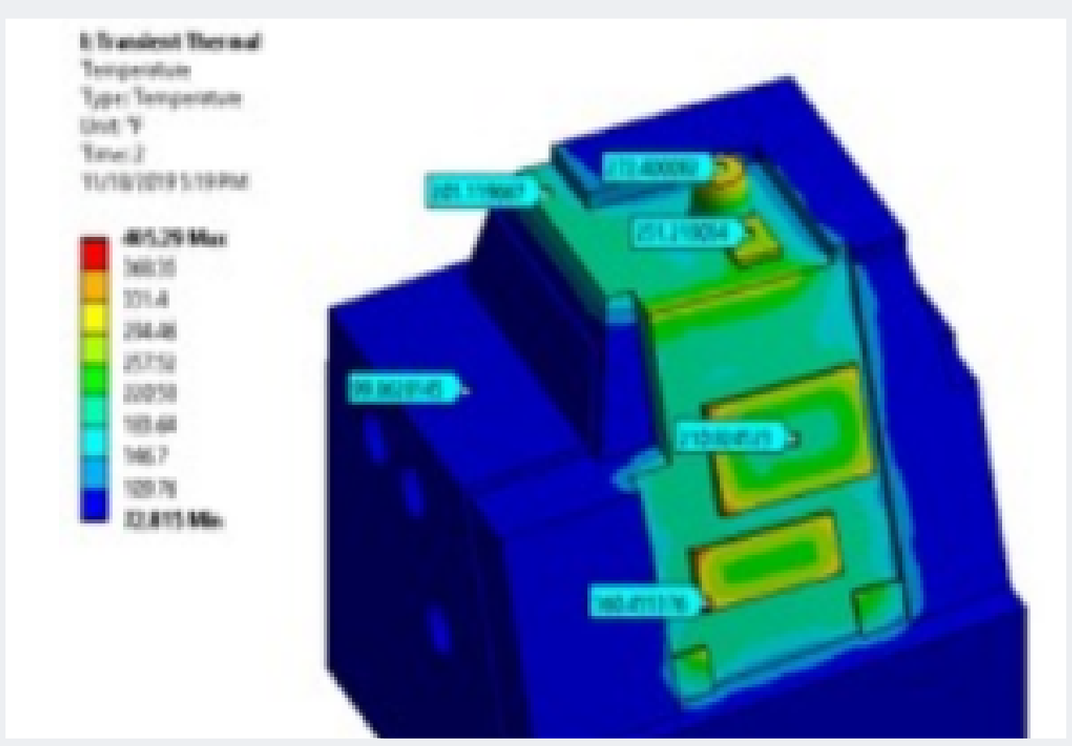

Fig 2 -Heat diagram after 2 seconds

Research was conducted primarily by Dr. Mostafa Saber of Oregon Tech.

Industry participants include:
GEFERTEC
Daimler
RanBro
Kaso Plastics