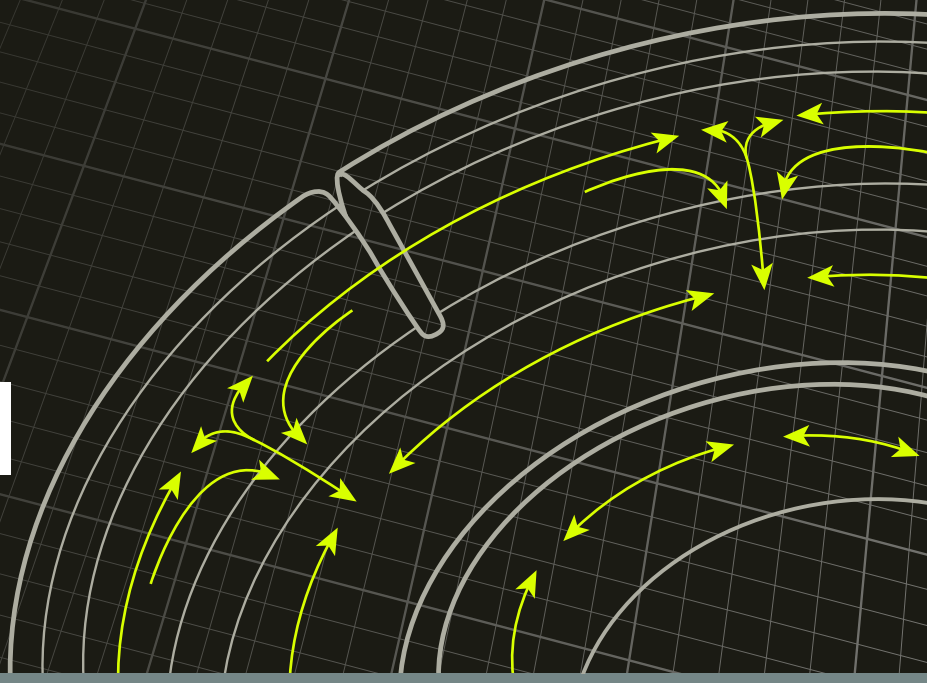
FATHOM
DIGITAL MANUFACTURING. REIMAGINED.

Case Study //

Conformal Cooling



A customer came to Fathom to solve a problem with one of their products. **Fathom identified the source of the issue, engineered a solution and delivered results that saved the customer valuable time and money.**

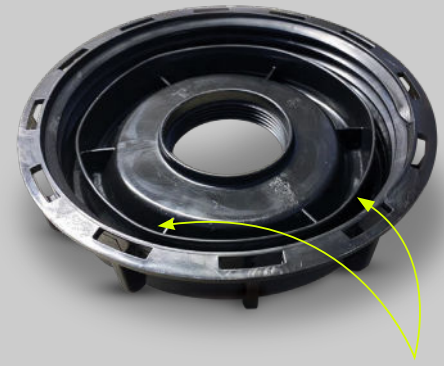
168

Production Hours Saved

Problem //

A leader in industrial closures and packaging components, and long-time customer of Fathom with services that include injection molding and CNC machining, was having assembly issues in the field due to a particular part feature warping, which limited its cap functionality.

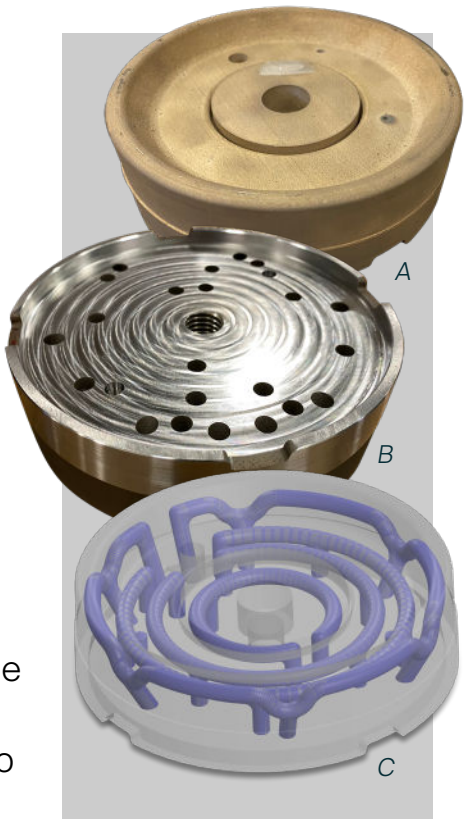
This faulty feature was caused from the long cycles necessary to cool part during the injection molding process. HDPE has high shrink rate percentage which will cause circular features like this to creep inward; in this application causing the cap/threads to be rendered useless. Material and part geometry required longer cycle times (for cooling) in attempts to mitigate this features issue.



Circular features became warped during long cooling cycles, ***rendering the product useless.***

Solution //

Adding Additive Manufacturing (DMLS) to the Process



The experts at Fathom identified the problem as a cooling issue. However due to the deep draw, it was difficult to get proper cooling into the cavity. Fathom tooling engineers took a different approach, designing conformal cooling into a new core insert. With Direct Metal Laser Sintering (DMLS), Fathom printed the insert in tooling steel to near net shape *(fig. A, right)* and post processed using CNC *(fig. B)* to hit the required tolerance requirements.

Cooling channels *(fig. C)* were incorporated into the design in areas previously unattainable via traditional tooling practices, maximizing the amount of water flowing to these problem areas and forcing cooling at the exact spot required to remove residual heat, allowing the part to cool quickly and evenly.

Results //

The customer was able to reduce cycle time by 13%, resulting in 168 production hours in savings on a 100,000 piece run. This led to:

Reduced...

- wear and tear on the machinery
- operational cost
- warpage, resulting in increased product quality

Increased...

- dimensional accuracy
- compound effect of cycle time savings resulting in machine availability

Fathom's ability to identify the problem, design solutions, provide simulation analysis, produce DMLS core, and run production all under one roof provides highly unique advantage for any customer looking to push manufacturing.

Additive Manufacturing (DMLS)

CNC Machining

Injection Molding

Talk to an Expert //

Working with Fathom means easy access to Additive and Advanced manufacturing experts. Contact us today, and let's transform the future of manufacturing together!

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