

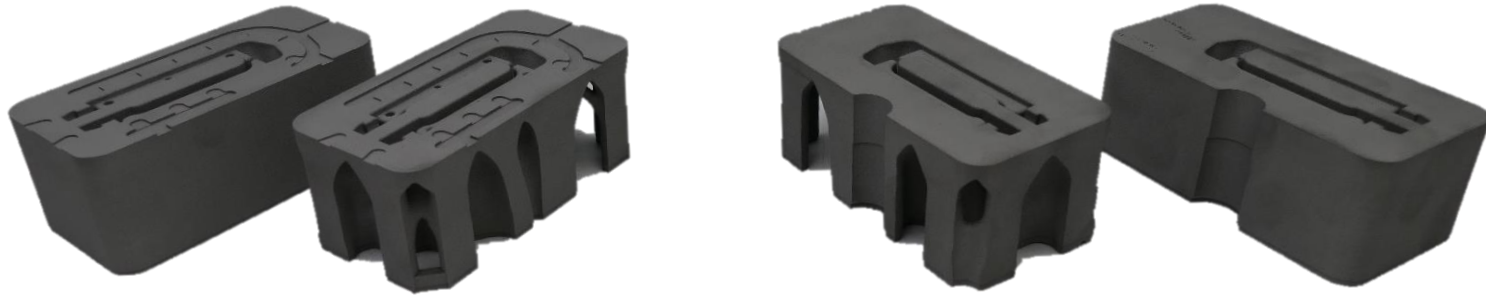


UDDEHOLM

a voestalpine company

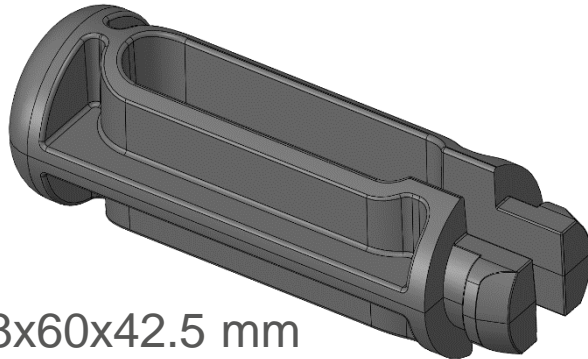
PIM INSERT AUTOMOTIVE

TECHNICAL AND ECONOMICAL OPTIMIZED TOOLING INSERT MANUFACTURED BY LASER BEAM MELTING

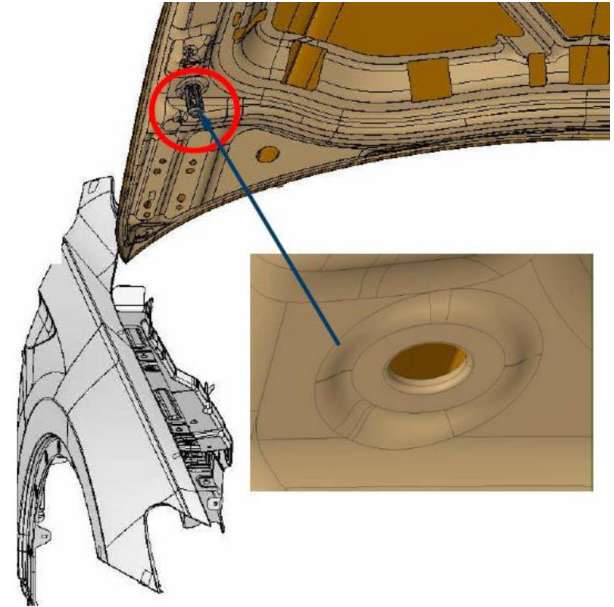


APPLICATION

- Application: Tooling insert for plastic injection moulding
- Product: distance pieces for the automotive industry

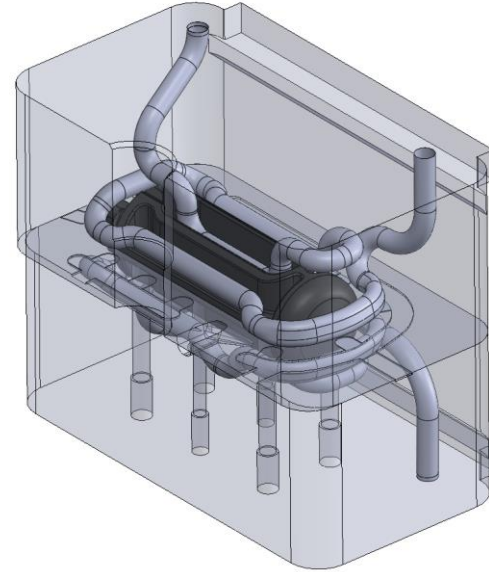
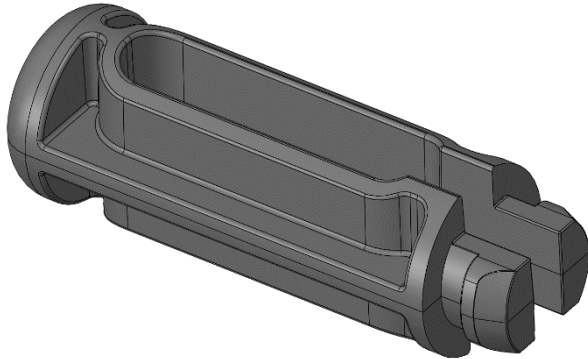


108x60x42.5 mm



PRODUCT

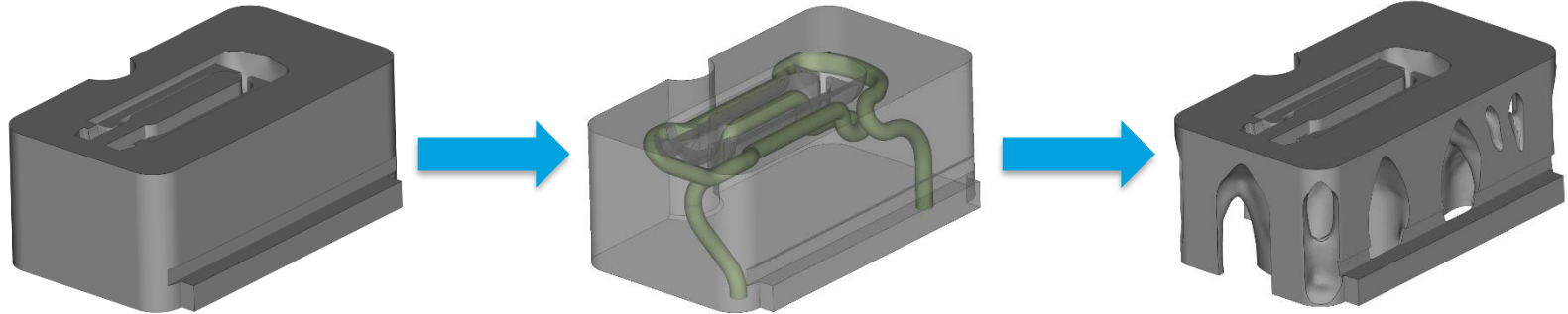
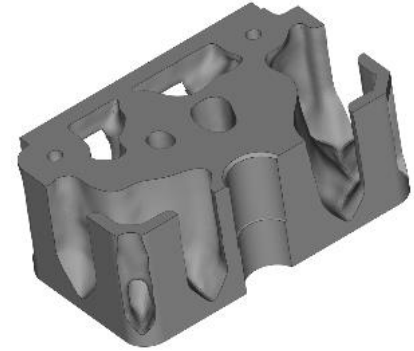
- Made of Polyamide 66
- Ribs and certain massive areas need conformal cooling to reduce cooling time and warpage



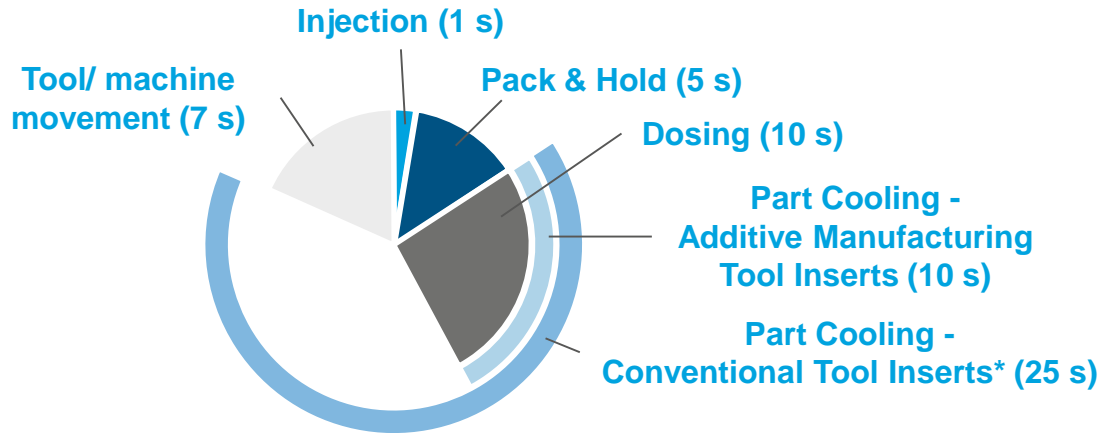
GOAL & METHODS

Light weight design for lower material & machine costs

1. Design of cooling channels
2. Topology optimization to reduce the mass
3. Additive Manufacturing with Uddeholm AM Corrax



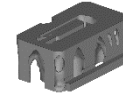
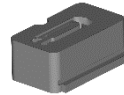
TESTED TOOLING INSERTS



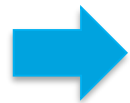
Cooling time reduced by 60 % (25 s to 10 s)
Cycle Time reduced by 40 % (38 s to 23 s)



TOOLING ECONOMY



Variable	Original with Conformal Cooling	Topology Optimized with Conformal Cooling
Mass (kg)	2,3	1,5
Additive Manufacturing time (h)	29,6	20,2



35% less material and 32 % less machine costs

**#1 IN HIGH
PERFORMANCE
TOOL STEEL**