



## Conformal cooling with DirectTool

# DMLS advantages have a positive impact all over the manufacturing chain

## Challenge

- manufacture a tooling insert for large-volume production
- optimise the design of the tooling insert

## Solution

- upper insert built on an existing moulding blank
- reduction of the volume of sintered material

## Benefits

- hybrid approach saves costs of tooling insert
- cycle time reduction: 35%
- reduction of scrap rate
- 10,000,000 products manufactured



Example of hybrid tool

# Hybrid approach saves tooling costs

## Challenge

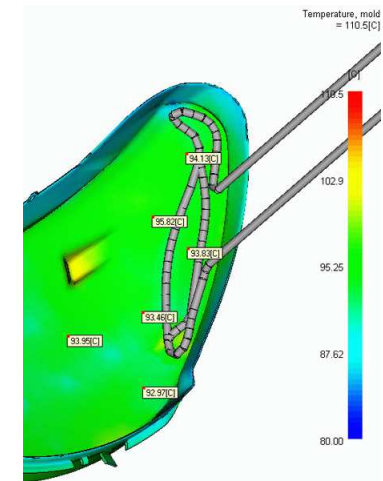
- manufacture a high complex tempering system (not possible conventionally)
- optimise the design of the tooling insert

## Solution

- thermal analysis to confirm the better performance of the conformal cooling system
- insert built in EOS MaragingSteel MS1
- size: 226x204 mm (l x h)

## Benefits

- hybrid approach saves costs of tooling insert
- freeform shape surface cooling possible



Hybrid insert for injection moulding with cooling channels



e-Manufacturing Solutions

# Tool insert for a fashion industry product

## Challenge

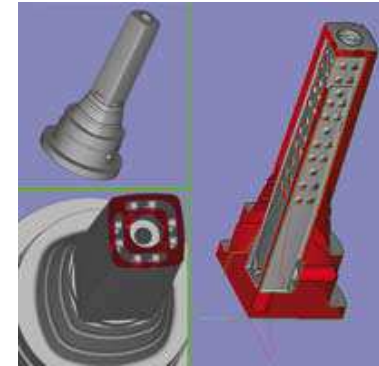
- improve the cooling performance of the conventional insert

## Solution

- optimisation thanks to conformal cooling system
- insert built in EOS MaragingSteel MS1
- using DMLS on EOSINT M 270
- 20 µm layer thickness, polished

## Benefits

- 43% cycle time reduction
- improved product quality



Tool inserts for lipstick lids

# Cycle time reduction allows cost saving and better product quality

## Solution

- simulation of the process to optimise the cooling system
- insert built in EOS MaragingSteel MS1

## Benefits

- 55% cycle time reduction (von 90 to 40 seconds)
- 40,000 parts per year
- inserts costs: 3,250 Euro
- cost saving: 19,444 Euro
- amortisation time: 2 months
- high saving of injection moulding machine hours (444 hours instead of 1,000 hours => 555 hours saving)
- better product quality



Tool insert for injection moulding with conformal cooling

# DMLS can be applied to die casting too

## Challenge

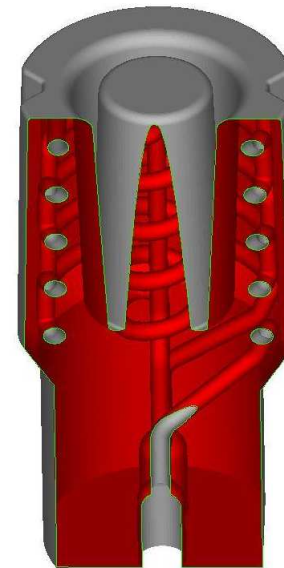
- build an insert for a die casting application
- tool insert life time is similar to inserts manufactured conventionally

## Solution

- cooling system optimisation
- insert built in EOS MaragingSteel MS1

## Benefits

- 20% cycle time reduction
- 180,000 parts manufactured in serial production



Tool insert for die casting