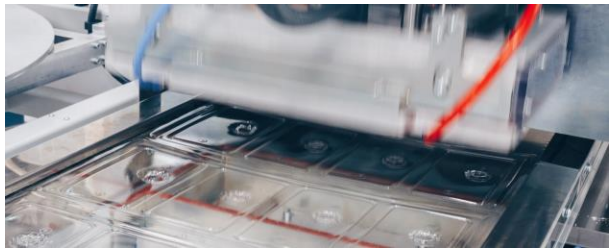
THE CUSTOMER

HAMER

Hamer is an European thermoforming mold manufacturer since 1980.

They design and manufacture equipment for the packaging market, especially thermoforming machines for the production of single-use plastic packaging, as well as automatic and semi-automatic lines for the production of blister packs. Hamer applies their knowledge to conceive and design the tooling, although they can also import designs to their system of CAD files supplied by the client.

They have several CNC machining centers, the company use to work with materials such as aluminum, steel or technical polymers for the manufacture of moulds. Hamer takes care of critical aspects such as refrigeration and vacuum circuits that will allow the proper control of the moulding process.



The final assembly and finishing of the moulds is done in Hamer facilities, working the finishes by hand in order to guarantee a superior finish in the pieces.

Hamer is able to offer solutions perfectly tailored to the needs of their clients because they control every part of the manufacturing process: from design to set up. Their technical team is responsible for the design and they control every stage of production in their own facilities. Once production is complete, they also carry out the commissioning and starting up of the equipment.

A blister is type of packaging done in thermoformed clear plastic that is mostly used in the marketing of small consumer products. Its use has spread since the blister pack is relatively cheap and permits the stored product to be viewed, providing extra quality check.

Thermoforming is a process of transformation of a plain plastic foil in a three-dimensional shape through the application of heat, vacuum and air pressure.It is an inexpensive method that allows the production of single-use plastic parts with a wide variety of uses. For example, the packaging of a product or auxiliary carrying supports such as trays used in industrial production.

INDUSTRY SEGMENT: Industrial Services

INDUSTRY SUB-SEGMENT: Machinery Equipment

3D PRINT MAIN BENEFIT

- ○ Performance
- ○ Customization
- ● Cost Reduction
- ○ Time Reduction

TOOLING APPLICATION

THERMOFORMING MOULDS

HAMER

MATERIAL
HP 3D HR PA 12

POST PROCESSING
Bead Blasting

COST REDUCTION
HP MJF Cost: 100€ / $123.7
PVC 600 Original Cost: 400€ / $494.8
75% Overall Cost Reduction

WEIGHT REDUCTION
Thanks to the design freedom, topological optimization can be done in order to reduce the material. This design approach allows to only print material where is in actually needed. As plastic has a lower density than metal, a dramatic weight reduction is achieved.
HP MJF: 50 grams
CNC Aluminium: 2310 grams
78% Overall Weight Reduction

LEAD TIME
With MultiJet Fusion you will be able to print 9 parts in only 16 hours. Machining this 9 parts will take at least 45 hours (taking in account 5 machining hours per mold).

DESCRIPTION

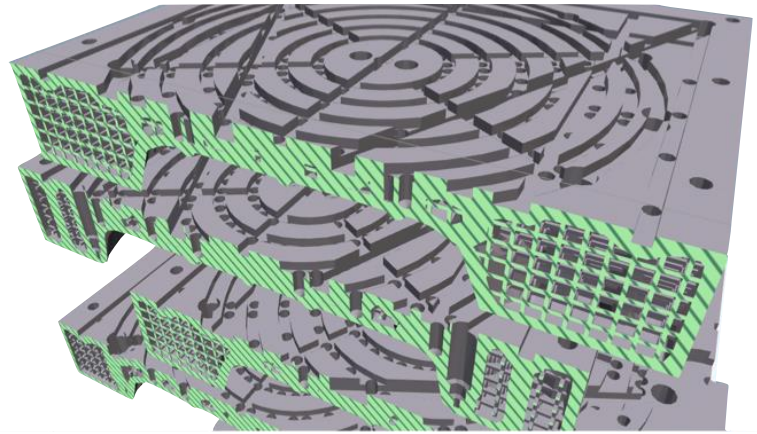
This part was used to thermoform plastic bins

The material used previously was PVC 600 um

This mold will be used for prototyping. There is no need of high heat extraction.

The design will allow to self-remove the air trapped during the thermoforming process without the need of vacuuming holes.

The part need to do not segregate with the plastic sheet temperature that will be around 120°C (248 °F).



What the Future Could Look Like

Performance increase

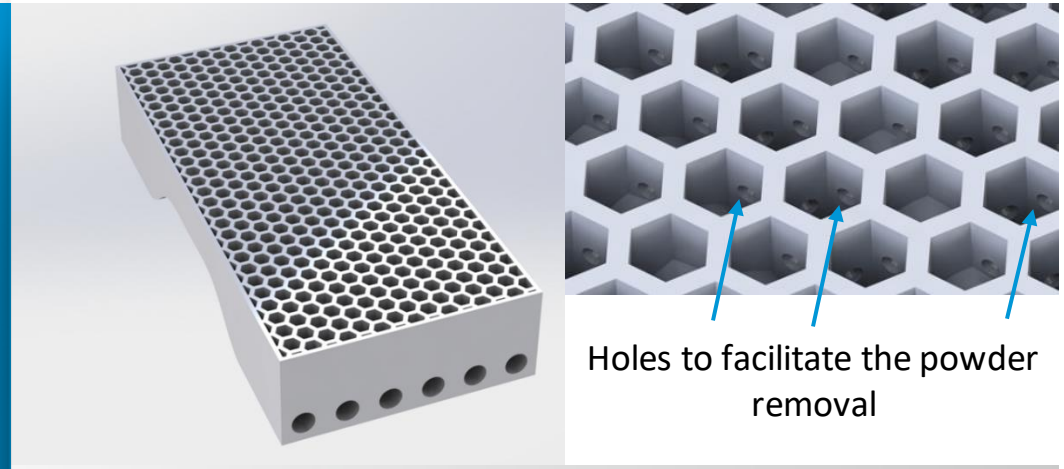
Moving from traditional Manufacturing technologies to Additive Manufacturing

From substractive thinking to additive mindset

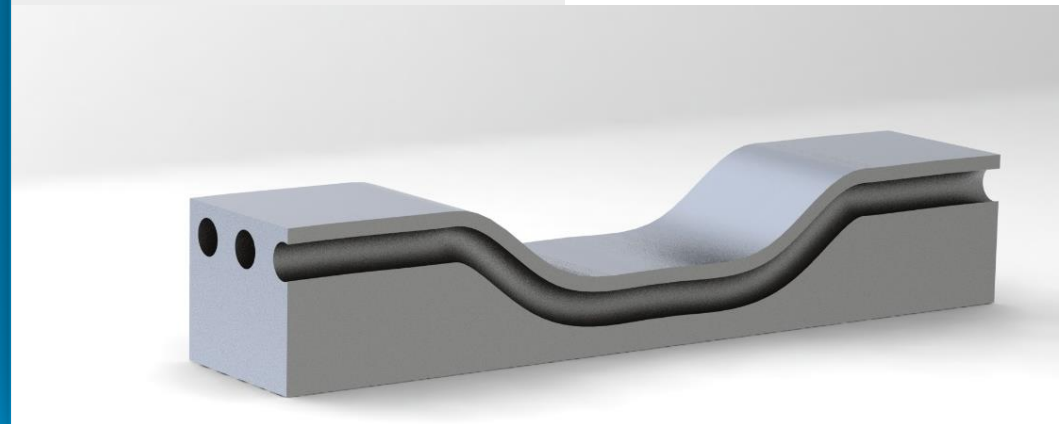
Cooling systems with highly optimized geometry.

Complex mold geometries & textures “for free”

Lightweight

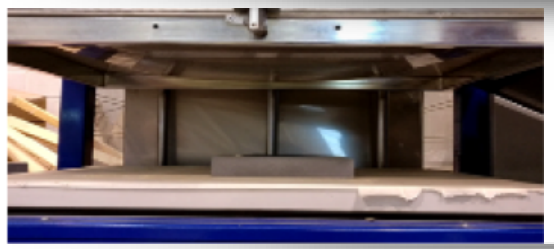
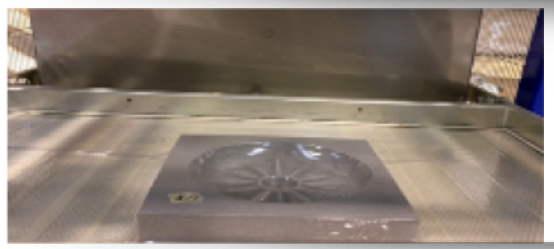


Holes to facilitate the powder removal



Hamer

Thermoforming process

Step	Plastic temperature	Description
	25º (77 ºF)	Thermoforming mold is placed on top of vacuum system and the plastic sheet starts to warm up
	80º (176 ºF)	During the heating process plastic residual stresses are released, the sheet of plastic has visibly bent.
	120º (248 ºF)	When the thermoforming temperature is reached.
	40º (104 ºF)	Plastic sheet is cooled below to ambient temperature.

Plastic bins

Thermoforming mold application

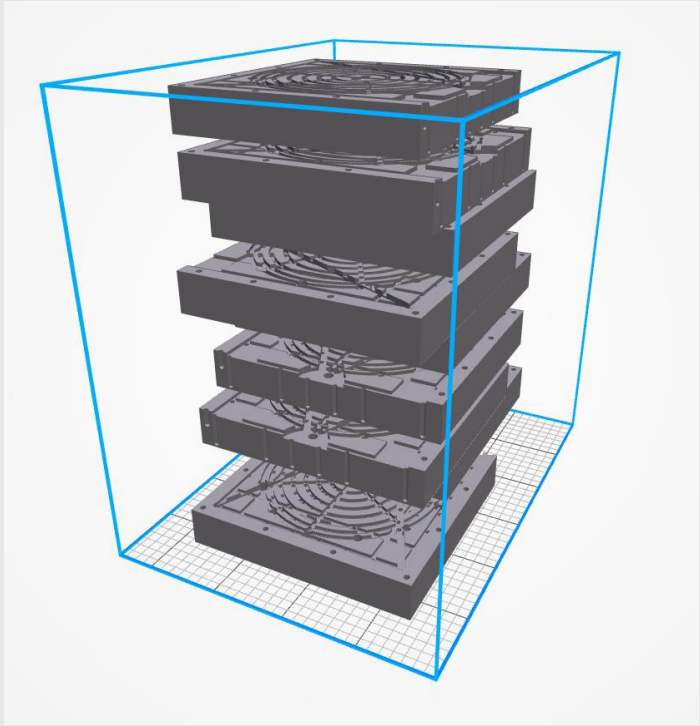
MATERIAL
HP 3D High Reusability PA 12

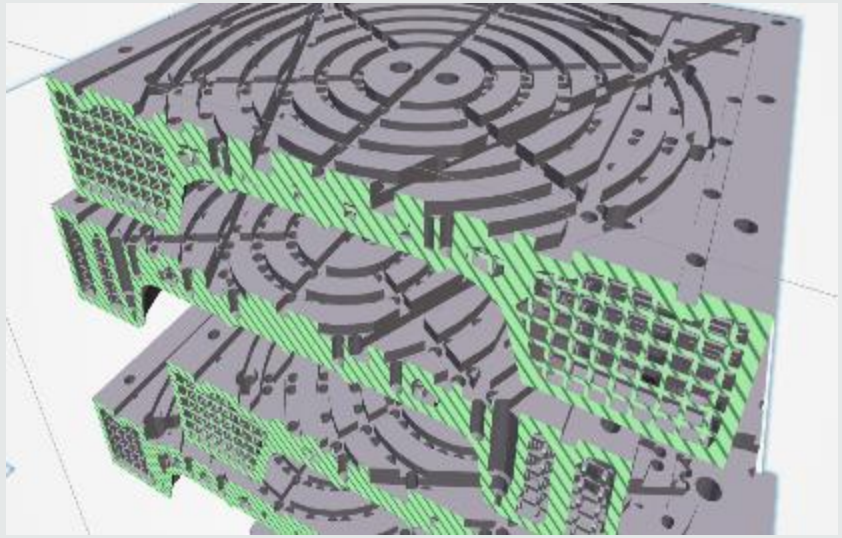
POST PROCESSING
Bead Blasting

TOTAL COST PER PART
CNC Machined part: $400
HP 3D MJF part: $100
75% Overall cost reduction

WEIGHT REDUCTION
CNC Machined part: 2.3 kg
HP 3D MJF part: 0.7 kg.
70% Overall weight reduction

DELIVERY TIME
CNC Machined part: 3-5 Days
HP 3D MJF part: 24 h.





HIGH REUSABILITY: HP Jet Fusion 3D print solution with HP 3D High Reusability PA 12 has the highest post-production surplus powder reusability with 80% reusability vs any other powder based 3D printing technology using PA 12 material. Consistent performance with only 20% powder refresh rate

THERMOFORMING APPLICATIONS

CIMQUEST
3D Printer Sales and Prototyping Services
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