

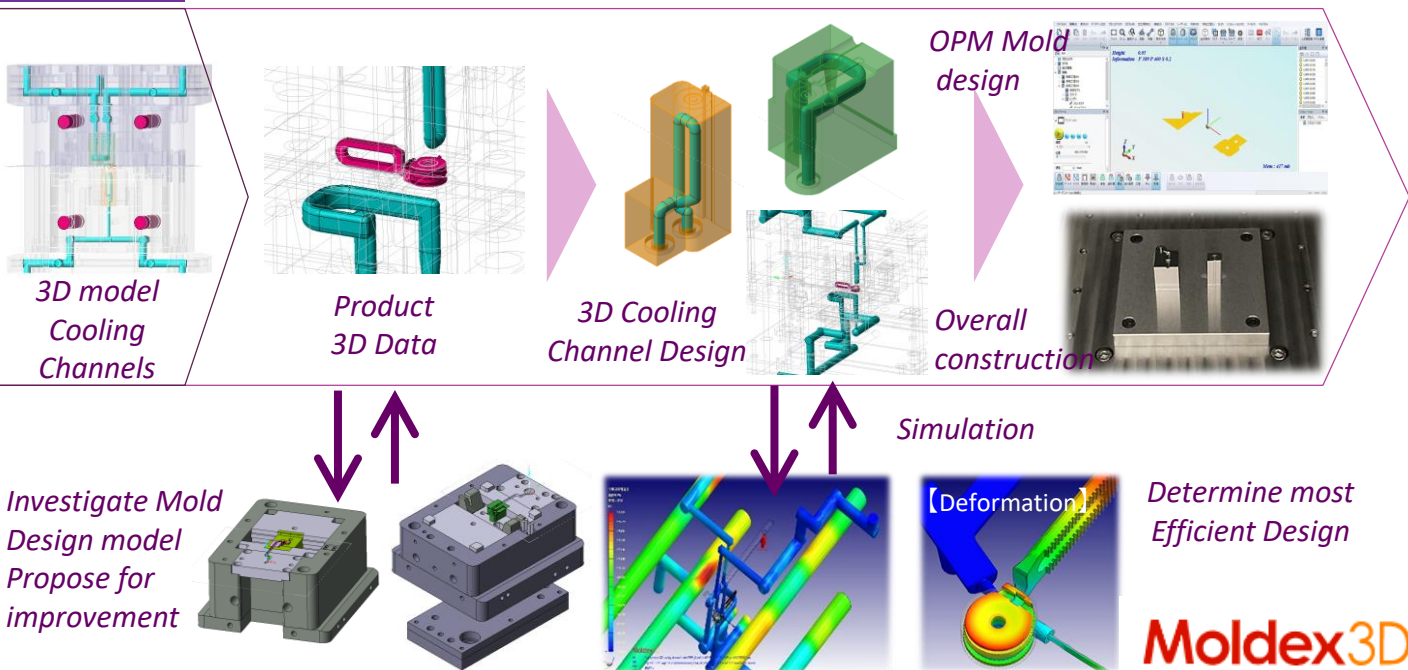
A Future of High Precision Filled with a lot of Smiles!

*The state of art 3D metal printer for
the next gen.manufacturing*



Procedure

OPM series makes a Plastics Molding Revolution



Outcome

3D Cooling Channel - Application Examples

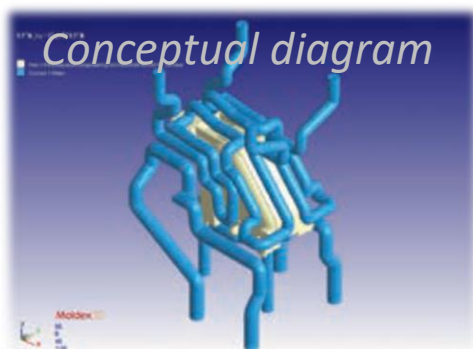


Image of a 3D Cooling Channel



OPM Core Mold Block

Yolo!

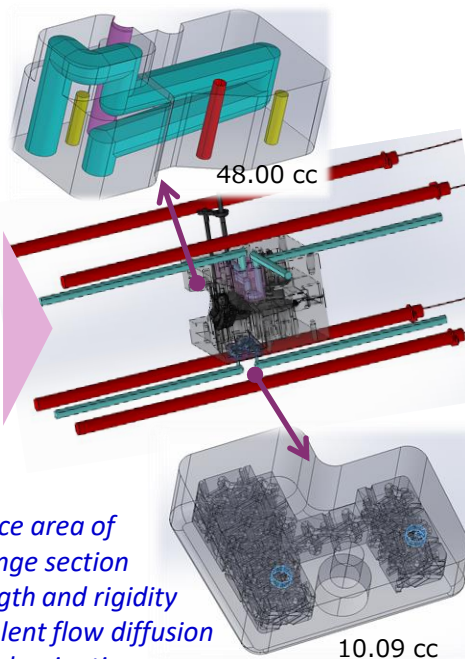
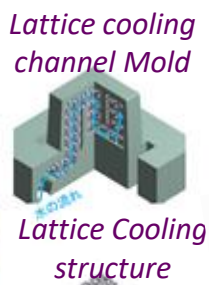
Deformation : 0.624 mm
↓
Improvement : 0.328 mm
52% improved

Yolo!

Yolo!

Max. Cooling time : 146.8 sec
↓
Improved time : 23.4 sec
Improvement : 84% reduction

Yolo!



Disadvantages:

- Large pressure loss
- Difficult design

Advantage

- Increased surface area of the heat exchange section
- Improved strength and rigidity
- Improved turbulent flow diffusion
- Easy to build by lamination

OPM Core Mold Block

OPM Cav. Mold Block

Optimization

Design for Additive Manufacturing – DfAM



Design Using Fusion 360

Topology Optimization
Creating the Design Space

Interpretation of Topology
Optimization and Settings

Topology Optimization
Interpretation of Results

Generative Design
Balancing Lightweight
Construction and High Strength

Optimized Twist
Connection
Bracket

Size and Shape
Optimization
Design Fine-Tuning



Yolo!

- Realization of complex shapes
- Reduction in the number of parts
- Significant weight reduction
- Integration of functions

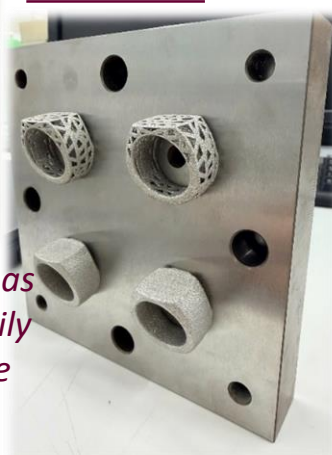
Yolo!



Porous
Structure



Lattice
Structure



A porous structure is one
that contains many small
voids (porous = holes),
like a sponge or pumice

The use of 3D printers has
made it possible to easily
produce complex lattice
structures

World Skills
International

3D Print Support Services — Adapter Bracket



Adapter Bracket



General Condition



Reinforcement Bracket Design

3D Printer : LUMEX Advance-25
by MATSUURA

Yolo!

Provided by Kanazawa Univ. FUROMOTO Lab.
Special Condition

Yolo!

Description: Design an internal reinforcement bracket to
distribute surface pressure when bolting the helmet to the
adapter bracket

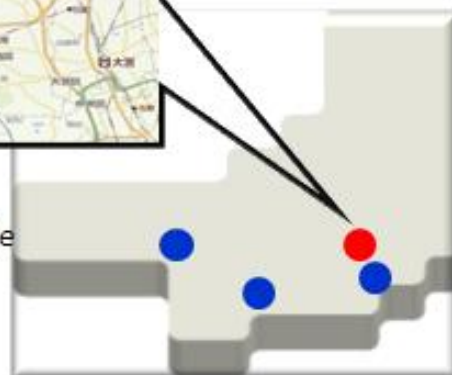
Lyon, France WSC 2024

Module A: 3D Metal Printing

Launched 3D Printer service center in SAITAMA



- 3 km from Sakado Smart IC of KAN-ETSU EXPRESSWAY
- 25 km from Omiya station on the JOETSU Shinkansen line
- 45 km from Tokyo
- 600 km from Osaka
- 310 km from Nagoya



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