

## 3-MATIC TOP USE CASES

Altair Partner Alliance

# VTT's Hydraulic Valve

## Challenge: The ideal hydraulic valve

- Lighter
- With a better fluid flow
- With minimal risk of leakage

## Solution: No laborious redesign to CAD

- Topology optimization with Altair software
- Clean up rough data with 3-matic<sup>STL</sup>
- Export FEM for FEA analysis in OptiStruct

## Result

- Fast and accurate transition from rough to clean model
- Improved flow of fluids
- Reduced overhangs leads to lower amount of support
- No local stress regions
- Time and money savings



# Spider Bracket

## Challenge: an optimized bracket with lattice structure

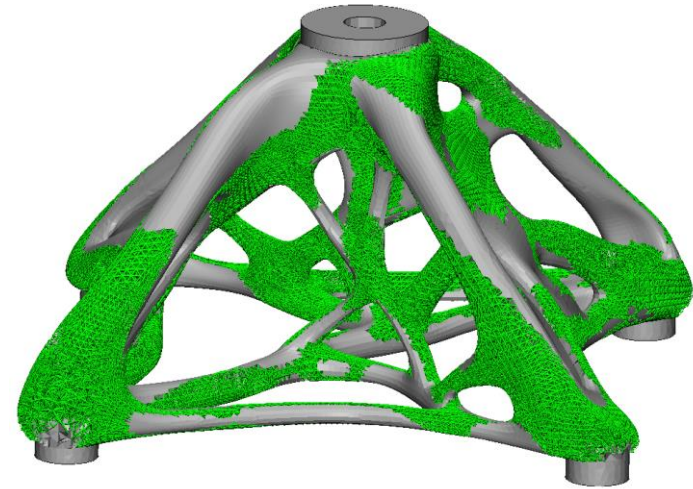
- Lightweight and strong
- Ready for 3D Printing
- Solid model without data overload
- Make the Altair Optistruct file printable

## Solution: 3-matic<sup>STL</sup> enhancements

- Enhancement of edgy geometry with 3-matic<sup>STL</sup>
- Smooth interface between lattice and solid
- Fixed solid geometry
- Thin layer of solid material under the lattice structures that need support
- Build processor technology used.

## Result

- From lattice optimization to Additive Manufacturing end product



# Computational Fluid Dynamics (CFD)

## Challenge: analyze fluid dynamics

- Prepare CAD assemblies for CFD analysis
- Model defeaturing

## Solution: 3-matic<sup>STL</sup> enhancements

- Wrap the assembly to generate one solid model
- Full control over details and gap sizes
- Prepare mesh for simulation
- Keep external surfaces intact

## Result

- Successful CFD analysis in Altair CFD software

