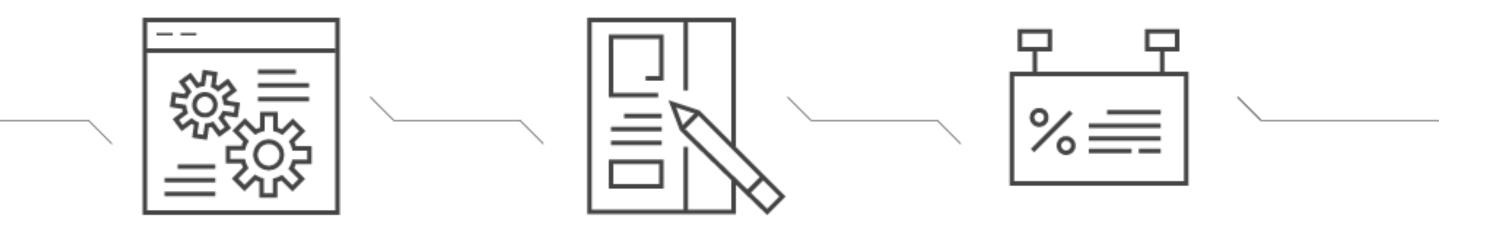


Generative Design + Optimization of Lattices + New Materials



The promise of advanced manufacturing



Better products

Performance optimization through advanced geometry

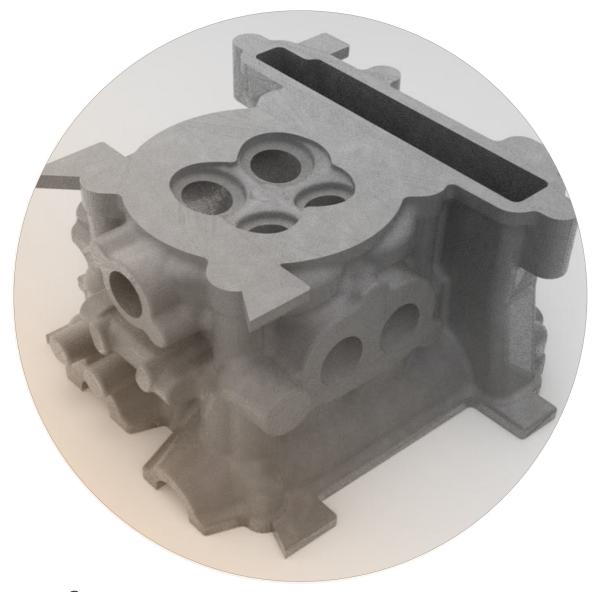
Custom products

End to end production pipelines where every product is one of a kind

Cheaper products

Supply chain optimization through short-run and on-demand production

Additive Manufacturing Disrupts Product Design



Before

Weight 5.095 g Internal cooling surface 823 cm²



After

Weight 1.919 g Internal cooling surface 10.223 cm²

End-to-end Additive Manufacturing Workflow

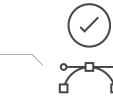
AM Metal Print

Machine specific knowledge Material Specific knowledge





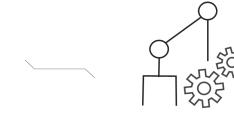


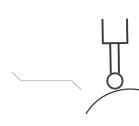


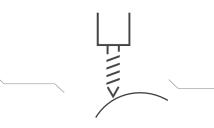














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CAD & CAE

Generative Design

Voxel

Optimize

Macro Level **Optimization**

Micro Level

Optimization

Validate Design

FEA

CFD

Moldflow

Build **Preparation**

File Verification

Fixing

Print Optimization

Build Supports

Packing

Slicing

Laser Control

Validate Build

Distortion **Simulation**

Shape Compensation

Automated Clean Up

Robot handling

Robot finishing (support structure)

Robot polishing

Part Alignment

Discover unique part

Fit toolpaths to near-net-shape

Pass/fail

SM Finish

Rapid Toolpath generation

Rapid machining

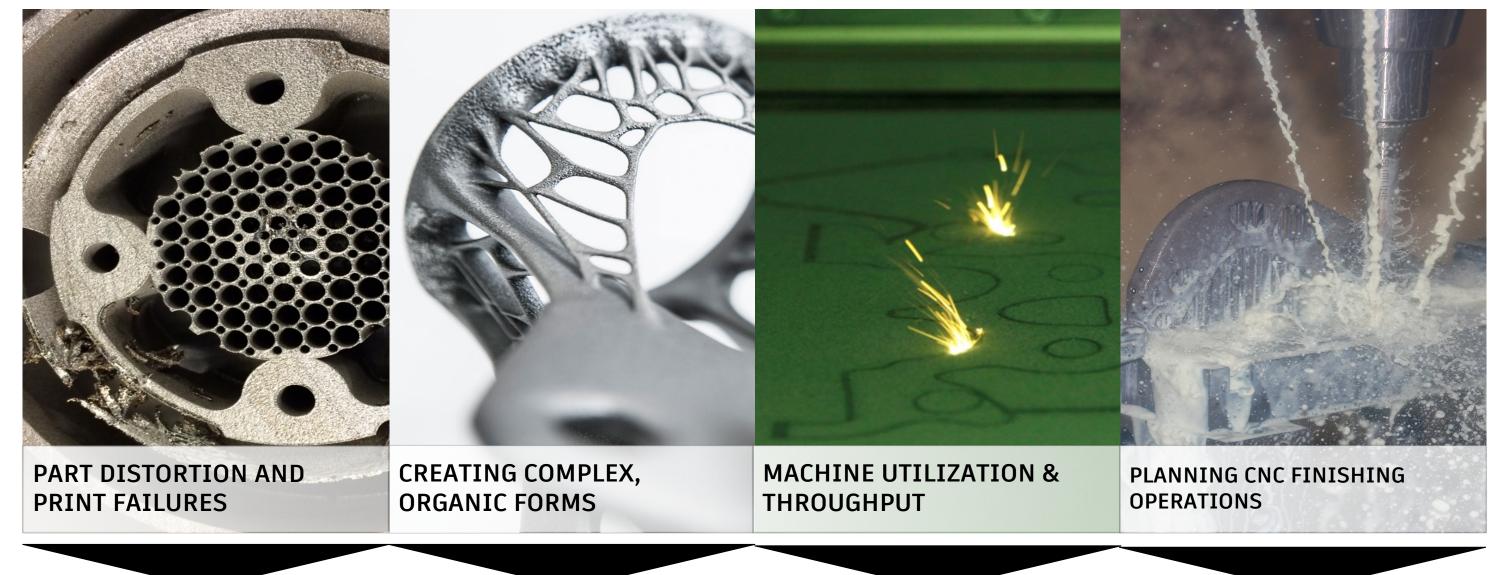
Remove part

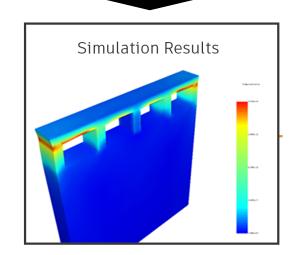
Validate **Final Part**

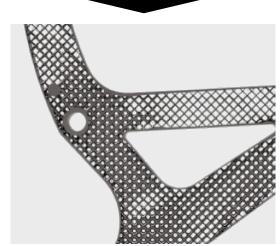
Probe/measure part

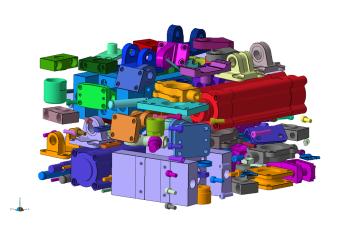
Report

Addressing the Full Scope of Additive Opportunities & Challenges









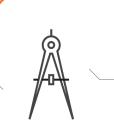


End-to-end Additive Manufacturing Workflow

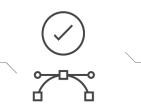
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Material Specific knowledge



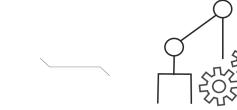


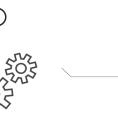
















Design

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Voxel

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Micro Level Optimization

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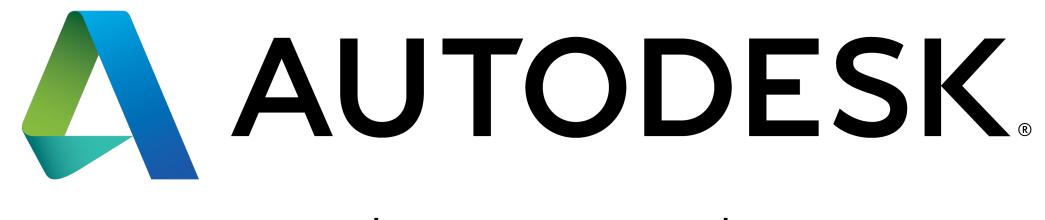
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Make anything.