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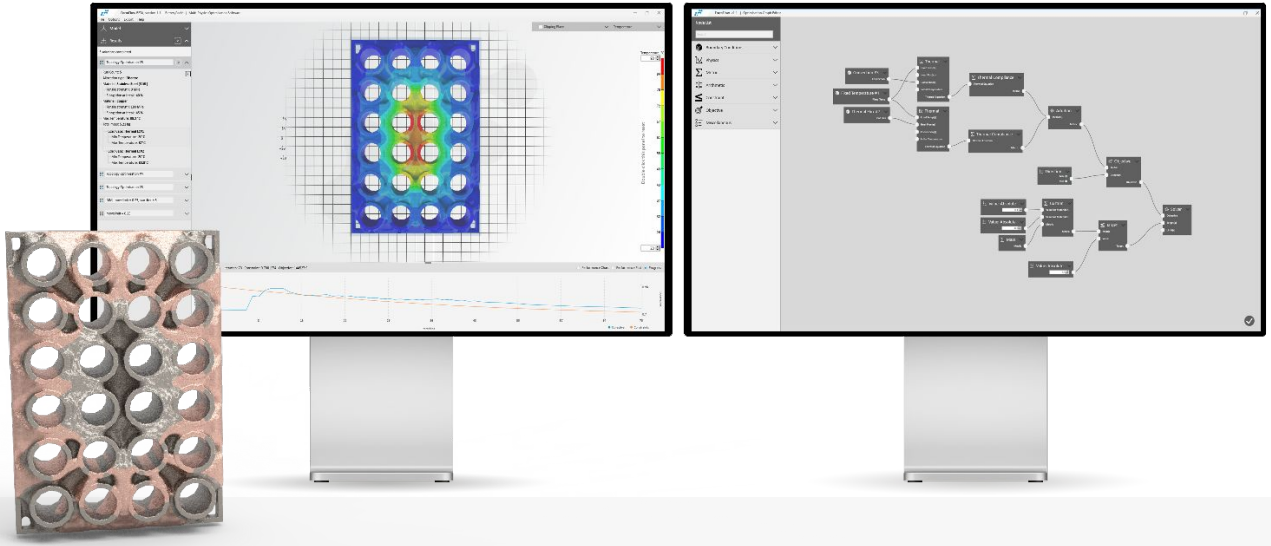
SIMULTANEOUS OPTIMISATION ACROSS THE ENTIRE AM WORKFLOW



Mar 2022

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10th November 2021

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Additive Flow's Impact

Results we've delivered

50% faster production for LPBF with Zeiss

Extreme cost and weight cutting for Tier-1 aerospace

35% better heat exchange performance in metal AM

Our AI is 2 thousand times faster: Weeks to minutes

Increased sustainability 15x for civil-engineering

Accelerate workflow efficiency by 5x in medical sector

"The ability to allocate multi properties through a product is game changing"

Kees
Senior Engineer

Royal HaskoningDHV
Enhancing Society Together

"Cut costs by half… and opened my eyes to what is feasible"

Findhan
Director

Comeragh COMPOSITES

"Cost and sustainability objectives could be met"

Neha
Manager

SAINT-GOBAIN

Multi-scale Optimisation Across Digital Thread

Connecting digital workflows end-to-end

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Materials and Engineering
Simultaneously Optimise:

- Lattices for thermal stability and weight
- Manufacturable topology for custom objectives
- Multiple material grades for performance & cost
- Orientation for speed and local part needs

Manufacturing
Simultaneously Optimise:

- Multiple parameters to reduce cost & meet spec
- Vector direction for material performance
- Energy density to achieve porosity & sustainability
- Hatch patterns for conductivity vs. speed

Quality
Simultaneously Optimise:

- Multiple physics against quality metrics
- Adjust multiple parameters to fix porosity
- Real-world physics with IOT
- Inter-thread relationships with AI and multi-property

Creating multiple solution sets to choose from: Clients select their ideal solution

Project Types

Project and Software Licences

Design & production optimisation

We meet custom goals by allocating design and process variables at multiple scales (material and time).

Output: A solution-set to choose from
Result: Achieve better outcomes faster

Build digital-thread relationships

We build relationships between material, engineering, and production variables on metrics - use existing or new data with our ML/AI capability

Output: Relationships that can be exploited
Result: Trade off speed vs. performance vs. quality

Deploy streamlined workflows

We connect software tools, manual process, and data in a unified end-to-end optimisation workflow.

Output: A repeatable workflow that connects your digital thread and specific needs
Result: Save time, max productivity, accelerate dev

Manufacturing & Materials Strategy

We work with you wherever you are on your development journey, to maximise our ROI

Output: Full strategy and implementation plan
Result: Leading approach to realise value with buy-in

Workflow: End to End Optimisation

Repeatable & scalable

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Inputs

- Geometry
- Goals
- Materials

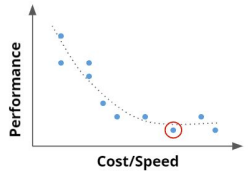
Volumetric Optimisation

Right properties in the right place

- Topology
- Lattices
- Parameters

Selection

Choose from multiple options



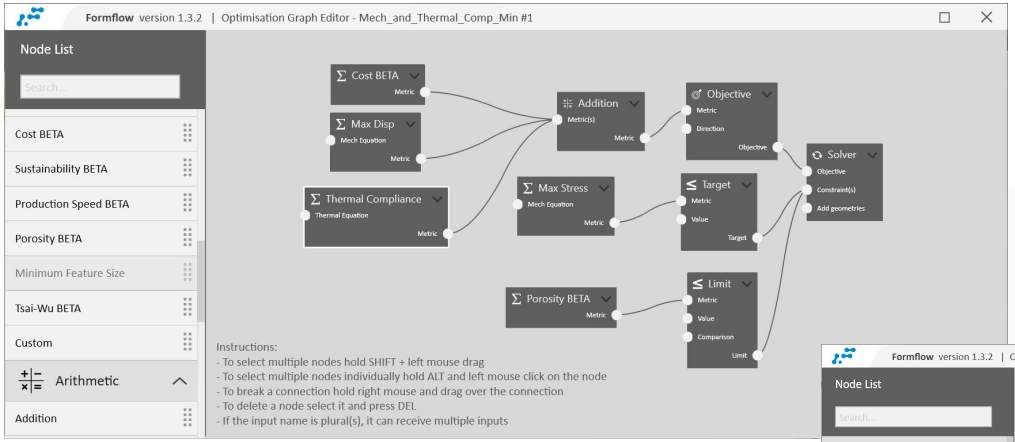
Produce & QA

QA data back in the loop

Rapid project delivery, readily scalable

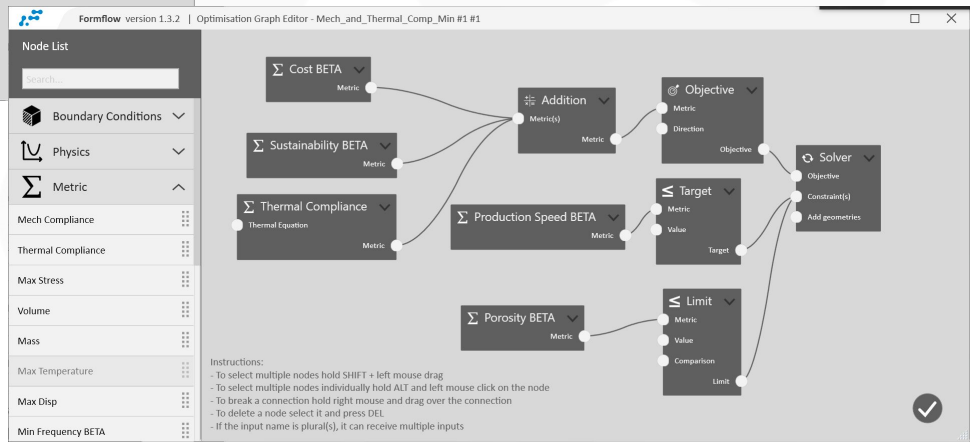
Repeatable Workflow: Custom Optimisations

Build your own repeatable workflow and share it across teams and applications



Add Sustainability to Cost

Target Production Speed



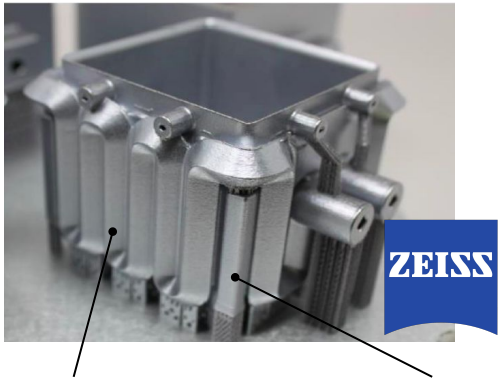
Switch Objectives, Limits & Targets

Repeatable Across Parts

Multi Scale Volumetric Optimisation

Optimise Digital Thread Parameters WITHIN Parts Spatially ACROSS Scales

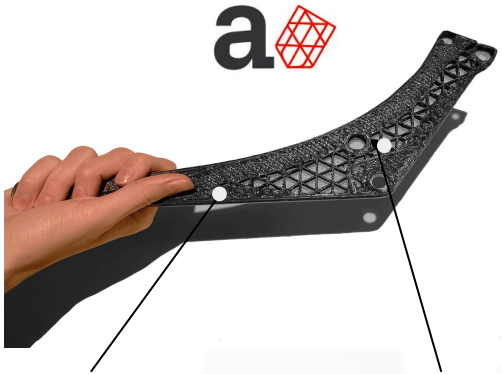
Production: Micro-structures



SLOW CONDUCTIVE PARAMETER

FAST POROUS PARAMETER

Meta-Material: Lattices & Alignment



HIGH DENSITY

50 DEGREE FIBRE ORIENTATION

LOW DENSITY

30 DEGREE FIBRE ORIENTATION

Multi-Property: Materials

PROPERTY A: Copper

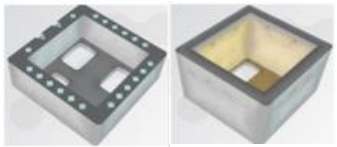
PROPERTY B: Steel

Digital Thread Optimisation with Zeiss

Multi-parameter repeatable workflows

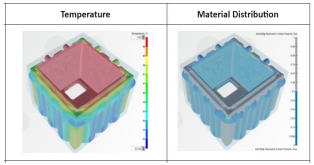
ZEISS + additiveflow

Inputs



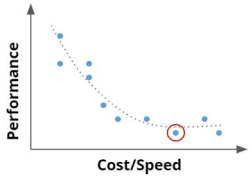
Volumetric Optimisation

Right properties in the right place



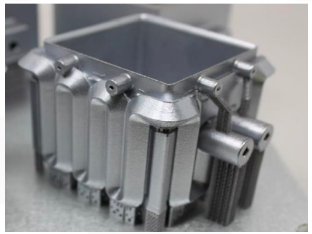
Selection

Choose from multiple options



Produce & QA

Parts and data output



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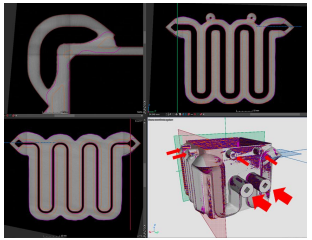
Passed QA Inspection



Optimisation Goals:

Minimise cost

Optimised geometry

Thermal efficiency

Optimised Process:

Multiple parameters trade off speed against porosity and performance

Repeatable workflow

Solution Trade-off:

45% Reduced Mass plus

50% Faster Production

Vs.

35% Better Performance

Accelerate innovation.

Improve your production speed

Reduce part mass & cost

Increase product efficiency & sustainability