



Let the Physics Design it

*Upgrading Data Center Cooling Solutions with
Physics-Driven Engineering*



Faster, Better, Greener with Physics-Driven Generative Design

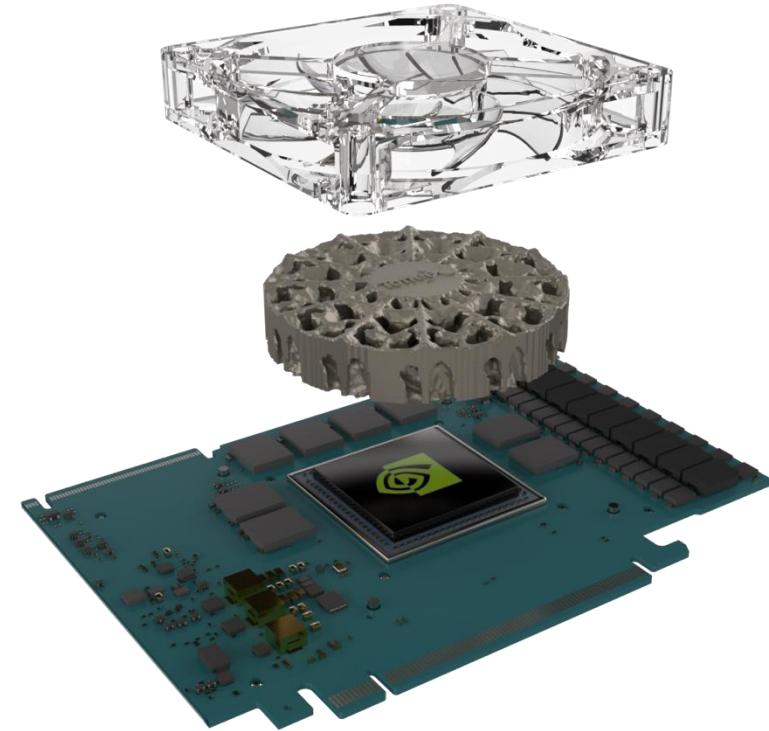


Who we are

- Software company developing next-gen cloud-native engineering design tool

We help enterprises worldwide:

- Drive unique high-performance designs
- Increase product innovation
- Make more sustainable products



Trusted by



AIRBUS



RICOH



FABRIC8LABS

IHI



Panasonic



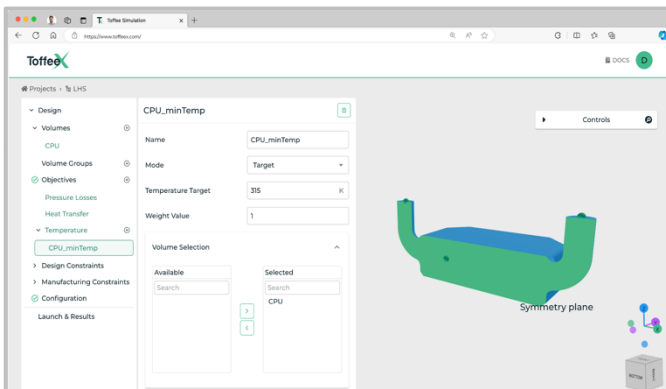
and many more...

Seamless integration into your digital engineering workflows



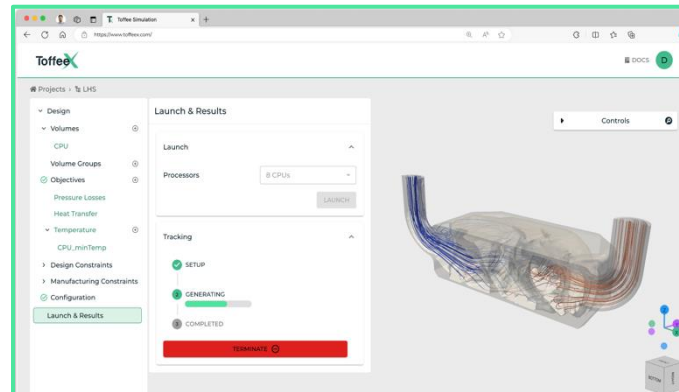
1. Import

Easily upload your design volume



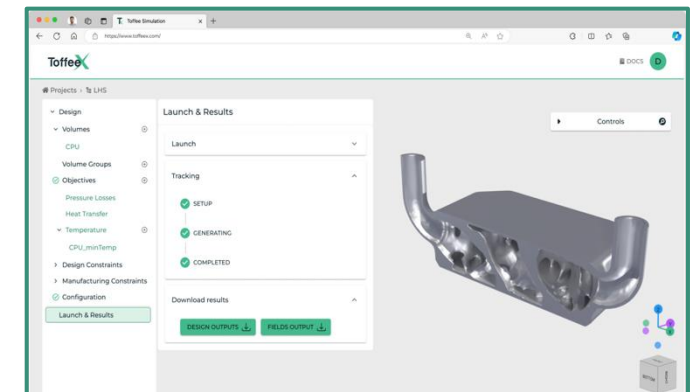
2. Generate

Get an optimized design fast



3. Integrate

Export your design ready for CAD/CAE/CAM



- Full Domain
- Surfaces

inlet

outlet

Generated Surface 1

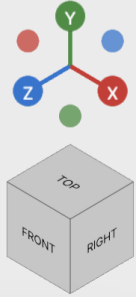
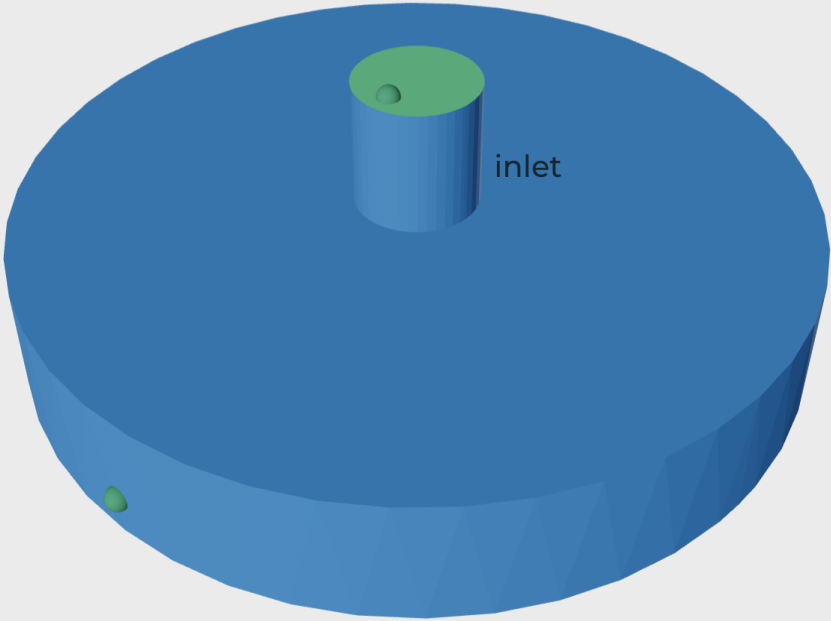
Generated Surface 2

Generated Surface 3
- Surface Groups

Default

Initialize Domain

▶ Viewer Controls



RUNS

D2 - max HT

D1 - 100W

RUNS DETAILS

Design - HT || PL

Objectives

Design Materials

Design Constraints

Manufacturing

Experimental Settings

Configuration

Simulation - Simulation v1

Boundary Conditions

Adiabatic Walls

Flux

Inlet

Outlet

Fluid Properties

Heat Sources

Solid Regions

GEOMETRY

Domain

Toolbox Volumes

Inlet

Type

Inlet

Name

Inlet

Velocity

Fixed Value

Velocity Value

2

m/s

Pressure

Zero Gradient

Temperature

Fixed Value

Temperature Value

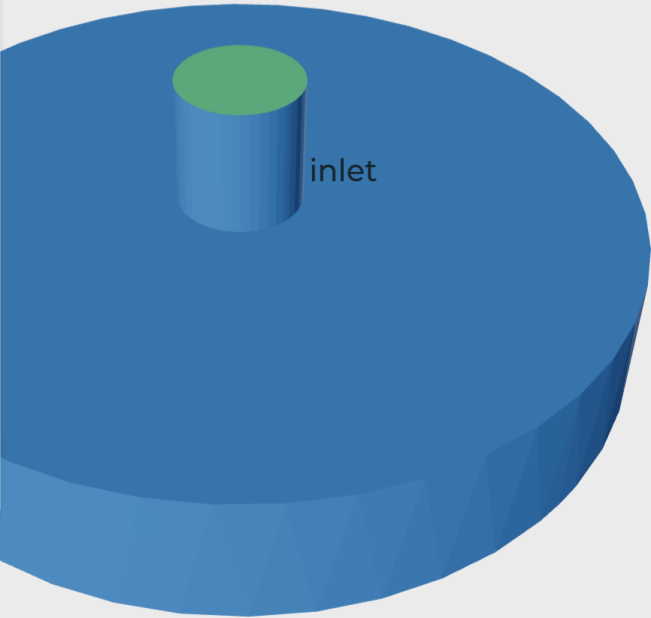
298

K

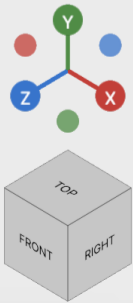
Turbulence (k-epsilon)

Surface Selection

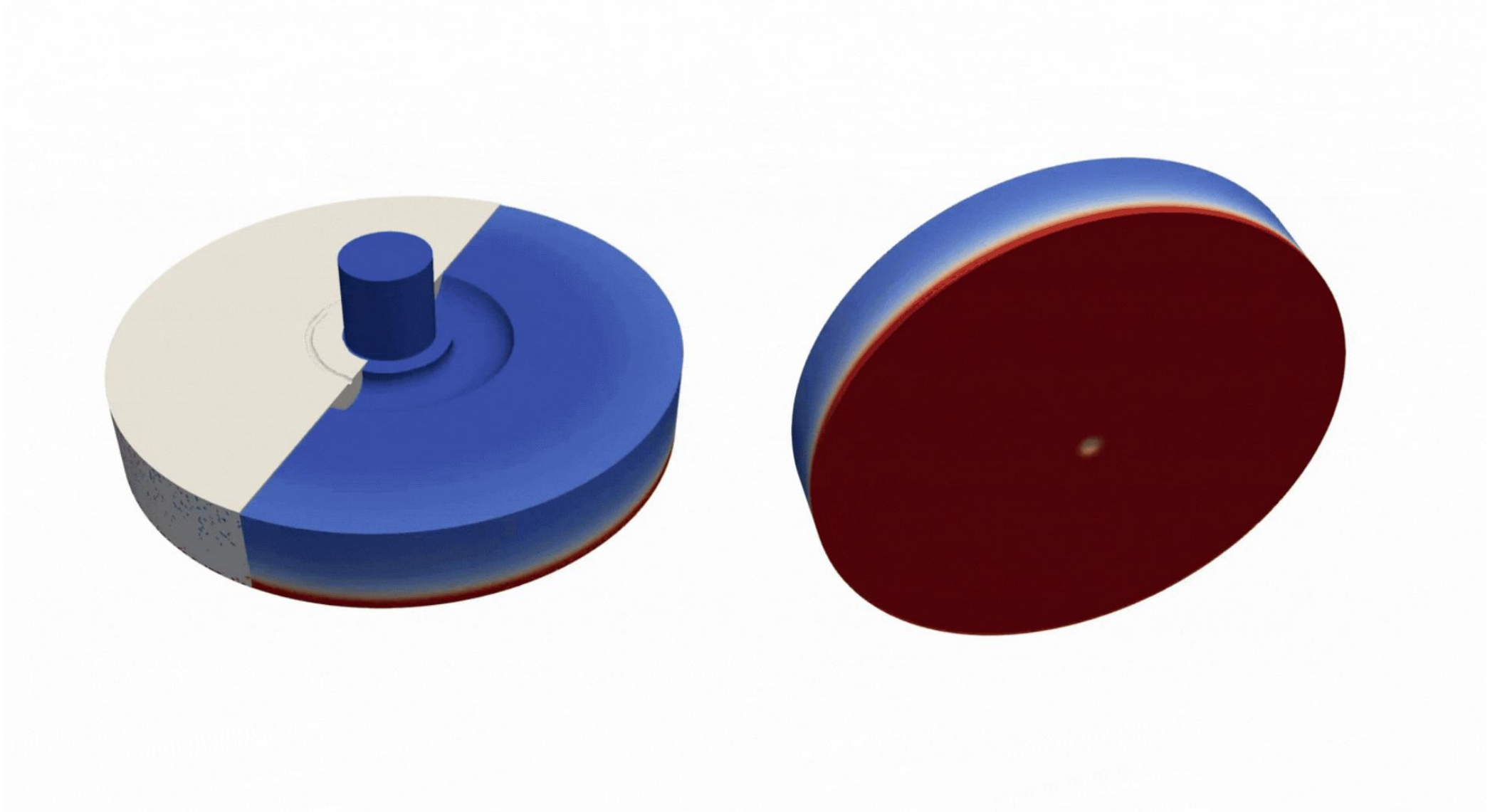
UPDATE



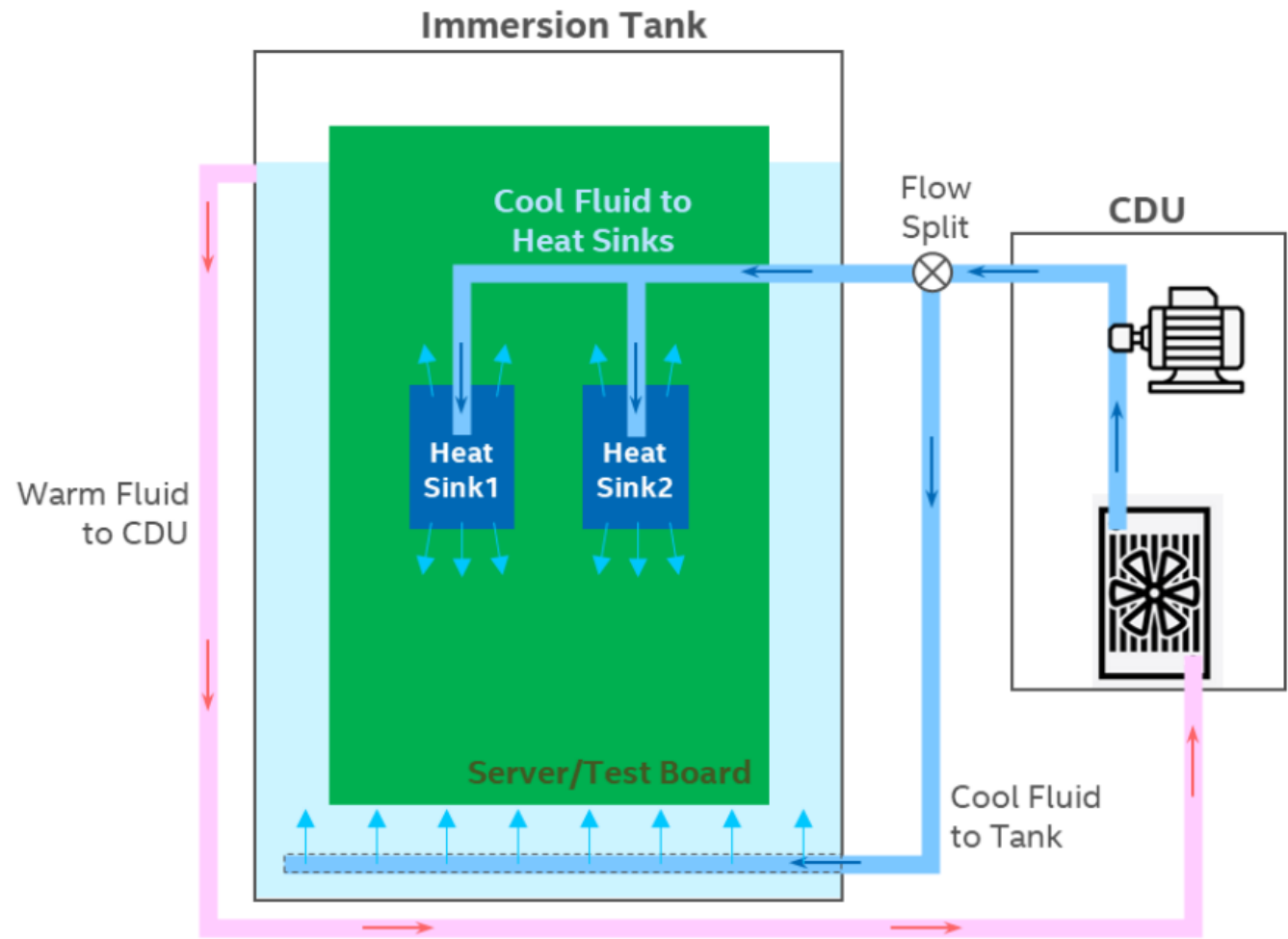
Viewer Controls



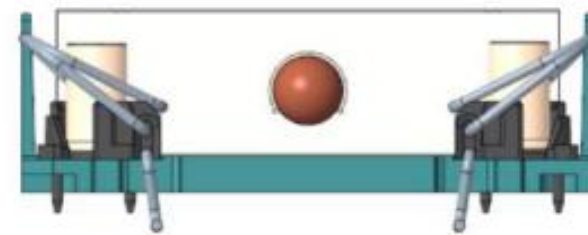
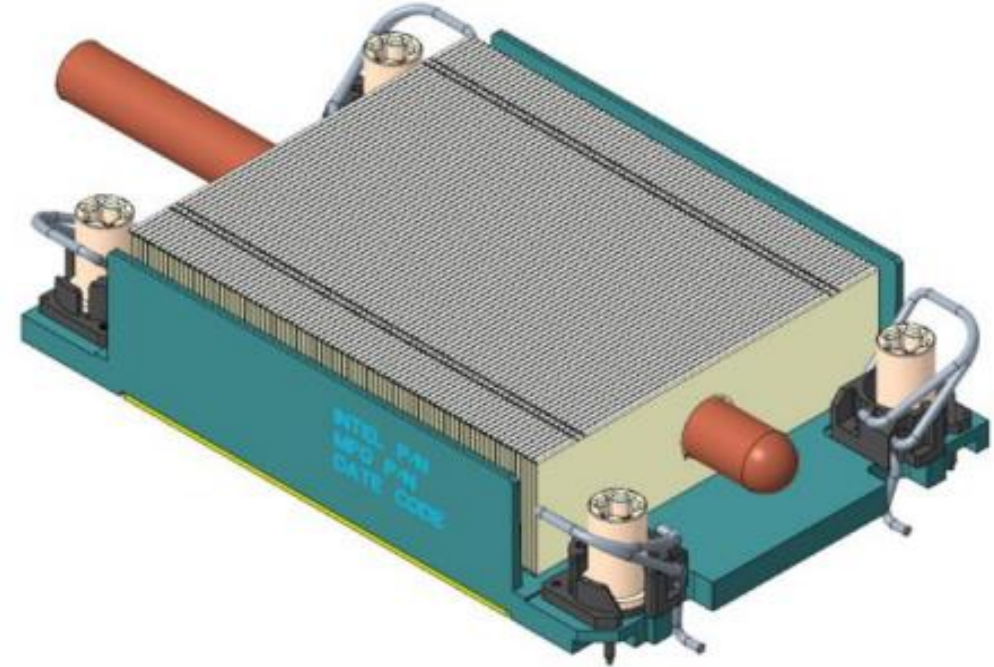
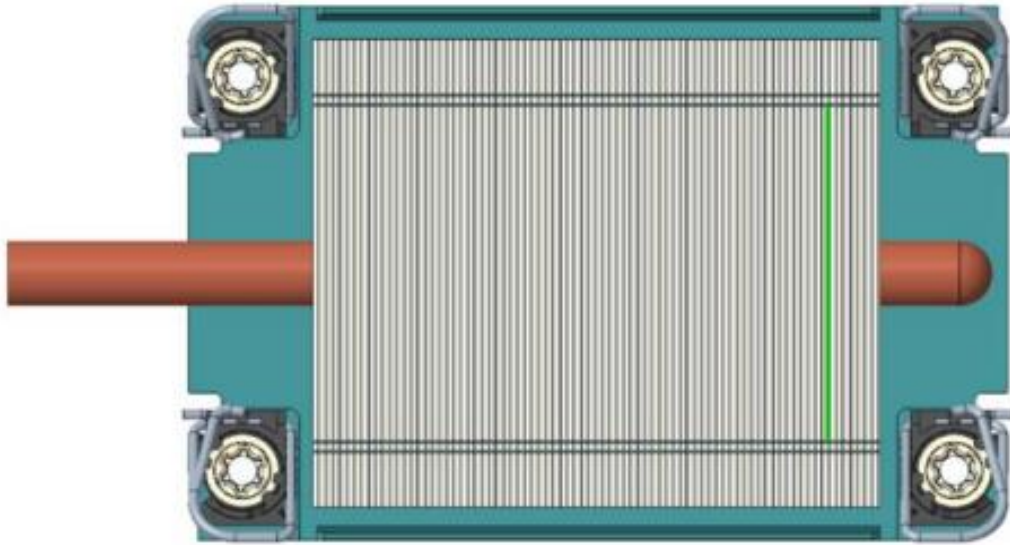
Let the Physics design it!



Single-phase immersion cooling in data centres

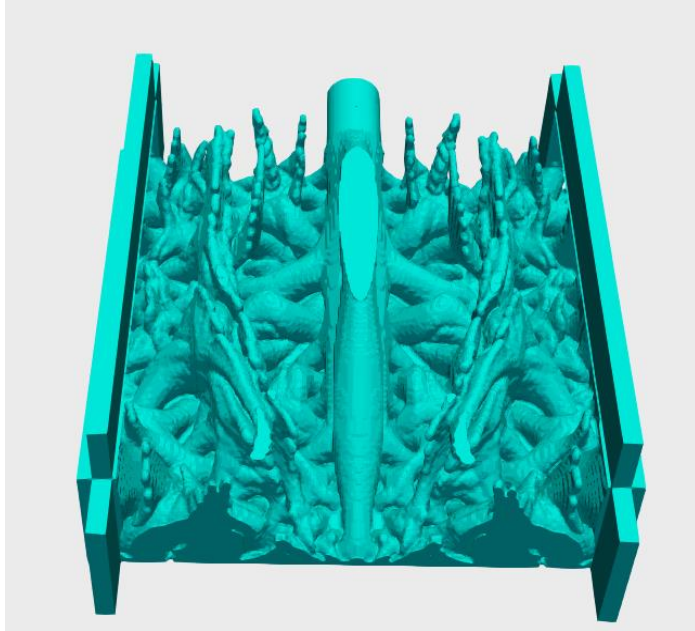


Targeted flow efficiency heat sink



Open compute project

Results: design for FDM additive



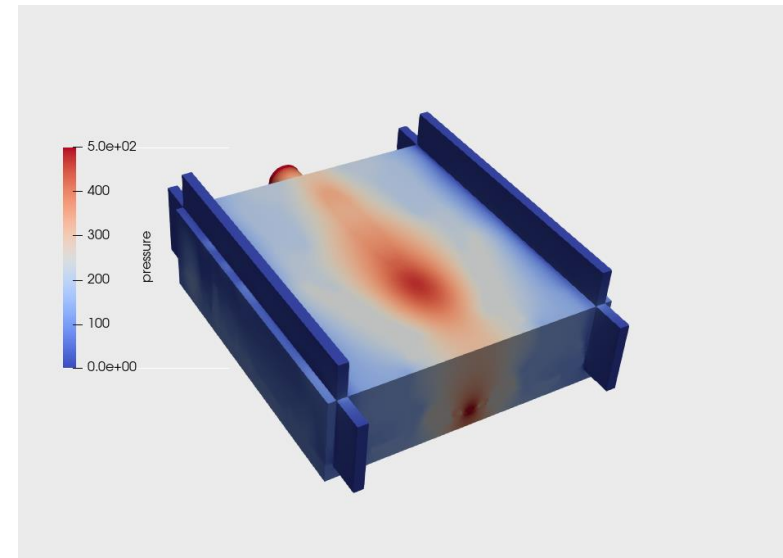
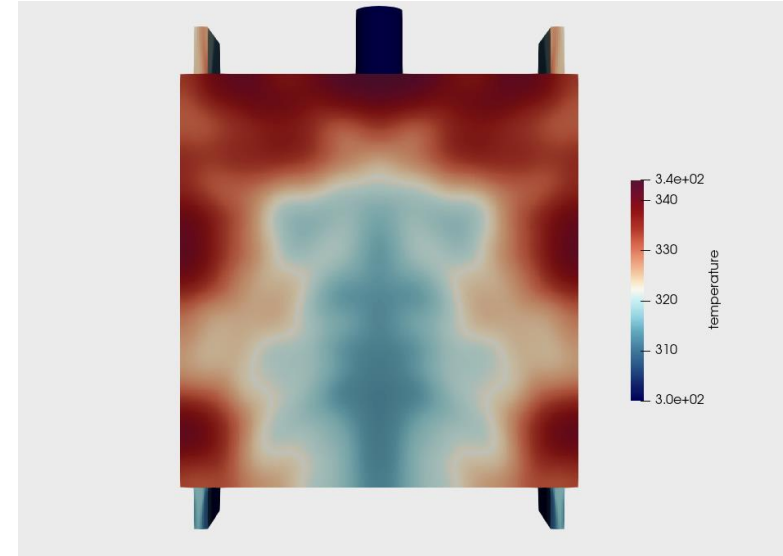
Metrics:

Max temp: ~334K (71C) (< 90C target)

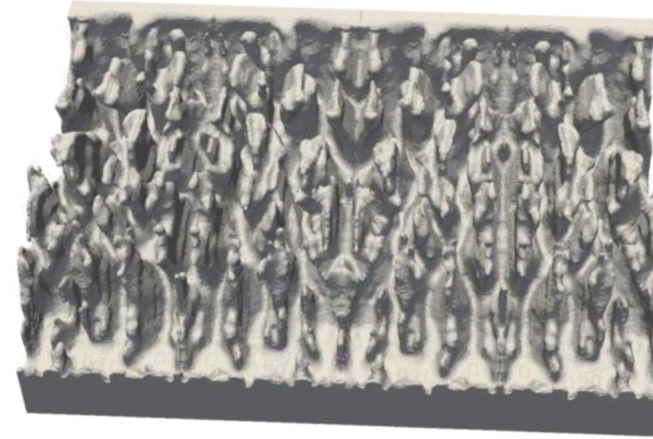
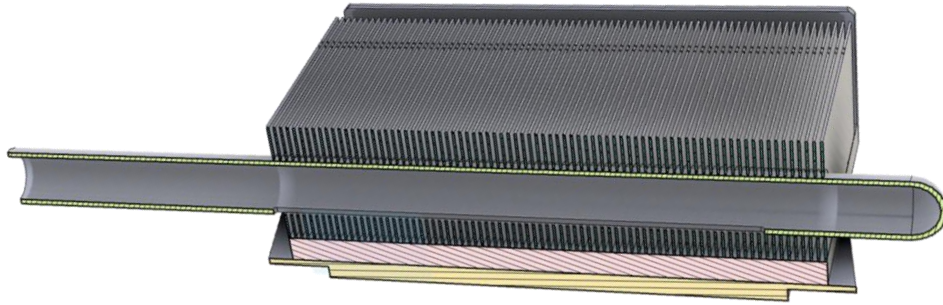
Thermal Resistance: 0.0255 (vs 0.05 for baseline)

Pressure loss: 500Pa avg at inlet (< 1kPa target)

Manufacturable from plastic using FDM



Results: design for conventional manufacturing



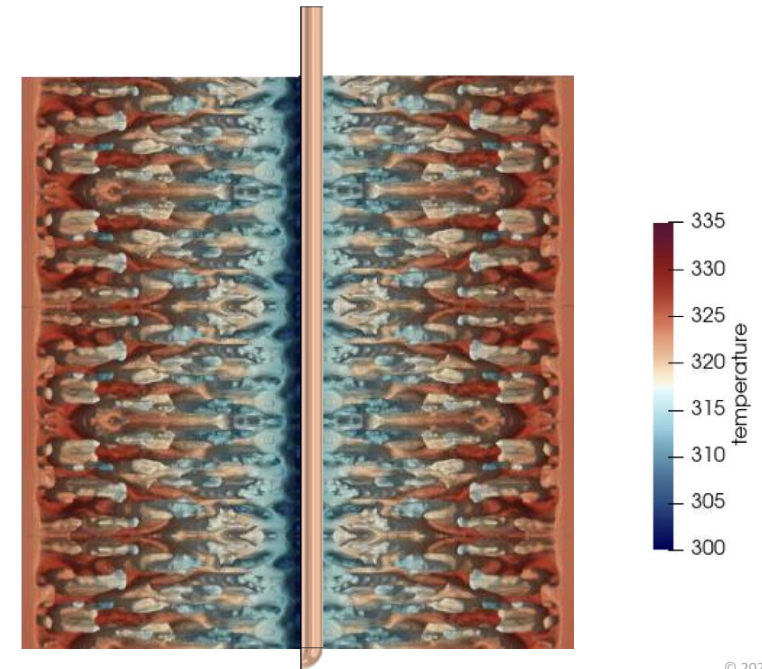
Metrics:

Max temp: ~336K (73C) (< 90C target)

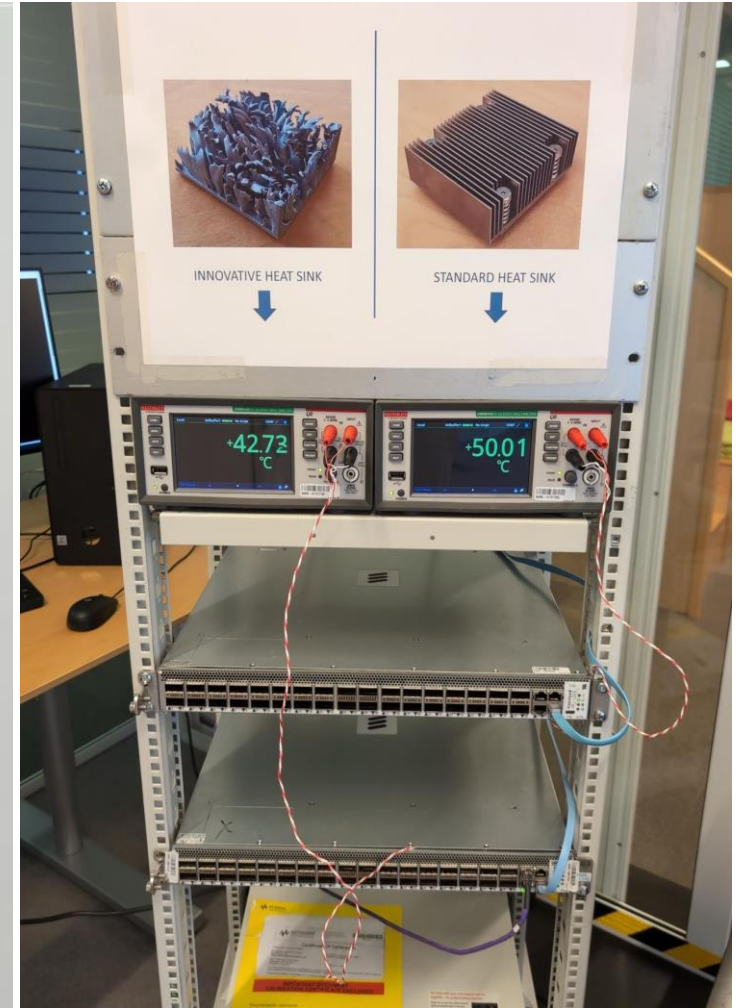
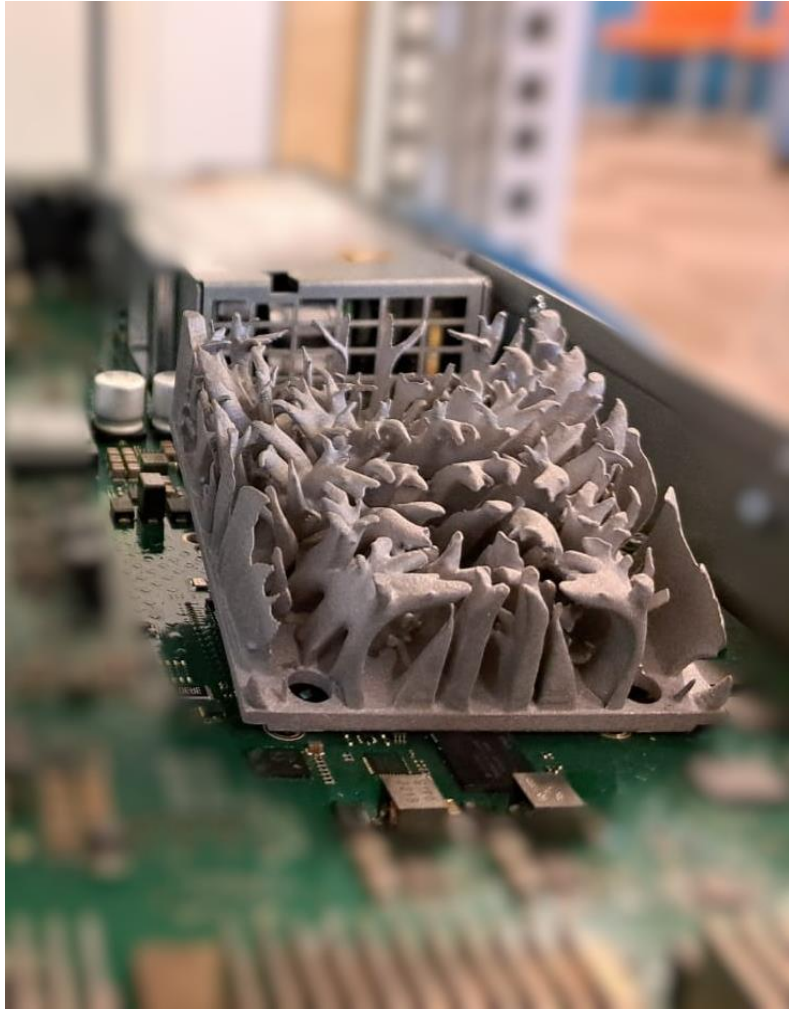
Thermal Resistance: 0.0265 (vs 0.05 for baseline)

Pressure loss: 600Pa avg at inlet (< 1kPa target)

Manufacturable from copper using 3+2 axis milling



Next-generation air-cooling solutions





Let the Physics Design it

toffeex.com

in   