

Water-Cooled Plate Development

Case Study for Mizutani Electric Ind. Co., Ltd.

Application Example of scSTREAM for Water-cooled Plate Analysis

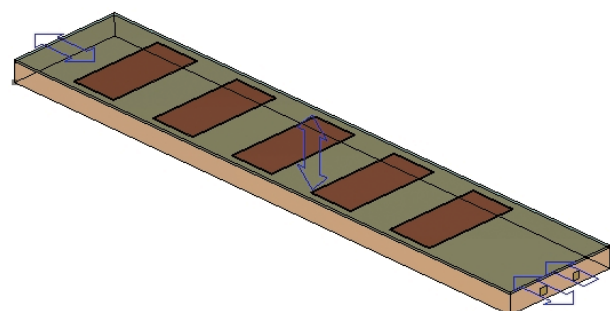
Designing the Optimized Flow Path Using Thermal Fluid Analysis

Effective heat dissipation for home and office electronic devices is essential for ensuring product quality and durability. A water-cooled plate is often used to dissipate large quantities of heat when air cooling effect is not sufficient. By applying thermal fluid analysis, the flow path of a water-cooled plate can be designed in a short amount of time, often fast enough to support production orders. Visual analysis results also helped Mizutani Electric present the performance results to their clients and explain the effectiveness.



Materials used
- Aluminium
- Copper

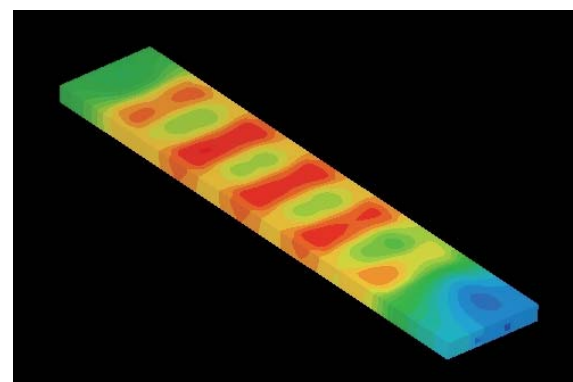
Cross section of a water-cooled plate



Water-cooled plate analysis model

Thermal analysis example

Plate dimensions	100 x 550 x 18 (mm)
Material	C1020
Heat element size	5 pieces @ 45 x 90 (mm)
Thermal load	1 (kW)
Flow rate	10 (L/min)
Predicted thermal resistance	0.0092 (°C/W)
Measured thermal resistance	0.0095 (°C/W)



Water-cooled plate analysis results

Customer Comments

The simulation and analysis capabilities of scSTREAM have helped us develop better products faster. We can customize the software for our purposes. The analysis results match well with theoretical and measured values, keeping the post production refinement tasks to a minimum.

