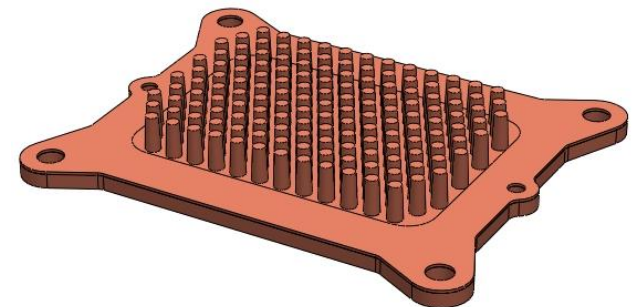
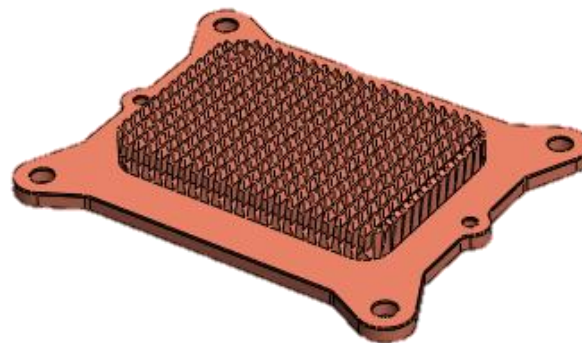


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ENGINEERING THERMAL INNOVATION

Performance Difference Between MicroCool MDT- ILPF and Forged Round Pins

July 2012

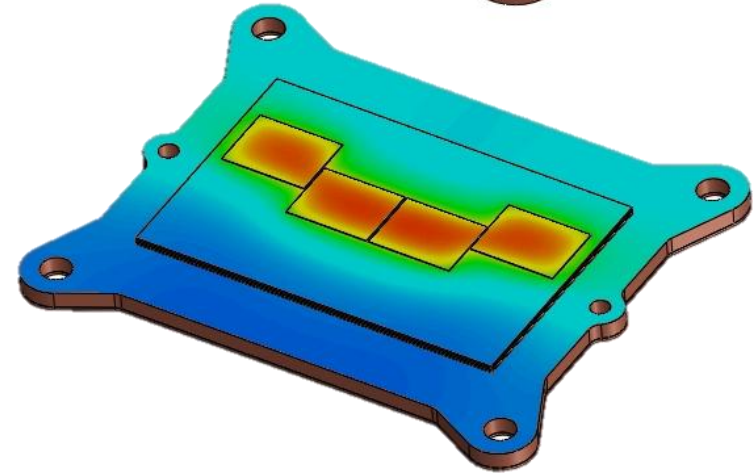
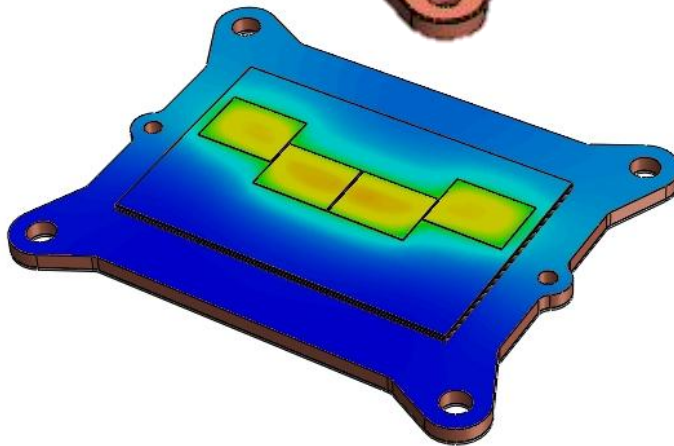
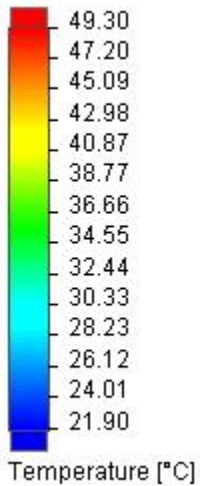
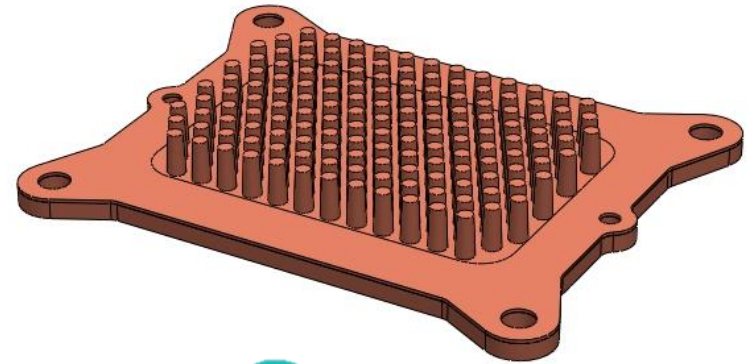
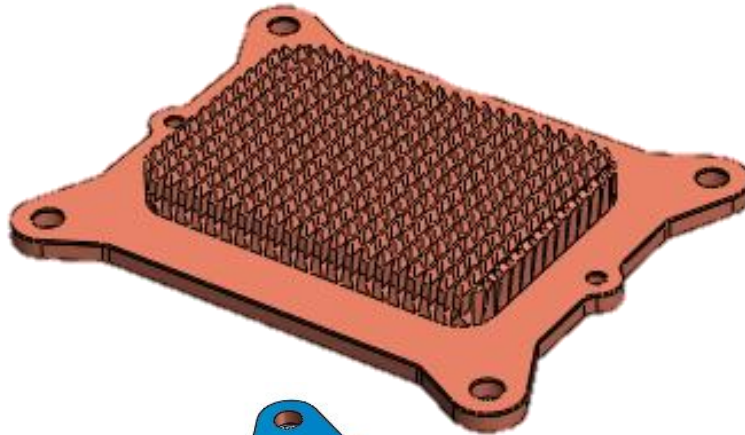
Matt Reeves



Performance Difference Between MicroCool MDT-ILPF and Forged Round Pins

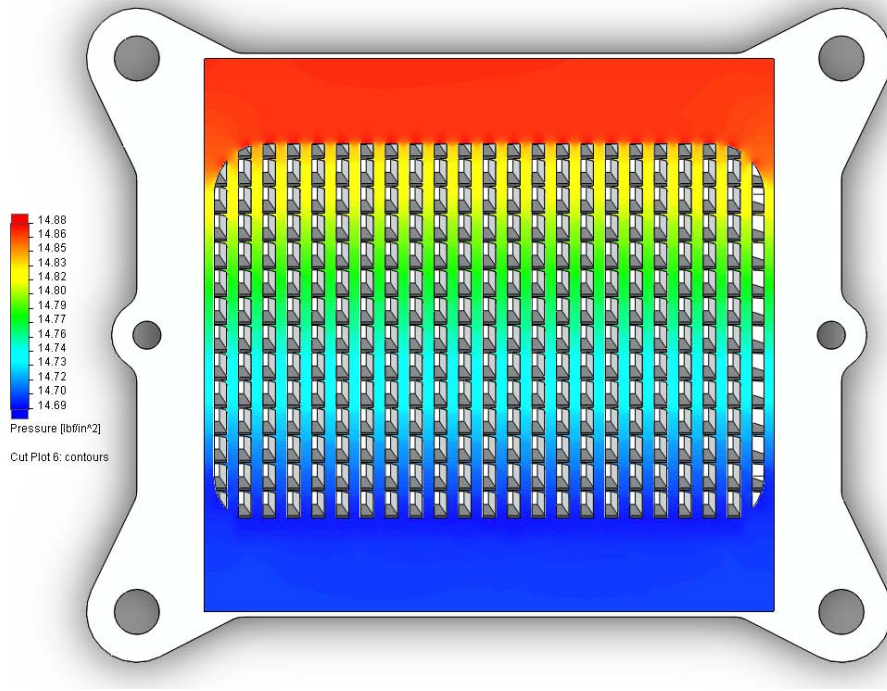
MDT: 44.3C

Forged: 47.7C

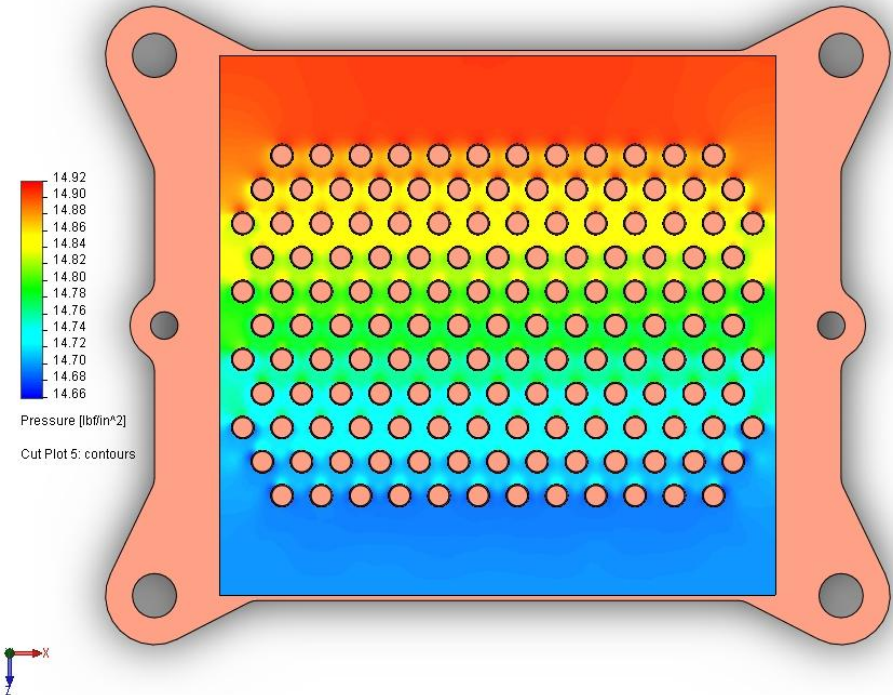


Results Pressure

MicroCool Inline Pin
Pressure Drop: 0.0131bar

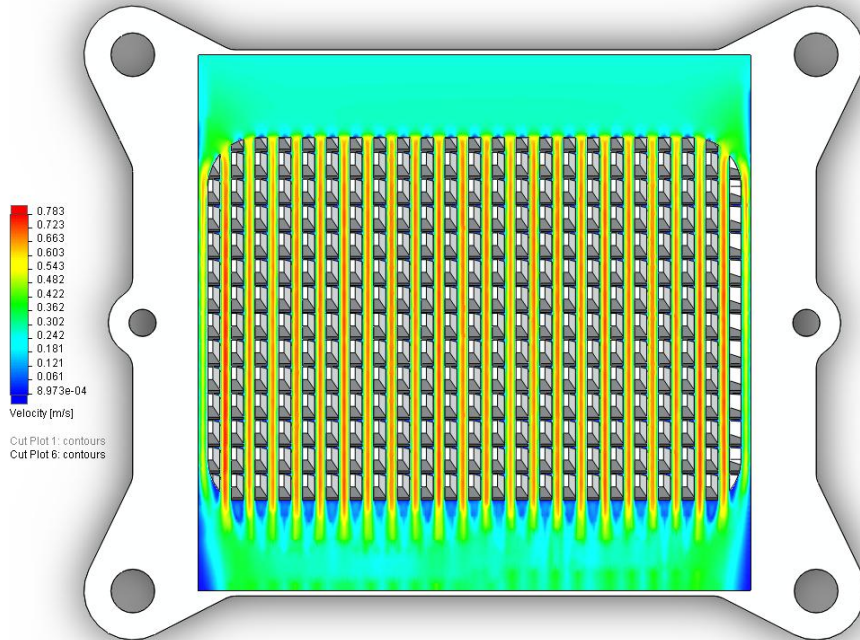


Forged Round Pin
Pressure Drop: 0.0159bar

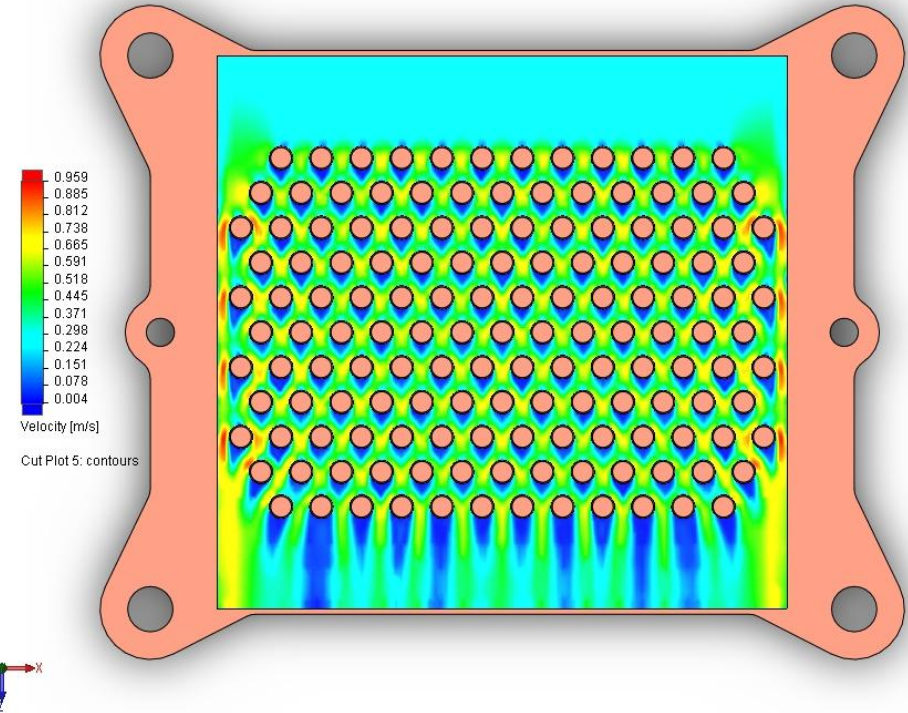


Results Velocity

MicroCool Inline Pin

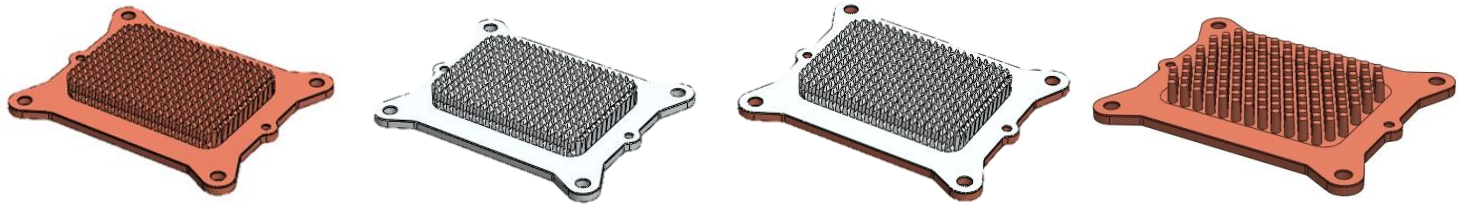


Forged Round Pin



Results Summary

6 l/min of 50/50EGW at 20°C with 300 watts



	MicroCool Cu Inline Pin	MicroCool Al Inline Pin	MicroCool Clad Inline Pin	Forged Cu Round Pin
Temp CP Surface (°C)	32.80	38.53	36.12	36.23
Temp Junction (°C)	44.35	49.66	47.79	47.73
Temp Outlet Fluid (°C)	20.89	20.84	20.91	20.90
Pressure Drop (bar)	0.0131	0.0131	0.0131	0.0159

- As expected MicroCool Clad is performance is in between that of pure aluminum and pure copper.
- When MicroCool Clad with inline pin fin offers the same performance as the forged copper part but with 17% less pressure drop.
- **MDT has 8% better thermal performance and 17% less pressure drop than Forged pins**