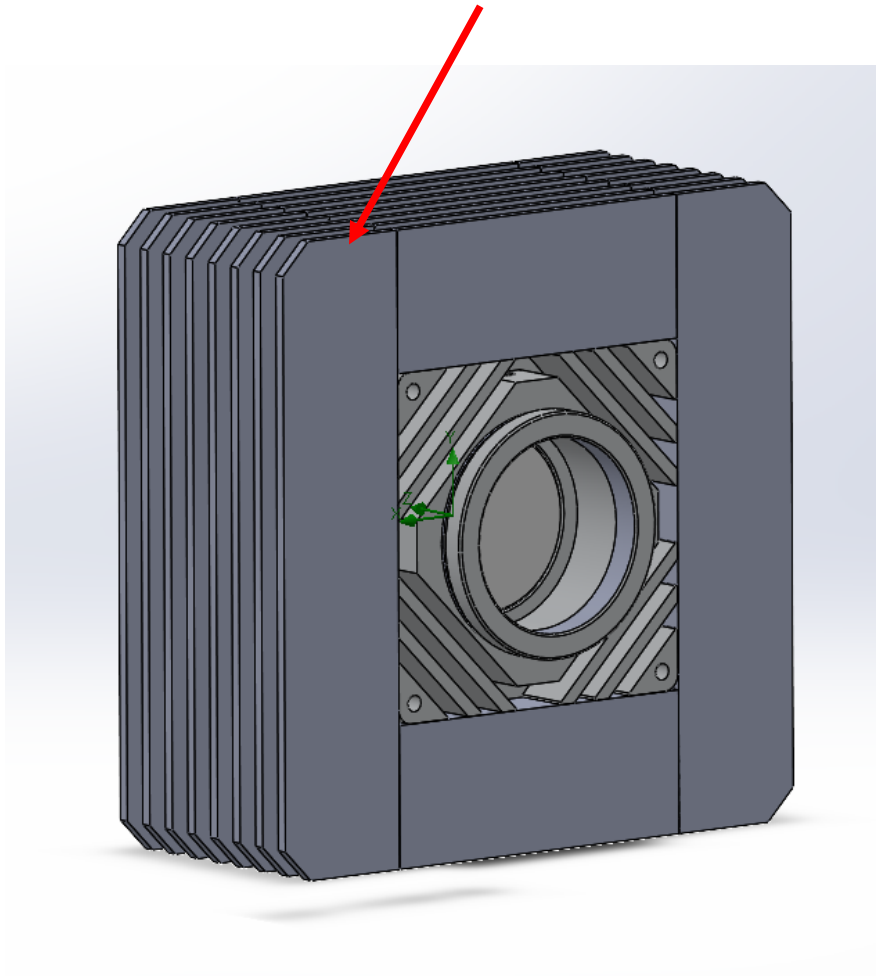
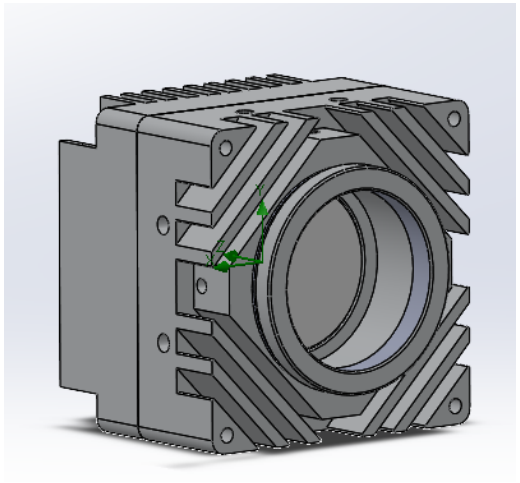
Mechanics

Fins attached to case by screws during utilizing thermal grease





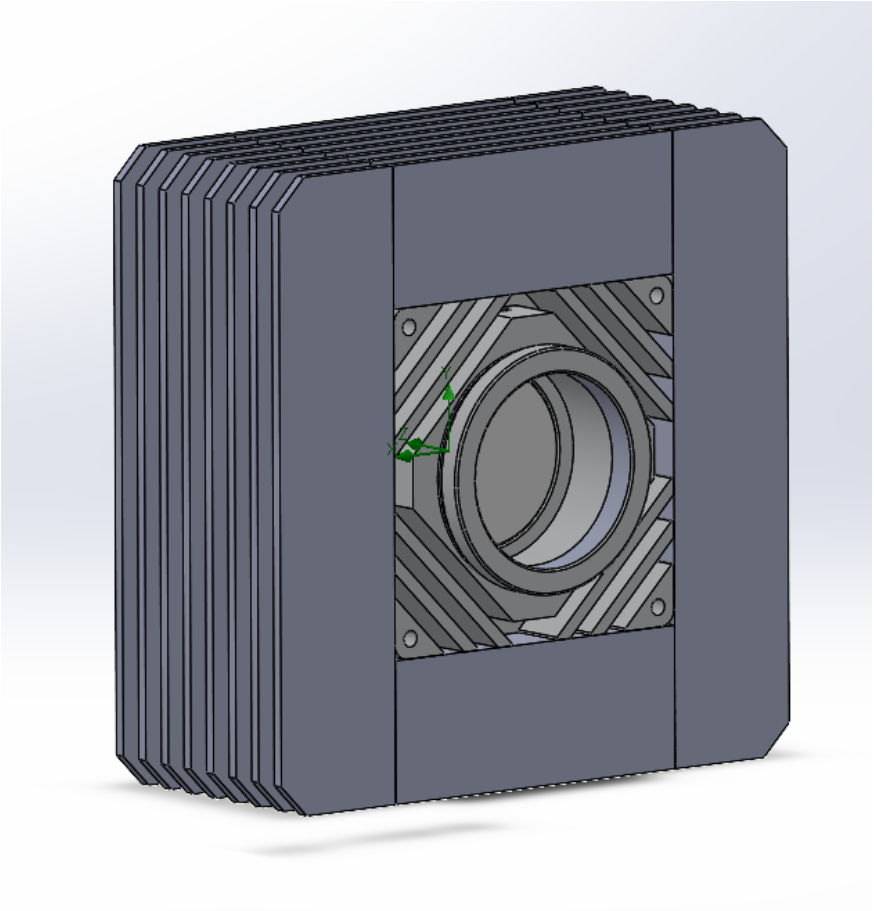
Air velocity direction

Two different models were analyzed:

1. Without fins
2. With fins attached to case by screws and thermal grease

For both cases were checked for still air as well as for the moving air (in y direction)

Boundary conditions



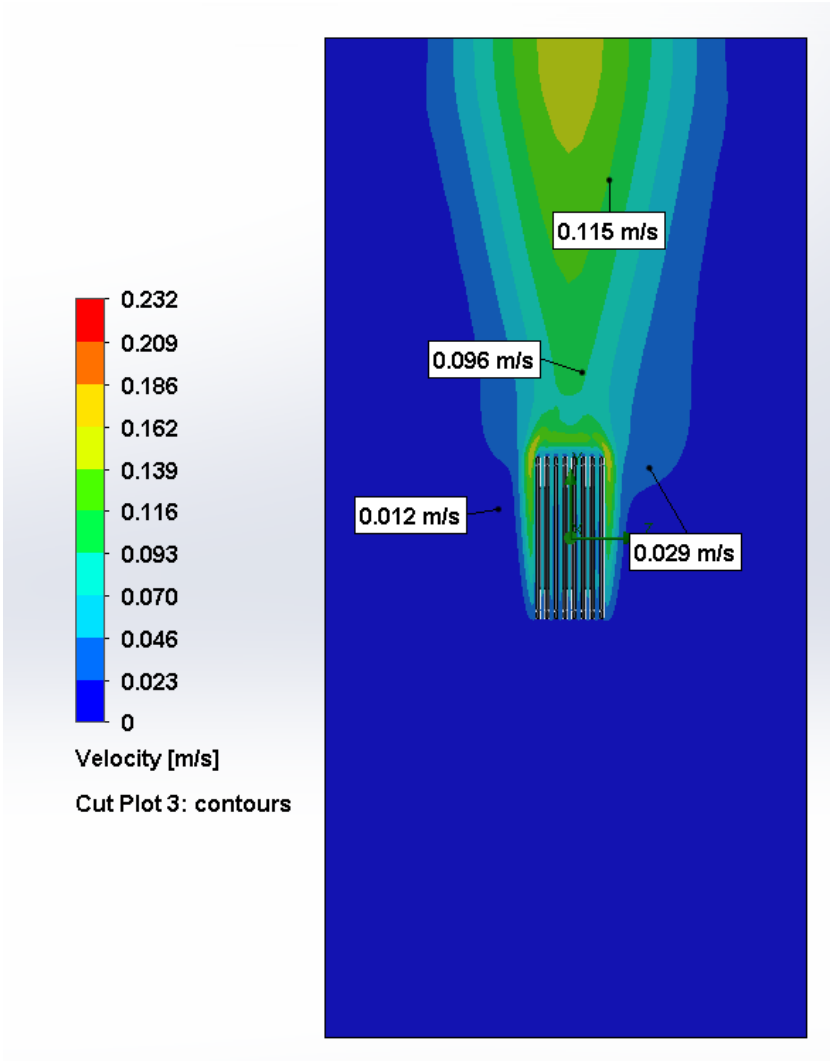
Heat transfer and evacuation is done by 3 ways:

- Heat transfer between solids by conduction.
- Heat transfer to air by natural/forced convection.
- Heat transfer by radiation. For heat radiation at low temperatures the emissivity/absorptivity coefficient is assumed to be 0.9.

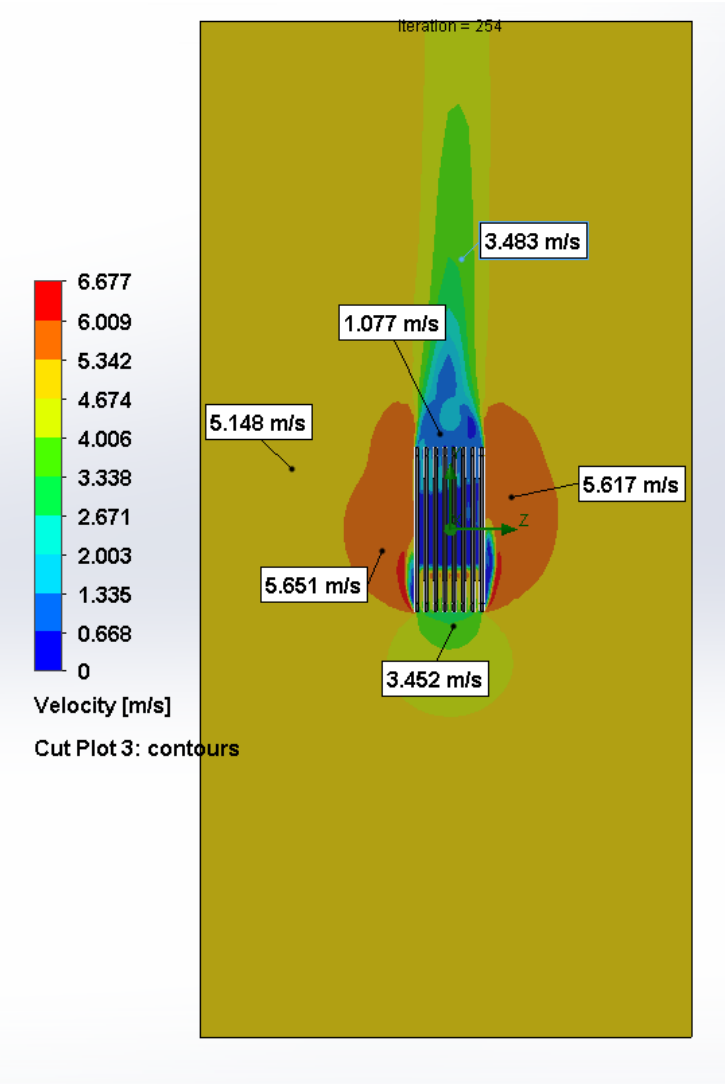
Ambient temperature

T_{amb}=20°C

Results –Air Velocity

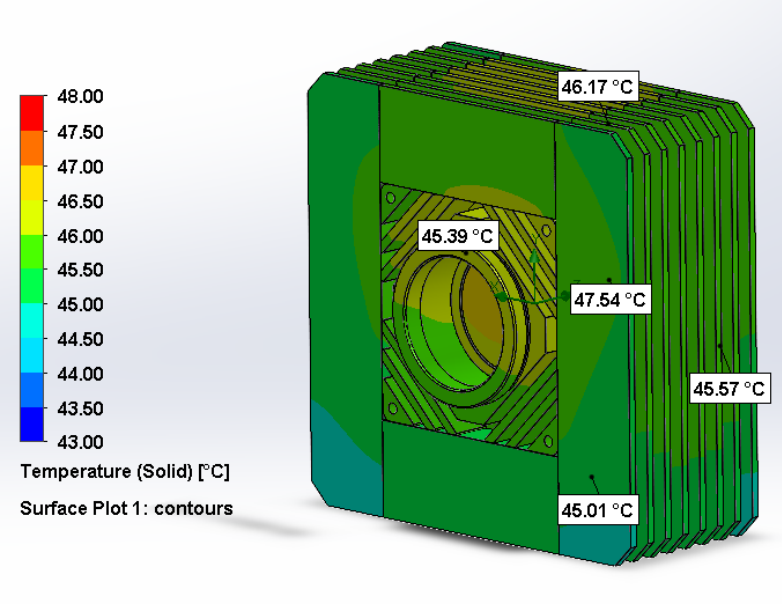


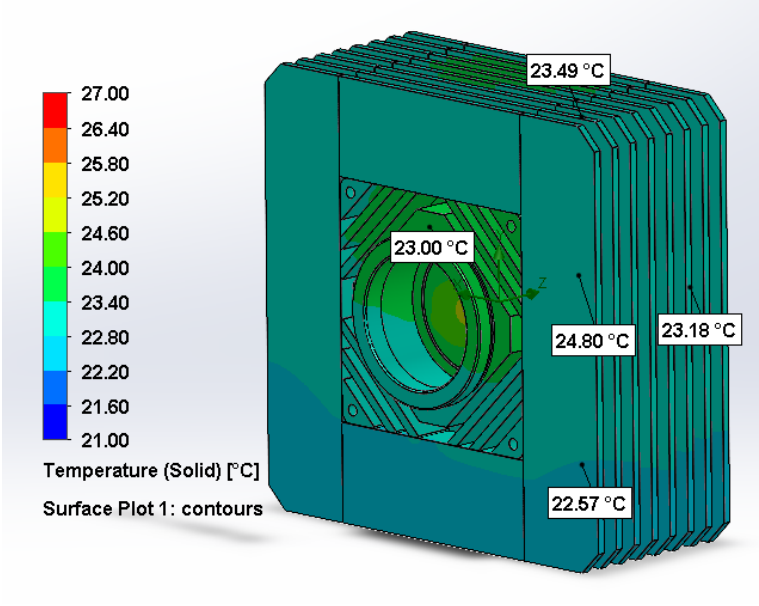
Still Air

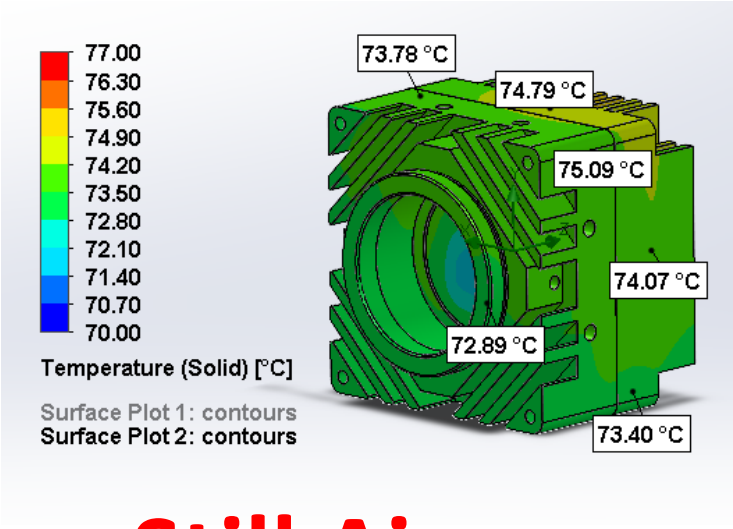


5m/s Air velocity

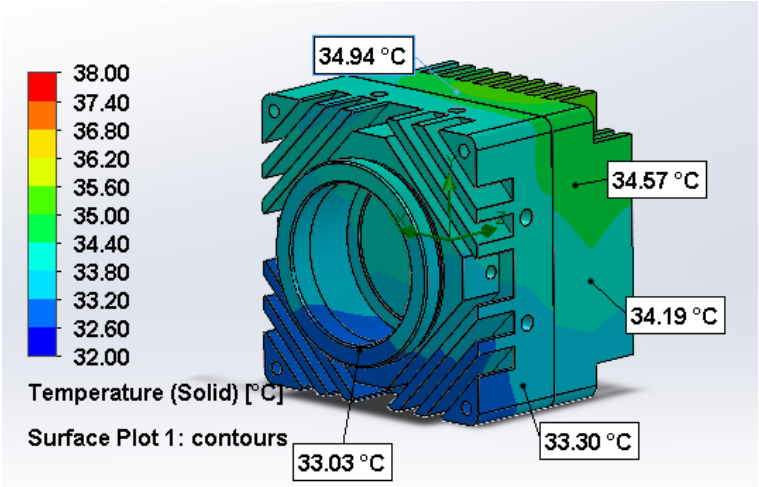
Results –Case temperatures







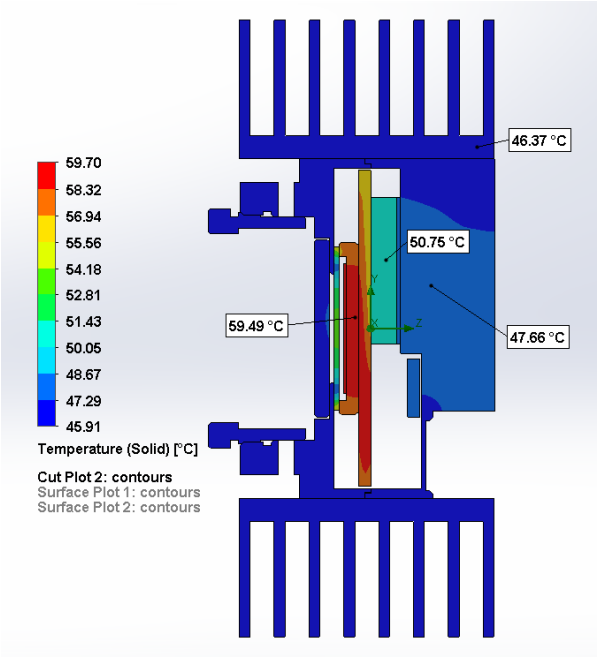
Still Air

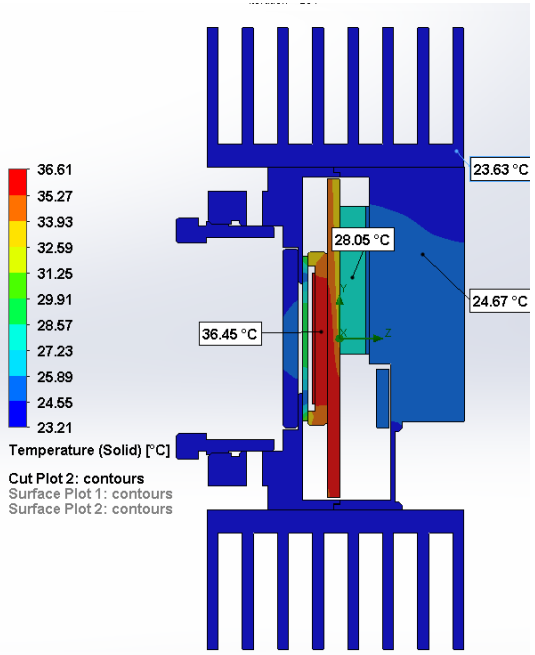


5m/s Air velocity

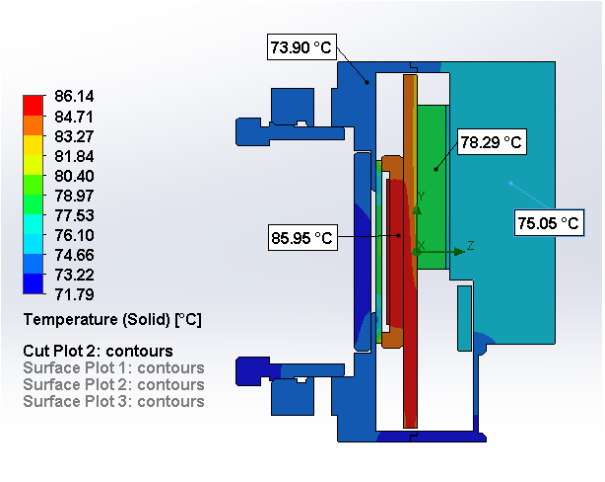
- For all tests the case temperature variation is just a few degrees.
- Fins and Air velocity significantly reduces case temperature

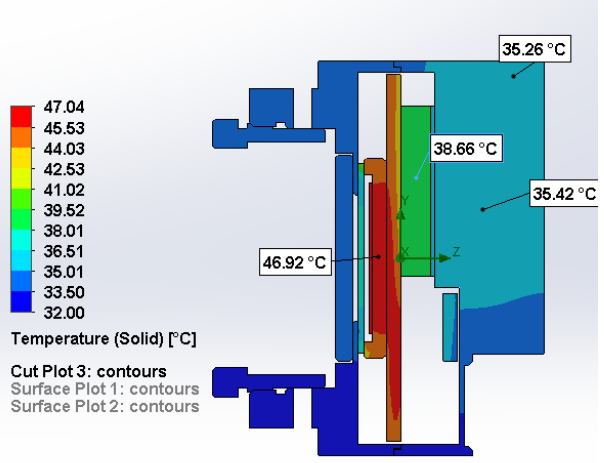
Results –Sensor back Temperatures





Fins





No Fins

Still Air

5m/s Air velocity

Temperatures Summary

	FPGA Temp [°C]	Sensor Temp [°C]
No Fins, No air flow	78	85
No Fins, 5m/s air flow	39	46
Extra Fins, No air flow	50	59
Extra Fins, 5m/s air flow	28	36

*Ambient 20C

International Distributor

sky blue microsystems

Sky Blue Microsystems GmbH
Geisenhausenerstr. 18
81379 Munich, Germany
+49 89 780 2970, info@skyblue.de
www.skyblue.de