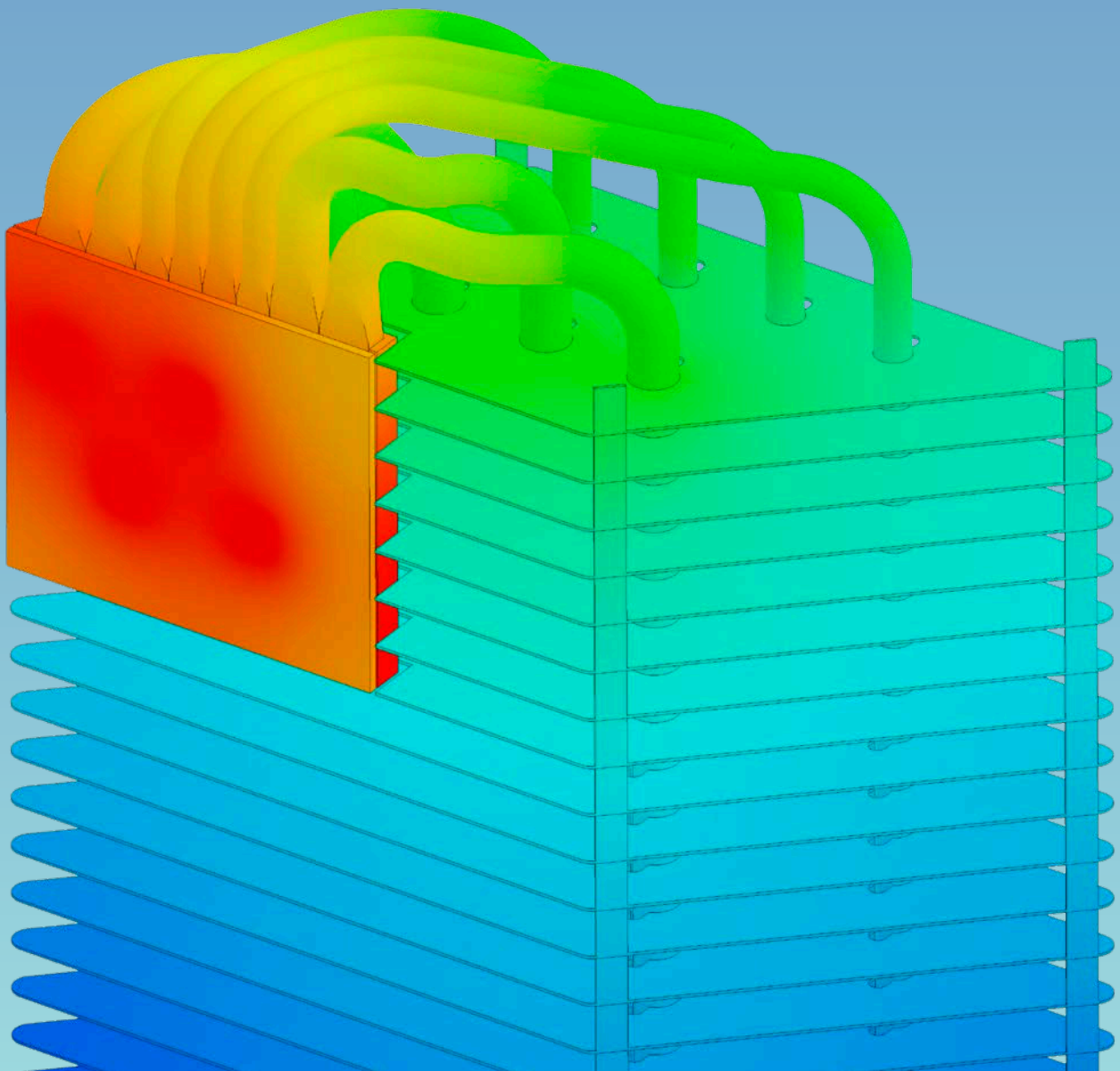


# CFD SIMULATION THERMAL MANAGEMENT CONSULTING

THERMAL SIMULATION



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## THERMAL SIMULATION

### OUR SERVICES

- Evaluation and elaboration of cooling concepts
- Analysis of existing simulation results
- Thermal and fluid dynamic simulations with Ansys:
  - From system to component level
  - Distribution of air flow, air temperatures, pressures, temperatures of solids
  - Fan operating points, pressure drops
- Optimisation of flow pattern and heat transfer, heat sinks, fans
- Failure mode and post mortem analysis
- Product upgrading and redesign

### BENEFITS

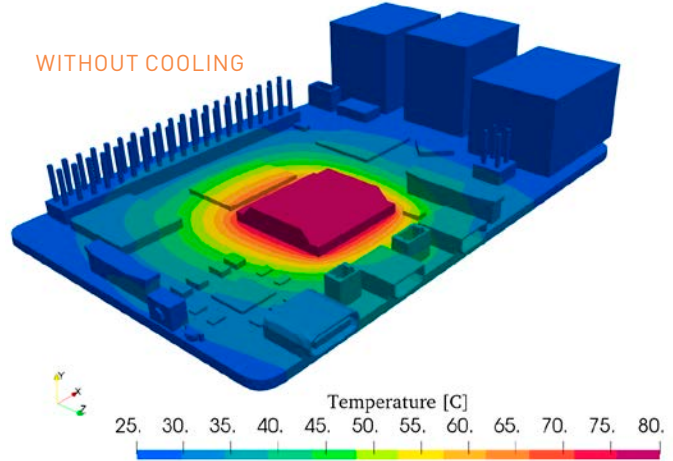
- Rapid feasibility studies
- Early problem identification
- Cost-efficiency of simulation vs. product redesign
- Easy variant analysis
- Accelerated Time-to-Market and Design-to-Cost
- Cost savings by avoiding expensive prototype production
- Replacement of lengthy test series / tests by fast simulations

### ADDITIONAL OPTION OF FEM SIMULATION

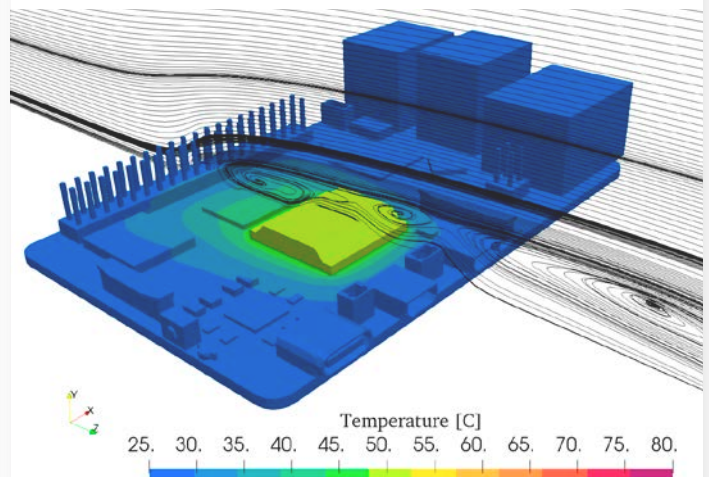
- Determination of thermal expansion, CTE-Mismatch and thermally induced stress
- Transient temperature distribution during heating or cooling
- Detection of gap formation and reduction of heat conduction contacts
- Determination of stress due to blocked thermal expansion
- Carrying out shock or vibration analyses using experimentally determined material data
- Additionally: transport simulation and/or drop tests

### COMPARISON OF THE CPU TEMPERATURE OF A RASPBERRY PI WITH AND WITHOUT COOLING

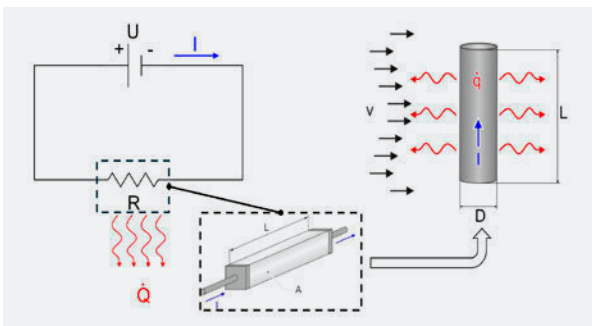
#### WITHOUT COOLING



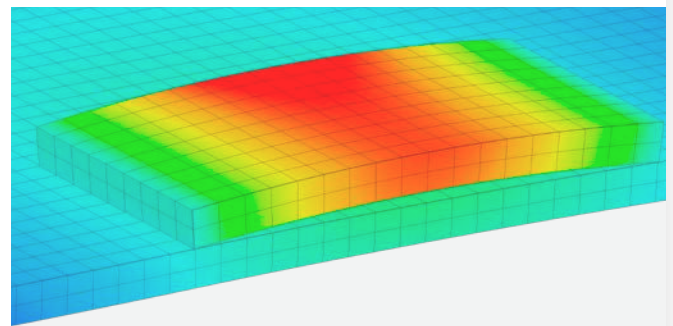
#### WITH COOLING



### Schematic representation of dissipative heat generation during current flow



### Expansion of a circuit board due to increased temperature differences



This can result in lift-off with an associated reduction in heat conduction.

Please contact us as your development partner.

### Further information

[www.elbcore-engineers.de/](http://www.elbcore-engineers.de/)  
[cfd-berechnung-und-stroemungssimulation](http://www.elbcore-engineers.de/cfd-berechnung-und-stroemungssimulation)