# TEDMAP 3D



## Get
## Accurate
## IR Temperature

**NPL**
National Physical Laboratory

**CIM LAB**
BY CIM-MES
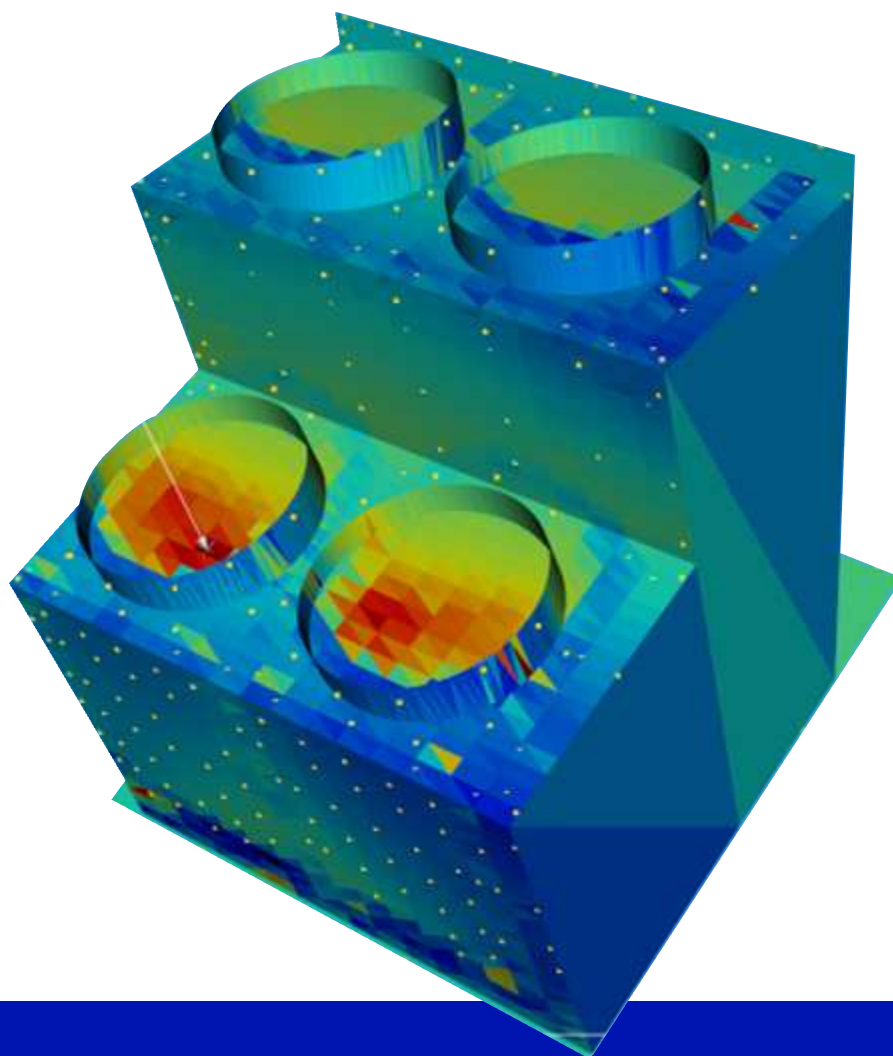
# What is TEDMAP 3D?

**TEDMAP 3D is a post-processing tool** that reduces temperature measurement error when using IR cameras. **Developed by CIM-lab and the National Physical Laboratory for ESA**, it was designed for TVACs but can also correct emissivity distortions and reflections in any application requiring accurate IR-based temperature measurements.

# Key features

## 1. Calculate corrected temperature

**TEDMAP 3D calculates corrected surface temperature** with high accuracy using proprietary algorithms that include material properties, detailed camera characteristics such as wavelength and geometric calibration, and a physically based rendering engine to correct distortions and deliver reliable thermal data.



Infrared camera

A

B

Hot spot
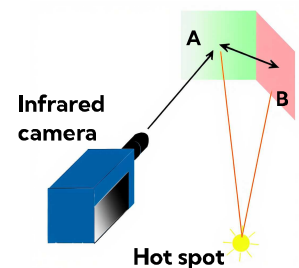
## 2. Combine 3D and IR data

**Geometric data such as point clouds and CAD models** is combined with thermal images, allowing detailed analysis of thermal displacements together with accurately corrected temperature measurements. This provides a richer, more precise understanding of both geometric changes and thermal behaviour.
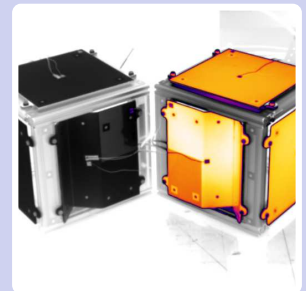


## 3. Calculate displacements

**The tool calculates displacement vectors** between different geometry datasets, such as point clouds from multiple snapshots, and 3D CAD geometry. It also offers supportive tools including CAD-to-point-cloud alignment and best-fit routines for various geometric primitives.
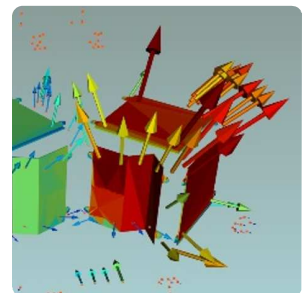


## 4. Analyse and export data

**The resulting 3D thermal data can be directly compared** with thermal models such as ESATAN, or with measurements of the same object taken at different times, enabling visualisation and analysis of thermoelastic deformations over time.

# Increased temperature accuracy



**Apparent temperature** — Error* = 5-20°C

**TEDMAP temperature** — Error* < 5°C

*\* Compared to thermocouples*
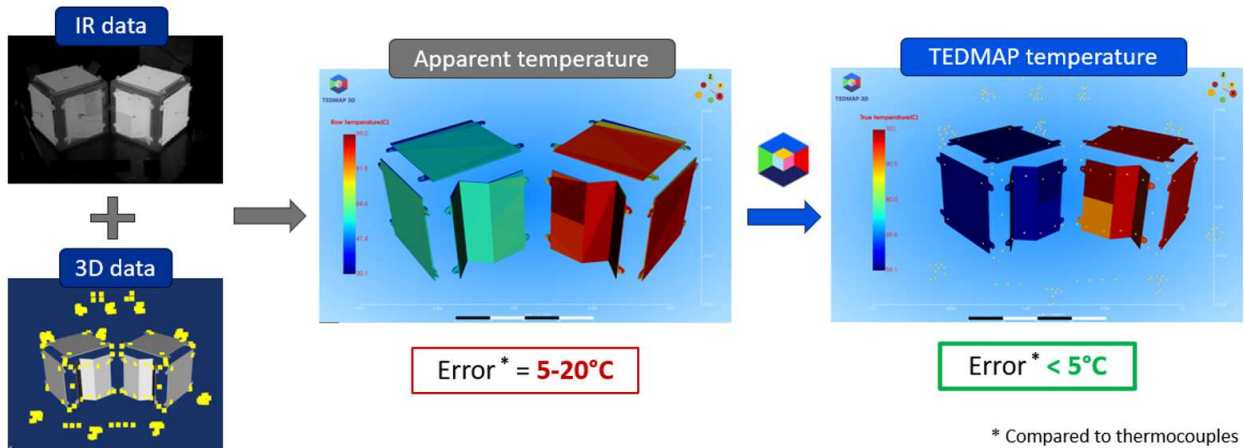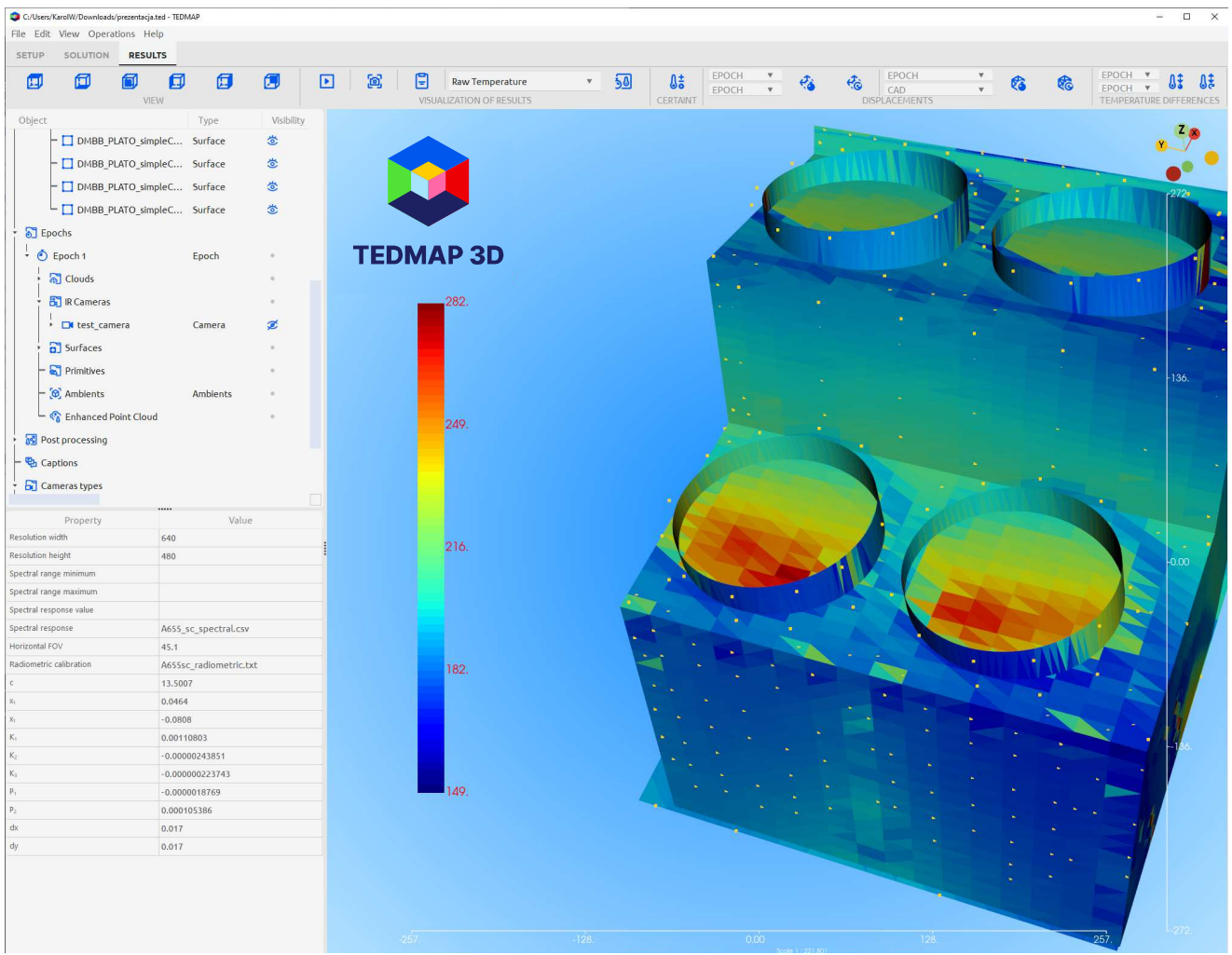
# Supporting the TVAC testing

**Visualise**
side-by-side the 3D dimensional and thermal data

**Provide corrected** surface temperature

**Faster and more accurate** temperature measurements
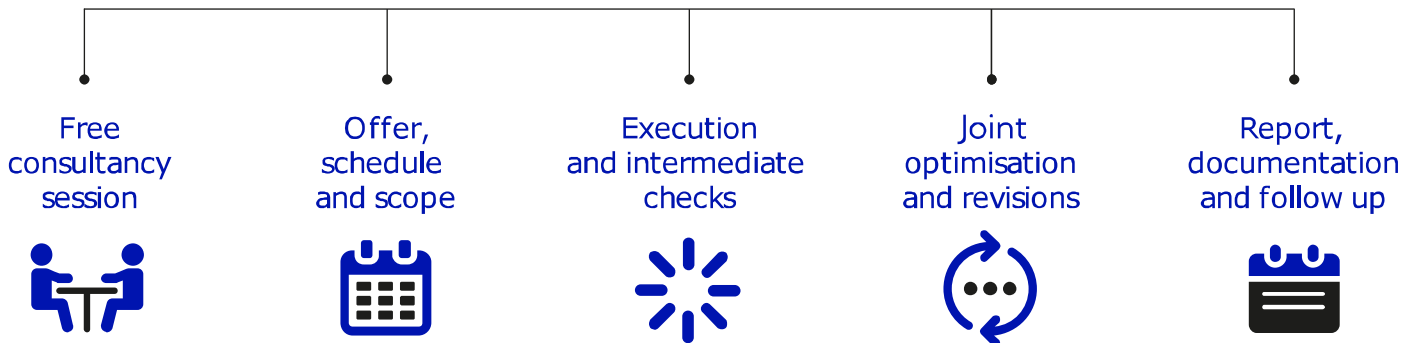
**Compare** deformations and thermal data

**Assess** measured thermoelastic deformation

# Who we are?

We are a research and engineering partner, combining design expertise with advanced simulation methods (FEM, CFD, and multiphysics). **CIM-lab**, a division of CIM-mes, develops innovative modelling techniques and engineering software for space applications. In cooperation with **ESA**, we have created software tools — **DUSTFLOW**, **MoonDUST**, and **TEDMAP 3D** — supporting contamination and thermal analyses in space projects.

## How we work?

| Free consultancy session | Offer, schedule and scope | Execution and intermediate checks | Joint optimisation and revisions | Report, documentation and follow up |
|---|---|---|---|---|

> CIM-mes provides valuable support and the necessary calculations in a very short time, which repeatedly accelerates our work and design decisions. We value working with them – it is substantive, fast and predictable at every stage.
>
> **Filip Ljubas**
> Lead Engineer in **Kelvion**

Among the others, we were trusted by

WÄRTSILÄ · eesa · AVIO · BLUE ORIGIN · WEIZMANN INSTITUTE OF SCIENCE · Kelvion

**Ready for the next step? Contact us, and we will help define the scope of work and align with your project requirements.**

## CIM Lab
BY CIM-MES

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### You whish to discuss your project?

Schedule a free technical consultation with our engineer.

**Scan the QR code to book a slot.**