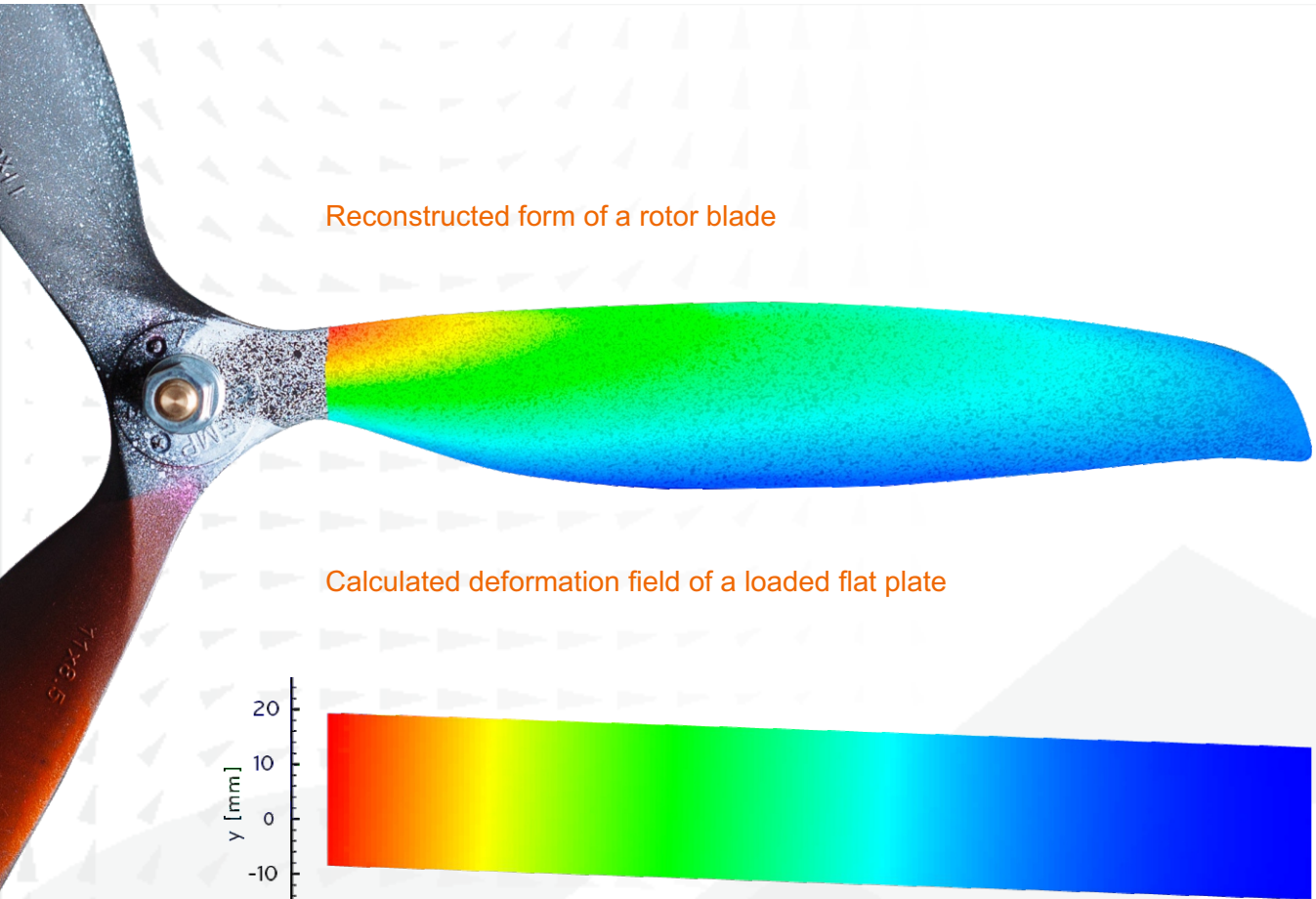
POLIS system for deformation measurements

Measurement system is intended for time-conserving and precise analysis of form and deformations, vibrations and movement of different objects including time-resolved measurement. Various objects can be measured from single parts (for example, turbine blades) to assemblies (turbine rotors or even gas turbine engines). Also position of model in wind tunnel can be controlled and measured. Main application area of the system is tests of static or dynamically loaded objects, vibrational analysis, crash tests and others.

POLIS deformations measurer is high-resolution photogrammetry system, based on approaches developed for 3D particle image velocimetry measurement. Optical system consisting of two or three cameras is calibrated using calibration target. Deformation of object can be calculated using two different methods: optical flow approach and correlational analysis or position triangulation of markers applied onto objects surface.

POLIS
flow measurement systems



Reconstructed form of a rotor blade

Calculated deformation field of a loaded flat plate

Main advantages:

- Contactless measurements;
- Instant measurement of whole objects form;
- 10 micron measurement uncertaint;
- High repetition measurements.

Application area:

- Test of static and dynamically loaded objects;
- Vibrational analysis;
- Crash-tests.

Measurements system components:

- Cameras and optics;
- Light source;
- Calibration target;
- Personal computer;
- ActualFlow software with Deformations kit;
- User manual.

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