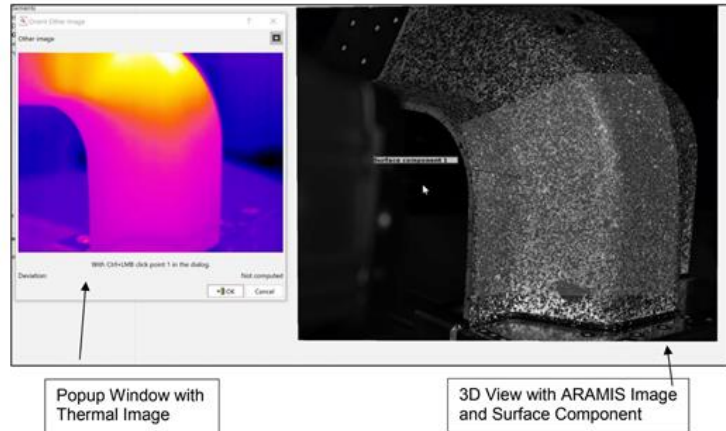




**Thermal Camera Used**



**ARAMIS Data**

### Problem Overview

Testing must simulate real-world use. Many tests in the automotive, aerospace, and energy industries require high temperatures ( $>40^{\circ}\text{C}$ ) be applied to the test specimen, the test environment, or both. Thermal expansion presents a challenge: which strains are present due to the mechanical load on the object and which strains occur simply because of the heat supplied to the specimen? If thermal and mechanical strains are not understood independently, the part performance is not understood. ARAMIS Thermography allows for the decoupling of thermal and mechanical strains and provides a deeper understanding of the test article's response than thermal imaging, traditional testing, or finite element modeling yield on their own.

### Test Setup

The specimen is prepared with high temperature resistant paint such as 'grill paint' or ceramic paint. The ARAMIS Optical Strain Gauge system is then calibrated and placed to view the specimen. An infrared camera is placed to give a similar field of view as seen by the left ARAMIS camera, and the test routine is then conducted. If the specimen temperature exceeds  $70^{\circ}\text{C}$ , a fan is placed to disrupt thermal convection currents that would otherwise interfere with the digital image correlation.

After testing has concluded, the data captured by the infrared camera is imported into the ARAMIS software. With guidance from the ARAMIS Thermography script, the operator inputs the material's coefficient of thermal expansion and aligns the infrared images to the visible light images.

**Keywords:** ARAMIS, Thermography, Optical Strain Gage, Digital Image Correlation



**ARAMIS Thermography being done on B2 bomber**

### Notes

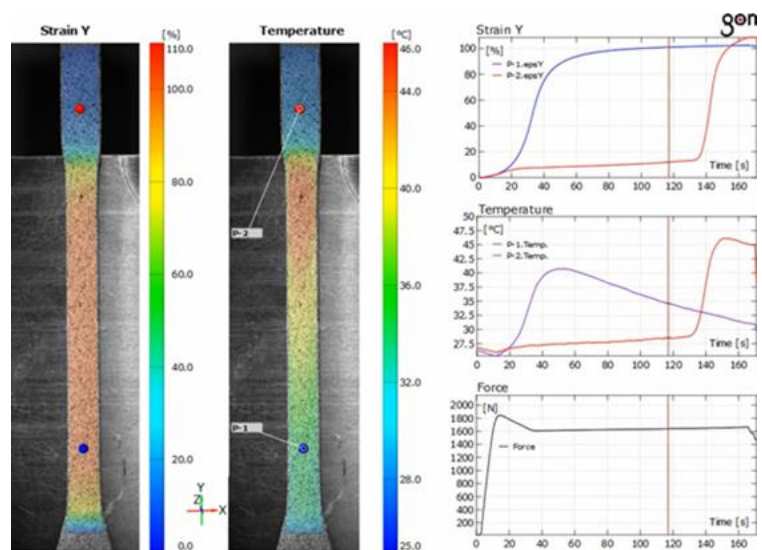
The ARAMIS Thermography package outputs the temperature readings for the surface based on the images from the infrared camera. This streamlines the analysis workflow, as all relevant measurements exist in one computer application. Additionally, the thermally corrected directional strains are automatically calculated and displayed.

### Conclusion

The ARAMIS Thermography tool combines the power of digital image correlation with the utility of infrared cameras that many labs already have. The thermography package is compatible with a wide range of FLIR and other infrared cameras. Additionally, Trilion is the United States supplier of InfraTec cameras. This partnership allows us to deliver full turn-key thermography and deformation testing solutions customized to your needs and preferences.

### Contact Us

We are ready to discuss your high-temperature testing needs! Please contact us at (215) 710-3000 or [trilion.com/contact](http://trilion.com/contact) for more information and to schedule a demonstration.



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