# SURFACE PRESSURE MEASUREMENTS USING PRESSURE SENSITIVE PAINTS AND INFRARED THERMOGRAPHY

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Pressure sensitive paint (PSP) presents an important benefit of gathering information on pressure distributions over large areas of the model being tested as well as being comparatively inexpensive. For these reasons a program is being carried out to implement this technology at the von Karman Institute.

The paint used in this experiment was the Unicoat aerosol pressure sensitive paint from Innovative Scientific Solutions Inc. In order to gather useful pressure values a calibration curve must be obtained relating the luminescent intensity of the paint under ultraviolet light, measured by a 12-bit CCD camera, to a known pressure. Furthermore, corrections for the paint sensitivity to temperature were also performed.

The goal of this project was to successfully implement PSP at VKI and to gather quantitative pressure distribution values on the EXPERT Kheops model in a hypersonic test regime. Filter performance, camera integration time, and LED illumination uniformity optimization studies were made. Problems involving camera and software integration were investigated and solutions were implemented.

Successful, qualitative results were achieved and corroborated with previous oil skin friction interferometry measurements. Quantitative results were less successful and further studies could improve these results.

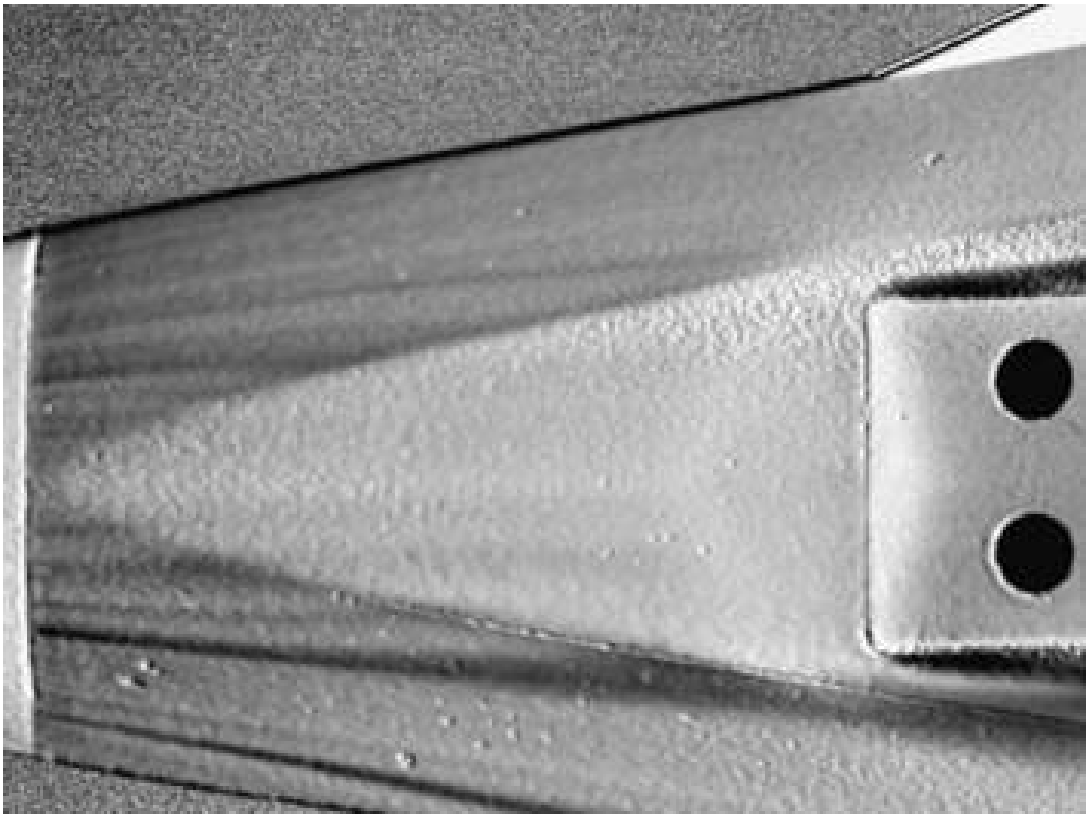

*Figure 1: PSP Visualization on Kheops Model*