

Application Story

Aerospace

Profile analysis of complex curves, such as airfoils, using Digital Probes



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The Product

The standard range of Digital Pneumatic Probes comes with an IP65 rating to ensure a long working life in wet or oily environments. In order to ensure the probe is totally sealed to IP65, actuation is achieved by pressurising the gaiter.

Range: 2 to 2 mm – Accuracy: Up to 0.05% of reading – Resolution: Up to 0.01 μ m – Repeatability: Up to 0.15 μ m.



The Challenge

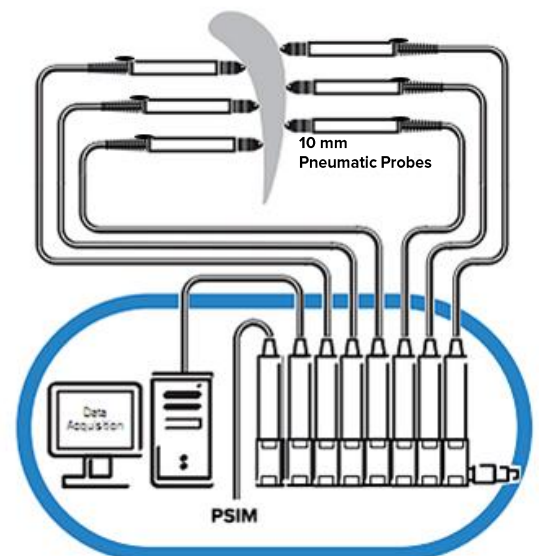
Although tolerance within the blades used on aircrafts are tight, the position of the blade can vary greatly in free space, leading to inaccurate readings at high volumes.

The Solution

Solartron's 10 mm Digital Pneumatic Probes are ideal for this application because they are linear along the full travel and can resolve up to $<0.01 \mu$ m. Pneumatic actuation of the probes enable the blades to be loaded into a fixture with a minimum number of moving parts. By reducing the complexity of the fixture, errors caused by moving parts can be reduced, leading to cost-efficiencies.

To determine the profile of a complex curve, the relationship of various measuring points need to be maintained. It is therefore important that all the readings are taken in the shortest possible time to minimise the possibility of calculation errors caused by movement during measurement taking. Using the Orbit[®] 3 Network to take up to 4,000 readings per second, per probe, ensures that this is no longer an issue.

An alternative solution would be to take 'snap shots' of the readings from all the probes and store them in buffered probes that are capable of storing 3,000 readings per probe.



Orbit[®] 3 Network example



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