



Oxsensis is an aerospace-qualified (AS9100) SME based at Harwell campus, Didcot (UK), making optical sensors for harsh environment, e.g. for aerospace applications, gas turbines, gas & oil, power generation.

Optical sensors for aerospace

Optical sensors are advantageous in aerospace applications because of their features:

- EMI immunity,
- light weight,
- dielectric materials,
- passive components,
- ability to measure multiple parameters.



Oxsensis is contributing to the ASHLEY project by developing 3 optical sensor demonstrators:

- Brake Temperature Sensor (BTS),
- Fuel Pump Pressure Sensor (FPPS),
- Oleo-Strut Pressure Sensor (OSPS).

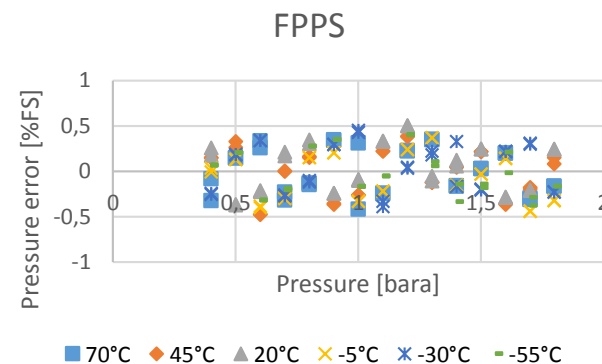
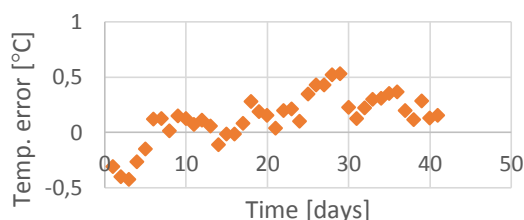
Brake Temperature Sensor (BTS)

The BTS is a high-temperature optical sensor, designed to survive temperatures (up to $\sim 1300^{\circ}\text{C}$) generated within the carbon brake pads of the aircraft, which will reduce costs by improving aircraft turn-around time.

The first sensor prototype has already been tested and calibrated up to 1300°C . Current data show excellent stability at $\sim 1100^{\circ}\text{C}$ over ~ 1000 hours and...

- accuracy $< \pm 1^{\circ}\text{C}$,
- repeatability $< \pm 2^{\circ}\text{C}$,
- resolution $< 1^{\circ}\text{C}$.

Temperature error at 1100°C



Fuel Pump Pressure Sensor (FPPS)

The FPPS is an optical sensor designed to measure the fuel pressure inside an aircraft fuel pump. It can also measure temperature, whose measurement is used in order to compensate temperature cross-sensitivity and thus provide accurate pressure measurements.

The first sensor prototypes have been tested at $P = (0.4 - 1.8)$ bar and $T = (-55 - 70)^{\circ}\text{C}$, demonstrating good stability at 70°C over ~ 400 pressure cycles and...

- pressure accuracy $< \pm 1\% \text{FS}$,
- temperature accuracy $< \pm 1^{\circ}\text{C}$.

