Ultra high temperature & pressure sensors

Operating as a spin-out from the Rutherford Appleton Laboratory, Oxsensis manufacture and supply their accurate, direct reading, combined temperature and pressure sensors to the Aerospace industry. The >1200ºC operating range allow these novel sensors to be used in the combustion zone of jet engines. Optical interrogation of the novel sensor head using a fibre optic is what enables this technology to operate at such extremes.

Oxsensis is developing fibre optical sensors for extremely hostile environments (extremely high temperatures and pressures). They will be used in ultra high temperature situations such as gas turbines for power generation, aero-engines and other industrial processes and other hostile environments such as poisonous gas detection and petrochemical processes. Oxsensis' sensor technology is based on the micromachining of super resistant materials such as single crystal sapphire (melting point >2000°C) together with innovative fibre optic interrogation techniques which give high sensitivity and immunity from electro magnetic interference (EMI) effects common in turbo machinery such as gas turbines.

Fibre optical sensors have considerable advantages in this industrial field over many other technologies due to:

- Measurement "at a distance"
- High sensitivity interrogation techniques
- Immunity to electromagnetic interference
- No electrical power at the sensor head

CLiK KNOWLEDGE TRANSFER

Northwest Aerospace Alliance

In July 2008 Oxsensis Ltd launched, Wave□Phire™, the world's first commercially available 1000°C (1800°F) dynamic pressure sensor and the first of a range of sensor products designed for use at extreme temperatures which are immune to EMI effects. The system has been used in several full scale gas turbine trials as well as in combustion rigs up to 1000°C and has shown measurement capability, repeatability and equally importantly good survivability. Further development of the range will extend the measurement capability to allow dynamic and static pressure, and temperature from a single sensor head, at far hotter locations then has previously been possible with conventional sensors.

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