



THERMOCOAX

POWER GENERATION



Applications

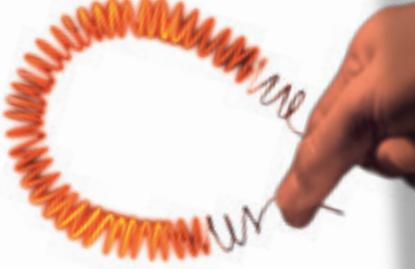
- **EXHAUST LINE TEMPERATURE**
- **TEMPERATURE & PRESSURE RAKE**
- **BLADE TIP CLEARANCE / TIP TIMING**
- **DEBRIS MONITORING**
- **FIRE DETECTOR**
- **HEATING TO REMOVE CONDENSATION**

Our capabilities

Our mission is to develop state-of-the art, complete thermal solutions and this through advanced innovation from conception, to prototype development right the way through to production.

We offer custom made thermal systems, providing our customers with safer, cleaner, cost effective and superior quality solutions.

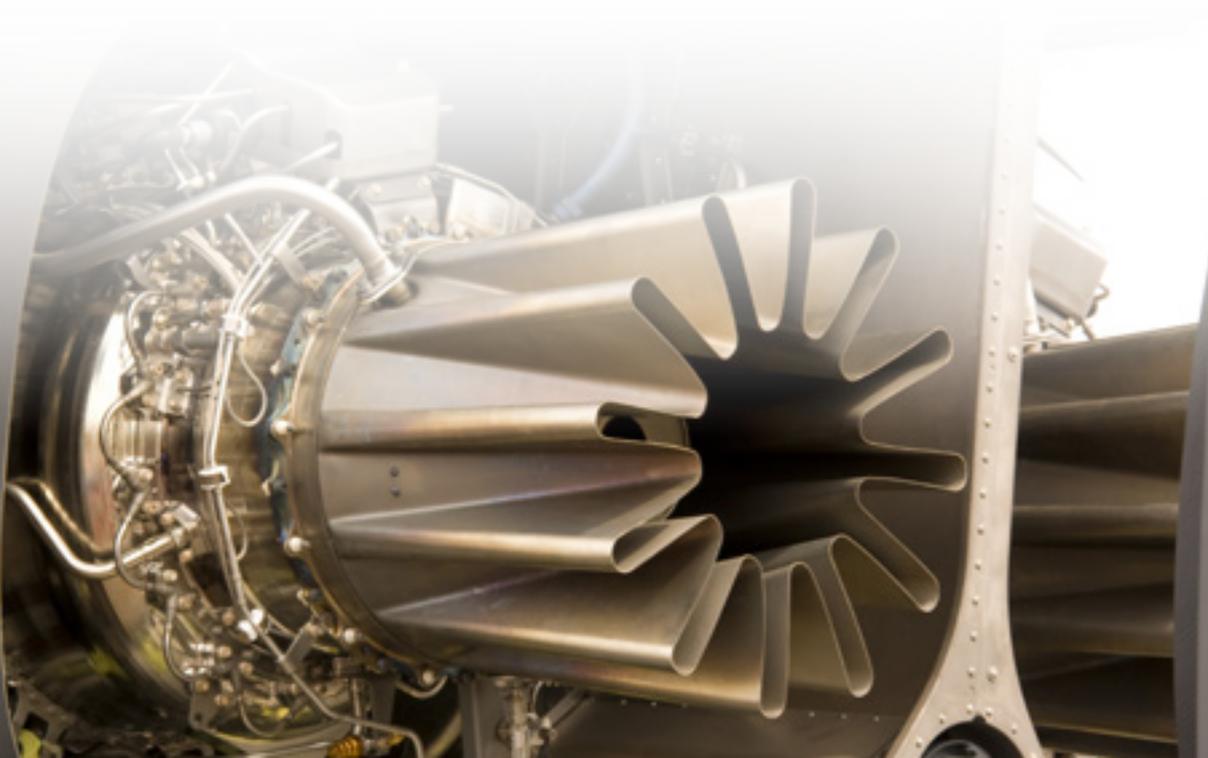
THERMOCOAX has acquired a great deal of skills and expertise to advance every demanding industry including nuclear, Oil & Gas, turbine, aeronautic.



The industry's
most trusted
Mineral
Insulated
Cable

➤ **COMPETENCES:**

- 3D Design / thermal modeling
- Brazing (Laser, Plasma, TIG)
- R & D and engineering projects management
- Metallographic



Aero - Industrial - Oil&Gas

Temperature

Thermocouples up to 2200°C

From 0.25 mm up to 6mm

For compressor, turbine, Inner Barrel, Wheel Space, combustion chamber, exhaust...

- ▶ Customized dimensions
- ▶ Total Air Temperature
- ▶ Harness, Rake
- ▶ Single, dual, triple loop
- ▶ Qualification RTCA DO 160 / MIL
- ▶ Calibration IEC, AMS2750
- ▶ ASME standard
- ▶ Stainless Steel, Inconel, Haynes, Nimonic, platinum...
- ▶ Swaged tip for fast response time
- ▶ Robust design
- ▶ High performance welding process
- ▶ Qualification test to fit the customer's specification



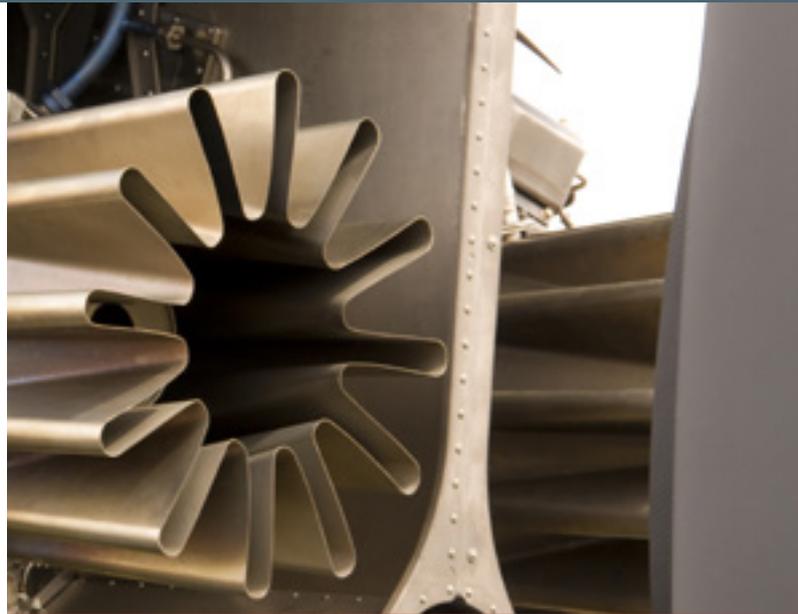
LONG LIFE



Aero - Industrial - Oil&Gas

Blade Tip Clearance / Tip Timing sensor

- ▶ TURBOCOAX Capacitive sensor
- ▶ High temperature 1400°C peak
- ▶ No cooling system
- ▶ Clearance from 0.01 up to 20mm
- ▶ Pseudo or Full triaxial technology
- ▶ Connected with Robust transmission cable
- ▶ High temperature 1100 °C
- ▶ Ø 1.5 to 3 mm
- ▶ Miniature version
- ▶ 15 years experience



1 400°C PEAK WITHOUT COOLING



Gas Path Debris Monitoring sensor

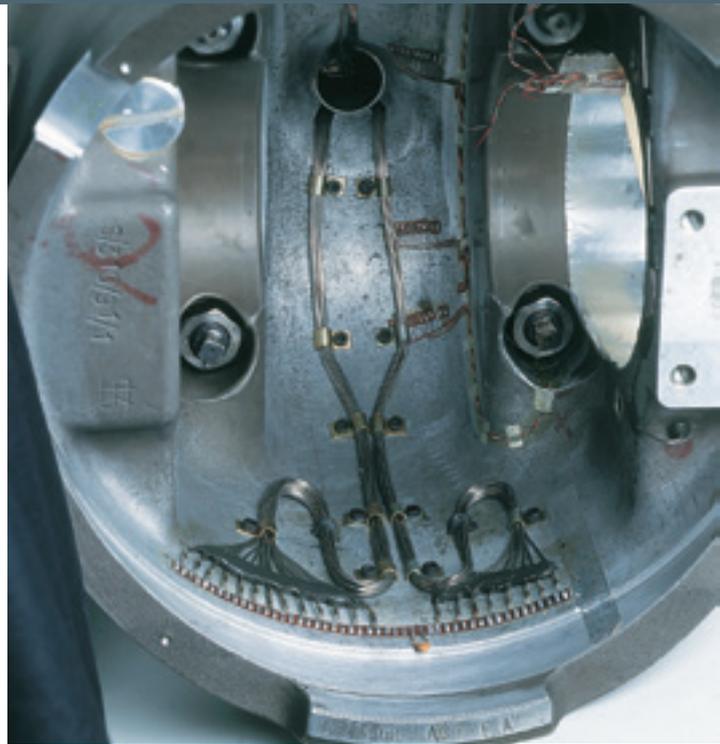
- ▶ Detection of electrostatically charged debris
- ▶ Hot section erosion
- ▶ Abradable seal rubs
- ▶ Combustor burning
- ▶ Fluid contamination (sand, dust carbon...)



Aero - Industrial - Oil&Gas

Signal transmission cable

- ▶ Single or multiconductor
- ▶ Coaxial 50 Ω , Triaxial
- ▶ Copper, copper plated SS304
- ▶ Inconel, constant, nickel...
- ▶ 0.25 to 6 mm
- ▶ Insulator MgO, SiO₂, Al₂O₃
- ▶ Dielectric 1500 volts
- ▶ From 0 up to 5 Kvolt



ELECTRICAL SIGNAL THROUGH HARSH ENVIRONMENT

Calculator Fire detector

- ▶ on aircraft engine
- ▶ not sensitive to vibration
- ▶ Loop test before take off
- ▶ Fast response time



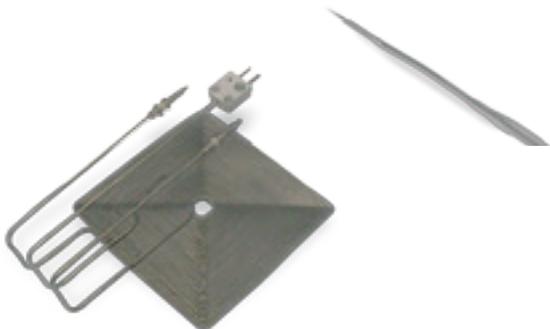
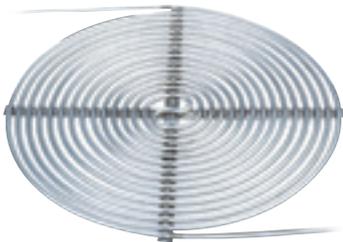


FOR BETTER INTEGRATION

Green Energy

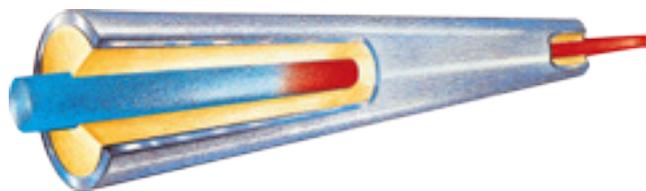
Fuel Cell SOFC - PEMFC

- ▶ Heating element
- ▶ To initiate start sequence
- ▶ Temperature up to 1000°C
- ▶ Designed for Corrosive environment
- ▶ Thermocouple
- ▶ Haynes 230 sheath alloy
Type N
Class 1



Boilers - Coal - Biomass

- ▶ Heat up fuel nozzle up to 800°C
- ▶ Safety and fast heating process
- ▶ Experience with 90Kwatt heating power
- ▶ Designed for multiple Start & Stop



Concept, Designs using SolidWorks and computing model techniques (CMT) and Computational fluid dynamics (CFD)

Calibration and testing using French COFRAC certified laboratory (NIST)

Engineering and Project management with high qualified engineer team



OUR COMPANY

With nearly 60 years of experience in heating solutions and temperature measurement, THERMOCOAX has acquired a great deal of skill and expertise. THERMOCOAX products are widely used and endorsed in many industries where the highest quality and utmost reliability are essential. All our mineral insulated cables are manufactured in-house with our proprietary and unique procedures.



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Site Planguivon



Thermocouples
 & Heating Elements
 ATEX
 certified and notified

