PYCO AND THE POWER PEOPLE: A PARTNERSHIP OF EXCELLENCE

All of our efforts at PYCO are dedicated to meeting the needs of our clients in the power industry who depend on the accuracy and reliability of our products and services.

By working together, we have achieved excellence in engineering and fabricating instruments that define the industry standards in heat sensing and heat control critical to producing electric power.

In addition to manufacturing equipment of the highest quality, PYCO assures its application is maximized in plants by providing seminar programs for those who purchase, install and monitor heat sensing equipment. The results have been gratifying.

We are proud of all PYCO's achievements since our founding in 1958. Described below are some innovations tat we feel are most important to our friends in power generation and to the original equipment manufacturers and architect engineers who serve them.

- When the Westinghouse Electric Corporation wanted a virtually indestructible thermocouple for blade path and compressor discharge temperature measurements in their gas turbines, PYCO responded with “long life headless thermocouple assemblies” in 1973. Westinghouse introduced them as retrofits for their customers' turbines in the field. They are recommended for use in all turbines from W-31 to W-251 a frames.
- PYCO produced the first of our present TT7 thermocouples for Pratt & Whitney Jet Engines in 1974, at the request of Public Service Electric & Gas Company of New Jersey. PYCO makes asbestos-free wiring harnesses for these thermocouples.
- PYCO in 1975 set the industry standard that continues today with our high-reliability spring-loaded thermocouple. This design provides a potting adapter under the spring to allow the connection of rugged stranded wires as leads. Te design incorporates a twisted junction in grounded elements to insure continuity in differential expansion.
- To accommodate the demanding insulation resistance requirements of General Electric gas turbine control systems, in 1977 PYCO introduced a newly designed headless thermocouple. It worked so well, it was adapted to General Electric steam turbine use at Kentucky Power, Duke Power, South Carolina Electric & Gas and Ohio Edison, among many others.
- PYCO introduced an improved multi-point thermocouple probe for exhaust stack temperatures in Westinghouse 501 series gas turbines in 1979. The probe features ease of element replacement and long life, due to improved materials and design.
- Installation of some thermocouples was made easier in 1977 when PYCO began inserting them into bearings shipped to us by the plant in which they would be used. PYCO also provides a kit for later installation in the power plant when the bearing is rolled into place. Advancements have been made, too, in the development of thermocouple leads to seal against pressurized oil leakage.

- In cooperation with PSE&G, PYCO in 1980 began manufacturing a newly designed start-up probe with air purge and protected measuring junction.
- Pycoprobes comprise a line of unique measuring instruments for temperature, gas extraction and pressure that were introduced in 1984 for Pennsylvania Power & Light Company. PYCO since has fulfilled the needs of dozens of power plants, helping them achieve greater efficiency wih the help of Pycoprobes. Since 1992, the line also includes Pycoprobes made specifically for smokestacks.
- PYCO engineers in 1989 completed the design of the primary sensors for Dresser-Rand's new high-pressure turbine. A year later, PYCO developed a high-temperature, lightweight and easy-to-handle turbine test thermocouple for acceptance and heat-rate tests. This design also includes a hook for spring loading.
- An improved design for Siemens gas turbine thermocouples was introduced in 1990, allowing for more convenient installation and removal at Delmarva Power & Light.

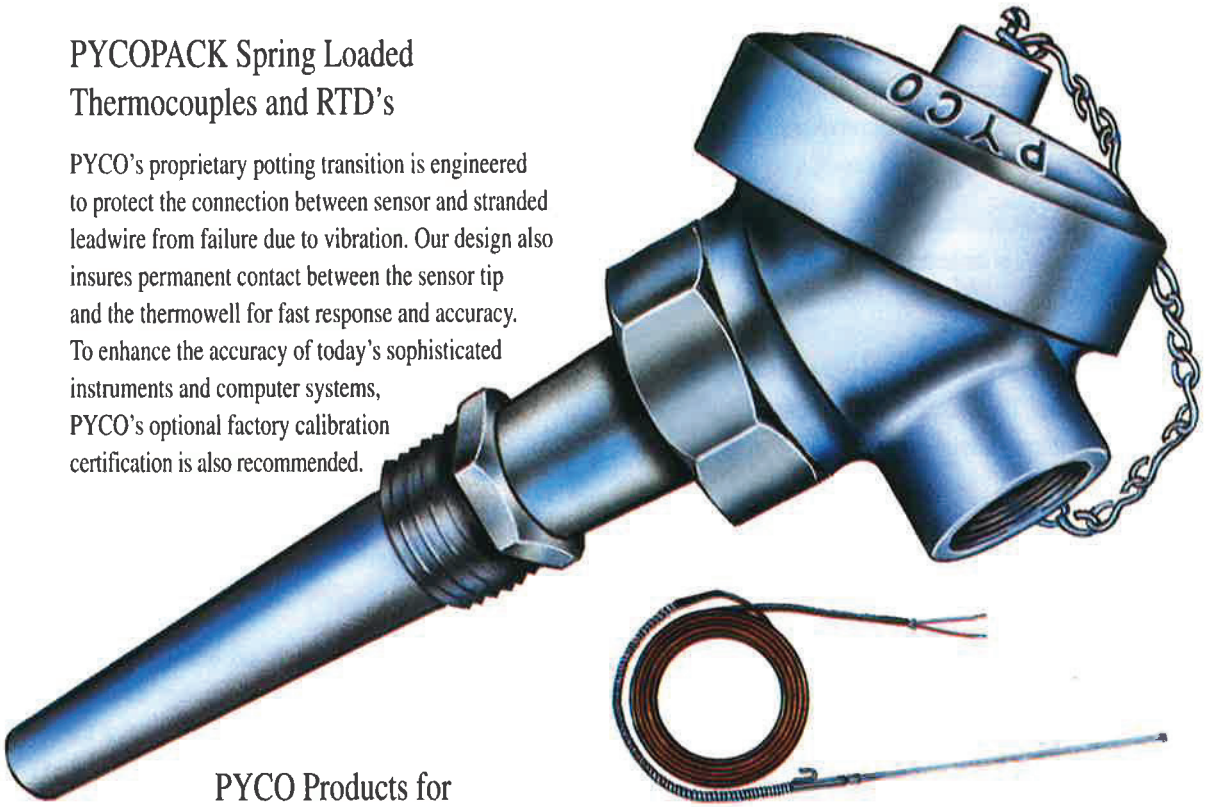
PYCO will continue working with all of our clients to research, design, engineer and fabricate the best possible heat-sensing and heat-control instruments fro the power industry.

PYCO POWER BROCHURE

PYCO Thermocouples.
The application is up to you.
The reliability is up to PYCO.

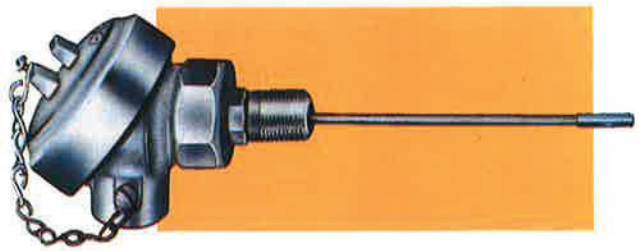
PYCOPACK Spring Loaded Thermocouples and RTD's

PYCO's proprietary potting transition is engineered to protect the connection between sensor and stranded leadwire from failure due to vibration. Our design also insures permanent contact between the sensor tip and the thermowell for fast response and accuracy. To enhance the accuracy of today's sophisticated instruments and computer systems, PYCO's optional factory calibration certification is also recommended.



PYCO Products for Nuclear Power Plants

Re-qualified in 1983, PYCOPACK thermocouples and high temperature RTD's are nuclear tested and nuclear qualified in accordance with IEEE standard 323-1974, 344-1975 and NUREG 0588. By meeting standards for the nuclear industry, PYCO is currently on the job with turbine manufacturers and over 40 electrical utilities.



Turbine Test Thermocouples

These units are customized and calibrated for your plant's turbine acceptance and heat rate tests. The leads are Teflon* insulated and a reference junction for ice bath is available. Stainless steel spiral armor prevents stress point breakage, and the Teflon insulation protects the sensor wires from high temperatures.

Upon request, PYCO will provide additional information and product sheets for any of the products listed in this brochure.

MULTI-POINT TEMPERATURE MEASUREMENT, FLUE GAS EXTRACTION AND PRESSURE MEASUREMENT. THE THREE-IN-ONE PYCOPROBE.

Pycoprobes

The gas samples taken through the Pycoprobe's vacuum extractive tubes make it possible for you to monitor air heater seal leakage and maintain the oxygen levels required for maximum combustion efficiency. Pycoprobes are ideal for stack monitoring in conformance with EPA regulations.

The matrix of accurate temperature readings provided by these units in air heater ducts enables you to increase air heater efficiency, control emissions and prevent the development of corrosives like sulfuric acid. Pycoprobes are also available for pressure applications. These in turn can be adapted for mass flow measurements.

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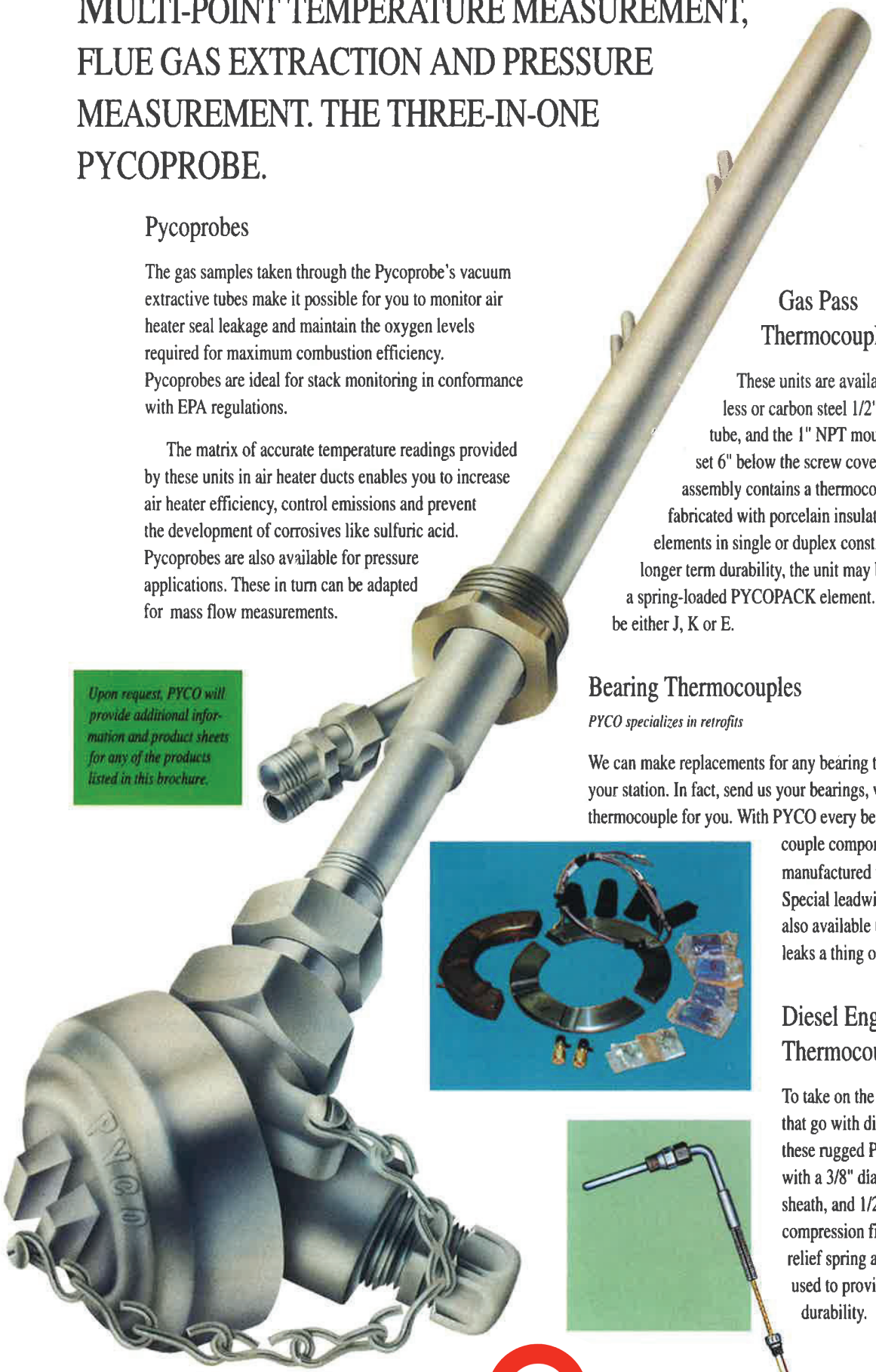


Gas Pass Thermocouples

These units are available with a stainless or carbon steel 1/2" NPT protection tube, and the 1" NPT mounting bushing is set 6" below the screw cover head. The assembly contains a thermocouple element fabricated with porcelain insulated 14 gauge elements in single or duplex construction. For even longer term durability, the unit may be fabricated with a spring-loaded PYCOPACK element. Calibrations can be either J, K or E.

Bearing Thermocouples

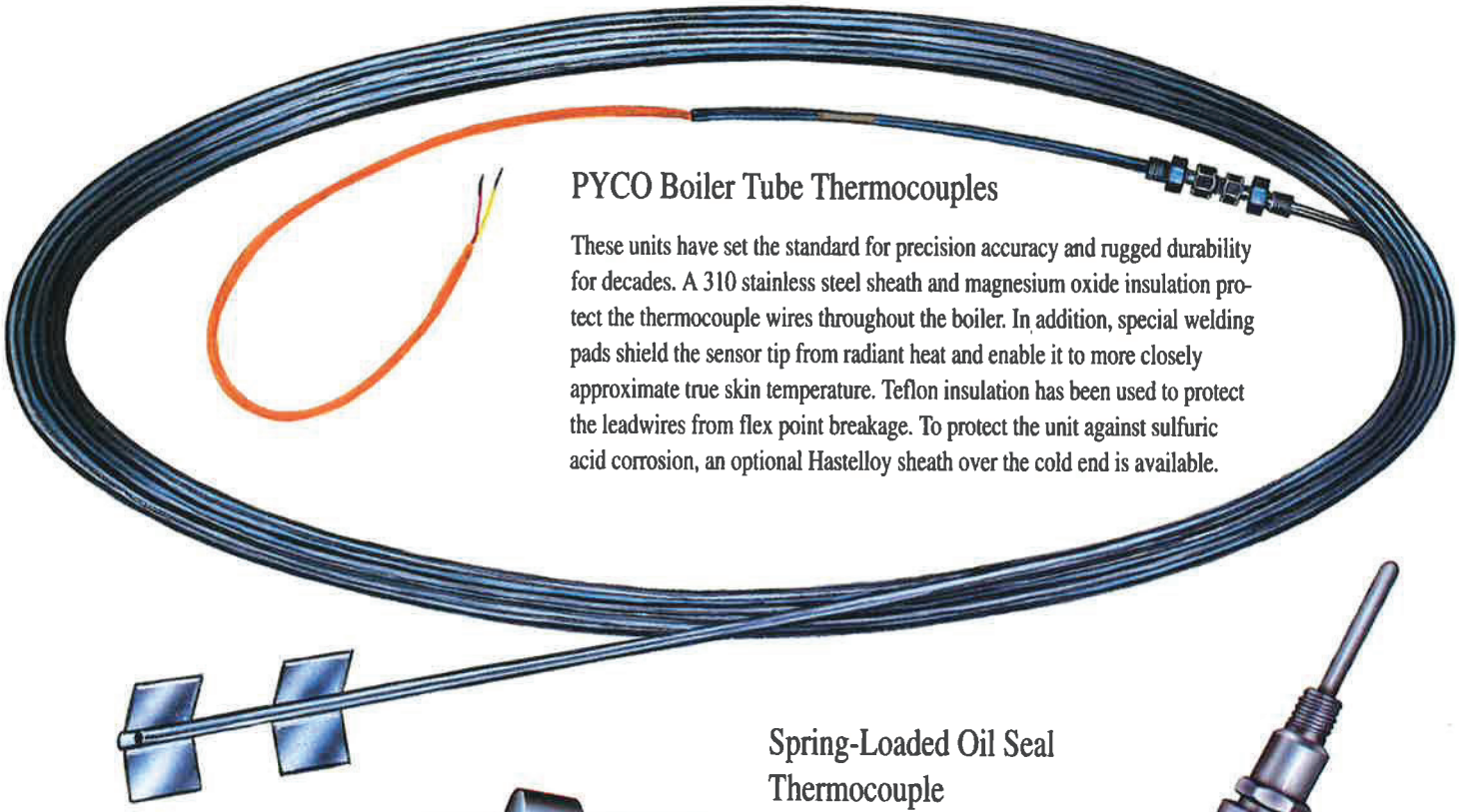
PYCO specializes in retrofits

We can make replacements for any bearing thermocouple in your station. In fact, send us your bearings, we'll install the thermocouple for you. With PYCO every bearing thermocouple component is precision manufactured for precise fit. Special leadwire assemblies are also available to make oil leaks a thing of the past.

Diesel Engine Thermocouples

To take on the shock and vibration stress that go with diesel engine applications, these rugged PYCO assemblies are built with a 3/8" diameter stainless steel sheath, and 1/2" NPT stainless steel compression fittings. In addition, a strain relief spring and heavy wire braid are used to provide long term leadwire durability.

PYCO SETS THE STANDARDS. OTHERS TRY TO MEET THEM.



PYCO Boiler Tube Thermocouples

These units have set the standard for precision accuracy and rugged durability for decades. A 310 stainless steel sheath and magnesium oxide insulation protect the thermocouple wires throughout the boiler. In addition, special welding pads shield the sensor tip from radiant heat and enable it to more closely approximate true skin temperature. Teflon insulation has been used to protect the leadwires from flex point breakage. To protect the unit against sulfuric acid corrosion, an optional Hastelloy sheath over the cold end is available.

Magnetic Thermocouples

PYCO part #13-2012- Calib.- Lead Length

To increase stability, a spring-loaded thermocouple is mounted to the center of a sturdy magnet. This simple but effective design will firmly hold the measuring junction against the surface of the tanks, ducts, bearing housings, steam lines, and water jackets.

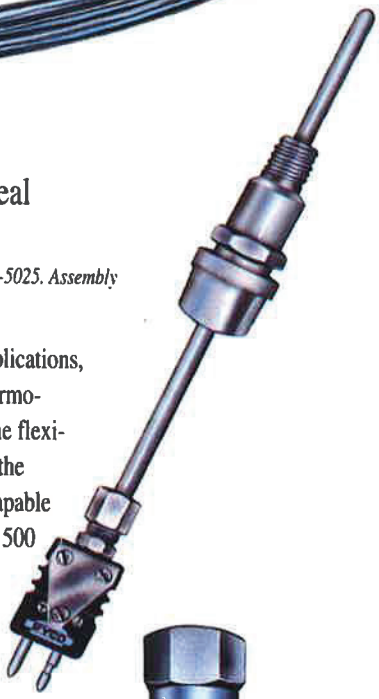
Insulator Bushings and Well Inserts

To protect your operating personnel from thermocouples that may develop high and dangerous potential on the sheath and termination heads, we have designed high quality insulating bushings and well inserts.

Spring-Loaded Oil Seal Thermocouple

Adjustable headless style: part #14-5025. Assembly with head: part #02-3046

Ideally suited for bearing applications, the spring-loaded oil seal thermocouple assembly combines the flexibility of spring-loading with the strength of "O" ring seals. Capable of containing gas pressure of 500 PSI at 500° F., these rugged thermocouples are virtually impenetrable barriers to gas and oil vapor. 1/2", 1/4" and 1/8" NPT mounting threads are provided.



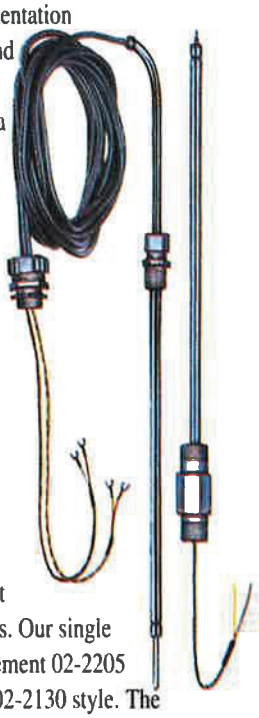
Resistwear Thermowells

Various Sizes

PYCO's Resistwear is a high-tech 0.01" facing that has proven its effectiveness against the highly abrasive environment of a coal pulverizer. To prolong both thermowell and thermocouple life, be sure to specify PYCO's Resistwear.

GAS TURBINE THERMOCOUPLES

PYCO offers a thorough documentation on a broad spectrum of OEM and competitive part numbers, descriptions, and drawings. As a result we are able to quickly identify and manufacture the right thermocouple for virtually any large or small gas turbine you need to monitor.



For General Electric Gas Turbines

PYCO's 02-2130 thermocouple for exhaust monitoring of G.E. models 5000 and 7000 gas turbines are identical in form, fit and function to the original parts. Our single element 02-2203 and duplex element 02-2205 are direct replacements for the 02-2130 style. The elements are continuous lengths of PYCOPACK from the measuring junction through the armor. Moreover, these rugged thermocouples are both insulated and isolated. PYCO can also supply the G.E. extended type thermocouples which require turbine modification for installation. (PYCO part numbers: 02-2269 and 02-2275).

The PYCO 02-2180 exhaust thermocouple holds up to the high temperature and vibration of gas turbines. Wires are Teflon insulated and spiral armor protected. This assembly provides a positive seal against exhaust gasses and the 1/2" NPT compression fitting ensures solid connection with the thermowell.

Thermocouple Part No.'s 02-9070 & 02-9071 for Heavy Duty Industrial Gas Turbines

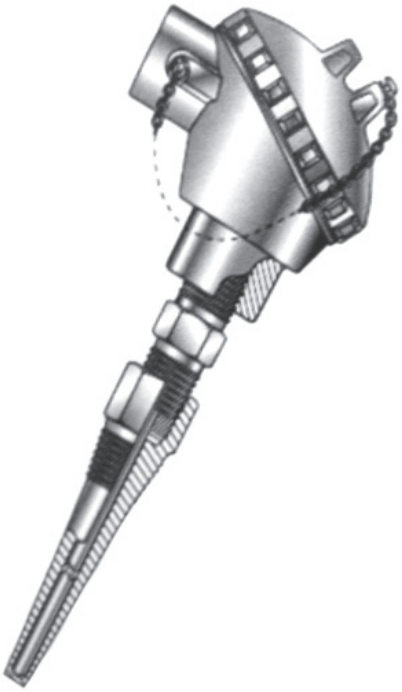
PYCO units are regularly provided as original equipment on large gas turbines. To make sure you achieve the results you're after, these units are designed for integral mounting in our rugged 08-8031 open-ended thermowell.

Double adjustable probe for monitoring exhaust gas temperatures features the following:
• Positive seal against gas leakage. • Adjustable measuring junction position. • Adjustable thermocouples. • Super rugged construction.

Harness Assembly

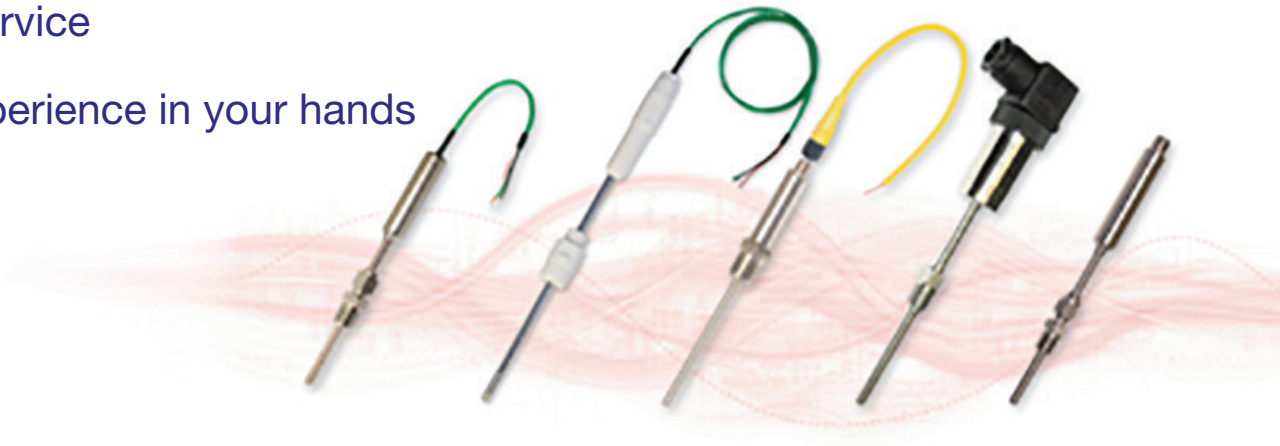
Other Services

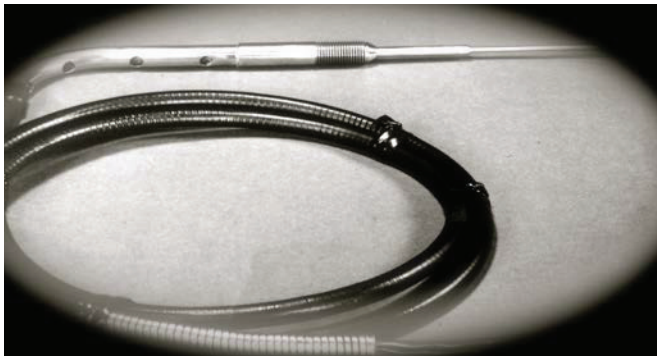
- Experience Engineers
- AutoCad Services
- Wake Frequency Calculations
- Design
- Customer Inspection Manuals
- Quality Inspection Plan
- Qualification Records
- NIST Calibration



Our Value

- 80+ years of combine experience
- A Quality and Reliable Service
- Personalized Service
- A full service manufacturer with technical support such as engineering and design service, testing, calibration, and distribution of accessories to enable us to offer a complete solution to the industry.
- Commitment to a superior customer and partner Relationship
- 24/7 Service
- Our Experience in your hands





"Serving One Customer At a Time"