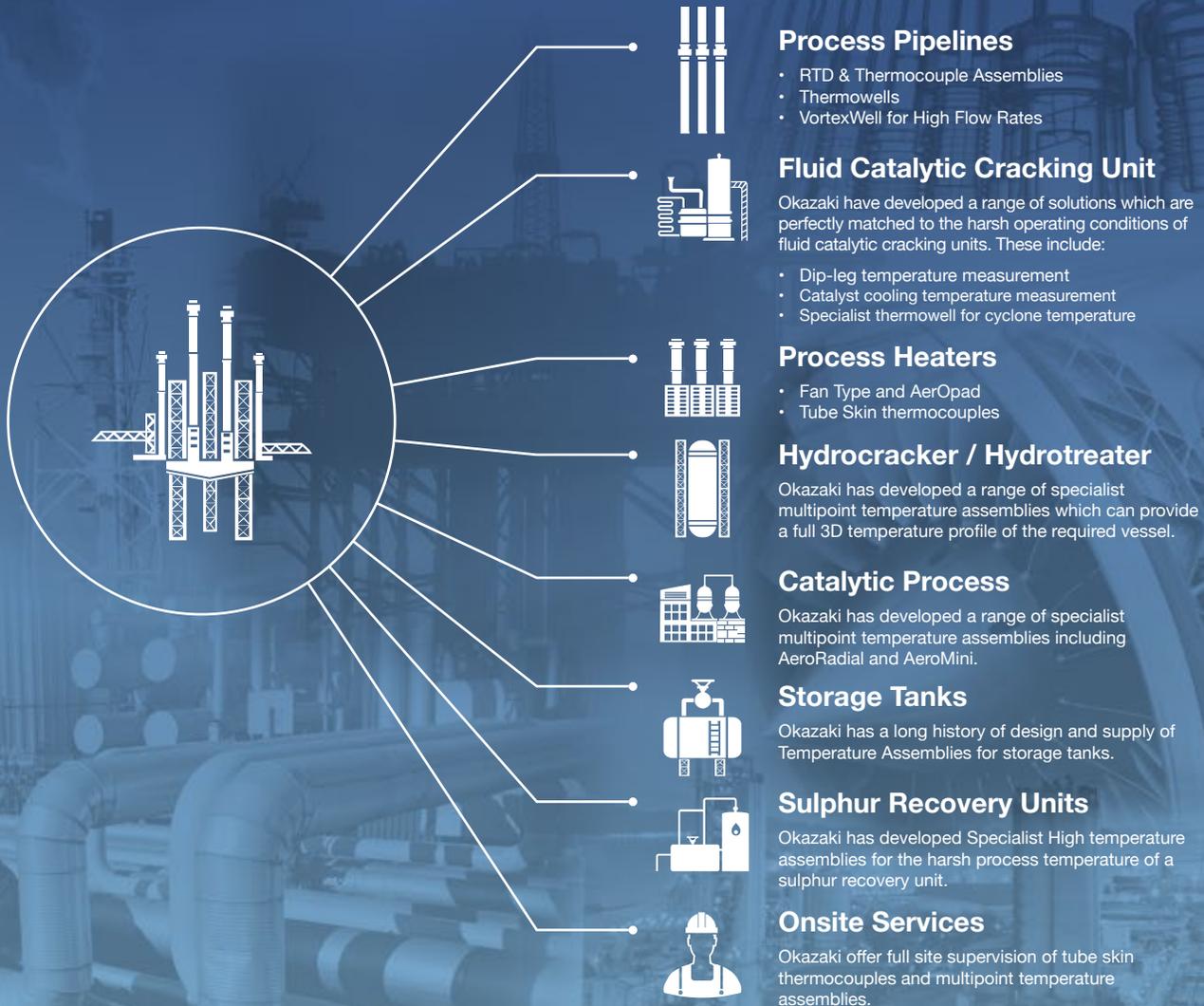


Temperature Measurement

for the Petrochemical, Refining & Process Industry



About Us

Okazaki Group designs and manufactures an extensive range of reliable, highly accurate, premium quality temperature measurement products. With an annual turnover of more than 110 million USD, it is one of the largest manufacturers of mineral insulated (MI) cable, the first building blocks of industrial temperature sensors and electric heaters.

Okazaki Manufacturing Company (OMC) was founded in 1954 when it began to design and manufacture temperature-related products in Kobe, Japan. ARi Industries Inc joined OMC in 1980 as the groups USA manufacturing hub.

In 1963, OMC developed RESIOPAK, a metal sheathed MgO insulated resistance thermometer, which is used in temperature measurement applications within petrochemicals processes around the world. This design has since been replicated by many other manufacturers.

OMC operates from a series of specialist sales support offices around the globe, backed up by a team of local representatives who provide specialist local instrumentation advice, guidance and technical support. OMC has manufacturing sites in Japan, USA and Taiwan, which provide a flexible, comprehensive but personal supply chain solution.

OMC is fully committed to quality management and control of its products and processes, ensuring the safety and reliability of its products. All OMC temperature products can be fully certified for use in explosive atmospheres to International Standards and also to country-specific variations. OMC temperature assemblies are certified by FM for NEC (USA) standards, BASEEFA for IECEx Product Approval and also for type approval in compliance with EU ATEX directives. OMC temperature assemblies then have GOST K and GOST R approval, as well as NEPSI (China) and KOSHA (Korea) country-specific approval.

OMC is continuing to invest in product design and in the latest, cutting edge technologies. Recently, OMC completed the research and development of the VortexWell. This is a unique design of thermowell that can be easily and safely installed in process lines if a standard thermowell has failed the ASME Performance Test Code (PTC 19.3, TW2016).



A Trusted Supplier to the Oil & Gas Industry

OMC has been an active supplier to the Oil & Gas Industry for more than 50 years. Along with its international partners, OMC implements its temperature measurement products and heating systems as part of major oil and gas projects all around the world, including the Middle East, Asia Pacific, US and Europe.

More than simply a manufacturer of products, OMC's customers regard it as a trusted, reliable supplier of premium quality instrumentation and process heating systems.

Often, OMC is asked to develop customised temperature measurement and/or heating solutions that solve specific issues. These projects may also require close collaboration with a customer's engineering team.

Due to its truly global presence, OMC is a company name found on many renowned approved supplier lists, which are

consulted by most leading engineering and EPC contractors.

All OMC's subsidiaries, sales offices and local representatives worldwide, provide teams of experienced engineers who manage and coordinate the implementation of all OMC products and equipment. These local representatives can provide quotations, technical documentation, advice and guidance on all your project requirements relating to temperature and heating.

The company's global presence, high quality product portfolio, coupled with the company's reputation for innovative products and technologies, make OMC the ideal supplier for your Oil & Gas contracts.

OIL & GAS/ PETROCHEMICALS

OMC provides a comprehensive range of high quality temperature and heater assemblies for the Hydrocarbon sector.

TEMPERATURE MEASUREMENT

OMC manufactures and supplies temperature measurement assemblies to cover the full range of process applications with a portfolio that covers temperatures from -200°C to +2,200°C.

OMC's products include Thermocouples, Resistance Thermometers, Temperature Transmitters, Temperature Gauges and Thermowells.

Uniquely, OMC sensors are manufactured using the company's own manufactured AerOpak mineral insulated cables and Ceracoil RTD elements, which means that quality, accuracy and reliability are assured from start to finish.

Here are some examples of products that OMC has supplied on recent EPC contracts for the Oil & Gas sector:



Whether it's an onshore petrochemical/refinery unit or offshore gas platform, OMC's products ensure the efficient and safe operation of these production units at all times.

OMC's products are fully certified for use in potentially hazardous and flammable atmospheres and can operate within Zones 0, 1 & 2 certified to global standards, European ATEX, USA NEC, Canadian CSA & Global IECEx requirements. OMC also has country-specific certification such as GOST K, GOST R, NEPSI, KOSHA & JIS.

Over the last 50 years, OMC has developed an unrivalled breadth of temperature measurement & heater assemblies for the oil and gas sector that have been specifically designed to provide temperature measurement and heat generation for some of today's most challenging applications, including the following:

Refinery Process

- Tube Skin Thermocouples for Fired Heater TMT Measurement
- High Temperature Thermocouples for Sulphur Recovery (Claus Process)
- Multipoint Temperature Assemblies for 3D catalyst reactor profiling
- VortexWell Thermowell design for high flow rate applications
- Flare tip thermocouples
- Hard wearing and High temperature assemblies for FCC Units
- Crude Oil Heaters

Petrochemical Process

- Multipoint Temperature Assemblies for catalyst process such as Ethylene Oxide
- High Pressure Thermocouples for production of LDPE

LNG Storage

- Cool Down Sensors
- Skin Temperature measurement
- Leak Detection Sensors

Temperature Assemblies for use in Potentially Hazardous Atmospheres

OMC's comprehensive range of temperature assemblies can be supplied fully certified for use in all Zones 0, 1 or 2 in Europe, complying with the ATEX directive, for USA NEC standards, Canada CSA and globally to IECEx standards.

The OFP Temperature Assembly can be supplied Certified Exia IIC T4 for Zone 0 (1&2), Exde IIC T6 for Zone 1 (2) and ExnA II T6 for Zone 2. Sensor configuration can be to any Thermocouple Type or Resistance Thermometer with a variation of sheath material to suit the specific application. Simplex, Duplex or multi-stem combinations can be supplied into a single terminal housing. The housing can be fitted with a castle style terminal block or head mounted transmitter. If a direct mounted style transmitter with integral housing is required, the FPN Temperature Assembly can be supplied with machining certification and configurations, but with the benefit of being supplied fully certified for fitment to a third party-supplied transmitter such as the Yokogawa YTA 110 or Emerson 3144P.



Thermowells

OMC manufactures an extensive range of thermowells to suit all process applications and offers a full design service to ensure that the correct item is supplied to meet the process conditions. Material selection is checked against a database of chemical properties to guarantee compatibility. Stress and Wake Frequency calculations are carried out using a bespoke designed application backed up by FEA analysis to ensure full compliance with ASME PTC19.3 design criteria and with the development of the VortexWell profile (see also page 11), can offer a practical solution for when the Thermowell design fails the calculation. Pressure calculations are carried out to ensure material selection meets with the process connection rating at the process temperature.

OIL & GAS/ PETROCHEMICALS

Multipoint Temperature Assemblies

OMC's multipoint temperature assemblies are suitable for all types of process applications, including crude oil storage tanks, hydrocarbon cracking units, chemical reactors and desulphurisation catalyst bed reactors.

For chemical reactors and desulphurisation catalyst bed reactors, OMC's AerOradial range offers full 3D profiling. These free hanging assemblies can be supplied with single point measuring ends or 6 measuring points housed in each sheath to provide a possible 96 measuring points through a single process connection. For LNG storage, multipoint assemblies can be supplied with lengths in excess of 140 metres and fully calibrated and process sealed for temperatures down to -200°C.

When more traditional assemblies are required, OMC can offer various designs, including one with internal cage arrangements which ensures the sensor tips are positioned correctly and are in contact with the larger diameter Thermowell ID for good thermal conductivity.

High Pressure thermocouples for LDPE production

OMC has developed a range of thermocouple assemblies to suit high pressure applications, including temperature measurement in LDPE production and for use in plastic injection moulding machines. The thermocouples are manufactured in-house, giving OMC complete control over thermocouple quality. At OMC, all pressurised joints on the thermocouple are vacuum brazed in-house using a fully automated brazing process. This ensures that human intervention is minimised, which reduces process errors and defects, thereby improving the quality, repeatability and reliability of the thermocouple. Vacuum brazing ensures a high quality thermocouple, as the process is always carried out under the same controlled conditions. Heat treatment can also be integrated into the brazing cycle, ensuring correct mechanical properties are obtained.

Tube Skin Thermocouples

OMC designs and manufactures a unique range of FAN TIP tube skin thermocouples for process-fired heaters, which offer higher accuracy and greater reliability against traditional thermocouples currently available on the market. The FAN TIP thermocouple (also see page 11) is designed to ensure maximum accuracy and to help eliminate temperature measurement problems that arise from radiant heat, flame impingement and heat sink effects.



OMC's extensive range of electric heating systems is constructed using the company's own manufactured mineral insulated cables. This manufacturing process offers ease of installation, since the sheath can be supplied to a bend radius of 2.5 times the heater OD. This means the heater can be formed into any desired shape and is high pressure sealed for welding when required into process flanges.

Mineral Insulated Trace Heaters

OMC supplies MI heating cables that provide reliable and rugged heat tracing for demanding applications within the oil & gas process sector. The construction enables the heating of equipment to higher temperatures when required. Various sheath and conductor combinations are available to meet application-specific requirements.

Process Heaters

OMC's range of process flanged heaters can be supplied with various process flanged connections and combinations of material to meet the specific requirements. Outputs range from several dozen W to many thousands of KW.

Process welding is carried out to ASME IX and full material certification is provided. If required, OMC can also provide the process chamber to suit the heater supplied.

Combustor Heaters

OMC designs and manufactures a range of combustors that comply with all the major international standards. Systems have been supplied to customers that comply with the Construction Code for Pressure Vessels, High Pressure Gas Safety Law, and the Construction Code for Boilers.

ELECTRICAL HEATING SYSTEMS

As with OMC's temperature assemblies, full product certification for use in hazardous area applications can be provided, Exde IIC T6 for Zone 1&2 terminated into suitable enclosures.

Here are some examples of product categories that OMC has supplied for recent EPC contracts for the Oil & Gas sector:



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ARi and European office
are not SGS certified

