



**OKAZAKI**  
MANUFACTURING COMPANY

# Tube Skin Thermocouples

Proven quality and reliability



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[www.okazaki-mfg.com](http://www.okazaki-mfg.com)

## Okazaki - Solving your challenges

At Okazaki, our focus is on solving your challenges. Which is why we specialise in delivering temperature management solutions according to your individual requirements. In today's challenging industry, we recognise that the importance of high levels of accuracy and reliability cannot be understated.

For over 60 years, we've been using the latest technology to develop our solutions. In the case of our sensors, we know that our Tube Skin thermocouples offer higher reliability than that of competing thermocouples on the market. Developed to deliver maximum results for process fired heaters, we recognise that failure in your facilities can result in a critical effect.

Providing innovative solutions, our specialism is in supplying temperature solutions and assemblies, manufacturing mineral insulated cable that covers all varieties of MI cable sheath material and size. As part of our commitment to delivering you long-term service and reliability, you'll find that our Tube Skin thermocouples deliver repeatable measurement throughout the lifecycle.



## Introduction to Tube Skin thermocouples



When it comes to thermocouples, our engineers have used cutting-edge technology to make sure that you have a solution that's built for ultimate accuracy and reliability. Designed to ensure that the thermocouple is the optimum size for attachment to the pipe, the Tube Skin thermocouple is not too large to act as a fin and draw radiant heat into the measuring point; increasing the TMT reading.

Eliminating temperature measurement problems is something that you can be assured of when you choose the Okazaki's thermocouples. Any problems arising from flame impingement, heat sink effects and radiant heat can be dealt with as quickly and effectively as possible.

We recognise that truly accurate and reliable temperature measurement will improve your furnace operation and consequently increasing your throughput, you'll find that the benefits of our Tube Skin thermocouples far outweigh those of their competitors:

- Simple installation
- Higher levels of accuracy
- Long life accuracy and repeatability
- Reduction of process variability

## Safety is our utmost priority

For us, ensuring that the highest levels of safety are adhered to at all times is top of our agenda. World-class quality is our benchmark. You can be assured that we only supply quality mechanisms from the most basic raw materials right through to the finished temperature sensor.

We also ensure that our products are designed with complete ease of installation in mind. Which is why our Tube Skin thermocouples are entirely simple to install; negating the need for costly installation engineers. However, we can also provide installation supervision if required.

Our commitment to delivering a quality service is why we're seen as the supplier of choice for many organisations worldwide including BP/Ineos, Esso/Exxon Mobil, Hellenic Petroleum, Singapore Refining and Thai Oil.



## A choice of sheath material options to suit

At Okazaki, we recognise that you may have different challenges when it comes to choosing the right material to meet your needs. Which is why our engineers have developed the Tube Skin thermocouples to be suitable for a variety of heating equipment – whether gas-fired, heavy fuel or light fuel oil burning heaters.

Make your choice from 310 stainless steel to suit gas-fired heaters, Hastelloy-X for light fuel oil, or if you're looking to meet arduous heavy fuel oil applications, you may choose to opt for our dual sheath HR 160 version.

We also know that when your heater is up and running, the tubes in the furnace will have the ability to move and expand between 50 and 350 metres. Which is why the Tube Skin thermocouples give you a reliable solution that can be adapted easily – both bent and coiled; forming expansion coils. So you're able to benefit from compensatory movement in both horizontal and vertical axes.



## Meeting Worldwide approvals

All of our Tube Skin thermocouples have been designed to meet stringent Worldwide safety approval requirements.

	Explosion Proof Rating	Enclosure Rating
Japan (TIIS)	Exd IIC T6	IP66 & 67
Europe (ATEX)	EExde IIC T6 & T5 EExnA IIC T6 EExiA IIC T4	IP66 & 67
USA (FM)	Class I Div I Gr A, B, C & D Class II, III Div I Gr E, F & G	NEMA4 & 4X
China (NEPSI)	Exde IIC T6 & T5	IP66 & 67
Russia (GOST-R)	I Exde IIC T6	IP66
Kazakhstan (GOST-K)	I Exde IIC T6	IP66

## Two great options

When it comes to selecting a Tube Skin thermocouple, you can choose from two superb alternatives – the Fan Tip or the AerOpad thermocouple. Both deliver superb accuracy and performance whilst ensuring World-class safety assurance.

The AerOpad solution is cleverly designed to be welded directly to either the process or boiler tubes. With accuracy of better than  $\pm 2^{\circ}\text{C}$  accuracy, you'll be guaranteed hassle-free meticulous accuracy. Designed to withstand rough and ruggedised conditions, they operate within a range of  $-240$  to  $1100^{\circ}\text{C}$ .

Alternatively, you may opt for the Fan Tip thermocouple, which is the optimum size for attachment to pipes. Benefitting from its unique design, it also delivers higher levels of accuracy, a reduction of process variability and over four years' working life potential.

# Okazaki Worldwide Contacts

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