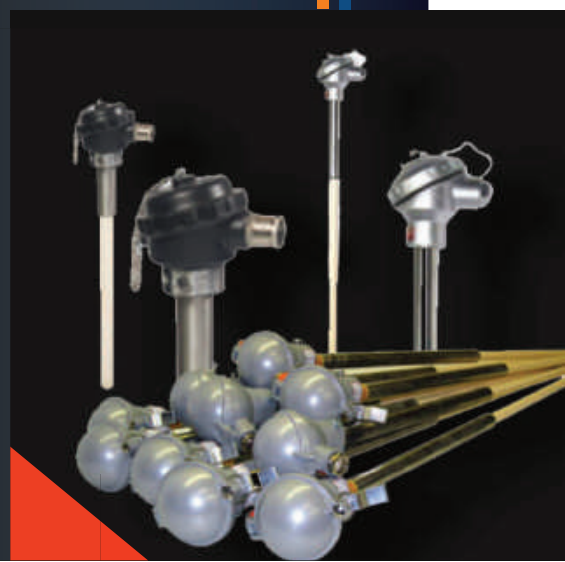




**CUSTOMIZED  
SOLUTION FOR**

# **IRON & STEEL INDUSTRIES**

**Temperature Sensors  
To Meet Your Industry Needs**



[www.eurekaengg.com](http://www.eurekaengg.com)



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## ABOUT US

Eureka Engineering Enterprises (Quality temperature sensors since 2000), is an ISO 9001-2015 certified, leading manufacturer of Temperature sensing and control systems founded by technocrats with their factory located at MIDC Bhosari, Pune. The company handles global, as well as national clientele. The factory is equipped with dynamic and autonomous machinery like Deep Hole Drilling Machine, CNC Turning Machine, Lathe Machines, TIG Welding for accurate machining. Their manufacturing program in a state-of-the-art manufacturing facility includes Thermocouples (K, N, J, N, R, S, T, E, and B types), Resistance Temperature Detectors (RTDs), Thermowells (Bar stock, Fabricated and Customized), Temperature Indicators, Controllers, and PID Controllers, etc. Eureka stands on three central pillars of – Quality, Value, and Delivery.

Leading manufacturer of Temperature sensing and control systems founded by technocrats



2000



State-of the art manufacturing factory located at MIDC Bhosari, Pune

## THREE PILLARS FOR EUREKA MOMENT

### Quality - Value - Delivery



We are an ISO 9001:2008 certified company specializing in manufacturing and supplying temperature measurement and control systems. We help improve productivity and provide growth opportunities to employees and suppliers while adhering to business philosophy of Total Quality Management. We have appropriate infrastructure & technical expertise supported by qualified and experienced engineers.



At Eureka, we believe in providing quality at optimum cost. Our manufacturing program includes Resistance Temperature Detectors (RTDs), Thermocouples (J, K, N, R, S, T, E, and B types), Thermowells (Bar stock, Fabricated and Customized), Temperature Indicators, Controllers, and PID Controllers etc. Our instruments have been successfully employed in various Process control Industries.



In today's world, speed is the most sought after parameters of reliability. We strive to deliver within proposed time frame and ensure that the delivery of the products are within reasonable duration so that our customers can trust us in long term. Today, we take pride in announcing us as one of the most trusted manufacturers and suppliers of Temperature measurement and control systems.

**SINCE 1982**

ISO 9001-2015  
certified by  
TUV Nord



CE Marking certification  
by Ente Certificazione  
Macchine Srl, Italy



**2020**

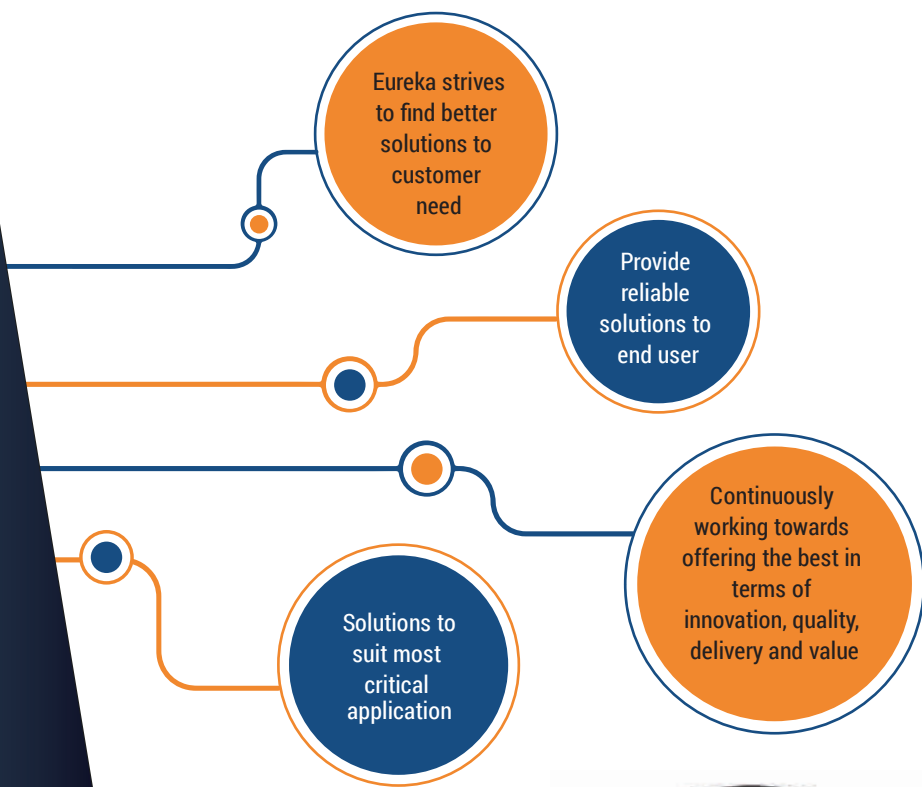


50 + number of  
employees working  
to give standard quality  
products

Annual turnover  
crosses Rs.83 million

## PROPELLING INNOVATIONS

Besides standard products, we have capabilities to fulfill almost any custom design requirement in temperature sensing



At Eureka we thrive to deliver quality products at competitive price and prompt delivery lead by dedicated workforce in a state of the art manufacturing facility where 'Therma' stands as a leading brand manufacturer of Temperature Sensing Instruments



**MANOJ KHATAN**  
Managing Director

The common ores of iron are iron oxides, and these can be Reduced to iron by heating them with carbon in Furnace.

Primarily, iron is an element while steel is an alloy comprising of iron and carbon. Addition of various other metals to steel produce alloys with different properties.

For example, if chromium is added to steel, then it becomes Stainless Steel.

## TEMPERATURE MEASUREMENT

Harsh environmental conditions in Iron & Steel Industries with corrosive gas and very high process temperatures demand very Robust & Durable Thermocouples. We design and manufacture full range of Thermocouples and RTDs for several areas of Iron and Steel Making process.

## BLAST FURNACE



Blast furnace chemically converts Iron Oxides into liquid iron . Blast furnace is a steel stack lined with refractory brick. Iron ore, coke and limestone are dumped into the top, and preheated air is blown into the bottom.

Monitoring of the Wall & Bottom Hearth Refractory Temperature is essential & critical factor.

Type R / S, Thermocouple 1700 deg C, Double walled, Ceramic and Metallic protection sheaths.

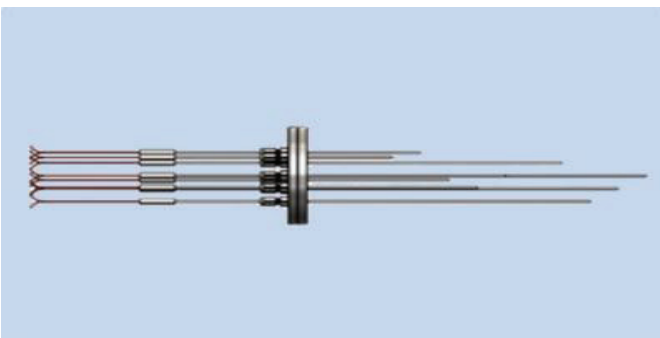


### Spring Loaded Thermocouples



Thermocouple tip makes positive contact with the Refractory wall, Even under vibration & Thermal expansion.

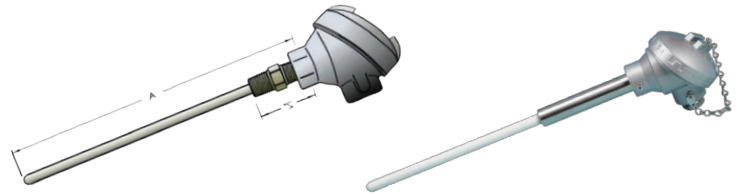
Refractory thermocouples are very long up to 50 meters , Type K, N -Mineral insulated construction. Sizes 3, 6 & 8 mm dia. SS310 / Inconel Sheaths. Multiple Thermocouples of various lengths can be grouped together in a single flange, for a particular area of the furnace.



# STOVE DOME



Very High Temperature, High pressure and High velocity exist inside the Stove Dome hot Air . Our Thermocouples are specially designed to meet this harsh environment. Thermocouples are also leak Proof with unique sealing design.



Hot air is prepared in this "Stove" at temperature 1100 -1450 Deg C.

The hot air is sent as a blast through Tuyeres to the bottom of the Blast Furnace. Generally there are three stoves and there is procedure for changing from one stove to another.

Max:1100 Deg C ,Type K, N. Drilled Bar , Nickel Alloy protection sheath , thick wall. Oxidation resistant, High bending strength . Leak Proof Design.

1700 deg c ,Type R,S ,B - High Temperature Platinum Thermocouples with Re Crystallized Ceramic Double Protection sheath Leak Proof Design.

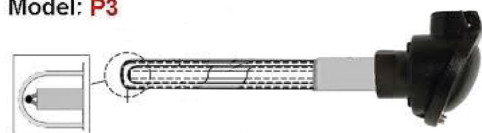
# COKE OVEN



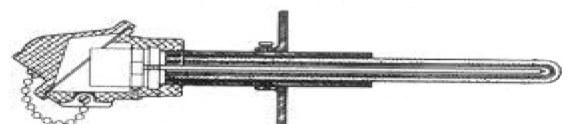
Coke is used as a fuel and reducing agent in the Blast Furnace. Function of Coke Ovens is to convert Coal into Coke, by heating the prepared coal blend in the ovens in the absence of air at a temperature of 1000 Deg C for a period of about 18 hours.

Measuring Flue Temperature & Controlling is very important to ensure total removal of unstable matter, Ash, Moisture etc from Coal. Oven Crown temperature is also monitored where ever necessary. Type R, S, Platinum Thermocouple with double Ceramic Sheath, for extended life - measuring around 1500 deg C

Model: P3



Where temperature is 1100deg C, Type K , N Thermocouples with high quality corrosion resistance metallic sheaths are recommended



# SINTERING



Sinter is the main feed material for making iron in a blast furnace. Sinter is produced from fine raw ore, small coke, limestone and steel plant waste materials etc. The mix is then placed on a steel conveyor belt, where it is ignited by gas fired furnace and converted into an agglomerated product – sinter.

**MULTI POINT TEMPERATURE MEASUREMENT WITH DATA LOGGER**

**For Uniform Iron Agglomeration Sinter Quality**

Very Flexible & Strong with extended cable makes easy movement with the conveyor.



**Type S & R Platinum Thermocouples**

Mineral Insulated, Inconel Sheath



Mineral Insulated Platinum Thermocouples are exceptional and suitable for very severe conditions. Sensors can be supplied in any long lengths, can be formed & bent without losing the properties. Calibration certificate Traceable to NIST can be supplied upon request.

# DIRECT REDUCTION - ROTARY KILN PROCESS

Iron is produced in Rotary Kiln, using Coal, by Direct reduction Process. The Metallic Iron is discharged from the kiln at about 1100°C.



Thermocouples are located at various sections of the Kiln. Type K, N Mineral Insulated Thermocouple. Protection: Corrosive resistant, Robust Thermowell for long life.



Hand Held Probe. Type K, N Thermocouple, Up to 1200 deg c. 3, 6, 8 mm dia. Length - as required. Supplied With Digital Temperature Indicator

## STEEL MANUFACTURING

### BASIC OXYGEN FURNACE



Steel is made in Basic Oxygen Furnace by blowing Pure Oxygen in to the Molten Pig Iron obtained from the Blast furnace and adding scrap iron. Impurities like Carbon, silicon, Phosphorous etc are removed by oxidation

The Reactions in the Furnace is highly Exothermic. Excessive heat is Released and the temperature reaches around 1650 Deg C.

#### Furnace Thermocouple:

Type B , Platinum Thermocouple with , 0.45 / 0.5 mm size Platinum sensor Thermocouple wires .  
Protection sheath : Re-Crystallized Alumina , Ceramic Tube or Silicon Carbide sheath.



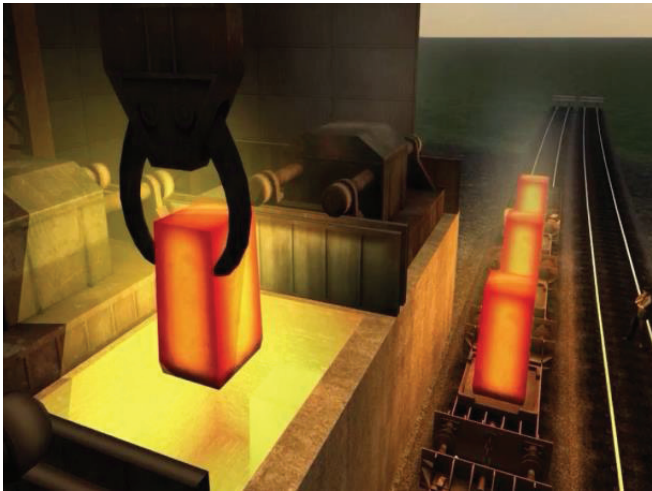
#### Molten Steel -Expendable Thermocouples:

Disposable immersion type thermocouple tips with cardboard tube for molten Steel.

TYPE S / R / B , Paper Tube Length 300 TO 1500MM, as required



# SOAKING PIT



A soaking pit, is a thermally insulated “Furnace - Chamber ” for heating steel Ingots before rolling. The Soaking pit has a top sliding lid to add or remove ingots.

The pit is gas fired and therefore continuous measurement & control of Temperature is required. Soaking pit temperatures are generally controlled at 1300°C.

Thermocouples :

There are generally two thermocouples used in soaking pits, one at the burner wall and one at the end wall. Type R, S – Platinum Thermocouple , with Re- Crystallized Alumina Ceramic sheath , Highly Accurate & Reliable. Temperature Range 1700 deg C.



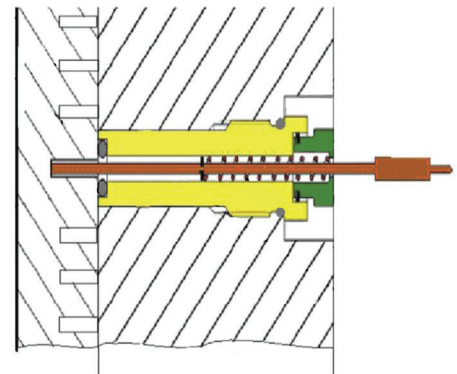
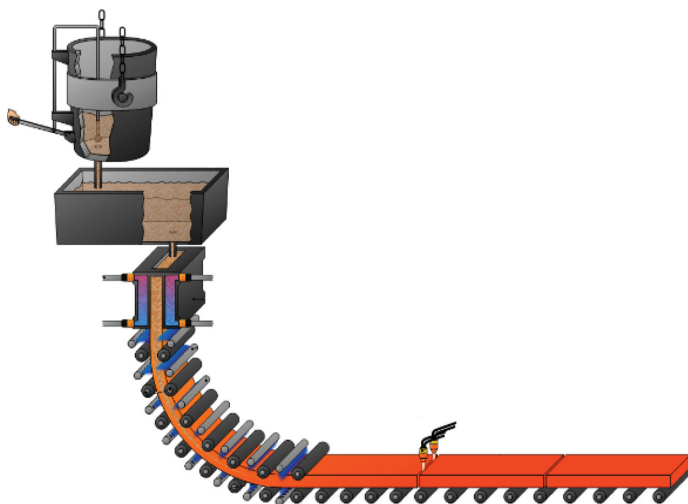
Mineral Insulated Type R, S Thermocouple with high Temperature Inconel sheath . Rigid, Flexible and very long life.



# CONTINUOUS CASTING

In Continuous Casting Process , the Liquid steel obtained from Oxygen Furnace is solidified and molded as Semi finished billet, bloom & Slabs.

The Liquid steel is taken to the continuous casting machine. Liquid steel flows out of the ladle into a watercooled copper mold . The mold is made of copper because of the high heat conductivity . It is highly watercooled



Temperature measurement is very essential to control and prevent the Sticking type Break out in the casting. Thermocouples are embedded in the copper plate mold to detect the temperature profile. Type K , 3 mm size , spring loaded Ther- mocouples are used



## RE -HEAT FURNACE



The purpose of the Re-heat Furnace is to heat the Billets, Blooms & Slabs to around 1200 deg C, so that they become suitable for Rolling, Extrusion, Forging etc.

Heat is transferred to the steel stock in the furnace mainly by means of convection and radiation from the burner and the furnace wall.

The furnace is divided into mainly three zones - Preheating, Main Heating & Soaking.

Since it is not possible to directly measure the temperature of Red Hot Billet, Roof Thermocouples are used to measure the Top Zone. Bottom Zone Temperature is measured by Thermocouple installed in the side Refractory wall.

### Main Heating Zone :

Thermocouples, Type R /S /B with very thick wall Re- Crystallised Alumina Sheath up to 1700 Deg C.



### Soaking, Pre Heating Zone :

Type K, N, Mineral Insulated Thermocouple with heat resistance, Stainless Grade Thermowell, suitable up to 1200 Deg C.



## RESISTANCE TEMPERATURE DETECTORS ( RTD )

In rolling mills it is very important to monitor bearing temperatures to predict bearing failure. High Operating Temperature & improper lubrication will result in over heating of the Bearing.



**Bearing RTDs** - Miniature & Compact . RTD -Pt 100, Type 3, 4 Wire Temp : 0 to 600 Deg C, Class A and Class B Accuracy.

**Byonet RTD** - encapsulated in Brass, Aluminum or Stainless Steel .

RTD with Cast Aluminium Head, Weather Proof- IP 65. Sheath material : SS 316, 304, Hastelloy ..etc.



## TEMPERATURE GAUGES

Bi-Metal Gauges: SS Body, Dial 3', 5" & above... 0 to 600 deg c All Angle Type.

Capillary Gages: Gas Filled 3 meter Capillary length with Bulbs of different lengths. Surface & Panel Mount. With Thermowells & Adaptors.



## CABLES

### THE TYPE OF CABLES

- ▶ Thermocouple Extension Cables &
- ▶ Compensating Cables
- ▶ RTD Cables
- ▶ Control Cables
- ▶ Instrumentation Cables
- ▶ Multi Pair, Multi Core, Twisted, Shielded, Braided & Armored

### INSULATION TYPES

- ▶ **PVC:** Flame Retardant PVC insulation Provides good chemical resistance and suitable up to 105 deg c
  - ▶ **FEP / PFA / TFE :** Teflon insulation has excellent resistance to Abrasion, solvent, Chemical and Moisture, Suitable up to 260 deg c
  - ▶ **Fiber Glass:** Individual conductors and overall insulated with glass fiber, used in very high temperature, up to 700 deg C.
- Ceramic Fiber: Extreme high Temperature applications up to 1000 deg C.



## ACCESSORIES



### Flanges & Mounting Brackets:

Flanges: SS 304, 316, 310, 446.. Inconel 600, Incoly 800, Monel 400  
Carbon Steel A 105, A 350

#### Standards:

ASME B 16.5, DN

#### Pressure Rating:

150#, 300#, 600#, 1500#, 2500#

#### Material:

Cast Iron, black powder coated finish.

Carbon Steel, black powder coated finish.

Clamping Pipe Sizes: 12mm, 15mm, 22mm, 32mm...and any other non standard size

## Union, Nipples & Reducers:

### Unions:

**Material:** SS 304 / 316, Galvanized Steel.

**End Connections:** Threaded, Socket Weld.

**Sizes:** 1/2", 3/4", 1" up to 2-1/2"...

### Nipples:

**Material:** SS 304, 316, Galvanized Steel.

**Sizes:** Any required Length, 1/2", 3/4", 1" and above

**Threads:** BSP, NPT & metric.

### Adaptors/Reducers:

**Material:** SS 304, 316, Brass.  
Various Male/Female Thred Options.



## Ceramic Tubes & other Non Metallic Tubes:

**Ceramic Tubes :** Aluminium Porcelain - C610 & Recrystallised Alumina-C799

**Sizes:** from 6mm OD to 30mm OD

**Silicon Nitrate Tube:** Equivalent to Syalon

**Silicon Carbide Tube:**

**Graphite Tube:**

## Compression Fittings & Cable Glands:

**Compression Fittings:** SS 316 & Brass, BSP & metric threads. To suit MI 1.5 mm to 12.5 mm OD.with Ferrules

**Cable Glands:** Brass cables glands-Nickel-plated & SS 316 Plastic Cable Glands. with strain relief, meeting IP & NEMA degree of protection,

**Threading:** BSP, NPT & Metric Also Available for hazardous Area, Ex Glands.



### TEMPERATURE INDICATORS

PANEL MOUNT

FLAME PROOF

BIG DISPLAY

MULTI CHANNEL

PORTABLE



### NON CONTACT PYROMETER



### TEMPERATURE CONTROLLER

### TEMPERATURE PID CONTROLLER

### TEMPERATURE TRANSMITTER


### TEMPERATURE SCANNER

### CABLES & ACCESSORIES





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