UNITECH

Empowering progress through Technology

MANUFACTURERS OF THERMOCOUPLES, THERMOWELLS AND RTD'S

History

2014

Founded with the vision of innovate, inspire and ignite change

2016

Entered the aluminum sector and provided supply to integrated aluminum industry.

2018

Entered the steel sector and started supplying Tata Steel through our channel partners.

2019

Ventured into the public sector, initiating the supply of thermocouples for bake oven furnaces to NALCO.

Present

Transitioned to a new facility and commenced exports to a prominent aluminum smelter in Oman.

Products

Thermocouple

J,K,N,T,E,R,S,B
Simplex/Duplex/Triplex

Thermowell

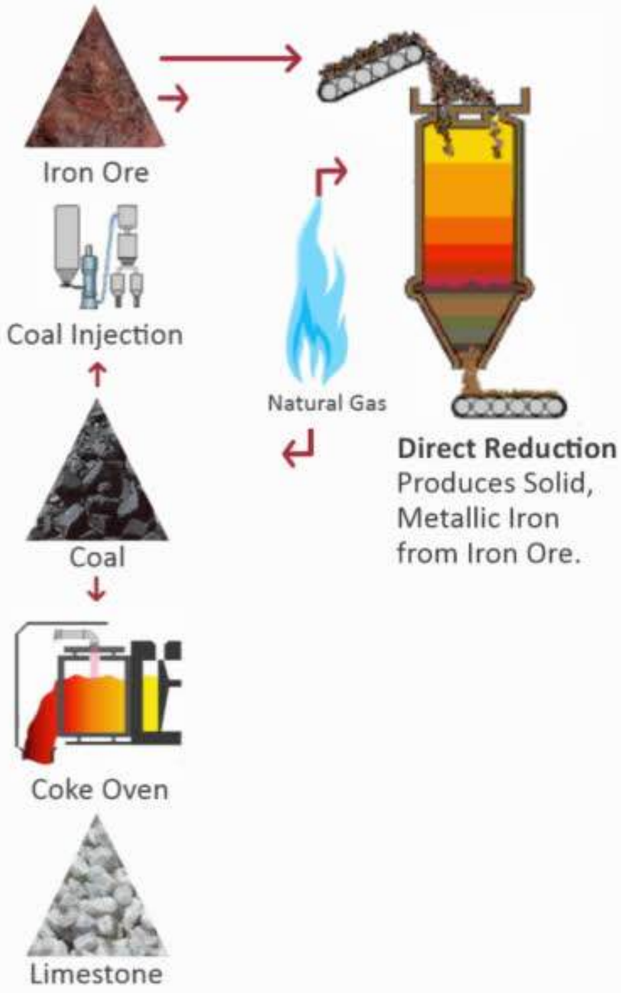
Metallic, Ceramic, Carbide
Silicon Nitride, Tungsten Carbide

RTD’s

Pt 100, Pt 1000, Cu and Ni
Simplex/Duplex

Instrument Cables

Thermocouple extension and compensating cables


Iron Ore
Coal Injection
Coal
Coke Oven
Limestone
Natural Gas
Direct Reduction
Produces Solid,
Metallic Iron
from Iron Ore.

Coke Oven

The most common steel making technology is the Bf-Bof Route. Coke is used in Blast Furnace (BF) both as a reductant and as a source of thermal energy. Coke's role in steelmaking is to provide the heat needed to melt the ore, whose natural state is iron oxide. In the coking plant, coal is heated to 1250c in the absence of oxygen, removing impurities and creating coke, a porous substance that is nearly all carbon.

Unitech provides Temperature Sensors with precise accuracy and quality workmanship so end user can achieve better quality product.

SOLUTION

We provide Type S Thermocouples having outer protection tube as Ceramic having alumina percentage of 99.7% for monitoring the temperature. Thermocouple Assembly can be designed and constructed as per user's demand.

Coke Oven

Specification

Type: “S” (Pt, Pt Rh-10%)
Standard Calibration: ANSI MC 96.1
Configuration: Simplex
Element Diameter: 0.45 mm (± 0.05 mm)
Insulator: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: 5.5 mm Diameter x 2 Hole
Inner Tube: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: OD x ID: 15 mm x 10 mm
Outer Tube: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: OD x ID: 24 mm x 18 mm
Holding Tube: SS 310
Dimensions: OD x ID: 32 mm x 26 mm
Connection Head: Die Cast Aluminium, Weather Proof, IP 67, Single Cable Entry, Cable Gland: ½”NPT (F) with Cable Gland, Chain and Ceramic Block and Terminals
Process Connection: CS flange, Size: OD 90mm, PCD 70mm, 4 hole dia 10mm, Thk 8mm

Stove Dome & Blast Furnace

A blast furnace is a key furnace for smelting industrial metals like pig iron, using a combination of fuel (coke), ores, and flux (limestone). It produces iron rich in carbon through a chemical reduction process with carbon monoxide. Despite evolving efficiency, its fundamental operation remains consistent. Research into alternatives such as plastic waste or hydrogen as reducing agents aims to mitigate carbon emissions in blast furnace operations.

SOLUTION

For Stove Dome, Unitech provides Type S and Type B Thermocouple Assemblies in very rigid construction for seamless operation of the Blast Furnace. The assembly can be constructed in both Ceramic or Carbide as outer protection tube and Ceramic coated metal as the outer protection tube. These assemblies are gas tight to protect the corrosive gases to pass from the outer sheath of the Thermocouple Assembly.

For Hearth, Unitech provides Type K Thermocouple Assemblies. They are mineral insulated and the length varies between 30 mtrs to 50 mtrs.

Stove Dome & Blast Furnace

Specification

Type: “S” (Pt, Pt Rh-10%)
Standard Calibration: ANSI MC 96.1
Configuration: Simplex
Element Diameter: 0.5 mm
Insulator: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: 5.5 mm Diameter x 2 Hole
Inner Tube: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: OD x ID: 12 mm x 08 mm
Outer Tube: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: OD x ID: 20 mm x 15 mm
Protection Tube: Inconel 600
Type: Drilled Barstock, Straight, Flanged
Dimensions: OD x ID: 40 mm x 22 mm
Total Length of Thermocouple Assembly: 1750 mm
Insertion Length i.e. Length below Flange: 1600 mm
Special Coating of 01 mm thk provided over Protection Tube

Connection Head: Die Cast Aluminium, Weather Proof, IP 67, Single Cable Entry,
Cable Gland: ½”NPT (F) with Cable Gland, Chain and Ceramic Block and Terminals

Process Connection: SS 316 flange, Size: 2” x 300# RF
Gas Sealing: Gas Seal is provided at the cold end to protect it from corrosive nature of the Furnace

Rolling Mill

A rolling mill is a machine that is designed to manipulate sheet metal by rolling it. Rolling mills contain at least one pair of rollers. Steelmaking companies use them to manipulate the physical properties of raw sheet metal, including steel sheet metal. Rolling mills work by using multiple rollers to manipulate the physical properties of sheet metal. In steelmaking, they offer a uniform thickness and consistency for the steel sheet metal with which they are used.

SOLUTION

Type S and Type R Thermocouple Assemblies can be installed to monitor the temperature efficiently. These can be constructed in various diameters and lengths as per customer demands.

Type K Thermocouple Assemblies are also supplied for the temperature measurement of Billets. These assemblies are very lengthy and measure upto 30 to 50 mtrs.

Rolling Mill

Specification

Type: “S” (Pt, Pt Rh-10%)
Standard Calibration: ANSI MC 96.1
Configuration: Simplex
Element Diameter: 0.40 mm (± 0.05 mm)
Insulator: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: 3.5 mm Diameter x 2 Hole
Inner Tube: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: OD x ID: 8 mm x 5 mm
Outer Tube: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: OD x ID: 15 mm x 10 mm
Holding Tube: SS 316
Dimensions: OD x ID: 21.3 mm x 16 mm
Connection Head: Die Cast Aluminium, Weather Proof, IP 67, Single Cable Entry, Cable Gland: ½”NPT (F) with Cable Gland, Chain and Ceramic Block and Terminals
Process Connection: CS flange, Size: OD 90mm, PCD 70mm, 4 hole dia 10mm, Thk 8mm

Direct Reduced Iron

DRI also called Sponge Iron, is produced from the direct reduction of iron ore into iron by a reducing gas or hydrogen. DRI overcomes the difficulties of the conventional Blast Furnaces. Direct reduction processes can be divided roughly into two categories: gas-based and coal-based. In both cases, the objective of the process is to remove the oxygen contained in various forms of iron ore (sized ore, concentrates, pellets, mill scale, furnace dust, etc.) in order to convert the ore to metallic iron, without melting it. The direct reduction process is comparatively energy efficient.

SOLUTION

Thermocouple Type K with Thermowell assemblies are required for efficient temperature measurement. Thermowells are drilled bar stock in construction. And another product known as QRT is used for instantaneous temperature measurement in DRI.

Direct Reduced Iron

Specifications

Thermocouple Type K with Thermowell

Type: “K”, Simplex, Ungrounded
Standard Calibration: ANSI MC 96.1
Insulation: Mineral Insulated
Sheath MOC: Inconel 600
Sheath OD: 08 mm

Thermowell

Type: Barstock, Straight
MOC: SS 310
OD x ID: 22 mm x 10 mm
Length below Head: 1350 mm
Connection Head: Die Cast Aluminium, Weater Proof, IP 67, Single Cable Entry, Cable Entry: ½” NPT (F) with Cable Gland, Cainand
Ceramic Block and Terminals

Thermocouple Type K (QRT)

Type: “K”, Simplex, Ungrounded
Standard Calibration: ANSI MC 96.1
Insulation: Mineral Insulated
Sheath MOC: Inconel 600
Sheath OD: 03 mm
Length: 1100 mm
with Seal Pot
Connector: Omega Type, Miniature Size, Male Female Plug, 2 Pin

Pellet Plant

Pelletizing iron ore is undertaken due to the excellent physical and metallurgical properties of iron ore pellets. Iron ore and iron ore pellets are important sources of iron for manufacturing steel. Iron ore pellets are used as raw material for blast furnaces. The quality requirements of pellet, such as physical, chemical and metallurgical specifications, depend on each ironmaking furnace and those requirements influence the operation of the iron ore pelletizing plant.

SOLUTION

We provide Type S thermocouples with outer protection tube as Carbide and inner protection tube as Ceramic having 99.7% alumina.

Pellet Plant

Specification

Type: “S” (Pt, Pt Rh 10%), Simplex, Ungrounded
Standard Calibration: ANSI MC 96.1
Element Diameter: 0.45 mm (±0.05 mm)
Insulator: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: 3.5 mm Diameter x 2 Hole
Inner Tube: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: OD x ID: 08 mm x 05 mm
Outer Tube: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: OD x ID: 15 mm x 10 mm
Connection Head: Die Cast Aluminium, Weather Proof, IP 67, Single Cable Entry,
Cable Entry: ½” NPT (F) with Cable Gland, Chain, Ceramic Block and Terminals
Adjustable Flange: CS, OD 90 mm, PCD 70 mm, 4 Hole dia. 10 mm, Thk 08 mm

Sinter Plant

Sinter plants agglomerate iron ore fines (dust) with other fine materials at high temperature, to create a product that can be used in a blast furnace. There are certain advantages of using sinters as opposed to using other materials which include recycling the fines and other waste products, to include flue dust, mill scale, lime dust and sludge.

SOLUTION

Type S Thermocouples are supplied with both outer and inner protection tubes as Ceramic having 99.7% Alumina.

Sinter Plant

UNITECH

Specification

Type: “S” (Pt, Pt Rh 10%), Simplex, Ungrounded
Standard Calibration: ANSI MC 96.1
Element Diameter: 0.45 mm (±0.05 mm)
Insulator: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: 3.5 mm Diameter x 2 Hole
Inner Tube: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: OD x ID: 08 mm x 05 mm
Outer Tube: Recrystallised Ceramic KER 710 (99.7%)
Dimensions: OD x ID: 15 mm x 10 mm
Connection Head: Die Cast Aluminium, Weather Proof, IP 67, Single Cable Entry,
Cable Entry: ½” NPT (F) with Cable Gland, Chain, Ceramic Block and Terminals
Adjustable Flange: CS, OD 90 mm, PCD 70 mm, 4 Hole dia. 10 mm, Thk 08 mm

HBI Plant

Hot Briquetted Iron (HBI) is a premium form of DRI that has been compacted at a temperature greater than 650° C at time of compaction and has a density greater than 5,000 kilograms per cubic metre (5,000 kg/m3). HBI also find the application as Blast Furnace feedstock. HBI was developed to overcome the problems associated with shipping of DRI and it is less reactive than DRI.

SOLUTION

Unitech is providing Thermocouple Type K with Metallic Protection Tubes assemblies with Hard surfacing of the Protection Tubes to get maximum life of the Assembly.

HBI Plant

Specifications

Thermocouple Type K with Thermowell
Type: “K”, Simplex, Ungrounded
Standard Calibration: ANSI MC 96.1
Insulation: Mineral Insulated
Sheath MOC: Inconel 600
Sheath OD: 08 mm
Length below Head: 950 mm
Connection Head: Die Cast Aluminium, Weater Proof, IP 67, Single Cable Entry, Cable Entry: ½” NPT (F) with Cable Gland, Ceramic Block and Terminals
Fitting: SS 304 Nipple, Size 1/2" Sch 80, Length 100 mm, Thread 1/2" NPT (M)

Thermowell

Type: Barstock, Tapered
MOC: Inconel 600
OD x ID: 22 mm x 10 mm
Total Length: 850 mm
Insertion length: 800 mm
Process Connection: 1" BSP (M)
Instrument Connection: 1/2" NPT (F)
Surface Hardening of thickness 1 mm on Insertion Length

Thankyou.

Looking Forward to Working with you

Unitech Therminstruments Pvt. Ltd.

Capt. Sanjay Matolia
+91-8696967111
(Co-Founder)

Mr. Hardik Matolia
+91-9799939994
(Co-Founder)