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

Alumina Production

After Bauxite mining, the next stage in the production chain is the processing of bauxite into alumina, or aluminium oxide - Al2O3, - a white powder. The most common process for making alumina from bauxite is the Bayer process.

Large aluminium hydrate particles can be filtered out from the solution with relative ease. They're then washed with water, dried and calcined: i.e. heated up to remove water. The output of this process is alumina. Alumina is then shipped off to smelters.

Alumina Production

Solution

We provide RTD Pt 100 in various sizes with Barstock Thermowells for temperature measurement in Alumina Refinery where the Thermowells give a handsome life in the corrosive environment thus increasing the life of RTD Pt 100.

Alumina Production

Specification for Alumina

Type: “Pt 100“, 3 Wire, Duplex
standard Calibration: IEC 751
Insulation: Mineral Insulated
Sheath: SS 316
OD: 06 mm
Length below Head: 450 mm
Connection Head: Die Cast Aluminium, Weather Proof, IP 67, Single Cable Entry
Adjustable Fitting: 1/2“ NPT (M)
Thermowell
Type: Barstock, Tapered
MOC: SS 316
OD: 28 mm
Length: 350 mm
Process Connection: SS 316 Flange, 1.5“ x 600# Rf
Instrument Connection: 1/2“ NPT (F)

Reduction

The reduction area is the heart of an aluminium smelter. Inside there are hundreds of reduction cells or pots arranged in rows and hooked up to power sources via massive cables. In each reduction cell, aluminium is produced from alumina via the electrolytic reduction process.

Reduction

Solution for Flue Wall

Thermocouple Type N and Type S are suitable for Flue Wall of the Bake Oven furnaces where the temperature during the ongoing process remains near to 1200 Deg. Celsius. Generally these Thermocouples have a length of approximately 1.1 mtrs and supplied with Fabricated Thermowells and proper arrangement of Cables and connectors. Our thermocouples are providing an average life of 3-4 Months depending on the sulphur content in the fuel used for firing the furnace and the operating temperature. By monitoring temperature of the Flue Wall life of the furnace can be increased.

Reduction

Specification for Flue wall

Type: “N”, Simplex, Ungrounded
Standard Calibration: ANSI MC 96.1
Element: 3.2 mm
Insulation: Ceramic Beads KER 610
OD: 12 mm
Thermowell
Type: Fabricated, Straight
Well MOC: FeCrAl
OD: 21.34 mm
Length below Head: 1125 mm
Connection Head: Die Cast Aluminium, Weather Proof, IP 67, Single Cable Entry
Cable: 14 x 0.3 mm, FG/FG/SS Braided, 2 Core upto 03 mtrs long
Connector: Standard Size, Omega Type, Male Female Plug both with Seal Pot
(Alternate Connector: Amphenol Connector, 2 Pin)

Reduction

Solution for Anode

Thermocouple Type N are provided for temperature measurement of Anodes where temperature prevails upto 1150 Deg Celsius. Uniformity in the temperature of the Anode ensures smooth operation of the Aluminium Smelting. The construction consists of both types Barstock and Fabricated as per demand by the customer. The length generally remains at 1.5 mtrs. Unitech provides these Thermocouples with an accuracy of +/- 0.4% of the Temperature reading. And also complete assembly along with Cables and connectors are provided. The average life span is 1.5 months.

Reduction

Specifications for Anode

Type: “N”, Simplex, Ungrounded
Standard Calibration: ANSI MC 96.1
Element: 3.2 mm
Insulation: Ceramic Beads KER 610
OD: 12 mm
Thermowell
Type: Fabricated, Straight
Well MOC: FeCrAl
OD: 21.34 mm / 26.7 mm
Length below Head: 1550 mm
Connection Head: Die Cast Aluminium, Weather Proof, IP 67, Single Cable Entry
Cable: 14 x 0.3 mm, FG/FG/SS Braided, 2 Core upto 06 mtrs long
Connector: Standard Size, Omega Type, Male Female Plug both with Seal Pot
(Alternate connector: Amphenol Connector, 2 Pin)

Reduction

Solution for Potline

We provide Thermocouple Type K for temperature measurement of Alumina in the potline. We provide highly accurate Thermocouples as the poor accuracy can affect the quality of the produced Aluminium. Generally the thermocouples are of Mineral Insulated Type and consists of a length of 1metre long. The Thermocouple sheath is also of high nickel content so as to work accurately at high temperatures. The complete Thermocouple Assembly is provided with a connector that gets fitted with Hand Held Temperature Meter instantly showing the process Temperature readings.

Reduction

Specifications for Potline

Type: “K”, Simplex, Ungrounded
Standard Calibration: ANSI MC 96.1
Insulation: Mineral Insulated
Sheath MOC: High Chrome
Sheath OD: 06 mm
Length: 1300 mm
with Seal Pot
Connector: Omega Type, Miniature/Standard Size respectively, Male Female Plug
2 Pin
(Alternate Connector: BNC Type, Round Shape)

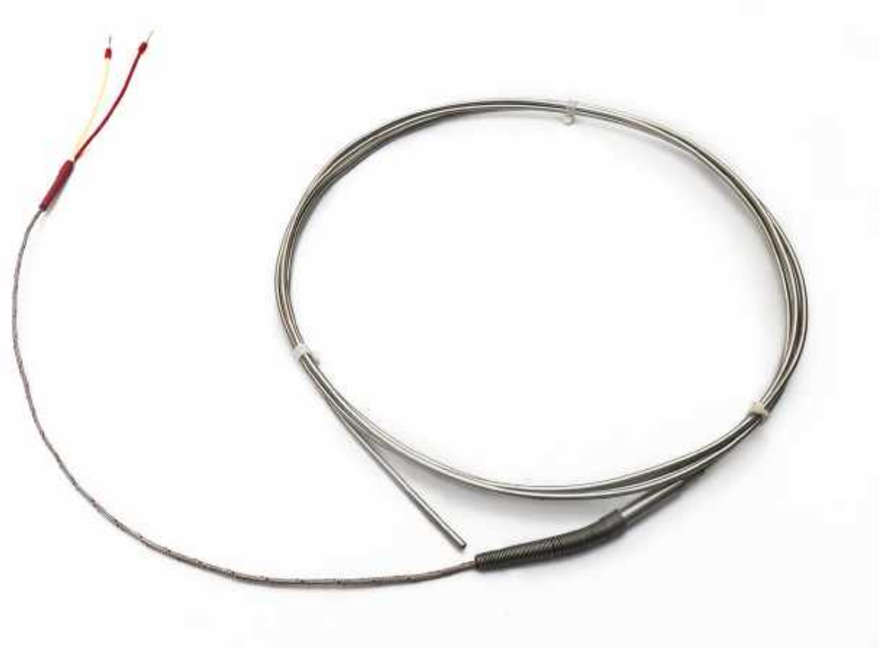
Reduction

Solution for Cathode Surface

Thermocouple Type K are used to monitor the temperature reading of the Cathode Surface. Uniformity of Temperature on the complete Cathode surface ensures proper production of the Alumina as well as life expectancy of the Cathode can be increased thus decreasing the cost of the production.

Reduction

Specifications for Cathode Surface



Type: K, Simplex, Ungrounded
Standard Calibration: ANSI MC 96.1
Insulation: Mineral Insulated
Sheath: Inconel 600
OD: 03 mm
Length below Seal Pot: 3000 mm
Cable: T/T/SS, 7/36, 2 Core upto 0.5 mtr long
Seal Pot and Protection Spring

Cast House

Molten aluminium is transported in buckets to the casthouse of the smelter. At this stage the metal still contains a lot of iron, silicon, copper and other elements. However, even the smallest amounts of admixtures can have a drastic impact on the properties of aluminium, so in the casthouse all admixtures are removed by remelting the aluminium in a special furnace at 800 oC. The resultant pure aluminium is cast into special moulds where it is allowed to solidify.

Cast House

Solution for Launder

We provide Thermocouple Type K having outer protection tube made of non ferrous metals for temperature measurement in molten aluminium. The Thermocouple supplied can be Straight Type or L shape Type. In Launders continuous temperature measurement is required to check the uniformity of the Molten Aluminium in the Launder. Non Ferrous metals used as outer protection tubes can provide a life of 1.5-2 months.

Cast House

Specifications for Launder

Type: “K”, Simplex, Ungrounded
Standard Calibration: ANSI MC 96.1
Element Dia.: 1.5 mm
Insulation: Ceramic Beads KER 610
Protection Tube
Type: Straight
MOC: NbSiC
OD: 25 mm
Insertion Length: 400 mm
Total Length below Head: 700 mm
Connection Head

Cast House

Solution for Tundish

The case with the tundish is same as with the Launders. The monitoring of the temperature in the Tundish is necessary to ensure the uniformity of the temperature of the molten aluminium thus ensuring the quality of the molten aluminium produced. The temperature prevails here is approximately 700 Deg. Celsius. For instantaneous measurement of the molten aluminium at some places in Tundish highly accurate mineral insulated Thermocouples are required.

Cast House

Specifications for Tundish

Type: “K”, Simplex, Ungrounded
Standard Calibration: ANSI MC 96.1
Element Dia.: 1.5 mm
Insulation: Ceramic Beads KER 610
Protection Tube
Type: L-Shape
MOC: Cast Iron / NbSiC
OD: 28 mm
Insertion Length: 350 mm
Cold Zone: SS 304
Length: 900 mm
Connection Head and Elbow

Cast House

Solution for Furnace Bath

Thermocouple Type K are provided for this particular application. The length of the Thermocouples generally varies between 1.5 mtrs and 2.5 mtrs depending on the construction of the Furnace. Outer Protection tubes used are Cast Iron. Cast Iron have a tendency to resist the reaction with the molten aluminium hence they provide a handsome life in the molten aluminium as compared to other metals.

Cast House

Specifications for Furnace Bath

Type: “K”, Simplex, Ungrounded
Standard Calibration: ANSI MC 96.1
Insulation: Mineral Insulated
Sheath MOC: SS 316
OD: 06 mm
Length below Seal Pot: 1600 mm
Cable: FG/FG/SS Braided, 7/36, 2 Core upto 02 mtrs long
Fitting (Fixed): ¾” BSP (M) Thread upto 20 mm long
Protection Tube
Type: Straight
MOC: Cast Iron
OD: 40 mm
Insertion Length: 1530 mm
Instrument Connection: ¾” BSP (F)

Cast House

Solution for Furnace Roof

We provide Thermocouple Type K with Thermowell to monitor the temperature in the Furnace Roof. Generally the length of the Thermocouple Assembly is 650 mm. Duplex Type Thermocouples are manufactured for this application. Here a temperature of about 1000 Deg. Celsius needs to be monitored. Hence Well and Sheath material are selected properly.

Cast House

Specifications for Furnace Roof

Type: “K”, Duplex, Ungrounded
Standard Calibration: ANSI MC 96.1
Insulation: Mineral Insulated
Sheath MOC: Inconel 600
OD: 06 mm
Thermowell
Type: Barstock, Straight
MOC: HRS 446
OD: 22 mm
ID: 08 mm
Length below Head: 650 mm
Connection Head
Adjustable Flange

Cast House

Solution for Furnace Bottom Shell

We can also provide temperature solution for Furnace Bottom Shell temperature monitoring. These are particularly L Shaped and provided with Cable Assembly. The temperature here prevails at about 500 Deg. Celsius. These Thermocouples can play a vital role in increasing the life of the furnace.

Cast House

Specification for Furnace Bottom Shell

Type: “K”, Simplex, Ungrounded
Standard Calibration: ANSI MC 96.1
Insulation: Mineral Insulated
Sheath MOC: SS 316
OD: 06 mm
Length: 700 mm (L Shape)
Cable: Tef/Tef/SS Braided, 7/36, 2 Core upto 05 mtrs long
Magnetic Type

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)