

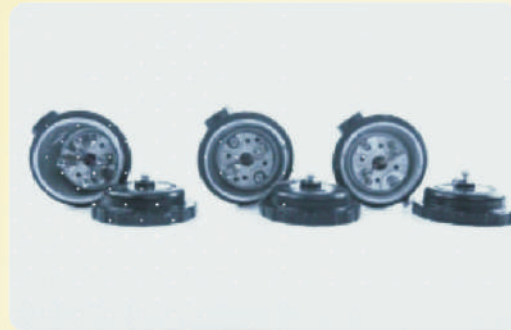
Heat Technologies is a technology driven Customer oriented company solely devoted to Manufacturing, Trading, & Marketing of Instrumentations and Automation Products required by integrated steel Plants, Power Plants & Cement Plants Specifically for COAL BASED SPOGE IRON PLANTS.

We specialized in Design and Manufacture of Contact type of Temperature Measurement solutions. Our Workshop has Manufacturing Efficiency and Engineering Expertise to ensure Accurate & Timely Delivery of Top Quality Products.

## 1. MI K TYPE THERMOCOUPLE:

They are popular choice for kiln zone temperature measurement in Sponge Iron Plants They are available with us in wide variety of **Sheath** materials, Dia and construction with Accessories such as ferrules and connectors , Flanges We are **equipped** with Calibrator ,Multimeter , Insulation-Tester, Vernier –Caliper for proper checking and Testing. We have Dry-Block Temperature Calibrator make: Tempsens, Model:CALSYS 1200, Range:200-1200with controlling sensor: PT-PTRH13% Thermocouple and PID Controller. K type Master Sensor With NABL certificate . We regularly do LOT test for 3 point and ensure that assembled sensor of that Lot are within Specified accuracy.

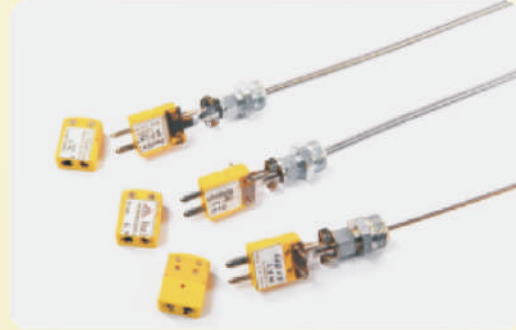
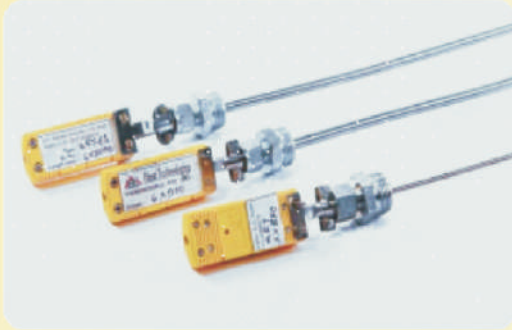
All thermocouple, QRT, RTD, Protection-tube, Thermo well are supplied with INSPECTION CUM TEST CARD which ensures that customer gets right size and quality of ordered materials.



## 2. QUICK RESPONSE THERMOCOUPLE (QRT)

They are mainly used in Sponge iron Plant for measurement of current/present temperature of kiln zone through Ports on Kiln specially provided for this purpose. QRT are inserted & taken out in rotating kiln at regular intervals.

Process connection is 1/2" BSP (M) adjustable with large size round pin male & female connector. Mostly 3MM OD QRT are used.



**3. L SHAPED K TYPE THERMOCOUPLE** : L Shaped Right angled K type thermocouple are mainly used for continuous temperature in **Galvanizing** process for Zinc Hot bath, Salt bath, Metal smelting (Molten Brass, Zinc, Aluminum, etc. ) They are Resistant to **Corrosion** and Thermal shock and Sensor can be Simplex & Duplex to suit Customers requirement. It Consist you of (1) Hot arm inserted into Hot Bath & Cold Arm which stay in ambient and away from bath.



L Shaped Thermocouple are used where High Temperature and harmful gasses in the production site affects junction Box of Thermocouple or not suitable for direct horizontal vertical Installation.

**4. R & S TYPE THERMOCOUPLE:** Thermocouple Assembly "R" & "S" is manufactured by us with ceramic sheath. Temperature Range: - (- 200 -1700\* C) Recrystallized Alumina (Alsint) outer tube along with inner tube and insulators are used to assemble them. Stainless steel holding tube with high temperature cement is used to hold the ceramic tube. Element wire diameter: Ø0.15-0.5 mm.

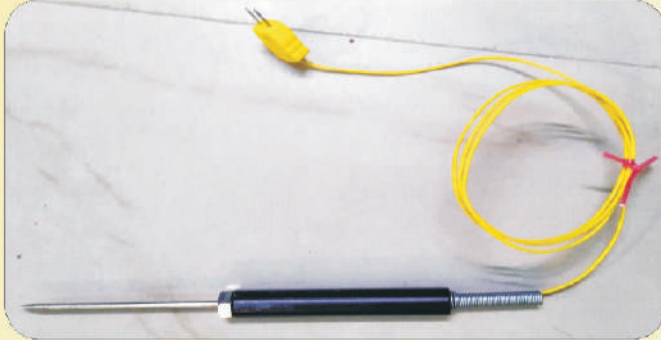
"R" Type Thermocouple is of high accuracy and with high stability.

Accuracy: +/- 1.5\*C or +/- 0.25%

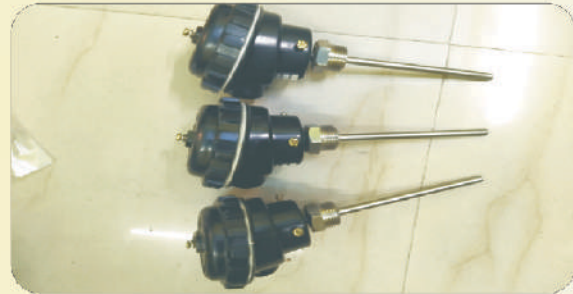
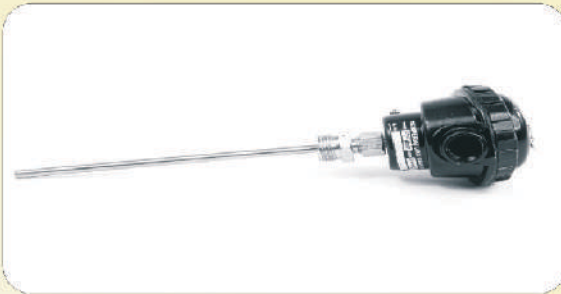
As this thermocouple is costly, its scrap is recycled.



**5. TEMPRATURE PROBE:** We can provide you RTD/ K type thermocouple probe of suitable length /Dia/M.O.C. Complete with Handle, Spring , required length of cable and termination such as lugs or miniature plug.



**6. RESISTANCE TEMPRATURE DETECTOR (RTD)** RTD are more accurate stable temperature sensors



suitable for Low temperature measurement We can supply you RTD in wide variety of M.O.C, OD, Length, Termination, Circuit (Simplex/ Duplex) etc.

**7. MINIATURE BUTTON TYPE RTD**

We specialize in Miniature Button type RTD with integrated HR Teflon/ SS Braided cable for Turbine, Motor, Generator, Gear and similar equipment temperature monitoring.

We can supply you custom built special RTD as per your application and requirement



**HEAT MOUNTED RTD TRANSMITTERS** In different Temperature range are also available with us.

**8. PROTECTION TUBE FOR THERMOCOULE, RTD & QRT, BOILER ETC.**

Protection tube are supplied by us in wide variety of M.O.C, OD & ID, Length, Termination .Our offered Protection Tubes are DRILLED BAR STOCK and are drilled by Gun Drill machine giving accurate ID & wall thickness without any Joints and weldings.

We can also provide you protection tube with Tungsten Coating for Abrasion Protection



### 9. THERMO-WELL :

They are protection device used in sponge iron plant with MS Flanges. Thermo well with side variety of MOC, OD, ID, Flange design can be fabricated , assembled & tested and supplied.



**10. TEMPRATURE TRANSMITTER :** HEAT Offer Dedicated 2 Wire Galvanic ally Isolated Housed In Weather Proof Die Cast Alu. Housing for Field Mounting. Other Options Smart, Programmable, Head Mounted, Capsules / 2" Pipe Mounted / In Built Indicator Etc. can also be supplied



### 11. TEMPERATURE INDICATOR & CONTROLLER:

We stock & sale Digital Indicator & Controller of OIPL Make in wide variety of Input, Output ,Size, Output etc. We also stock & supply their Large size Display, Scanners, Signal Isolator & Distributor & Convertor and Transducer etc We welcome your esteemed requirement / Enquiry for above Items. Portable Thermo-Meter with probes and hand held IR Pyrometers We stock & sale above Items of G-Tech make and will be happy to Supply it.



### 12. HR COMPENATING CALBE FOR K TYPE & R TYPE THERMOCOUPLE AND RTD :-

K type Compensating cable are connecting cable between Thermocouple & Transmitter/ Indicator As they are laid on cable tray fixed on Rotary kiln and other Hot zone of Sponge Iron Plant – TEF/TEF/FG/SS is most common Insulation Covering used. 3 Core PTFE Insulated RTD cables are connecting cable between RTD & Transmitter/ Indicator with TEF/TEF/FG/SS Insulation covering. Compensating Cable for R type Thermocouple is available with us in Ready stock in wide variety of **Outer sheathing** such as Teflon, Fiberglass, PVC, Rubber etc in different sizes in 100 Meter Coil





# HEAT Technologies

*"High-Tech Solutions for the Interactive Age"*

## Testing / Calibration & Quality Assurance Thermocouple QRT, RTD Thermowell & Protection Tube :-

We are committed to provide right quality at right price at earliest possible delivery time.

To ensure right quality, we have arranged for following: -

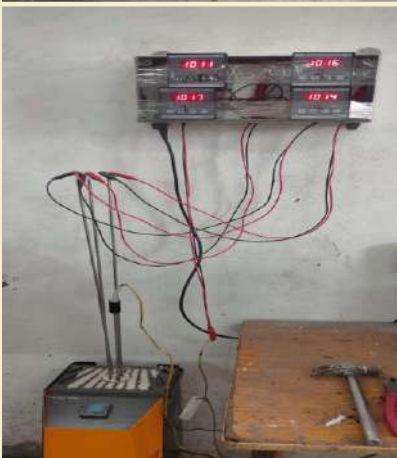
1. We are equipped with calibrator, Digital multimeter, insulation testers, vernier-callipers etc for proper checking and Testing.
2. We have Dry block temperature calibrator make : Tempsens Model : CALSYS 1200, RANGE : 200-1200 DEG C, WITH CONTROLLIG SENSOR PT-PT/RH THERMOCOUPLE AND P.I.D CONTROLLER and K type master sensor with NABL certificate We also have a separate Temperature Calibration furnace with Digital controller for RTD.

We regularly do lot Test for 3 Points and ensure that Assembled sensors of that lot are within specified Accuracy

3. All Thermocouple QRT RTD Protection tube, Thermowell are supplied with INSPECTION CUM TEST CARD which ensures that customer gets right size and quality of ordered materials

**We are attaching herewith followings**

- ( 1 ) Photo of calibrator
- ( 2 ) Photo of set up for calibration
- ( 3 ) inspection cum Test card accompanying with above



### HEAT Technologies

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#### INSPECTION CUM TEST CARD

#### QRT/Thermocouple Protection Tube Drilled

Bar Stock Both End/one End Open with 1/2" BSP (M) O.D. .... I.D..... Length.....  
M.O.C.: SS310 / Ss316 / Inconel 600

- Checked M.O.C. & Composition with Vendor & Found O.K.
- Checked Dimensions Accessories with P.O. & Found O.K.
- Checked Lab Composition report attached.



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#### INSPECTION CUM TEST CARD

#### Thermocouple O.D..... Length.....MM

SS 310 / Incone 600 / SS316

- Checked M.O.C. & Composition with Vendor Bill & Found O.K.
- Matched Dimensions with P.O. & Found O.K.
- Checked Lot temperatures Reading for 3 test points and found within specified accuracy

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## International Thermocouple Color Codes - Thermocouple and Extension Grade Wires

# HEAT Technologies



THERMO-COUPLE TYPE	ALLOY COMBINATION	U.S. & CANADIAN (ANSI/MC96.1, ANSI/ASTM E230)		PLUG & JACK	International IEC 584-3	International IEC 584-3 <i>Intrinsically Safe</i>	Czech British BS 1843	Netherlands German DIN 43710	Japanese JIS C 1610	French NFC 42-324
		THERMOCOUPLE GRADE	EXTENSION GRADE							
T	Copper			Blue						
	Constantan (Copper-Nickel)			Blue						
J	Iron (magnetic)			Black						
	Constantan (Copper-Nickel)			Black						
E	Nickel - Chromium			Purple						
	Constantan (Copper-Nickel)			Purple						
K	Nickel - Chromium			Yellow						
	Nickel - Aluminium (magnetic)			Yellow						
N	Nicrosil (Nickel-Chromium-Silicon)			Orange				No Standard (Use American Color Codes)	No Standard (Use American Color Codes)	No Standard (Use American Color Codes)
	Nisil (Nickel-Silicon-Magnesium)			Orange				No Standard (Use American Color Codes)	No Standard (Use American Color Codes)	No Standard (Use American Color Codes)
S	Platinum Rhodium - 10%	None Established		Green						
	Platinum			Green						
R	Platinum Rhodium - 13%	None Established		Green						
	Platinum			Green						
B	Platinum Rhodium - 30%	None Established		White (Uncompensated)			No Standard (Use Copper Wire)			No Standard (Use Copper Wire)
	Platinum Rhodium - 6%			White (Uncompensated)			No Standard (Use Copper Wire)			No Standard (Use Copper Wire)
C	Tungsten Rhenium - 5%	None Established		Red				No Standard (Use American Color Codes)	No Standard (Use American Color Codes)	No Standard (Use American Color Codes)
	Tungsten Rhenium - 26%			Red				No Standard (Use American Color Codes)	No Standard (Use American Color Codes)	No Standard (Use American Color Codes)

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Heat Technologies Thermocouple calibrator Maximum Uncertainty over 100 Degree Intervals  
Maximum Error over range °C

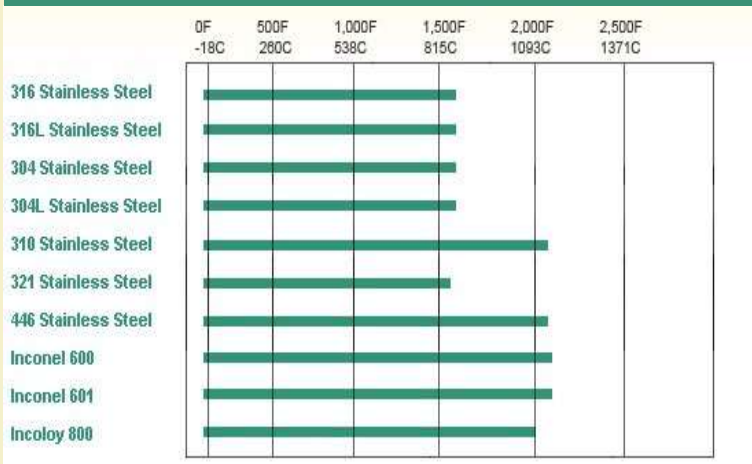
Range °C	Type K	Type J	Type T	Type E	Type N	Type B	Type R	Type S	Type G	Type C	Type D	"P" Platinum	Type L J-DIN	Type U T-DIN
-100 to 0	0.4	0.3	0.4	0.3	0.4								0.4	0.5
0 to 100	0.3	0.3	0.3	0.3	0.3							0.2	0.3	0.3
100 to 200	0.3	0.2	0.2	0.2	0.3							0.2	0.4	0.3
200 to 300	0.3	0.2	0.2	0.2	0.3		0.7	0.7	0.6	0.4	0.4	0.2	0.3	0.3
300 to 400	0.3	0.2	0.2	0.2	0.2		0.6	0.7	0.5	0.4	0.3	0.2	0.5	0.3
400 to 500	0.2	0.2	0.2	0.2	0.2		0.6	0.6	0.4	0.3	0.3	0.2	0.3	0.3
500 to 600	0.2	0.2		0.2	0.2		0.6	0.6	0.3	0.3	0.3	0.2	0.3	0.2
600 to 700	0.3	0.2		0.2	0.2	0.9	0.5	0.6	0.3	0.4	0.3	0.2	0.4	
700 to 800	0.3	0.2		0.2	0.2	0.9	0.5	0.6	0.3	0.4	0.3	0.2	0.4	
800 to 900	0.3	0.2		0.2	0.2	0.9	0.5	0.5	0.3	0.4	0.3	0.2	0.3	
900 to 1000	0.3	0.2		0.2	0.2	0.7	0.5	0.5	0.3	0.4	0.3	0.2		
1000 to 1100	0.3	0.2			0.2	0.7	0.5	0.5	0.3	0.4	0.3	0.2		
1100 to 1200	0.3	0.2			0.2	0.7	0.5	0.5	0.3	0.4	0.3	0.3		
1200 to 1300	0.3				0.3	0.6	0.5	0.5	0.3	0.4	0.3	0.3		
1300 to 1400	0.3					0.7	0.5	0.5	0.3	0.4	0.3	0.3		
1400 to 1500						0.6	0.5	0.5	0.3	0.4	0.3			
1500 to 1600						0.7	0.5	0.5	0.3	0.4	0.3			
1600 to 1700						0.6	0.5	0.5	0.3	0.4	0.3			
1700 to 1800						0.6	0.5	0.6	0.3	0.4	0.3			
1800 to 1900									0.3	0.4	0.3			
1900 to 2000									0.3	0.4	0.3			
2000 to 2100									0.3	0.4	0.3			
2100 to 2200									0.3	0.4	0.3			
2200 to 2300									0.3	0.5	0.4			

## TOLERANCES FOR A 100Ω PLATINUM RTD PER IEC 751-95

Temperature Deg (C)	Tolerance			
	Class B		Class A	
	(±C) <sup>(1)</sup>	(±Ohm)	(±C) <sup>(2)</sup>	(±Ohm)
-200	1.30	0.56	0.55	0.24
-100	0.80	0.32	0.35	0.14
0	0.30	0.12	0.15	0.06
100	0.80	0.30	0.35	0.13
200	1.30	0.48	0.55	0.20
300	1.80	0.64	0.75	0.27
400	2.30	0.79	0.95	0.33
500	2.80	0.93	1.15	0.38
600	3.30	1.06	1.35	0.43

Notes: (1) C=±(.3+.005\*|t|) • (2) C=±(.15+.002\*|t|)

## Sheath Material of Thermocouple Temperature limit



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## Our Esteemed Customer / Clientele List in Steel & Sponge Iron Plant

1. M/s. Top worth Steel & Power Ltd
2. M/s. Shree Bajrang Ispat & Power Ltd
3. M/s. Salasar Steel & Power Limited
4. M/s. Crest Ispat & Power Ltd.
5. M/S. Vaswani Industries Ltd.
6. M/s. Devi Iron & Power (P) Ltd.
7. M/s. Real Ispat & Power Ltd.
8. M/s. API Ispat & Power Tech (p) Ltd.
9. M/s. S.K.Sarawagi & Co. (P) Ltd.(Gopal Group)
10. M/s. Shree Nakoda Ispat Ltd.
11. M/s. Vandana Globa Ltd.
12. M/s. Mahamaya Steel Industries Ltd.
13. M/s. Sarda Energy & Minerals Limited
14. M/s. Sarda Dairy & Food Products Pvt. Ltd.
15. M/s. Shree Rupanadham Steel (P) Ltd.
16. M/s. GR Sponge and Power Ltd.
17. M/s. Shree Shyam Sponge & Power Ltd.
18. M/s. Shivalay Ispat & Power Pvt. Ltd.
19. M/S. MSP Steel & Power Ltd.
20. M/S. Niros Ispat Pvt. Ltd.
21. M/S. Sky Aalloys Power Pvt. Ltd.
22. M/S. NR Sponge Pvt. Ltd.
23. M/S. B.S. Sponge Pvt. Ltd.
24. M/S. Phil Ispat Pvt. Ltd.
25. M/S. Indo Sponge Power & Steel Ltd.
26. M/S. Agrawal Sponge Pvt. Ltd.
27. M/S. Vraj Metaliks Pvt. Ltd.
28. M/S. Agrawal Structure Mills (P) Ltd.
29. M/S. Gagan Resources Pvt. Ltd.
30. M/S. Mahendra Sponge & Power Ltd.
31. M/S. Sambhv Sponge Power Pvt. Ltd.
32. M/S. Rama Udyog Pvt. Ltd.
33. M/S. SKS Ispat & Power Ltd.
- And many more to name.....
34. BHILAI STEEL PLANT
34. NSPCL
34. JK LAKSHMI CEMENT LTD
34. SHREE RAIPUR CEMENT PLANT-A UNIT OF SHREE CEMENT LIMITED
34. AMBUJA CEMENTS LIMITED
34. SHREE JHARKHAND CEMENT PLANT

