

FURNACE MONITORING CAMERA

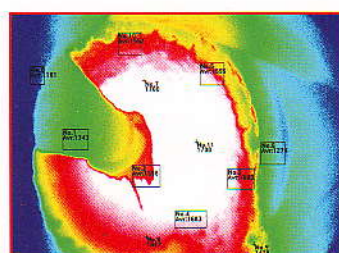
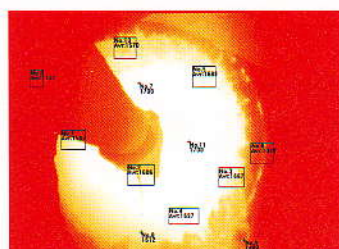


In this issue

- 2 Selection of Thermowells
- 3 Klin Shell Scanner
How to select a suitable online pyrometer.
- 4 Calibration Systems
Calibration Services
Master Sensors
Thermal Imager

Furnace monitoring cameras are being used for Cement, Steel, Glass and power plants; for viewing inside the rotating kilns, clinker coolers, melting furnaces, boiler burner furnace, etc.

To improve productivity, Quality as well as increase safety level of the labours and display superior performance in equipment and environment protection furnace monitoring systems are essential. Traditionally peep holes were provided in the furnace for this purpose, but with advent of better protections and technology available for getting this picture in the control room has provided a big advantage for the operator and the plant management.



Applications

- ◆ Cement Kiln & Cooler
- ◆ Glass Melt Tanks
- ◆ Power Generations
- ◆ Steel Reheat Furnaces

Advantages

- ◆ High Resolution over 480 TV Lines
- ◆ No Water Cooling required
- ◆ Front lens Tip Operates to 1,800°C
- ◆ Lens, Camera in one unit Vision Tube System
- ◆ Minimal Maintenance
- ◆ Easy Field Adjustments
- ◆ Spring type Auto Retract System
- ◆ One package in a Local Panel
- ◆ Compact Design

In the 1st year of introduction Orders for 9 Systems from all over India have been received

Call our Sales Representative or e-mail us at info@tempsensindia.com

Low cost portable Pyrometers

Radiation non-contact pyrometers are never been more economic than today. Now portable pyrometer can become part of the standard toolkit of every engineer.



DUAL MEASUREMENT
TCT 500

Rs. 5,000



TI 750

Rs. 7,500



TI 1000
ED and Tax extra

Rs. 10,000

Features

- ◆ Auto Hold and power off
- ◆ Fast Response Time
- ◆ Adjustable emissivity
- ◆ Compact
- ◆ Laser Pointer

SELECTION OF THERMOWELLS

Materials - The Longevity Factor

The thermowell material chosen for an installation is governed mainly by the corrosion conditions the well will face. The high polish given to all stainless wells provides maximum corrosion resistance.

Sometimes, the basic consideration is of strength rather than corrosion resistance. For example, a stainless steel well may be required for high pressure water service instead of a brass well which would be satisfactory from a corrosion point of view. Please verify the pressure-temperature ratings for each well type.

Wells are also available in special grades of stainless steel, like SS310, SS446, Inconel 800, Inconel 600, Alloy 20, Hastelloy B & C, Nickel, Titanium, and Monel. Tantalum platinum jackets are also available.

Connection - The Installation Factor

The connections for standard bore wells are threaded, flanged, or socket weld types.

All threaded wells are made in easily welded or brazed materials. This is important for installations requiring seal welding or brazing. The pipe thread provides mechanical strength, and the weld or braze provides the seal.

Fixed Flanged wells consist of a bar stock well which is solidly welded to a top quality flange. The underside weld is machined to produce a clean fillet. This double welded construction eliminates the possibility of crevice corrosion since no open joints are exposed from either inside or outside the installation.

Socket weld wells are simple to install simply weld them into place. These wells fit standard socket, weld couplings or flanges. The resulting installation is clean and tight.

Bore Size - The Interchangeability Factor

Almost any installation uses several types of temperature measuring sensors. The selection of a standard bore diameter can produce extreme flexibility within the plant. The same well can accommodate either thermocouple, resistance thermometer, bimetal thermometer, or test thermometer.

Insertion Length - The Accuracy Factor

The distance from the tip of the well to the underside of the thread or other connection is the insertion length (designated as "U"). For best accuracy, this length should be great enough to permit the entire temperature-sensitive part of the element to project into the medium being measured. A properly installed element will project into a liquid a distance equal to its sensitive length plus at least 25 mm. In air or gas, the element should be immersed its sensitive length plus at least 75 mm.

Thermocouples have short sensitive lengths. They can be used with shorter insertion length thermowells. Resistance thermometers have sensitive portions about 50 mm. Therefore, the minimum standard insertion length of 75 mm. must be entirely immersed in liquid for proper accuracy.

Above all, be sure that dead length, i.e., that required to pass through walls, pipe fittings, etc., is taken into account when choosing the necessary well insertion length.

Tapered or Straight Wells - The Velocity Rating Factor

Tapered shank wells provide greater stiffness with the same sensitivity. The higher strength-to-weight ratio gives these wells a higher natural frequency than the equivalent length straight-shank wells, thus permitting operation at higher fluid velocity.

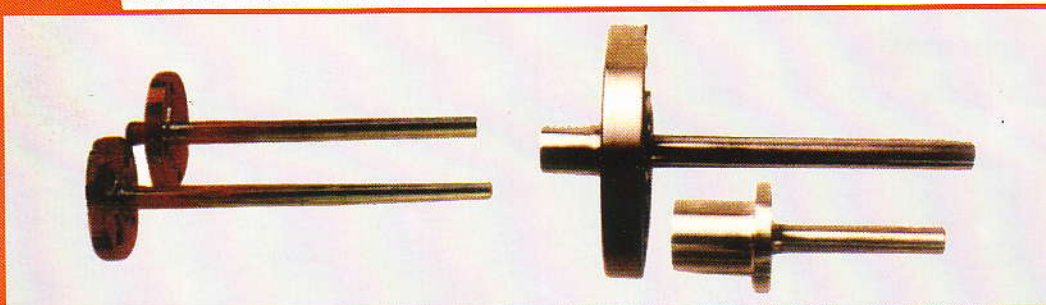
Velocity Ratings of Wells

Well failures, in many cases, are not due to the effects of pressure and temperature alone. Inadequate strength of well can be due to improper choice of wall thickness or material. Less familiar, and more dangerous, are the vibrational effects to which wells are subjected. Fluid, flowing by the well, forms a turbulent wave (called the Von Karman Trail) which has a definite frequency based on the diameter of the well and the velocity of the fluid. It is important that the well have sufficient stiffness so that the wake frequency will never equal the natural frequency of the well itself. If the natural frequency of the well were to coincide with the wake frequency, the well would vibrate to destruction and break off in the piping.

Flanged Thermowells

When ordering flanged thermowells, be sure to specify the flange fully. Use a sketch or drawing of the flange and specify Flange Material.

USE "SS" for stainless steel, "CS" for carbon steel, "FF" for flat face flanges, and "RF" for raised face flanges.



Melting Point of Some Important Metals

← 1500°C	PALLADIUM FREEZES
← 1084.620°C	COPPER FREEZES
← 1064.180°C	GOLD FREEZES
← 961.7800°C	SILVER FREEZES
← 660.3230°C	ALUMINIUM FREEZES
← 419.5270°C	ZINC FREEZES
← 231.9280°C	TIN FREEZES
← 156.5985°C	INDIUM FREEZES
← 29.76460°C	GALLIUM FREEZES
← 0.010000°C	TRIPLE POINT OF WATER
← -38.83440°C	MERCURY TRIPLE POINT



HOW TO SELECT A SUITABLE ON-LINE PYROMETER

It is been noted that, although the customer is using pyrometers for long time for their various application, the concept of pyrometry is not fully understood by the user. As a result the requirement is not clearly transmitted to the supplier leading to procurement of unwanted "Facilities" at much higher cost.

Temperature range:- Always select a suitable temperature range according to the industry.

Distance Ratio (Spot size):- According to the object size under process a pyrometer with a fixed optic can be selected. In normal on-line application a focusable optic pyrometer is only a luxury.

Emissivity Adjustment:- Emissivity plays a vital role in non-contact pyrometry. Today's digital pyrometers offer facility to select emissivity by remote communication via PC and through portable devices. Dip switches are also provided in the instrument for selection of parameters. However, exposure of parameter selection key/switches tempts the process people to tune the pyrometer according to process. Therefore IMPAC always provide the switches inside the back cover.

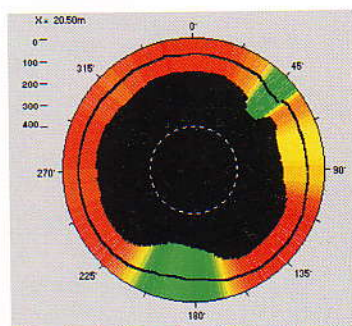
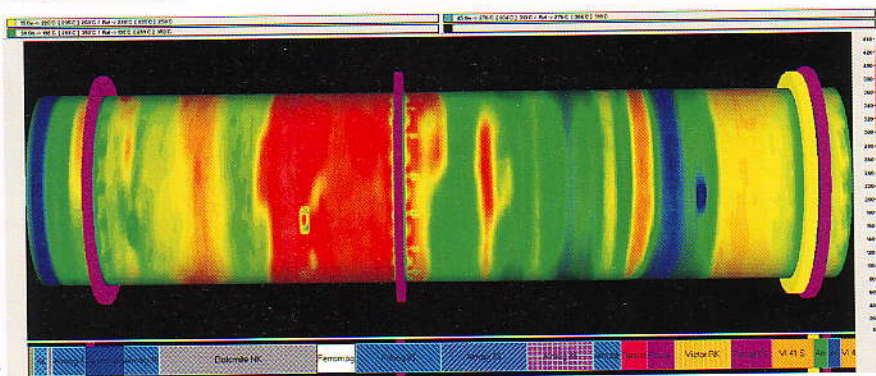
Fibre Optic:- Fibre optic pyrometers are recommended for

- ◆ High ambient temperature application
- ◆ Electro magnetic field
- ◆ Narrow space to install the pyrometer

Since the fibre optic is highly fragile, for normal application it is always wise to select a pyrometer without fibre optic.

Digital Pyrometers:- Digital pyrometers offer

- ◆ High accuracy
- ◆ Compact Size
- ◆ Very small spot size
- ◆ Selection of sub-range within the basic temperature range without a re-calibration
- ◆ No need to replace the secondary instruments
- ◆ Easy recalibration
- ◆ Reduced stock level since one pyrometer can be tuned for different temperature range
- ◆ No need of additional hardware for parameter selection, data storage. It can be hooked to a normal PC
- ◆ IMPAC offers a wide range of Digital pyrometers.



Tempsens bring to you world best Klin shell scanner for the Indian market.

The KLIN SCANNER enables control and measurement of thermal distribution. It also provides line measurement of external Klin Shell temperature profile. The equipment gives the operator numerous facilities such as

- ◆ Continuous monitoring of the condition of the refractory lining and coating
- ◆ Early detection of any abnormality, such as a brick falling from the refractory lining or loss of part coating, formation of a ring
- ◆ Klin tyre slip
- ◆ Refractory brick management
- ◆ Klin shell thermal warp

It enables the operator to optimize klin performance, increasing production and saving on refractory maintenance costs.

Advantages

- ◆ Small spot size, even a single brick failure can be detected
- ◆ High resolution
- ◆ Fibre optic data transmission
- ◆ Best available software for Klin shell, with 3D pictures etc.
- ◆ Flexibility of communication for multiple Klins
- ◆ Large installation base through out the world

Technical Specifications

Scanning rate	20 Hz
Scanning field of view	90° / 140°
Temperature measurement range	75...550°C
Spatial resolution	3.5 mrad
Thermal sensitivity	better than 0.5°C at 100°C better than 0.05°C at 300°C
Real time calibration	Using internal reference
Long term repeatability	± 5°C
Signal transmission	By fibre optic cable 12 bit digitization
Operating measurement	-25...+55°C
Power supply	230 V / 1 ph / 50 Hz, 50 W

Scope of Supply

- ◆ KLIN SCAN 21 infrared scanner head and its power supply module
- ◆ KLIN rotation contact switches
- ◆ Tyre contact switches
- ◆ Fibre optic transmission line from the scanner to control room
- ◆ One electronic receiver box
- ◆ One data acquisition and processing system (PC, SIRCIM software and colour printer)

TEMPERATURE CALIBRATION SYSTEM DRY BLOCK BATH

Highly accurate & stable

Cost effective

Manufactured & tested under
strict quality control standard

Fast & reliable

Compact

Temperature range	50°C to 650°C
Medium	Dry Block
Power Requirement	230 VAC, 1KW
Accuracy/Uncertainty	±0.5°C
Temperature resolution	1°C
Stability	±0.5°C
Method of control	PID Controller
Heating rate	15°C/Min
Time to reach peak temp.	45 Min
Cooling	Fan cooled
Insert vol./Aperture Dia	φ32X165mm long
Dimension	300x185x263mm
Wight	8 Kg
Software	Optional
Operating Temperature	0 to 45°C



CALsys650

Rs. 49,500

Portable equipments suitable for lab and on site
Adjustable inserts for different size of sensors
Fan cooled



CALsys 1100

Rs. 72,500

Portable equipments suitable for lab and on site
Adjustable inserts for different size of sensors
Fan cooled



CALsys 1200L

Rs. 92,000

Desktop model suitable for test and calibration lab.
Highly accurate Fast response Fan cooled

Temperature range	300°C to 1200°C
Medium	Dry Block
Power Requirement	230 VAC, 2KW
Accuracy/Uncertainty	±0.5°C
Temperature resolution	1°C
Stability	±0.5°C
Method of control	PID Controller
Heating rate	15°C/Min
Time to reach peak temp.	45 Min
Cooling	Fan cooled
Insert vol./Aperture Dia	φ28X165mm long
Dimension	400x600x800mm
Wight	40 Kg
Software	Optional
Operating Temperature	0 to 45°C

CALIBRATION SERVICES

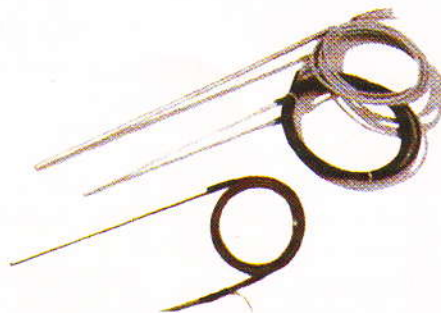


Tempsens has always tried to anticipate and accomodate customers needs in temperature measurements. To this end Tempsens has commenced new "R&D center". Temperature calibration lab has highly stable calibration furnaces, measuring instruments and accurate master sensors traceable to National and International Standards. The R & D center functions as per ISO 17025/NABL standards. Calibration of contact type sensors can be made in temp. range of -20°C to 1200°C. Calibration of non contact type sensors can be made in temperature. range of 50°C to 1500°C.

Features

- ◆ High Accuracy UKAS calibrated Master Sensors
- ◆ Wide range of calibration equipments
- ◆ Trained Staff
- ◆ Simple Temperature Calibration Software
- ◆ Computerized Automatic Calibration Report
- ◆ On site calibration

MASTER SENSORS



The master sensors could be used together with an accurate temperature source to evaluate the performance of the temperature sensors used in the process and for testing purpose.

We offer Master temperature sensor both thermocouples (R, S, N & K type) and RTDs (upto 1/5 DIN accuracy)

Prices

- ◆ Master Thermocouple "K" Type TTCK
Dia:6/8mm, Length:300/450mm
sheath:inconel-600 **Rs. 2,750**
- ◆ Master Thermocouple "S/R" Type TTCS/TTCR
Dia:8mm, Length:600mm
Sheath:KER-710 **Rs. 10,800**
- ◆ Master RTD "Pt-100", 4 Wire, Class "A" Type PRT
Dia:6mm, Length:450mm
Sheath SS316 **Rs. 3,050**
- ◆ Master RTD "Pt-100", 4 Wire, "1/3" DIN Type PRT
Dia:6mm, Length:450mm,
Sheath:SS316 **Rs. 3,550**

Master Sensors

THERMAL IMAGER



IRISYS[®] U.K.

Applications

- ◆ Predictive Maintenance
- ◆ Energy Conservation
- ◆ Process Monitoring
- ◆ Research & development
- ◆ Inspection
- ◆ Health Care

Features

- ◆ Temp. Range - 10°C to 300°C
- ◆ Low Cost
- ◆ Temp. Measurement
- ◆ Multiple Image Storage
- ◆ Light Weight
- ◆ Uncooled
- ◆ Long Wave Length
- ◆ Simple Operation
- ◆ Voice Recording
- ◆ Laser Pointer
- ◆ Microsoft Compatible
- ◆ Pocket PC Compatible
- ◆ Remote Operation



TEMPSENS

B-188, A, Road No. 5 Mewar Industrial Area,
UDAIPUR-313003 (Rajasthan) INDIA
Ph. : 0294-2492127, 28, 29 Fax : 0294-2492447
Email : info@tempsensindia.com
tempsens@pyrotechindia.com
web. : www.tempsensindia.com

We are available at your door step

Raigarh	09329026944	Mumbai	09352501350
Jamshedpur	09431182353	Hyderabad	09390919399
Delhi	09312872090	Bangalore	09844061752
Nagpur	09422116549	Visakhapatnam	09885247149
Baroda	09327157887		

Pyrotech
Group Company