

Temperature Solutions



cement industry

Thermocouples

RTDs

Compensating Cables

Non Contact Pyrometers

Kiln Shell Scanner

Kiln & Cooler Camera

Thermal Imager

Thermography Survey

NABL Calibration Service



TEMPSENS INSTRUMENTS

www.tempsens.com



THERMOCOUPLE & RTD

High accurate Thermocouples for variety of applications

THERMOCOUPLES

Type	: J, K, T, E, N, R, S	
Element size (MI)	: 1, 1.5, 3, 4.5, 6, 8 (mm)	
	for Base Metal	for Nobel Metal
	: 1.2, 1.6, 2, 2.5, 3.2 (mm)	0.4, 0.45, 0.5 (mm)
Protection sheath	: Seamless SS 316, SS 310, HRS 446, INCONEL, Nickel, Monel, Hastalloy, Titanium, Ceramic, Silicon carbide etc	
Configuration	: Simplex / Duplex / Multipoints	

SPECIAL

- Coated Thermocouples
- Thermocouples with IBR Approved Thermowells
- Drilled Bar stock



RTDs

Type	: Pt 100
Element	: Wire wound ceramic encapsulated Thin film ceramic encapsulated
Connection	: 2, 3, 4 wire
Accuracy	: Class A, B
Protection sheath	: SS 304, SS 316 Hastalloy, Monel etc.

SPECIAL

- Slide shoe RTDs
- Vibration proof RTDs for DG sets
- Bearing & Winding temperature RTDs
- Handheld & Probe in various designs
- RTDs with IBR approved Thermowells.



CABLE

Compensating cables for thermocouples J,K,T,E,N,R,S,B Types.

Wire Gauge	: 14 to 36 gauge (AWG/SWG)
Conductor	: Solid / Multistrand
Insulation	: Single and double fibre glass, teflon, ceramic fibre, silica fibre, SS braided, PVC etc.
Protection	: Armored / Unarmored



Series 14 Series 15 (Portable)

	Series 14	Series 15
Temperature Range	-32...500°C	-32....900°C
Spectral Range	8...14µm	8...14µm
Field of View	30 : 1	50:1
Data Storage	No	Yes
Sighting	Laser Targeting light	Laser Targeting light
Emissivity	20.....100%	20....100%
Out Put	RS 232	RS 232, Analog



(Series 14/15)

Application

Clinker Temperature, Motor Bearing, Electrical Panel, Kiln Shell & General Application

IS 8 plus

Temperature Range	600.....1600°C
Spectral Range	0.6.....1.1µm
Field of View	300 : 1
Sighting	View finder
Emissivity	20....100%



Application

Kiln Burning Zone

IN 510/520

Temperature Range	-40.....700
Spectral Range	8.....14µm
Field of View	10 : 1 / 2 : 1
Emissivity	10.....100%
Out Put	0/4.....20mA,0.....5V, RS 232 / 485



(IN 510/520)

Application

Clinker Temperature, Kiln Shell & General Application

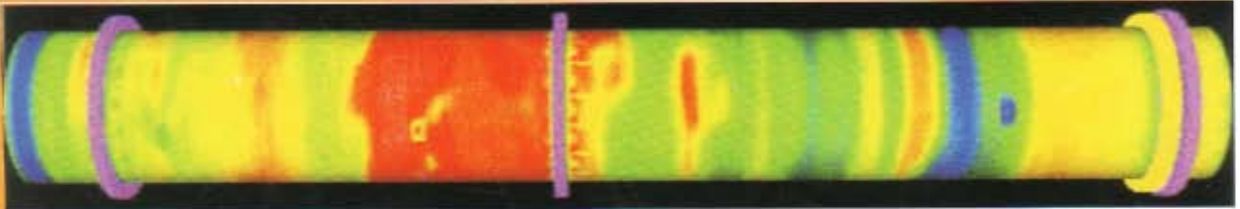
ISQ 5 (Two Color)

Temperature Range	800....2500°C / 600.....1400°C
Spectral Range	Channel 1 : 0.70....1.15µm, Channel 2 : 0.97....1.15µm
Field of View	200 : 1
Sighting	Laser Targeting Light, View Finder, T.V. Camera (Option)
Emissivity Slope	0.800.....1.250
Output	0/4.....20mA, RS 232/485



Application

Kiln Burning Zone, Kiln inlet & Secondary Air



Kilnscan is an infrared line scanner system purposely designed for rotary kiln applications to detect even single brick fall. The package enables accurate non contact kiln shell temperature monitoring, brick lining and coating thickness evaluation, tyre slip and thermal warp calculation.

Technical

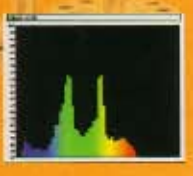
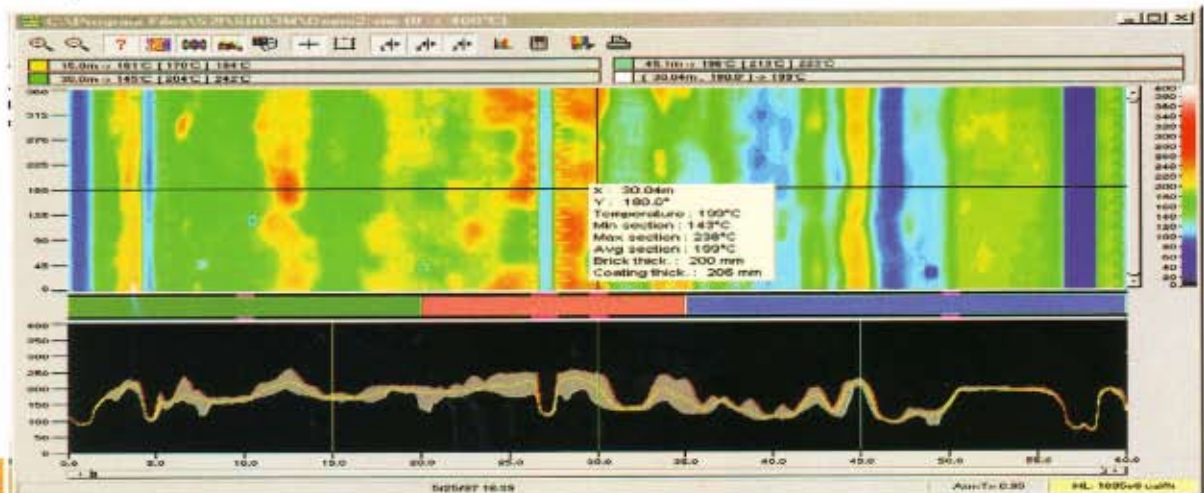
	KLIN SCAN 21	KLIN SCAN 17
Scanning Rate	20 Hz	20 Hz
Scanning Angle	90 Deg (140 Deg Option)	90 Deg (140 Deg Option)
Infrared Detector	MCT	MCT
Thermal Range	75 to 550 Deg C	100 to 550 Deg C
Thermal Resolution	0.5 at 100 Deg C 0.05 at 300 Deg C	0.5 at 300 Deg C 0.05 at 600 Deg C
Spatial Resolution	0.9 mrad at 50% of modulation 2.0 mrad at 90% of modulation	2.0 mrad at 50% of modulation 5.0 mrad at 90% of modulation
Accuracy	$+(2+1%*T) ^\circ\text{C}$	$+(2+1%*T) ^\circ\text{C}$
Data Communication	Through Optical Fiber	Through Optical Fiber
Points Per Scan	1250 at 90 Deg 1945 at 140 Deg	1250 at 90Deg 1945 at 140 Deg
Power Supply	220/110 VAC	220/110 VAC
Enclosure	IP 65	IP 65

Software

	KLIN SCAN 21	KLIN SCAN 17
Thermal Profile	Max., Average, Min. Thermal Envelop profile	Max., Average, Min. Thermal Envelop profile
3D View	3D view of kiln with thermal profile	3D Relief view of thermal profile
No of alarms	20	20
History	Yes	Yes
Tyre Slip Monitoring	Yes	Yes
Brick Lining	Yes	Yes
Zoom Image, Zoom Profile	Yes	Yes

Optional :

Thermal Warp, Refractory Management, Coating thickness, Brick thickness, Polar view, Atmospheric absorption correction



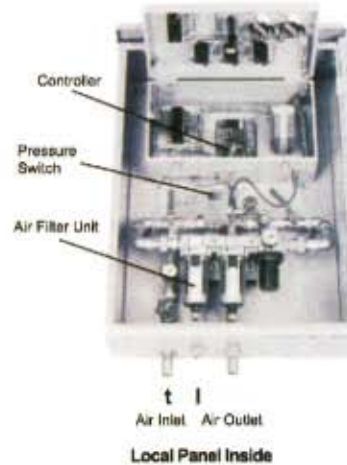


STRAIGHT VIEW (RNV-103, 203)

To monitor inside high temperature Kiln, Cooler and furnaces. The equipment has inbuilt safety devices for retraction on low pressure, power failure, hood draft, high temperature etc.

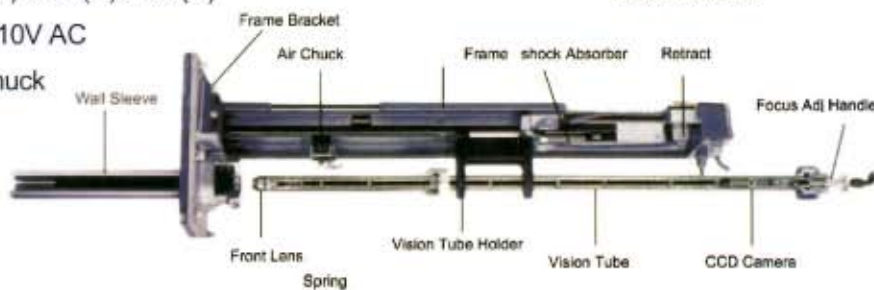
VISION TUBE

Image Sensor	1 /4" interline transfer CCD
H. Resolution	More than 480 TV Lines
Video Output	Composite Video 1 V P-P / PAL
Angle of View	Horizontal :89°,Vertical:68 ,Digonal:105°
Length	VT-1180:1180mm/VT 980:980mm
Wall Sleeve Length	350/500/900 (mm)
Wall Sleeve Diameter	OD : 58mm ID : 42mm



RETRACT CONTROLLER

Size(mm)	440(W) x225(H)x 160(D)
Power Source for	220/110V AC
Locking Device	Air Chuck



THERMAL VIEW (RNV-503)

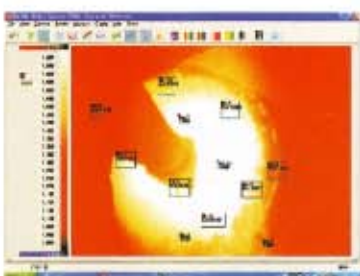
With the NIR camera and computer system. This product features an average atmosphere temperature display within any 32-point areas, and date recording/control function in addition to viewing the furnace interior. Each area is adjustable.

VISION TUBE

Image Sensor	1 /2" interline transfer CCD
Resolution	More than 600 TV Lines
Current Consumption	Max.200mA
Angle of View	Horizontal:89°- Vertical:68°.Digonal: 107°
Length	VT-1100:1100mm

TEMPERATURE MEASUREMENT SYSTEM

CPU	Pentium IV 2.4 GHz
Hard Disk	100GB
RAM	512MB
Monitor	17"
OS	Windows 2000 or XP
Power Source	220/110 V AC
Temperature Range	600 ~ 2000 °C
Measurement Frequency	Min. 1 Sec.
No. of Measurement Place	Max. of 32 places
Measurement Errors	±1% (Standard : black body)
Temperature Display	Celsius or Fahrenheit
Optional	8 Nos. 4-20 mA output



THERMAL IMAGERS & THERMOGRAPHY SERVICES

Affordable portable thermal imagers for predictive and preventive maintenance Thermal Imaging is a technique for creating an image of scene based on the invisible thermal radiation emitted from an object. Using this technology, thermal images of faults in mechanical and electrical application can be easily located, before occurrence.

THERMAL IMAGERS - For Predictive Preventive Maintenance

Specification	Model IRI 4010	Model IRI 4030
Temp. Range	-10°C to + 250°C	200°C to + 900°C
Field of View	20° x 15°	20° x 15°
Focus	Manual	Manual
Thermal Sensitivity	150mK @ 25° C	150mK @ 25° C
Detector	160 x 120 pixels	160 x 120 pixels
Image Storage	Up to 1000 Images	Up to 1000 Images
Display	3½" colour LCD 4 colour palettes	3½" colour LCD 4 colour palettes
Emissivity	0.2 to 1.0 adjustable	0.2 to 1.0 adjustable
Accuracy	±2% of reading or ± 2°C	±2% of reading or ± 2°C
Interfaces	USB type B	USB type B



THERMOGRAPHY SERVICES

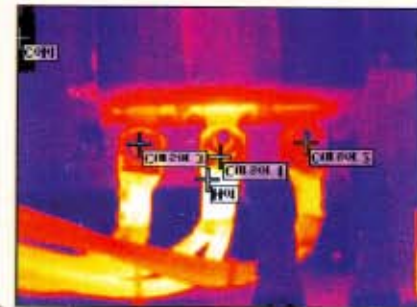
We provide thermography services for various industries. Thermography enables to monitor the thermal efficiency of critical process systems that rely on heat transfer of retention.

This is one of the most powerful, fast and one of the most cost-effective condition monitoring technique that has wide application in any industry in detecting incipient faults, which if left unattended, would not only lead to loss of productivity and quality but also increase operations and maintenance cost.

THERMOGRAPHY REPORT

MAIN LOCATION	: Cooler MCC Room
Report No.	: 15
Location	: L1M 110 (Back Side) Down(Chock)
Equipment	: VVVF Panel
Date	: 02/7/07

Temp	13.9 °C
Temp DB	18.2 °C (94°C)
COP	14.2 °C (67.4°F)
W	28.8 °C (83.8°F)
Temp DB	27.8 °C (82°C)
CIR 200 1	28.0 °C (82.4°F)
CIR 200 2	28.0 °C (82.4°F)
CIR 200 3	28.0 °C (82.4°F)
CIR 200 4	28.0 °C (82.4°F)
CIR 200 5	28.0 °C (82.4°F)
CIR 200 6	28.0 °C (82.4°F)
CIR 200 7	28.0 °C (82.4°F)
CIR 200 8	28.0 °C (82.4°F)
CIR 200 9	28.0 °C (82.4°F)
CIR 200 10	28.0 °C (82.4°F)
CIR 200 11	28.0 °C (82.4°F)
CIR 200 12	28.0 °C (82.4°F)
CIR 200 13	28.0 °C (82.4°F)
CIR 200 14	28.0 °C (82.4°F)
CIR 200 15	28.0 °C (82.4°F)
CIR 200 16	28.0 °C (82.4°F)
CIR 200 17	28.0 °C (82.4°F)
CIR 200 18	28.0 °C (82.4°F)
CIR 200 19	28.0 °C (82.4°F)
CIR 200 20	28.0 °C (82.4°F)
CIR 200 21	28.0 °C (82.4°F)
CIR 200 22	28.0 °C (82.4°F)
CIR 200 23	28.0 °C (82.4°F)
CIR 200 24	28.0 °C (82.4°F)
CIR 200 25	28.0 °C (82.4°F)
CIR 200 26	28.0 °C (82.4°F)
CIR 200 27	28.0 °C (82.4°F)
CIR 200 28	28.0 °C (82.4°F)
CIR 200 29	28.0 °C (82.4°F)
CIR 200 30	28.0 °C (82.4°F)
CIR 200 31	28.0 °C (82.4°F)
CIR 200 32	28.0 °C (82.4°F)
CIR 200 33	28.0 °C (82.4°F)
CIR 200 34	28.0 °C (82.4°F)
CIR 200 35	28.0 °C (82.4°F)
CIR 200 36	28.0 °C (82.4°F)
CIR 200 37	28.0 °C (82.4°F)
CIR 200 38	28.0 °C (82.4°F)
CIR 200 39	28.0 °C (82.4°F)
CIR 200 40	28.0 °C (82.4°F)
CIR 200 41	28.0 °C (82.4°F)
CIR 200 42	28.0 °C (82.4°F)
CIR 200 43	28.0 °C (82.4°F)
CIR 200 44	28.0 °C (82.4°F)
CIR 200 45	28.0 °C (82.4°F)
CIR 200 46	28.0 °C (82.4°F)
CIR 200 47	28.0 °C (82.4°F)
CIR 200 48	28.0 °C (82.4°F)
CIR 200 49	28.0 °C (82.4°F)
CIR 200 50	28.0 °C (82.4°F)
CIR 200 51	28.0 °C (82.4°F)
CIR 200 52	28.0 °C (82.4°F)
CIR 200 53	28.0 °C (82.4°F)
CIR 200 54	28.0 °C (82.4°F)
CIR 200 55	28.0 °C (82.4°F)
CIR 200 56	28.0 °C (82.4°F)
CIR 200 57	28.0 °C (82.4°F)
CIR 200 58	28.0 °C (82.4°F)
CIR 200 59	28.0 °C (82.4°F)
CIR 200 60	28.0 °C (82.4°F)
CIR 200 61	28.0 °C (82.4°F)
CIR 200 62	28.0 °C (82.4°F)
CIR 200 63	28.0 °C (82.4°F)
CIR 200 64	28.0 °C (82.4°F)
CIR 200 65	28.0 °C (82.4°F)
CIR 200 66	28.0 °C (82.4°F)
CIR 200 67	28.0 °C (82.4°F)
CIR 200 68	28.0 °C (82.4°F)
CIR 200 69	28.0 °C (82.4°F)
CIR 200 70	28.0 °C (82.4°F)
CIR 200 71	28.0 °C (82.4°F)
CIR 200 72	28.0 °C (82.4°F)
CIR 200 73	28.0 °C (82.4°F)
CIR 200 74	28.0 °C (82.4°F)
CIR 200 75	28.0 °C (82.4°F)
CIR 200 76	28.0 °C (82.4°F)
CIR 200 77	28.0 °C (82.4°F)
CIR 200 78	28.0 °C (82.4°F)
CIR 200 79	28.0 °C (82.4°F)
CIR 200 80	28.0 °C (82.4°F)
CIR 200 81	28.0 °C (82.4°F)
CIR 200 82	28.0 °C (82.4°F)
CIR 200 83	28.0 °C (82.4°F)
CIR 200 84	28.0 °C (82.4°F)
CIR 200 85	28.0 °C (82.4°F)
CIR 200 86	28.0 °C (82.4°F)
CIR 200 87	28.0 °C (82.4°F)
CIR 200 88	28.0 °C (82.4°F)
CIR 200 89	28.0 °C (82.4°F)
CIR 200 90	28.0 °C (82.4°F)
CIR 200 91	28.0 °C (82.4°F)
CIR 200 92	28.0 °C (82.4°F)
CIR 200 93	28.0 °C (82.4°F)
CIR 200 94	28.0 °C (82.4°F)
CIR 200 95	28.0 °C (82.4°F)
CIR 200 96	28.0 °C (82.4°F)
CIR 200 97	28.0 °C (82.4°F)
CIR 200 98	28.0 °C (82.4°F)
CIR 200 99	28.0 °C (82.4°F)
CIR 200 100	28.0 °C (82.4°F)



Basic Observation :

Temperature found Normal. Temperature of Y phase is slightly higher.

Analysis & Recommendation :

At Present condition is normal. However the Y phase may develop a problem at later stage. Check Condition within one month.

Feedback :

Thermography Analysis by : AM/AG

Client Representative : AY

HIGHLY STABLE TEMPERATURE CALIBRATION BATH -40 ... 1500°C

Model	Range	Stability
CALsys -40	-40 ... +50°C	±0.1°C
CALsys 100	Amb ... +100°C	±0.1°C
CALsys 300	50 ... +250°C	±0.1°C
CALsys 650	50 ... +650°C	±0.3°C
CALsys 1100	250 ... +1100°C	±0.5°C
CALsys 1200	300 ... +1200°C	±0.5°C
CALsys 1500	400 ... +1500°C	±1°C



BLACK BODY SOURCES

CALsys 500 BB	Amb ... +500°C	±0.5°C
CALsys 1200 BB	400 ... +1200°C	±1°C
CALsys 1500 BB	400 ... +1500°C	±1°C



HIGHLY ACCURATE MASTER SENSORS

RTD - Pt 100

Accuracy	: 1/5, 1/3, 1/2 DIN, Class A
Sheath Material	: SS 316/ Inconel / Glass
Thermocouple	: K/N/R/S
Accuracy	: Special, Class 1 with Cold junction compensation
Sheath Material	: Inconel / Ceramic (KER 710-C 799)
Cold Junction Probe	: J/ K/ E/ N/ R/ S/ B for Thermocouple Type
Dual Probe Possible in one Housing	



NABL CALIBRATION SERVICE

Permanent Facility

S.#	Parameter Measured	Range	B.M.C.
1	Contact type temp sensors	-38 ... 250 °C	0.1°C
	Thermocouples, RTDs,	250 ... 500 °C	0.14°C
	Digital Temp. Indicator,	500 ... 1000 °C	1.3°C
	Thermometers	1000 ... 1200 °C	2.1°C
		1200 ... 1500 °C	4.2°C
2	Non-contact Infrared pyrometers	50 ... 250°C	0.4°C
		250 ... 400°C	0.9°C
		400 ... 500°C	2.6°C
		500...800°C	2.7°C
		800...1000°C	3.2°C
		1000...1200°C	4.0°C
		1200...1500°C	5.8°C

Onsite Facility

S.#	Parameter Measured	Range	B.M.C.
1	Contact type temp sensors	-25 ... 140 °C	0.11°C
	Thermocouples, RTDs,	140 ... 500 °C	0.14°C
	Digital Temp. Indicator,	500 ... 1000 °C	1.17°C
	Thermometers	1000 ... 1200 °C	2.2°C
2	Non-contact Infrared pyrometers	50 ... 250°C	0.6°C
		250 ... 400°C	1.0°C
		400 ... 500°C	2.4°C
		500...800°C	2.7°C
		800...1000°C	3.2°C
		1000...1200°C	4.0°C



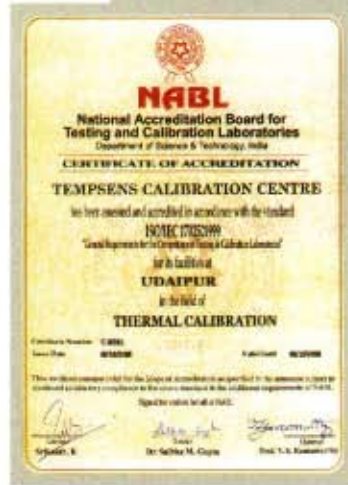
Always one step ahead....Committed to success

TEMPSENS Instruments (I) Pvt. Ltd is a part of Pyrotech group which was established by four technocrats in 1976 at Udaipur, with our first product as Thermocouples and RTDs. We have focused ourselves for the supply of high quality Temperature sensors, related products accessories; services built to specific customer needs.

We have tied up with world leaders in Temperature measuring technology for critical components, Non contact Temperature measurement and Thermal imaging solutions. We add value to these products and deliver complete engineered solutions, backed by efficient service and application support.

Today we have strong sales and service network operating from important locations of India. Continuing our constant endeavor of delivering solutions for temperature technology to our large base of over two thousand satisfied customers.

- ♦ 32 years of experience
- ♦ Large customer base
- ♦ Executed Major Projects of Cement Industries in India and Abroad
- ♦ Production Expertise - Specialised Team & Facility for Cement Thermocouples, Pyrometers, Kiln Shell Scanner & Kiln/Cooler Camera.
- ♦ NABL Accredited Calibration Laboratory up to 1500°C
- ♦ Fixed Point Temperature Calibration.



TOTAL SOLUTION TO TEMPERATURE SENSOR TECHNOLOGY

OUR ASSOCIATES



TEMPSENS INSTRUMENTS (I) PVT. LTD.
 B-188 A, Road No.5, Mewar Industrial Area,
 UDAIPUR-313003 (Rajasthan) INDIA
 Ph. : +91-294-2492127, 28, 29 Fax : +91-294-2492447
 Email : info@tempsensindia.com
 Web. : www.tempsens.com

Our Offices

- Baroda : 09327157887
- Delhi : 09312872090
- Raipur : 09329026944
- Hyderabad : 09390919399
- Bangalore : 09844061752
- Jamshedpur : 09431182353
- Mumbai : 09322676597
- Chennai : 09382990001
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- Visakhapatnam : 09440801797