CALIBATION FACILITIES

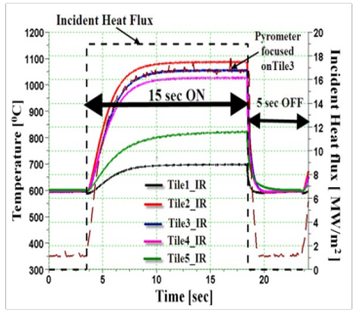
M390 Cavity Black body:
Range:500- 3000°C,
Accuracy: ±0.25% of reading ±1°C
Stability: ±1°C
Uniformity: ± 0.1°C

Pagasus Plus 1200 thermocouple calibrator:
Range: 150- 1200°C,
Stability-±0.05 – 0.2°C

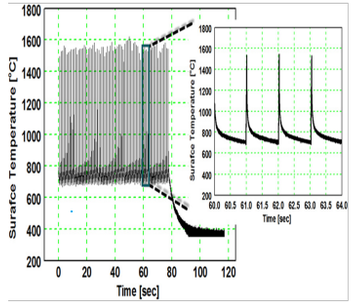
Features of High Heat Flux Dignostic systems

- Real time data monitoring
- Active Feedback to heat flux test for control and safety purpose
- Sampling rate can be adjusted as per type of experiment
- High Accuracy & repeatability of measured data
- Data can be available in .xls, .csv formats for post processing

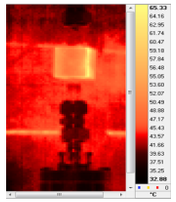
High Heat flux Measurment Data

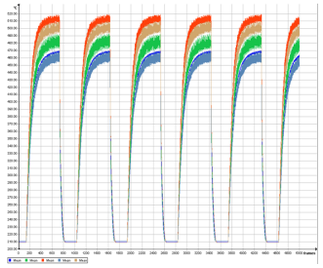


Steady state Heat Flux Measurement data

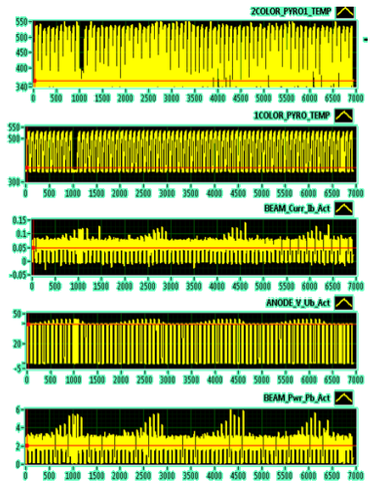


Transient Heat Flux Measurement data





IR Image of Mock up and Tools
Temepratures showing Unifirm Heat flux



steady state 100 cycles Measured data

CONTACT

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DIGNOSTICS OF HIGH HEAT FLUX TEST FACILITY

High Temperature Technologies Division

Institute for Plasma Reserach
Bhat, Gandhinagar, Gujarat,
India-382428
www.ipr.res.in

HHF TEST PARAMETERS TO BE DIAGNOSED

- Specimen spot surface temperature
- Specimen Bulk Temperature
- Surface temperature Area profiles
- Monitoring of the test object state
- Total absorbed Heat Flux
- Input and Output Coolant temperatures
- Coolant Flow rates
- Critical Heat flux
- Current collected by specimen
- Localized X-ray dose
- Heat Load Pulse duration and Pulse time
- Number of Heatload cycles

DIAGNOSTICS DEVICE SPECIFICATIONS

Thermocouples:
k type ungrounded (0ºC - 1200ºC),
1 mm diameter,

One color pyrometer KLEIBER KMGA 740 LO:
Temp Range:350ºC- 3500ºC,
sampling rate:10µsec
Spectral range: 2.0 ...2.5 µm

IMPAC Two color pyrometer IGAR12-LO (MB13) :
Temp. Range:350ºC-1000ºC
Sampling rate:2 millisec
Spectral range:1.52 µm /1.64 µm

IMPAC Two color pyrometer ISR12 -LO (MB33) :
Temp. Range:1000ºC-3000ºC,
Sampling rate:2 millisec
Spectral range: 0.8 µm /1.05 µm

FLIR SC 5200 IR camera:
Temp Range: RT- 1500ºC, 2 – 1000 Fps,
Framerate:320x 256/160 x 128 / 64 x 8 pixels
Temperature measurement accuracy: ±1 ◦C or ±1%

FLIR SC 5200MB IR camera:
Temp Range: RT -500, 1000-3000°C,2 – 1000 Fps,
Frame Size:320x 256/160 x 128/64 x 8 pixels
Temperature measurement accuracy: ±1 ◦C or ±1%

Coolant calorimetry:
Fast Response RTD Pt 100,
4 mm diameter, 3 - Wire
Response less than 1 sec

Mass Analyzer:
Residual Gas Analyzer up to 300AMU

Photron High Speed Imagining camera (upcoming):
Monochrome CMOS sensor
1,280 x 1,024 pixels @ 2,000 fps
640 x 240 pixels @ 10,000fps
12-bit Dynamic Range

Acoustics sensors for CHF detection (upcoming)
Frequency Bandwidth: 5Hz to 300KHz

Portalok 7s Ultrasonic flow meter:
Range:0.01…25 m/s
Repeatability0.25% of reading +/- 0.02 m/s

BIDIRECTIONAL CURRENT TRANSDUCER SERIES S273:
VOLTAGE SIGNAL: 0 to ±5Vdc FS (Full Scale),
ACCURACY: 1% FS

Safety Devices: X-ray Dosimeter,
X-ray Area Monitor
Accuracy: nSv/h