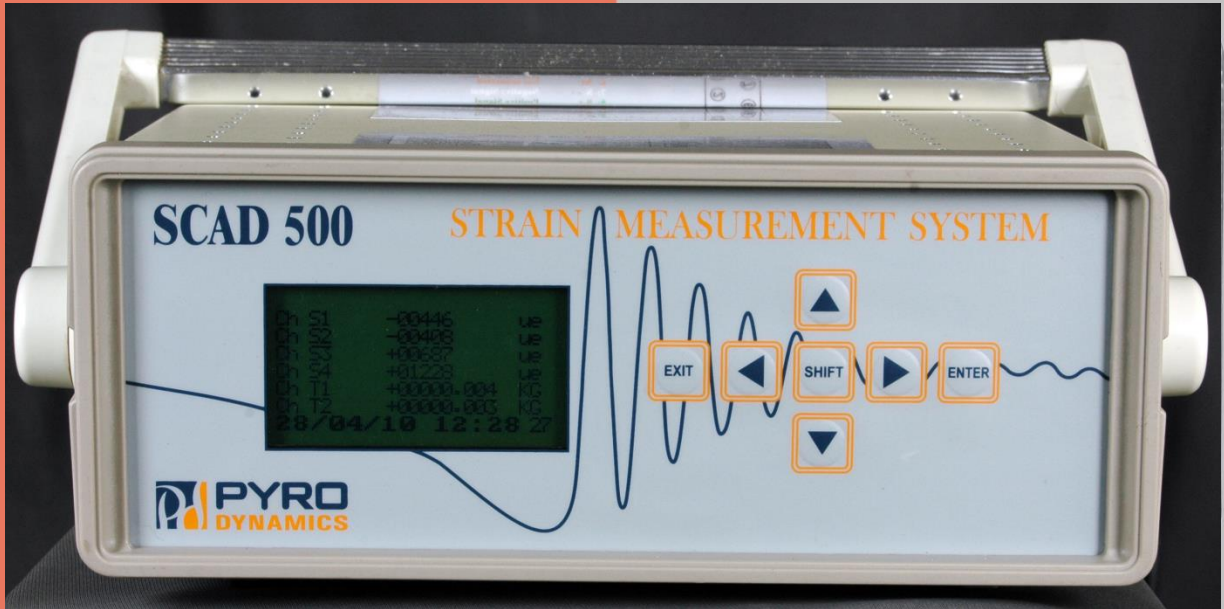
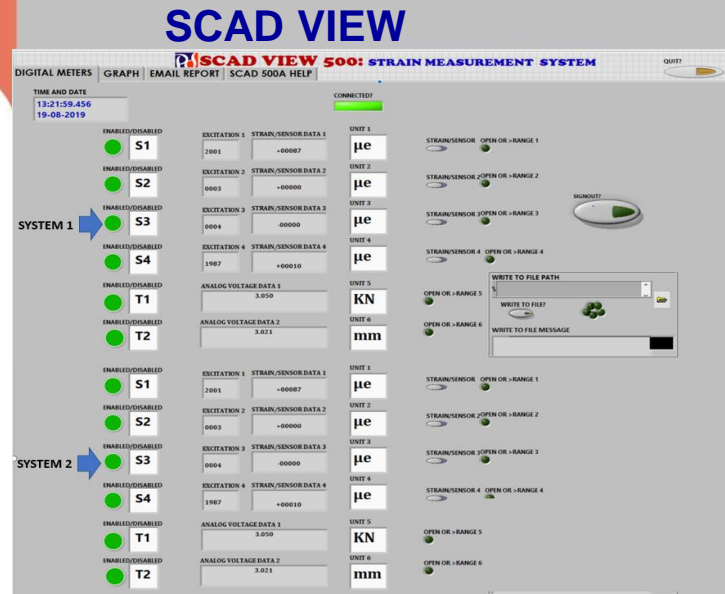


# SCAD 500

## STRAIN MEASUREMENT SYSTEM



- Four Strain Gage Inputs.
- Two Analog Inputs.
- Features the Latest Digital Circuitry.
- Fully Programmable.
- Online Display of Data in ASCII format.
- Selectable Excitation Voltage.
- Selectable Gain
- Auto Zero.
- USB 2.0 Interface.
- SCAD VIEW Software for Data Logging.
- Auto Report Generation and Email.
- Remote Display of Data using Wireless Protocol.
- Portable and Light Weight.



SCAD 500 is a 6 Channel Strain Measurement System designed for Static and Dynamic Strain Measurements.

SCAD 500 accepts 4 strain gage inputs (any combination of 120 Ohms, 350 Ohms or 1000 Ohms quarter, half or full bridge configurations) and 2 Analog inputs.

SCAD 500 uses a 128\*64-pixel Graphics LCD display

On Line Data is displayed in ASCII Format of all 6 channels simultaneously.

Two high level analog inputs are provided for interface from amplified sensors and the raw voltage can be converted into user defined engineering units via the Mx + B scaling option.

All the parameters – Excitation Voltage, Gage Factor, Bridge Factor, Engineering Units, Auto Zero, Shunt Calibration is set via the menu setting.

There are no manual switch selection or jumpers or potentiometers to be set.

All the menu settings and the Bridge Balance is stored in a built in NVRAM.

Menu settings can be password protected.

## FEATURES

- ❖ 6 Channel System – Four Strain Gage Inputs and Two Analog Inputs.
- ❖ Accepts Quarter Bridge, Half Bridge and Full Bridge Strain Gage Configurations.
- ❖ System has built in circuitry for 120 Ohms, 350 Ohms and 1000 Ohms, Quarter and Half Bridge Strain Gage Configurations.
- ❖ Simultaneous Display of all 6 Channels in Microstrain or User Defined Engineering Units.
- ❖ Selectable Display of Channels.
- ❖ Auto Zero.
- ❖ Gage Factor Setting from 0 .1 to 99 ( 3 Decimal Digits)
- ❖ Excitation Voltage:- Selectable from 0 to 10 VDC in steps of 10 mV.
- ❖ Full Scale Range:- 10,000  $\mu\epsilon$ ; 25,000  $\mu\epsilon$  ; 50,000  $\mu\epsilon$  and 1,00,000  $\mu\epsilon$ .
- ❖ +/- 10VDC - Analog Output for Strain Gage input Channels .
- ❖ USB 2.0 Interface.
- ❖ The data can be parallely viewed via wireless protocol on mobile devices with Android/iOS Application.

# DISPLAY MENU'S

## EXCITATION VOLTAGE

Selectable from 0.5 to 10 VDC  
in steps of 10 mV

Ex A 02000 mv  
Ex B 02000 mv  
Ex C 02000 mv  
Ex D 02000 mv

## GAGE FACTOR SETTINGS

0.100 to 99 (to 3 decimal digits)

GF A 2.000  
GF B 2.010  
GF C 2.020  
GF D 2.030

## BRIDGE FACTOR

BF A QUARTER 1  
BF B HALF 1  
BF C FULL 1  
BF D HALF 1.33

## AUTO ZERO

Ch A + 00087  $\mu\epsilon$   
Ch B + 00000  $\mu\epsilon$   
Ch C + 00000  $\mu\epsilon$   
Ch D - 00010  $\mu\epsilon$   
Ch E + 3.050 KN  
Ch F + 3.021 mm

## DATA

Ch A - 04576  $\mu\epsilon$   
Ch B + 00304  $\mu\epsilon$   
Ch C + 00006  $\mu\epsilon$   
Ch D - 00325  $\mu\epsilon$   
Ch E - 199.57 mm  
Ch F - 00005 kgs



# SCAD VIEW Software

**SCAD VIEW 500: STRAIN MEASUREMENT SYSTEM**

DIGITAL METERS GRAPH EMAIL REPORT SCAD 500A HELP

QUIT?

TIME AND DATE

13:21:59.456  
19-08-2019

CONNECTED?



ENABLED/DISABLED



S1

EXCITATION 1 STRAIN/SENSOR DATA 1

2001

+00087

UNIT 1

$\mu\epsilon$

STRAIN/SENSOR OPEN OR > RANGE 1



ENABLED/DISABLED



S2

EXCITATION 2 STRAIN/SENSOR DATA 2

0003

+00000

UNIT 2

$\mu\epsilon$

STRAIN/SENSOR 2 OPEN OR > RANGE 2



ENABLED/DISABLED



S3

EXCITATION 3 STRAIN/SENSOR DATA 3

0004

-00000

UNIT 3

$\mu\epsilon$

STRAIN/SENSOR 3 OPEN OR > RANGE 3



SIGNOUT?



ENABLED/DISABLED



S4

EXCITATION 4 STRAIN/SENSOR DATA 4

1987

+00010

UNIT 4

$\mu\epsilon$

STRAIN/SENSOR 4 OPEN OR > RANGE 4



ENABLED/DISABLED



T1

ANALOG VOLTAGE DATA 1

3.050

UNIT 5

KN

OPEN OR > RANGE 5



ENABLED/DISABLED



T2

ANALOG VOLTAGE DATA 2

3.021

UNIT 6

mm

OPEN OR > RANGE 6



WRITE TO FILE PATH

%

WRITE TO FILE?

WRITE TO FILE MESSAGE

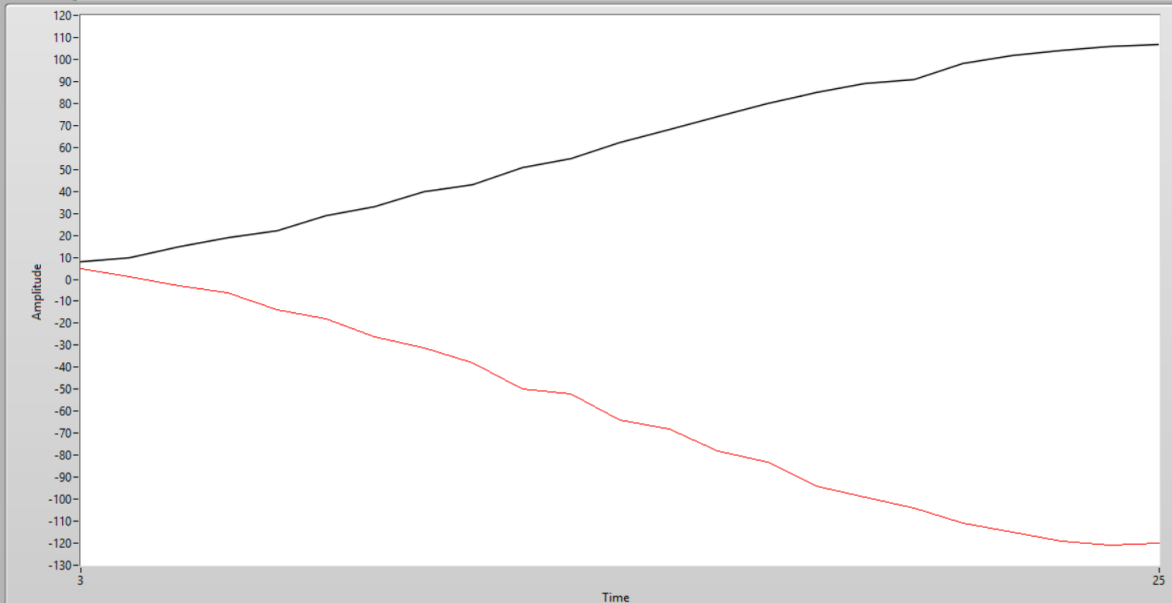
**SCADVIEW 500: STRAIN MEASUREMENT SYSTEM**

QUIT?

DIGITAL METERS GRAPH EMAIL REPORT SCAD 500A HELP



STACKED GRAPH INDIVIDUAL GRAPHS



PILOT ON/OFF

S1	<input checked="" type="checkbox"/>
S2	<input type="checkbox"/>
S3	<input type="checkbox"/>
S4	<input checked="" type="checkbox"/>
T1	<input type="checkbox"/>
T2	<input type="checkbox"/>

PAUSE?



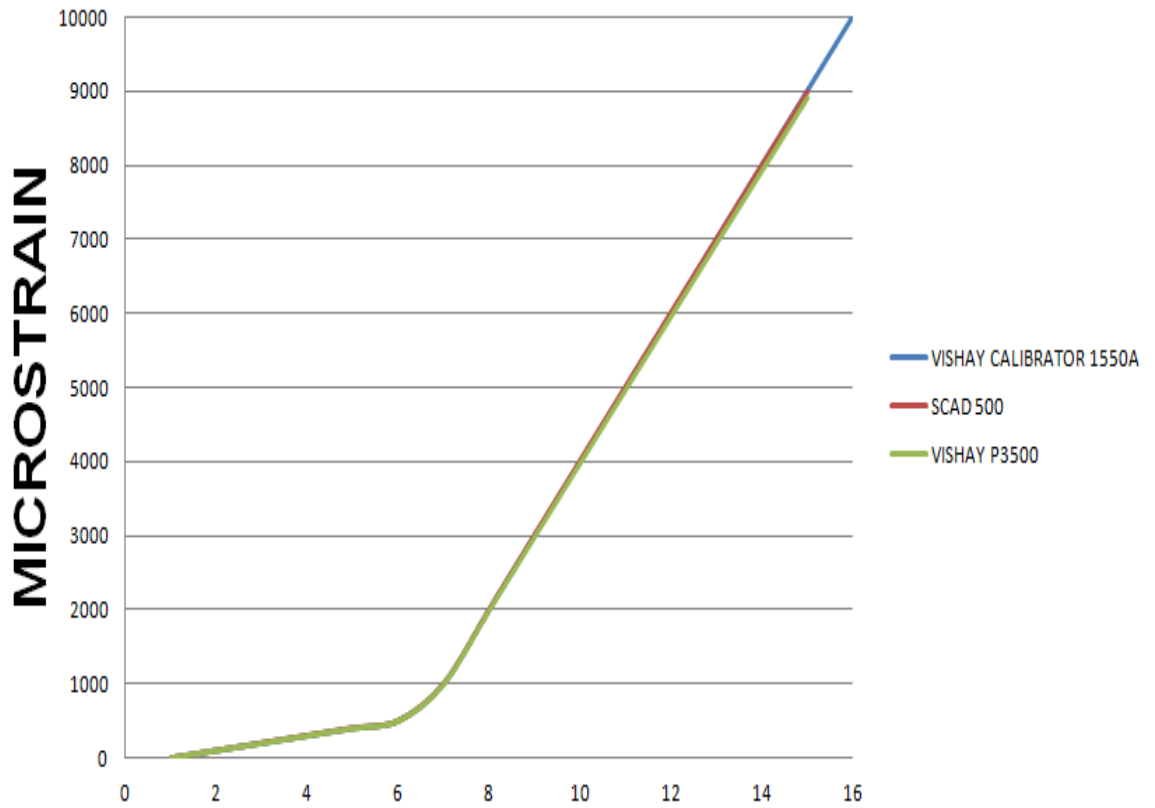
## Features:-

- Auto Detection of SCAD 500 Hardware.
- Communication Failure Alert.
- System Settings are Password Protected.
- Display of all 6 channels in Engineering Units in Digital Meters.
- Data Logging in ASCII Format.
- Indication of Over Range.
- Indication of Shorting of Excitation Voltage Cable.
- Display of Data in Graphical Format.
- Report Generation and Transmission via email.
- Display of Data in a Remote Device (Mobile Phone / Tablet PC) Via Wireless Link.

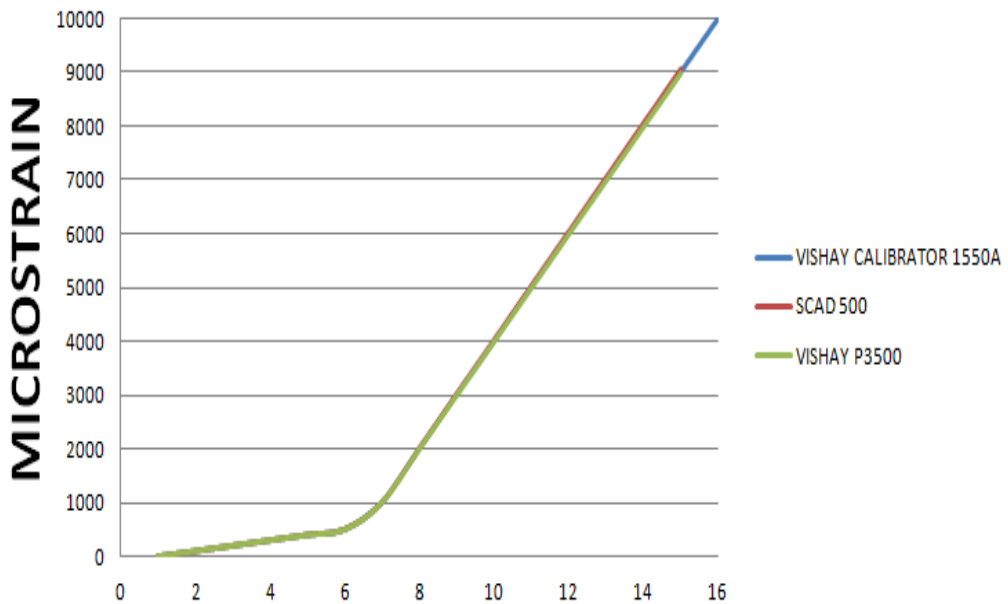
# SPECIFICATIONS

<b>EXCITATION VOLTAGE</b>	Selectable from 0.5 to 10VDC in steps of 10mV. Excitation Voltage could be different for different channels.
<b>INPUT CHANNELS</b>	- 4 Strain Gage Input Channels. – Marked S1 to S4 - 2 Transducer Inputs. – Marked T1 & T2  Input Range : +/- 10 VDC. Power Supply for the sensor : +/- 15VDC.
<b>BRIDGE CONFIGURATIONS</b>	Quarter Bridge, Half Bridge or Full Bridge for 120 Ohms, 350 Ohms and 1000 Ohms Strain Gages.  The system incorporates internal bridge completion circuitry for 120 Ohms, 350 Ohms and 1000 Ohms Strain Gages.
<b>DISPLAY</b>	128x64 Pixel Graphics LCD .  Simultaneous Display of all 6 channels in Microstrains or user Defined engineering units and Current Date and Time.  The data can be parallely viewed via wireless protocol on mobile devices with Android/iOS Application.
<b>ENGINEERING UNITS</b>	Each Channel can be set for user defined engineering units via the Mx+B scaling format.
<b>DISPLAY UPDATE RATE</b>	1 sample per second per channel
<b>GAGE FACTOR SETTINGS</b>	0.1-99 ; Resolution – 0.001
<b>BRIDGE FACTOR SETTING</b>	1(Quarter Bridge), 2 (Half Bridge) or 4 (Full Bridge) or user defined.
<b>BRIDGE BALANCE</b>	Independent Zeroing for each channel or Simultaneous Zeroing of all the channels. Bridge Balance Setting are stored in a built in NVRAM.
<b>FULL SCALE STRAIN OUTPUT</b>	Selectable: – 10,000 $\mu\epsilon$ , 25,000 $\mu\epsilon$ , 50,000 $\mu\epsilon$ and 1,00,000 $\mu\epsilon$ .
<b>RESOLUTION OF THE LCD DISPLAY</b>	1 $\mu\epsilon$ for a Range of 10,000 $\mu\epsilon$ .
<b>FULL SCALE ANALOG OUTPUT</b>	+/- 10 VDC
<b>STRAIN GAGE TRANSDUCER INPUTS</b>	Full Bridge Strain Gage Based Transducers +/- 50 mv/V in increment of 0.05 mv/V
<b>AMPLIFIED TRANSDUCER INPUTS</b>	SCAD 500 system has 2 amplified analog inputs – T1 and T2 to log in output from the Load and Displacement Transducer from the UTM or any amplified signal.
<b>DYNAMIC RESPONSE</b>	DC to 50 kHz (Flat). System has a 40 Hz Low Pass Filter . Frequency response rolls off from 50 kHz to 150 kHz.
<b>CALIBRATION</b>	Shunt calibration across the 1000 Ohms passive arm to simulate 5000 $\mu\epsilon$ .
<b>INPUT POWER</b>	+/- 15VDC & +5VDC . 110 – 230 VAC , 50 /60 Hz Adapter supplied with the system.
<b>DIMENSIONS</b>	255 x 255 x 105 mm ( L x W x H)
<b>WEIGHT</b>	1.6 Kgs (Excluding AC Adapter)

### PERFORMANCE EVALUATION OF SCAD 500 SYSTEM 120 OHMS QUARTER BRIDGE STRAIN GAGE CIRCUIT



### PERFORMANCE EVALUATION OF SCAD 500 SYSTEM 120 OHMS FULL BRIDGE STRAIN GAGE CIRCUIT



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 Bengaluru Rural - 562 112  
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Mr.S.Raviprakash – MD & CEO – Pyrodynamics Receiving the Technology Development Board Award on behalf of Pyrodynamics from the Honorable President of India Shri Pranab Mukherjee at the National Technology Day Function Held at Vigyan Bhawan – New Delhi on 11<sup>th</sup> May 2013.



Mr.S.Raviprakash – MD & CEO receiving a Plaque on behalf of Pyrodynamics , from Dr.Rashid Al Leem – Director General, Hamriyah Free Zone Authority, Government of Sharjah - UAE

**ORDERING INFORMATION**

**SCAD 500:** - Comprising SCAD 500 Strain Indicator ;  
 110-230 VAC , 50/60 Hz Adapter ;  
 Input Connectors and SCAD View Software,.

Pyrodynamics pursues a policy of continuous development and product improvement. The specifications in this catalog may therefore be changed without notice. The information in this catalog is given in good faith, but is intended for guidance only. Pyrodynamics will accept no responsibility for any losses arising from errors in this catalog.



# Partial List of End users of SCAD 500 System

## Research Laboratories:-

- Vikram Sarabhai Space Centre – Thiruvananthapuram.
- Liquid Propulsion Systems Centre – Valiamala – Thiruvananthapuram.
- ISRO Satellite Centre – Bengaluru.
- National Aerospace Laboratories.
- Bharat Heavy Electricals Limited – Hyderabad , Bhopal & Haridwar.
- Indira Gandhi Centre For Atomic Research – Kalpakkam.
- Bhabha Atomic Research Centre – Mumbai.
- Gas Turbine Research Establishment – Bengaluru.
- Defence Research and Development Laboratory – Hyderabad.
- Central Road Research Institute – New Delhi.
- National Metallurgical Laboratory – Jamshedpur.

## Aircraft Research and Testing:-

- Hindustan Aeronautics Limited – Bangalore.

## Research & Development - Organisations:-

- GEITC- John Welch Technology Centre – Bengaluru.
- GE Global Research Centre – Bengaluru.
- DOW Chemical International Private Limited – Pune.
- Tata Steel – Jamshedpur

## IISC / IIT / NIT:-

- IIT – Jammu – Department of Mechanical Engineering.
- SVNIT – Surat.
- IIT – Kanpur – Department of Mech Engineering.
- IIT – Chennai - Dept of Mechanical Engineering & Dept of Applied Mechanics.
- IIT – Goa - Dept of Mechanical Engineering.
- IISC– Bengaluru – Department of Aerospace Engg & Dept of Civil Engg.
- IIT – Kharagpur - Department of Mech Engg & Tribology Laboratory.
- IIT – New Delhi - Dept of Applied Mechanics.

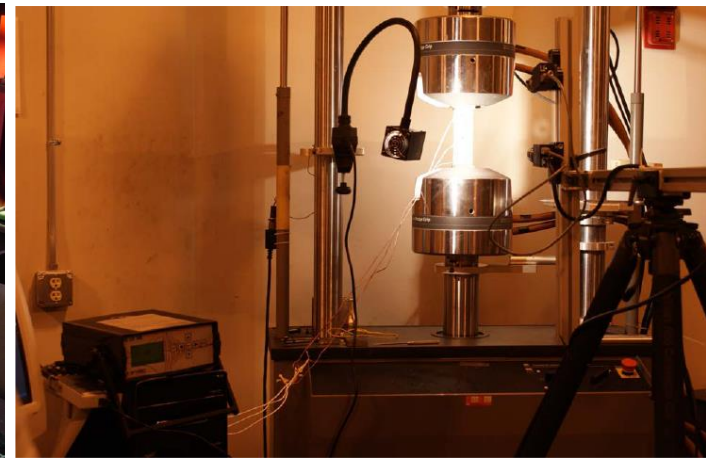
## Overseas:-

- Peekel Instruments B.V. – Netherlands.
- isi-sys – Kassel – Germany.
- Correlated Solutions Inc - U.S.A.





SCAD 500 System used for Strain Measurement on Board a Cargo Ship – Sharjah Port – UAE.



University of South Carolina – U.S.A.



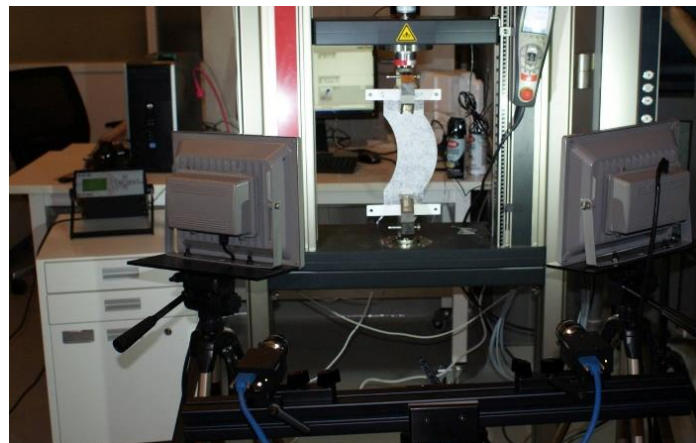
Technology Innovative Institute – Abu Dhabi.



Kassel University - Germany.



Rochester Institute of Technology – Dubai.



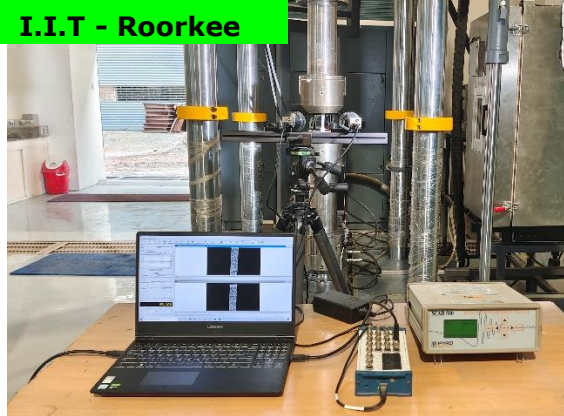
Masdar Institute of Technology (Khalifa University) – Abu Dhabi.



**I.I.T - Tirupati**



**Central Building Research Institute - Roorkee.**



**I.I.T - Roorkee**



**2400MW Tehri Hydro Power Complex- Koteswar - Uttarakhand.**



**I.I.T - Jammu**



**SVNIT - Surat**



**B.H.E.L - Hyderabad**



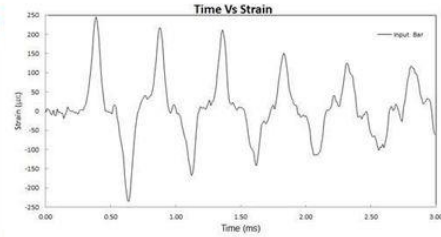
**Dhofar University - Oman**



**IISC - Bengaluru**

**I.I.T - Kanpur**





Strain Data obtained from Strain Gage Amplifier (US Manufacturer). Cost Per Channel \$4K+

Strain Data obtained from SCAD 508 System . Cost Per Channel \$800.00  
**Performance & Specifications of SCAD 508 System matches with those of any other World Class Manufacturer.**

