



DEPARTMENT OF CIVIL ENGINEERING  
**Indian Institute of Technology Madras**  
I.I.T.P.O., MADRAS-600 036

**Form for Inviting Quotations**

Ref.No.CIE/ARUM/2017/FOI/SPIX

Date: 25/05/2017

DUE DATE: 16/06/2017

Dear Sirs,

1. Quotations are invited in duplicate (two bidding covers) for the various items shown below / overleaf / **Enclosed list.**
2. **The Quotations duly sealed and superscribed on the envelope with the reference No. and due date, should be addressed to the undersigned and contain in 2 bid system i.e. Technical bid and Commercial bid in two separate envelopes should be enclosed in a single envelope only so as to reach on or before the due date stipulated above.**
3. The Quotations should be valid for sixty days from the due date and the period of delivery required should also be clearly indicated.
4. If the item is under DGS&D Rate contract No. and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price (Please note that we are not Direct Demanding Officers). If so please send copy of the RC.
5. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable. Samples if called for, should be submitted free of charges, and collected back at the supplier's expenses.
6. Local Firms : Quotations should be for free delivery to this Institute. If Quotations for Ex-Godown delivery charges should be indicated separately.
7. Firms Outside Madras : Quotations should be for F.O.R. Madras. If F.O.R. consignor station, freight charges by passenger train / lorry transport must be indicated. If Ex-Godown, packing, forwarding and freight charges must be indicated.
8. The rate of sales / General Taxes and the percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim for Sales / General Taxes will be admitted at any stage and on any ground whatsoever The taxes leviable should take into consideration that we are entitled to have concessional Sales Tax applicable to non Government Educational Institutions run with no profit motive for which a concession. Sales Tax Certificate will be issued at the time of final settlement of the bill.
9. Goods should be supplied carriage paid and insured.
10. Goods shall not be supplied without an official supply order.
11. Payment : Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later.

Yours faithfully,

  
[Dr. ARUN MENON]

- Note: (i) Quotation should be sent by SPEED POST only or to be delivered directly to the concerned.  
(ii) Firms are requested to submit the specifications of their product along with supporting technical Documentation / brochure instead of reproducing the specifications sent by us.

# Proposal request for optical interrogator system to measure long-term strains in civil engineering structures

Project Coordinator: Dr. Arun Menon

Due date of Submission of Quotation: June 16 2017

## System Architecture:

The dynamic optical interrogator should have at least 4 optical channels, and each channel should be capable of having at least 12 optical sensors. Type shall be – continuous laser swept laser scanning.

The fiber optic sensor should be capable to measure strains in concrete and steel, ambient temperature and ambient humidity.

The operating range with regard to temperature is 15°C to 45°C and with regard to humidity it is 25% to 95%.

The data acquisition system should meet the following specifications.

## Optical Interrogator System Specifications and Sensor Specifications:

1.	<b>Interrogator System</b>	Scanning frequency should be less than 250 Hz and selectable
		Wavelength range should be at least 100 nm (1500 to 1600 nm)
		Optical connectors shall be FC/APC type
		Wavelength measurement error shall be less than 10 pm (measurement error includes resolution, nonlinearity, stability and repeatability)
		Number of sensors per channel shall be greater than 12
		Dynamic range shall be greater than 25 dB
		Data logging interface shall be RJ45 Ethernet / USB
		4 parallel channel shall allow for simultaneous measurements (no multiplexing)
		Traceable wavelength reference shall be provided for continuous calibration to ensure long term stability
2	<b>Optical Sensors</b>	Sensitivity of the sensors (both surface and embedded) shall be greater than 650 (µm/m)/nm
		Measurement range of the sensors shall be ±2500 µm/m



		Reflectivity shall be greater than 60%
		Side lobe suppression shall be greater than 10dB
		Cable type shall be $\varnothing$ 3mm outdoor cable
		Sensor spacing shall be 0.25m to 1m
		IP68 protection shall be used for all types of sensors
		Optical sensors should be capable of measuring strains, temperature and ambient humidity
		No of strain sensors – 44 (Surface mounted -22 & Embedded – 22)
		No of temperature sensors – 2
		No of ambient humidity sensors – 2
3	<b>Software</b>	The software should include: Hardware setup, simplified data Logging, optical Spectrum visualization, simplified Data Viewing. No programming knowledge should be required to work on the software or make online digital displays, graphs & calculations. Capability to log Foil gauges and Optical gauges in parallel and Visualize the same would be preferred. LabVIEW drivers should be provided

**Requirements of the bidder:**

- a. The bidder should be capable of supplying all relevant hardware/software
- b. The bidder company should be in existence for at least 15 years as on 1-5-2017
- c. The product proposed must be that of an internationally recognized brand
- d. Latest income tax clearance and sales tax clearance should be produced along with bid
- e. The manufacturer should have direct presence in India

The bidder should produce documentary support for the above. Only those who satisfy the above criteria are eligible to bid and will be considered for further participation.

**Requirements of the bid:**

- a. Documents to establish the meeting of the eligibility of the bidder should be submitted separately in a sealed envelope.
- b. Submit separate technical bid in sealed envelope.
- c. Submit separate commercial bid in sealed envelope.
- d. Bids that do not conform to the above requirements could be disqualified.

**Important Dates:**

Event	Date
<ul style="list-style-type: none"> <li>• Last date for Response from Bidders</li> </ul>	<i>June 16 2017</i>



## FORM-I (Bidder Details)

Address:    Contact Person: e-mail: Phone: Mobile: FAX:	Date of Establishment in India:  Turnover in the last 3 years: (Valid documentary evidence is mandatory)  No of Projects executed in the last 5 Years: (Valid documentary evidence is mandatory)  Your strength in Chennai:
---	---

**References** – Three references for similar project implemented by the Bidder

S. No.	Client Details	Date of the order	Completion Date	Cost of the Project
1	Project Title: Address:  Contact Person: e-mail: Phone: Mobile: FAX:			
2.				
3.				



**Response format**

All submissions in response to this request must conform to the format given at the end of this document. Failure to submit in the requested format will lead to rejection of the tender

**Response submission**

Responses to this proposal must be submitted in sealed envelopes and delivered by either post, courier, or in person before **5.00 p.m. on June 16, 2017** to the Client at

Dr. Arun Menon  
Project Coordinator  
Department of Civil Engineering  
Indian Institute of Technology Madras  
Chennai – 600 036  
India

Proposals received after the due date and time will be rejected.

**Right to reject**

The Client reserves the right to reject all the bids without assigning any reason. Responses should be submitted with the most favorable terms that the Vendor could offer.



## FORM II TECHNICAL SPECIFICATIONS COMPLIANCE TABLE

**NOTE:** For each specification, please enter "YES" or "NO" in the last column of this table. If a cell in the second column is left blank, then it will be assumed that the quotation does not comply with the respective specification/requirement, and the bidder can be rejected. Provide catalogues, data sheets and/or other documentation to support the compliance of your equipment to the given specifications.

1.	<b>Interrogator System</b>	Scanning frequency should be less than 250 Hz and selectable	
		Wavelength range should be at least 100 nm (1500 to 1600 nm)	
		Optical connectors shall be FC/APC type	
		Wavelength measurement error shall be less than 10 pm (measurement error includes resolution, nonlinearity, stability and repeatability)	
		Number of sensors per channel shall be greater than 12	
		Dynamic range shall be greater than 25 dB	
		Data logging interface shall be RJ45 Ethernet / USB	
		4 parallel channel shall allow for simultaneous measurements (no multiplexing)	
		Traceable wavelength reference shall be provided for continuous calibration to ensure long term stability	
2.	<b>Optical Sensors</b>	Sensitivity of the sensors (both surface and embedded) shall be greater than 650 ( $\mu\text{m}/\text{m}$ )/nm	
		Measurement range of the sensors shall be $\pm 2500 \mu\text{m}/\text{m}$	
		Reflectivity shall be greater than 60%	
		Side lobe suppression shall be greater than 10dB	
		Cable type shall be $\varnothing 3\text{mm}$ outdoor cable	
		Sensor spacing shall be 0.25m to 1m	
		IP68 protection shall be used for all types of sensors	
		Optical sensors should be capable of measuring strains, temperature and ambient humidity	
		No of strain sensors – 44 (Surface mounted -22 & Embedded – 22)	
		No of temperature sensors – 2	
No of ambient humidity sensors – 2			
3.	<b>Software</b>	The software should include: Hardware setup, simplified data Logging, optical Spectrum visualization, simplified Data Viewing. No programming knowledge should be required to work on the software or make online digital displays, graphs & calculations. Capability to log Foil gauges and Optical	

		gauges in parallel and Visualize the same would be preferred. LabVIEW drivers should be provided	
4	<b>Manufacturer Experience &amp; Training</b>	The manufacturer must have at least 15 years experience in the field of manufacturing interrogator systems. Similar equipment supplied in India and the contact details for verification should be provided.	



### FORM III COMERCIAL BID

<b>I Interrogator and Optical Sensors</b>					
S.No	Component	Specification	Quantity	Unit Price	Price
<b>II Software</b>					
<b>III Laboratory installation and demonstration charges</b>					
<b>IV Warranty for 1 year</b>					

