



DEPARTMENT OF OCEAN ENGINEERING
Centre For Industrial Consultancy and Sponsored Research

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I.I.T – MADRAS.36

Form for Inviting Quotations

Ref.No.

Date: 06/02/2015

OED/RARN/2014-15/1096/SPLX

M/S.

Under Certificate of Posting

Dear Sirs,

DUE DATE: 18/02/2015

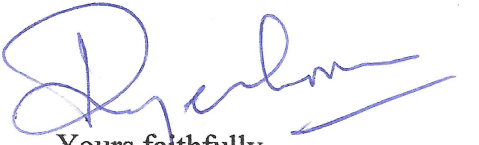
1. Quotations are invited in duplicate for the various items shown below / overleaf / Enclosed list.
2. The Quotations duly sealed and superscribed on the envelope with the reference No. and due date, should be addressed to the undersigned so as to reach him on or before the due date stipulated above.
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 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, which is later.



Yours faithfully,

Dr. Rajesh R Nair

(Project Co-Ordinator)

डॉ. राजेश आर. नायर
Dr. RAJESH R. NAIR
सह प्राध्यापक / Associate Professor
समुद्र अभियांत्रिकी विभाग
Department of Ocean Engineering
भारतीय प्रौद्योगिकी संस्थान मद्रास
Indian Institute of Technology Madras
चेन्ने-600 036, भारत / Chennai-600 036, India

Advanced Hydro Fracking Setup

(Computerised Version)

Technical Specification:

Size of the Specimen:

1. Dia of the specimen : \approx 100 mm to 200 mm
2. Height of the specimen : \approx 100 mm to 120 mm

Capacity of the Equipment:

3. Capacity of the equipment : 1200 bar
4. Least count / Accuracy : 0.7 bar
5. Display : 4 digit Digital display with Rs 485 Communication
6. LCD Display : Touch screen and Programmable

Pressure System:

7. Pressuring Items :
 - 1) Water
 - 2) Sand with water mixer
 - 3) Gel with water mixer
8. Pressurising units : High Pressure Syringe Pump

High Pressure Syringe Pump:

9. Capacity : 67.97 ml
10. Flow range (ml/min) : 0.01 ml/min-25 ml/min
11. Flow Accuracy : \pm 0.3% of set point, (Maximum 0.25 μ l/min seal leakage)
12. Displacement resolution : 2.5 nl/step
13. Motor stability : \pm 0.001%
14. Pressure Range : 10-20,000 psi
15. Standard pressure accuracy : 0.5% FS
16. Optional pressure accuracy : 0.1% FS
17. Wetted materials (standard) : Nitronic 50, Graphite filled PTFE, TFE
18. Plumbing ports : $\frac{1}{4}$ " pipeline
19. Operating Temperature : 50-40°C Ambient
20. Power Required : 234 V, 50/60 Hz (specify)

Sample Holding System:

21. Sample Holding Mechanism : Hydraulic system
22. Hydraulic system capacity : 50 tone
23. No.of Cylinder : Bottom and Top-2 cylinders

- 24. Hydraulic system operation : Automatic movement
- 25. System type : "H" type MS Steel construction
- 26. Construction : 25 mm thickness MS heavy construction
- 27. Inner size of apparatus : 400 mm x 250mm
- 28. Outer size of the apparatus : 400 mm x 700 mm
- 29. Sample Holding Mechanism : Flexible sample size is acceptable. Bottom ram is housed with special quality flexible gasket and above which the sample is loaded and upper ram with similar flexible gasket will be fixed at the top. The top of the vessel will be tightened with necessary available special bolt mechanism to hold the pressure.

Pressure Sensor:

- 30. Pressure Sensor : High quality pressure transducer will be available.
- 31. Pressure Indicator : Digital Indicator with max load freezing
- 32. Computerization : Software, PC and other automation will be provided on separate order and not included here. However necessary ports are available to get the data's.
- 33. Work Table Construction : High quality fabrication of M.S. body and M.S. Angle's structure with proper stiffeners and neat powder coating.
- 34. Calibration : Calibration for pressure sensor and indicator will be provided.

Design and Construction of new apparatus for generation and stabilization of experiments with hydrocarbon liquids. Foam Nano particles are to be supplied.

- 1. Design and Construction of Chamber - According to the suitable requirements
- 2. Foam Nano Particles - PEG-coated nano particles and dichlorodimethylsilane grafted silica nano particles for their ability to stabilize CO₂ in water foam and characterize the viscosity and quality of the generated foam, with particular emphasis on the ability to stabilize viscous, very high quality foam to minimize water use.