



INDIAN INSTITUTE OF TECHNOLOGY KANPUR
DEPARTMENT OF MECHANICAL ENGINEERING
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Enquiry no.: ME/ERL/2013-14/September/01

Enquiry date: September 16th, 2013

Last Date: October 08th, 2013

Enquiry for Digital Mass Flow Controllers for Methane and Hydrogen
Fuels for Engine Applications

Sealed quotations are invited for the purchase of digital mass flow controllers for Methane and Hydrogen fuels for engine applications. The detailed specifications are the following:

1. Mass Flow Controller for HYDROGEN (1 No.)

- ◆ Flow Range: 0-1000 SLPM of HYDROGEN
- ◆ Material of Construction: Stainless Steel 316
- ◆ Accuracy range: $\pm 0.5\%$ to $\pm 1\%$ FS
- ◆ Operating Temperature: -20°C to 70°C
- ◆ Maximum Pressure: 70 bar
- ◆ Inlet-Outlet Fittings: $\frac{1}{4}$ " Male NPT
- ◆ Repeatability: $\pm 0.25\%$
- ◆ Display: Must have Display over MFC showing Set Point and flow rate
- ◆ Sealing Material of Fluid contact: PTFE (Poly tetra fluoro ethylene)
- ◆ Application Position: Horizontal
- ◆ Power Supply unit: Compatible to operate under standard 220V and 50Hz AC Supply
- ◆ Leak: As low as possible (Should be specified)
- ◆ Valve: Normally closed
- ◆ Resolution: 0.1% of F.S
- ◆ Warm Up Time: As low as possible, but < 2 min

Company must do calibration at STP (25^o C and 1 atm.) for Hydrogen, but must provide calibration factor for use in other conditions of temperature and must provide relation for calculation of corresponding mass flow rate at other temperature.

2. Mass Flow Controller for CNG:

◆ Flow Range:	0-1000 SLPM of CNG
◆ Material of Construction:	Stainless Steel 316
◆ Accuracy range:	±0.5% to ±1% FS
◆ Operating Temperature:	-20 ^o C to 70 ^o C
◆ Maximum Pressure:	70 bar
◆ Inlet-Outlet Fittings:	¼” Male NPT
◆ Repeatability:	±0.25%
◆ Display:	Must have Display over MFC showing Set Point and flow rate
◆ Sealing Material of Fluid contact:	PTFE (Poly tetra fluoro ethylene)
◆ Application Position:	Horizontal
◆ Power Supply unit:	Compatible to operate under standard 220V and 50Hz AC Supply
◆ Leak:	As low as possible
◆ Valve:	Normally closed
◆ Resolution:	0.1% of F.S
◆ Warm Up Time:	As low as possible, but < 2min

Company must do calibration at STP (70^o F and 1 atm.) for CNG but must provide calibration factor for use in other conditions of temperature and must show calculation for corresponding mass flow rate.

3. Module for Hydrogen- CNG mixture ratio control:

Supplier should provides a module or controller, which can set the ratio between hydrogen and CNG MFC's to form their (Hydrogen in CNG by mass) mixture at 5%, 10%, 15%, 20%, 25%, 30%, 35%, 40%, 45% and 50%.

Terms & Conditions:

- (i) Provide “Authorization certificate” from the manufacturer, if representing an international supplier.
- (ii) Prices should include delivery and installation at IITK.
- (iii) Validity of quotation should be at least for 90 days.

(iv) Warranty should be for one years (preferably longer).

Kindly send your best offer (Techno-Commercial offer in a single document) so as to reach us on or before October 08th, 2013 to the following address:

Prof. Avinash Kumar Agarwal
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In case of any queries/ clarifications related to this tender, you may contact Mr. Tadveer Singh Hora (+91 9559795588).