

दूरभाष :
TELEPHONE :
तार : बार्क - मुंबई, चेम्बुर
TELEGRAMS : BARC-MUMBAI, CHEMBUR.
टेलिक्स : ०९९-६९०९७/०९९-६९०२२ बार्क ईन
TELEX : 011-61017/011-61022 BARC IN
फैक्स संख्या : ९९-२२-५५६०७५०
FAX NUMBER : 91-22-5560750



भारत सरकार
GOVERNMENT OF INDIA
भाभा परमाणु अनुसंधान केंद्र
BHABHA ATOMIC RESEARCH CENTRE

Nuclear Recycle Group
Process Development Division

ट्रॉम्बे,
मुंबई - ४०० ०८५
TROMBAY,
MUMBAI-400 085.

Ref: PSDD/MF/AS/2017/OPA/159516

OTF,PP complex,
Trombay
12 Sept , 2017

To,

Sub: Invitation of quotation for Design, Fabrication, Testing and supply of gas heater cum mixer for application in NOx mitigation loop as per the attached specification without any free issue material.

Dear Sirs,

You are requested to submit your quotation in sealed envelope for the above mentioned job. The material should confirm to our specifications. The reference no. given above should be clearly mentioned on the sealed envelope.

Quotation shall be complete in all respects with regard to specifications, validity of offer etc., and must reach the following address on or before Sept. 21, 2017, by 14:00hr preferably by Speed Post (India Post).

AvinashSahu, SO/E, PSDD
13, OTF, P.P. Complex,
BARC, Trombay
Mumbai-400 085

General Instructions:

1. Work should be completed within 4 weeks from the issue of work order.
2. Vendor may discuss the scope of work before quoting for the job.
3. Cost against supply and labour shall be quoted separately.
4. BARC is exempted from Excise duty.
5. Taxes, duties and other charges applicable, if any, shall be indicated separately. Quotation without GST number and cost breakup would be considered invalid.
6. On successful completion of the job as per work order, bills and pan card copy of the firm shall be submitted along with advance stamped receipt for the payment.

Yours sincerely,

Avinash
11/09/2017

AvinashSahu
SO/E, PSDD

वैज्ञानिक अधिकारी (E) / Scientific Officer (E)
प्रक्रम विकास प्रभाग / Process Development Division
भारत सरकार / Government of India
भाभा परमाणु अनुसंधान केंद्र / B.A.R.C.
ट्रॉम्बे / Trombay, मुंबई / Mumbai - 400 085.

Technical Specifications

Sr. No.	Description	Quantity
01	SS310-Gas heater cum mixer	01 No.
	Gas Flow Rate	30 m ³ /h (CMH) at STP
	Inlet Main Stream	NOx at room temp. (26-30°C) Flange Inlet: 40 NB ANSI B16.5 150#
	Side stream	Ammonia (NH ₃) & Oxygen(O ₂) Flange Inlet: 25 NB ANSI B16.5 150#
	Ammonia Inlet	Shall be located where main gas stream has achieved a temperature of >500°C. (NH ₃ & O ₂ flow rates are minimal wrt to NOx flow rate)
	Mixing	NH ₃ & O ₂ should get thoroughly mixed with NOx stream.
	Heating Media	Electric heater on tubeside (~800°C temperature of heated surface) (Terminal box has be to provided with cover) Type: Ni-Cr or Equivalent End connection with shell: Flanged with tube bundles joints Replacable
	Heat Transfer(HT) Area	>0.4 m ² (Tube total outer surface area)
	Overall HT Coefficient (W/m ² .°C)	50-100
	Process Fluid	Shell side (NOx and NH ₃) Shell Thickness:>12mm
	Temperature measurement	Thermocouple pocket with 04 Nos Pt-100 sensors at inlet, outlet and at ammonia feed point along with digital remote display
	MOC	SS310 for heated tubes SS310 for all other contact & non contact parts
	Outlet Conditions	Temperature of mixed phase >500°C Flange Outlet: 40 NB ANSI B16.5 150#
	Insulation	Body insulation suitable for minimum heat loss (Insulation thickness:10% in excess of critical thickness of insulation)
	Welding Specification	TIG (Qualified welder)
	QA Required: 1. PMI, 2. Thermography Test, 3. Radiography Test	
	Power Input: >4.6kW, 230 V AC, 50 Hz Heating Coil: Suitable for >800°C	
	Acceptance Criteria: The fabrication equipment shall be accepted only upon satisfying the following conditions;	

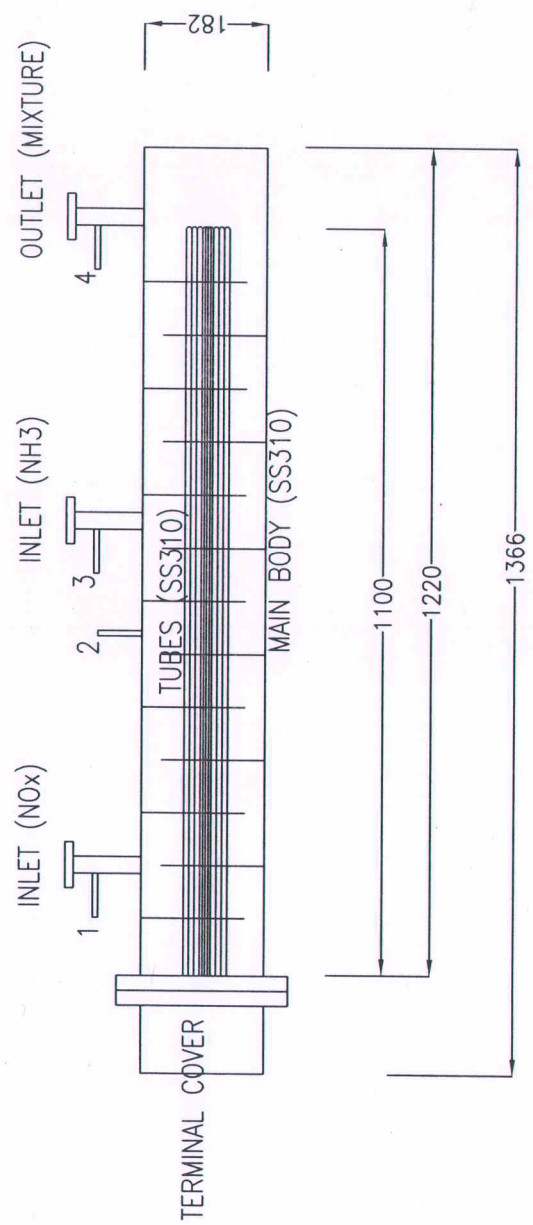

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 मुंबई / Mumbai - 400 085.

<p>i. While testing, the outlet stream temperature shall be $>500^{\circ}\text{C}$ ii. It shall qualify all above mentioned test. iii. The temperature at the ammonia entry is >300 deg C</p>	
<p>Documentation (Vendor's Scope): i. GA drawing for approval prior to fabrication ii. Mill TC & test certificates iii. As-built drawings</p>	
<p>Note: 1. NO_x is a mixture of NO & NO_2 and it is highly corrosive (Use SS310) 2. At $<250^{\circ}\text{C}$, NH_3 forms ammonium nitrate with NO_x, which is an explosive</p>	


Avinash Sahu, SO/E

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Thermocouple Pockets(1,2,3,4)



LINE DIAGRAM OF HEATER CUM MIXER

Handwritten signature and date:
12/09/2019
Avinash Salun.

Scientific Officer (E)
Process Development Division
Government of India
B.A.R.C.
Mumbai - 400 085.