Enquiry # MET/2014/TIJU/001 Dated: 09.06.2015 Due on: 23.06.2015

**SPECIFICATION FOR HIGH PRESSURE(100 BAR) AMMONO THERMAL REACTOR 1000°C -1 No**

#### FURNACE STRUCTURE – VERTICAL MODELShell size / ,Shell Construction:≈500 x 500 x 500 mm and 200 x 70 mm

M. S.Body and M. S. Angle’s structure with stiffeners and powder coat painting

Furnace stands & panel box:Control panel box InbuiltTubular material:Fused quartz lined Inconel retort ,

Insulation:pressed zirconia blend ceramic fiber ,Stainless steel fittings for controlled atm

Port for pulling gases and Purging gases K Type ‘Thermocouple to measure the temperature inside the reactor.

Reactor High grade corrosion resistant Inconel steel reactor Vessel body, Maximum pressure In the vessel120 bar

100 bar Operation Pressure10mm thickness Quartz reactor inner lining, reactor size 8mm thickness 50mm ID X 66mm OD 350 mm height. Silicon ‘o ‘ring based vacuum sealing at the base plate Pressure sealing.

water cooling fittings Stainless steel fittings are provided with water cooling arrangement and silicon ‘o’ ring withhigh pressure locking set up.

Retord top lid size 30mm (H) x 150 (OD) mm, material SS316 shell lid lining suitable lid with bottom quartz lining

Ports in the lid One number gas inlet with automated valve,One number gas outlet with automated valve,Pressure Relief Valve,Pressure sensing port with pressure sensor

#### Heating System, Heating elements,APM grade Kanthal (Melting Temp 1450°C)

Operation Single phase / 230V/AC ,Maximum Power,4 kW Maximum temperature/Working Temperature 1000°C,

Temperature control Micro processor based, programmer cum,Digital Temperature,controller cum Indicator (Imported) x two numbers to measure furnace temperature

to measure the reactor temperature,Temperature sensor‘K’ type thermocouple (Chromel / Alumel) x two,numbers,Accuracy ±1°C.Power control phase angle controlled thyrister with required ammeters,main indicators,output indicators,fuses- 1 No

**SPECIFICATION FOR AMMONO THERMAL REACTOR 1000°C with GAS PURGING FACILITY-1 No**

#### FURNACE STRUCTURE – VERTICAL MODELShell size /, Shell Construction:≈500 x 500 x 500 mm and 200 x 70 mm

M. S.Body and M. S. Angle’s structure with stiffeners and powder coat painting

Furnace stands & panel box:Control panel box InbuiltTubular material:Fused quartz lined Inconel retort ,

Insulation:pressed zirconia blend ceramic fiber ,Stainless steel fittings for controlled atm

Port for pulling gases and Purging gases K Type ‘Thermocouple to measure the temperature inside the reactor.

Reactor High grade corrosion resistant Inconel steel reactor Vessel body, Maximum pressure In the vessel120 bar

100 bar Operation Pressure10mm thickness Quartz reactor inner lining, reactor size 8mm thickness 50mm ID X 66mm OD 350 mm height. Silicon ‘o ‘ring based vacuum sealing at the base plate Pressure sealing.

water cooling fittings Stainless steel fittings are provided with water cooling arrangement and silicon ‘o’ ring withhigh pressure locking set up.

Retord top lid size 30mm (H) x 150 (OD) mm, material SS316 shell lid lining suitable lid with bottom quartz lining

Ports in the lid One number gas inlet with automated valve,One number gas outlet with automated valve,Pressure Relief Valve,Pressure sensing port with pressure sensor

#### Heating System, Heating elements,APM grade Kanthal (Melting Temp 1450°C)

Operation Single phase / 230V/AC ,Maximum Power,4 kW Maximum temperature/Working Temperature 1000°C,

Temperature control Micro processor based, programmer cum,Digital Temperature,controller cum Indicator (Imported) x two numbers to measure furnace temperature

to measure the reactor temperature,Temperature sensor‘K’ type thermocouple (Chromel / Alumel) x two,numbers,Accuracy ±1°C.Power control phase angle controlled thyrister with required ammeters,main indicators,output indicators,fuses Standard Valves & Fittings Gas mixing chamber One unit between MFC and the furnace.-1 No

**GLOVE BOX SYSTEM / HYDRAULIC PRESS: 1 No**

Glove box System inner size 750 (w)X 800 (h) X 500 mm(d)ms Steel construction with Brushed, Anti corrosive coating and scratch resistant Powder coated stand with levelling feet & Castors

Electrical feed DN 40 Electrical Outlet Six position power strip Electrical Feed through One in No/ blank3 ,Shelves Three Shelves, height adjustable, SS 304 Glove ports 220MM diameter, chemical resistant, polyoxymethylene Gloves thick butyl rubber of 0.3-0.4 mm thickness Window Chemical resistant and inclined panel of 9-10mm thickness, Internally mounted lighting

Working Gas Nitrogen, Argon, Piping 304 Stainless Steel, Control Valves Electro Pneumatic NW – 40 or equivalent foot switch box pressure control foot switch

Cylindrical chamber inside dimensions 250 diameter and 300 mm long Ms built Interior brushed finish Powder coated External finish doors anodized aluminium, flat type, 10mm thickness, with vertical lifting mechanism spindle lock type for door, Rotary vacuum pump cap 200 ltrs Analogue gauge(compound gauge). Desk Type Hydraulic Press for compaction of pellet ,Cap10 tons cylinder 15 Tons (Max) (hydraulic power unit),vertical loading Size of the platen100mm dia Press frame2-pillar type with digital pressure gaugeMax Pressure 300 bars.

Technical Clarifications if any Pl Contact Dr.Tiju Thomas E.Mail tijuthomas @iitm.ac.in.