

Market survey

-Avviso ai sensi dell'art. 216 comma 9 D.Lgs. 50/2016 under italian law-

OBJECT: Commitment of n. 1 plant of treating liquid and gas feeds in the context of a research on biorefinery processes.

The Politecnico di Torino DEPARTMENT of APPLIED SCIENCE AND TECHNOLOGY lets be known that it wants to commission “n. 1 plant of treating liquid and gas feeds in the context of a research on biorefinery processes”.

In order to contact as many as possible the interested suppliers and to obtain several quotes from them, it publishes this communication.

Information of this communication have only an approximate value and do not represent an obligation for Politecnico di Torino regarding interested suppliers, that cannot demand anything to Politecnico di Torino, with regard to this communication.

1. Description service

N. 1 plant of treating liquid and gas feeds in the context of a research on biorefinery processes

The plant to be purchased has the purpose of treating liquid and gas feeds in the context of a research on biorefinery processes.

The plant should be fed simultaneously (or separately) with a liquid and gas flow, which are fed to a tubular reactor arranged in vertical position. The reactor should be filled with a catalyst, and the volume occupied by it is the reactive zone. Such a zone must be heated up to an operating temperature that ensures the light-off of the catalyst and the development of the intended chemical reaction. The feed flows could be pressurized, as well as the tubular reactor, which should work under pressure.

The outlet, which could be either a monophasic (all liquid or all gas) or a biphasic flow (gas/liquid), is sent to gas/liquid separator, in order to convey both phases to analysis (the analysis equipment is not part of the current furniture). The outlet flow rates must be measurable.

Minimum required features must be:

- *Internal diameter of the reactor in the range of 20-30 mm;*
- *Catalyst zone height > 150 mm (with guaranteed isothermal zone of at least 50 mm).*
- *Working conditions of the reactor: temperature from ambient up to 900 °C; pressure from ambient up to 300 bar (and > 200 bar at 500°C).*
- *All plant equipment allowing operation with an internal pressure of hydrogen up to 50 bar and 500°C (explicit declaration about chemical resistance of the materials to hydrogen exposure is required);*
- *Furnace to heat the catalytic bed up to 900 °C with efficient control (low overshooting, quick response, etc.). Possibility of programming at least one isothermal and one heating ramp.*
- *Direct measurement of the internal catalyst temperature;*
- *Accommodation of solid material (i.e. the catalytic bed) inside the reactor, by porous plate or similar technical solutions;*
- *Downward (from top to bottom) feeding of the premixed gas and liquid flow to the tubular reactor;*
- *3 high precision control devices for gas feeding to the reactor, operating in the range 1-400 ml/min (expected gases: H₂, CO₂, CO, N₂, Ar) and compatible with plant design pressures, including related PC monitoring.*
- *HPLC liquid pump, working in a range between 0.02 and 4 ml/min up to 300 bar, including related PC monitoring;*
- *Back pressure control system for setting the desired operating pressure of the plant from gas and liquid feed to the reactor outlet (up to 300 bar);*
- *Liquid/gas separator at ambient temperature and pressure conditions for downstream analysis purposes;*
- *Pipes between reactor outlet and backpressure control system with external diameter not greater than 1/8" in order to reduce travelling time from the reactor.*
- *Measurement of the outlet reactor gas flow rate;*
- *Measurement of the outlet reactor liquid flow rate (either through liquid accumulating devices (i.e. gravimetric analysis) or on-line measurement (i.e. volumetric or mass flow meter);*
- *Software to control the whole system*
 - a) *Controlled parameters: inlet mass flows of gases and liquid, reactor temperature, reactor pressure;*
 - b) *Measured parameters: inlet and outlet mass flows of gases and liquids, reactor temperature, reactor pressure*
- *PC with dedicated installed software and hardware ports compatible with input/output communication.*

- *Safety systems in case of plant failure (specifically pressure and temperature –related).*
- *24 months warranty*
- *Delivery within 90 days.*
- *1-day training on-site for installation.*

2. Maximum costs

EURO 110.000,00 VAT not included.

3. Minimum requirements of economic/financial and technical/professional capabilities

The interested supplier must possess:

- **requirements of Article. 80 of D. Lgs. no. 50/2016**, implementing art. 57 EU directive 24/2014
- **suitability to pursue the professional activity;** *Contracting authorities may require economic operators to be enrolled in one of the professional or trade registers kept in their Member State of establishment, described in Annex XI directive 24/2014*
- **requirements detailed in the art. 80 D.lgs. 50/2016.**

4. Due date

Within the day **22/12/2017**, the suppliers with the above mentioned requirements interested to participate to the further negotiation for the equipment below would reply to this market survey sending a communication by email:

- Email Address: procurement.tecnici@polito.it
- OBJECT: the same subject of this advice
- Text of the communication:

I undersigned _____, Fiscal code _____, on behalf of the company _____ - VAT ID, declare that our company is interested to participate to a further negotiation for the equipment in object.

I declare:

- *To possess the requirements detailed in the art. 216, comma 9 del D. Lgs. 50/2016*
- *Not to pretend any fees from Politecnico di Torino replying to this market survey;*
- *I consent to the processing of my personal data, in accordance with the privacy laws D.Lgs. 30 giugno 2003, n. 196.*

5. Further information

Clarifications and further technical information could be required only by email at the addresses procurement.tecnici@polito.it

Torino, 06/12/2017