



## INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

MATERIALS MANAGEMENT DIVISION

Powai, Mumbai 400076.

### **Specifications for Crude Oil Flow-loop including Installation and Commissioning :**

#### **A. Crude Oil Flow Loop:**

1. Crude oil feed tank: 1 unit
  - i. Jacketed (MOC: SS 316)
  - ii. Volume: 25 liters
  - iii. Two impellers with one as close as possible to the bottom of the tank
  - iv. Flame arrester
  - v. With temperature gauge and transmitters installed
  - vi. Drain line with valve
2. Crude oil circulation pump: 1 unit
  - i. Gear pump with VFD, flow rate up to 1.5 m<sup>3</sup>/hr, Pressure = at least 30bar
  - ii. An injection point should be provided upstream of the pump
3. Transmitters:
  - i. Pressure Transmitter: 0-50bar (1 unit), 0-30bar (2 units), 0-10 bar (2 units)
  - ii. Differential Pressure Transmitter: 0-30 mWC (1 unit)
  - iii. Temperature transmitter: RTD type (3 units)
  - iv. Flow meter with transmitter: 0-1.5 m<sup>3</sup>/hr (1unit)
4. Control valves:
  - i. Manual Control Valve: Ball value 25NB Flanged Ends (MOC: SS 316) (12 units)
  - ii. Pressure safety Valve (PSV): set pressure 30 bar (2 units)
  - iii. Isolation valves for all temperature and pressure gauges and transmitters: ¼" size (16 units)
5. Crude oil flow loop:
  - i. Main loop: 2m length with U-bend (jacketed) (MOC: MS)
    - a. If U-bend cannot be jacketed it should be insulated.
    - b. U-section should be a semi-circle with a radius of 6 inches.
    - c. Outlet of the loop should have a branch line feeding back to the pump inlet
  - ii. Height of piping system: atleast 1m from the ground level

- iii. One more side loop for electric field applications:
    - a. Outlet of electric loop should feed the inlet of the main loop
    - b. There should be isolation valves at the start and end of this loop
  - iv. Provision for air vent to remove trapped air
  - v. A drain line for both loops
6. Control system
  7. Hot & Cold insulations
  8. The loop to be mounted on a skid for support
  9. All remaining pipelines to be SS 316 and jacketed

**B. Data Acquisition and Control**

1. Supervisory Control and Data Acquisition System (SCADA) or equivalent for recording data from transmitters and for control
2. I/p converters required for SCADA

\*\*\*Warranty—Two Years