

Equipment Name: 3H High Pressure Pump for 3000 psi head

High Pressure sCO₂ Pump

The pump is expected to deliver super critical CO₂ at a pressure of 200 bar with **no** pulsation in the flow. The expected maximum mass flow outlet from the pump is 0.2 kg/s at a maximum discharge pressure of 200 bar. The pump should have the in-built cooling system to protect from overheating issues. The pump needs to have full protections against burst protection with appropriate burst protection disc and pressure regulating valves. The motor associated with the pump needs to be electrically driven with the capacity of up to 30 KW rating. The electrical motor shall have a small fan to electrically cool it. The pump should have noise levels less than 50 dB, if exceeds, the system needs to have an appropriate noise protection cabinet. The pump shall have required protection for handling back pressures and Cavitation. The inlet and exit ports of the pump shall meet the standard BSP norms.

Detailed technical specifications for the requirements are listed below.

Operational Specifications

S.No.	Description	
1.	Mass flow	0 – 0.2 kg/s or 0 to 720 kg/h
2.	Discharge Pressure	Max 200 bar
3.	Discharge Temp (C)	70 degree C
4.	Power Rating	30 KW
5.	Operating Mode	Set Pressure and Mass Flow Control Modes
6.	Control System	Yes. Include accessories for a fully automated PID control system to achieve steady mass flow at a set pressure
7.	Pump Cooling	In built lubricant cooling system
8.	Electrical Motor	30 KW
9.	Electrical Motor Cooling Fan	2 HP blower fan for cooling the motor
10.	Inlet Pressure	Up to 60 bar
11.	Communication	RS232/RS485
12.	Mode of Operation	Continuous & Closed Loop System
13.	VFD	Suitable for CO ₂ pump at the specified power rating of 30 KW
14.	Fluid Condition at the Pump Inlet	Liquid CO ₂ at 10 ⁰ C and 50 to 60 bar pressure
15.	Back Pressure Regulation Valve	Rated up to 400 bar
16.	Pump Base Frame	Made of Mild Steel
17.	Motor to Pump Shaft Coupling	Yes
18.	Burst Protection Disc (Explosion protection)	Yes
19.	Pulsation Damper	Yes

Electrical Specifications

<u>S.No.</u>	<u>Description</u>	
1.	Voltage	3 Phase - 220- 240 V
2.	Power	Up to 30 KW
3.	Current	10 - 15 A
4.	Frequency	50 - 60 Hz

General Conditions:

1. List of Purchase orders or supply references to institute of National importance, PSU, or premier research institutes to be attached.
2. Must provide pump performance curve.
3. Quotation for 2 years standard warranty + 1 year optional warranty.
4. Installation/Commissioning to be done at IITM.
5. Should provide list of spares and their cost.