



TECHNICAL SPECIFICATION

TITLE: PURCHASE OF TRIPLEX BOOSTER PUMP ASSEMBLY WITH COMPLETE ACCESSORIES AND MOTOR CONTROLLER

1.0 SCOPE OF CONTRACT

The scope shall be supply, testing, delivery and commissioning of one (1) assembly brand new Constant Pressure Booster pump System with built in motor controller to General Santos City Water District (GSCWD).

2.0 Technical Specification and Operating Requirements

Particulars	Requirements	Statement of Compliance
Number Of Pump And Motor	3	
Pump Type	Vertical Multistage In-Line pump	
Rated Total Capacity	231m³/hr	
Rated Total Head	54m	
Max Total Capacity	300 m³/hr at 37m	
Max Total Head	70m at 120 m³/hr	
Maximum Operating Pressure	16Bar	
Maximum Permissible Inlet Pressure	8.6Bar	
Pressure Rating	PN16	
Motor Power Rating	18.5kW (25Hp)	
Motor Rated Voltage	440V - 480V	
Motor Efficiency	92% and above	
Motor Efficiency Class	IE3 (Premium Efficiency)	
Mains Frequency	60Hz	
Number of Phases of Main	3Phase	
Enclosure Class (IEC34-5)	IP54	
Pump Parts In Contact With The Pumped Liquid	Made of Stainless Steel	



Pump Bases and Heads	Made of cast iron; other Vital parts are made of stainless steel	
Base Frame	Galvanize C- profile frame	
Manifold Sizes (Inlet & Outlet)	DN200; Stainless Steel 316AISI	
Pump Check Valve	Individual	
Isolating Valves	Two (2) pieces each pump	
Pressure Gauge and pressure transmitter	Analog output 4-20mA	

3.0 Motor Control Panel Requirement

Requirement	Statement of Compliance
Controller shall be enclosed in an IP54 steel Cabinet and shall consist of main switch, all required fuses, motor protection, switching equipment and a microprocessor-controlled communication unit.	

3.1 Control panel shall perform as follows:

No.	Requirement	Statement of compliance
1	<p><i>Auto mode</i> The desired delivery pressure within the range specified, shall be set at the duty local control panel. The pressure transmitter shall detect the delivery pressure continuously within 1 second and feed back to the microprocessor, which will control the speed of the variable speed drive frequency converter for speed control of the duty pump. The 1st duty pump will run first to cater the need of the flow. If the demand is high, the 2nd pump will cut-in to cover. When demand still continues to increase, the 3rd pump will cut-in as well. If any of the pump fails, the standby pump shall cut-in to maintain the delivery pressure at the desired set value.</p>	
2	<p><i>Manual mode</i> The on/off function of the pumps shall be manually adjusted at the microprocessor located at the local control panel.</p>	



3	<p><i>Frequency Control By-pass Mode</i> All the pump set shall be start/stop automatically with the pump output at fixed maximum rotation speed. All the control and protection functions shall remain active. The cut in / cut out pressure shall be internally calculated by the microprocessor for each pump.</p>	
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4.0 Pump operation

Built in controller unit shall control the booster pump operation and composed of the following functions:

No.	Required Functions	Statement of compliance
1	Intelligent multi-pump controller	
2	Constant pressure control through continuously variable adjustment of the speed of each individual pump	
3	PID controller with adjustable PI parameters	
4	Constant pressure at set point, independent of inlet pressure	
5	On/off operation at low flow	
6	Automatic cascade control of pumps for optimum efficiency	
7	Selection of min. time between start/stop, automatic pump changeover and pump priority	
8	Automatic pump test function to prevent idle pumps from seizing up	
9	Emergency switches for manual operation.	
10	Log function	
11	System on/off	
12	Digital inputs and outputs can be configured individually	
13	Pump and system monitoring functions	
14	Minimum and maximum limits of current value	
15	Inlet pressure monitoring	
16	Motor protection	
17	Sensors and cables monitored against malfunction	
18	Alarm log with the previous 24 warnings/alarms	
19	Display and indication functions	
20	Colour Screen display	
21	SCADA ready	



22	Green indicator light for operating indications and red indicator light for fault indications	
23	Potential-free changeover contacts for operation and fault	
24	Built in clock functions with possible weekly programming and with switch system to operate at 10 different pre-set pressure points as required.	
25	Capability of receiving input signal concerning shortage of water supply, preventing the pumps from dry running.	

5.0 TERMS AND CONDITIONS

No.	TERMS AND CONDITIONS	Statement of compliance
1	The scope of work shall be supply, testing, delivery and commissioning of One (1) assembly brand new Constant Pressure Booster pump system with built in motor controller to General Santos City Water District (GSCWD).	
2	The Booster pump with motor control panel complete with accessories shall be factory designed, assembled and tested not locally fabricated to ensure superior quality with optimum reliability. (<i>Provide Test Certificate and Manufacturer's Certificate specific to this project</i>)	
3	<i>All three (3) pumps in systems are with variable frequency drive individually, providing FULL variable speed operation.</i>	
4	The winning bidder is required to submit and include documents but not limited to manuals, data sheets, <i>Test Certificate</i> and <i>Manufacturers Certificate specific to this project.</i>	
5	Field testing shall be made once the unit is ready for operation and when both the GSCWD and winning bidder have finished their scopes of work on the installed unit. GSCWD engineers shall conduct field testing with the presence of winning bidder's representative. All relevant and incidental cost (Testing fees, transportation, accommodation, allowances and etc.) for the testing of the equipment shall be shouldered by the winning bidder.	
6	That during the installation and commissioning of the unit, the winning bidder shall be required to send a technician responsible of commissioning. All relevant and incidental cost (transportation, accommodation, allowances and etc.) in the commissioning of the equipment shall be shouldered by the winning bidder.	
7	Mounting and positioning of the pump assembly shall be performed by the winning bidder qualified technicians	



8	Piping works for provision of the suction and discharge lines shall be provided by General Santos City Water District (GSCWD).	
9	Electrical installation of main circuit breaker and grounding shall be performed by GSCWD technicians.	
10	The winning bidder shall deliver the unit within One Hundred Twenty (120) calendar days upon receipt of Purchase Order (PO) including Laboratory testing.	
11	The winning bidder shall be subjected to Liquidated Damages (LD) for each day of delay as provided by the IRR of RA 9184.	
12	That the winning bidder shall issue a warranty certificate of not less than one (1) year and the warranty shall commence from the date of commissioning of the pumping equipment. That the winning bidder must have an available qualified and trained technicians 24/7 in case of equipment failure, also the winning bidder must replace the defective part / parts with in ten (10) days during its warranty period.	

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