METERING PUMP SKID

1. GENERAL

1.1 Work Included

.1 Supply and installation, testing, and commissioning of a complete and functional metering pump systems for designated chemicals dosing application, as per the Drawings.

1.2 Submittals

.1 Submit Shop Drawings in accordance with Section 01300.

.2 Operation and maintenance data: provide for incorporation in O&M Manual as specified in Section 01735. Include complete description of operation together with general arrangement and detailed drawings, wiring diagrams for power and control schematics, parts catalogue with complete list of repair and replacement parts with section drawings illustrating the connections and identifying numbers.

1.3 Shipment, Protection, and Storage

.1 Ship pre-assembled to the degree possible.

.2 Provide storage instructions indicating specific requirements to ensure there is no uneven wear, distortion or weathering of components.

.3 Identify all other special storage requirements.

2. PRODUCTS

2.1 Description

.1 Provide equipment capable of pumping ClearTech LimeClear^{TM} from a 205 L storage drum in the configuration shown on the Drawings.

.2 Each pumping system includes a metering pump, pressure relief valve, pulsation damper (if diaphragm pump), pressure, backpressure valves, drip tray, and all associated piping and fittings, in accordance with the Drawings.

.3 The whole system shall take into account the atmospheric temperature, the specific gravity, viscosity, flammability, and temperature of the fluid being pumped.

2.2 Tag Numbers

.1 C661-P-P (Duty).

.2 C662-P (Standby).

2.3 Acceptable Manufacturers

.1 Abel (as supplied by Power & Mine).

.2 Prominent (as supplied by Metcon).

.3 Blue-White Flex-Pro A2

.4 Watson Marlow Q-DOS

2.4 Capacities and Performance

.1 Liquid properties:

.1 Specific gravity: 1.00 to 1.03.

.2 Boiling point: not available.

.3 Freezing point: -1°C.

.4 Classification: Class 1B liquid.

.5 Non-flammable.

.2 Ambient environment temperature -40°C to 35°C.

.3 Metering Pumps:

.1 Pump shall discharge between 11 and 27 mL of product to each batch (corresponding to 3 to 7 mg/L per 3800 L batch).

.2 Maximum backpressure: 100 kPa (before backpressure valve).

.3 Maximum negative suction lift (barrel empty): 2.5 m.

.4 Maximum differential pressure pump suction and discharge: 135 kPa.

2.5 Materials

.1 Diaphragm (if diaphragm pump): EPDM or PTFE capable of operation over the range of specified fluid temperatures.

2.6 Pumps

.1 Provide metering pump.

.2 Provide gearbox with manual speed adjustment for altering pump speed.

.3 The pumps shall provide a constant output flow over the full range of fluid levels in the storage tanks.

.4 The pumps shall have a pumping accuracy of ±5 percent.

.5 Construct the pump parts in contact with the fluid from materials suitable for the specified fluids.

.6 Provide pressure relief valve and backpressure regulating valve for each pump discharge, sized for the maximum pump flow with an adjustable pressure range. Valve material to be compatible with the fluids being pumped.

.7 Provide motors in suitable for Phase 120V.

.8 Provide heat tracing on enclosure together with a thermostat, if required for protection of the equipment at low temperatures.

2.7 Control Description

.1 The pump is started automatically by the Distributed Control System (DCS) at the start of the soda ash batch preparation sequence. The metering pump shall inject the volume of chemical required to produce the desired concentration in the 3800 L batch tank and then shut off.

2.8 Spare Parts and Maintenance Materials

.1 Provide the following spare parts:

.1 Two (2) pump diaphragms (if diaphragm pump).

.2 Four (4) replacement pump hoses (if peristaltic pump).

.3 One (1) set of ball check valves.

.4 One (1) set of ball check valve seats.

.5 One (1) set of gaskets and O-rings.

.6 One (1) backpressure valve diaphragm.

.7 One (1) pressure relief valve diaphragm.

.2 Provide a list of spare parts which would be expected to be required over a period of five years under normal conditions. At the Contract Administrator’s request, provide a price for the listed parts.

3. EXECUTION

3.1 Manufacturer's Representative

.1 To ensure the equipment is installed, operated, and maintained in accordance with the manufacturer's recommended procedures, arrange for a technically qualified manufacturer's representative to witness the installation Work, certify correct installation, train operating and maintenance staff, and undertake system testing.

3.2 Installation

.1 Ensure the equipment is installed as required to provide satisfactory service.

.2 Instruct installer in the methods and precautions to be followed in the installation of the equipment.

3.3 Testing

.1 Ensure the equipment, including all component parts, operates as intended.

.2 Cooperate with the installer to fulfill the requirements for successful testing of the equipment by completing Form 103, included in Section 01670.

3.4 Commissioning

.1 Attend during commissioning of the process system which includes the equipment.

END OF SECTION