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#

SPECIFICATION FOR ELECTRIC VERTICAL PUMP

1. SCOPE

1.1 General

This document covers the technical requirements for design, manufacture, supply, and delivery of one vertical pump, fitted with electrical motor drive to be operated in ENERGY INFRASTRUCTURES, at KIRYAT HAIM TERMINAL in Israel.

1.2 Scope of supply

1.2.1 The system designed to use the pump for this specific task:

1.2.1.1 Transfer seawater from 8m deep pit to a storage tank at a distance of 250-300 m.

1.2.2 The diameter of the discharge pipe is 10 inch #300 FF.

1.2.3 One (1) complete electric pump.

1.2.4 The pump to include all accessories needed for its' operation.

1.2.5 The motor engine will include all accessories as specified in paragraph 8.

1.2.6 Vendor to include all special service tools required for maintenance of the pump and motor.

1.2.7 Documentation as specified in paragraph 10.

1.2.8 Pump must meet the sizes and measurements as described in paragraph 11.

2. SITE CONDITIONS

2.1 The pump will be installed outdoor.

2.2 Site altitude is about 5 m above sea level.

2.3 Ambient temperature varies between 0^0C- 45^0C.

2.4 Relative humidity varies between 45% - 90%.

2.5 Rainfall around 250 mm/year.

3. PUMP REQUIREMENTS

3.1 The pump shall be rated to 300 m3/h, 12 BAR.

3.2 The pump shall be of a vertical centrifugal design.

3.3 The pump shall be fitted with ANSI flanges, class 300 FF.

3.4 Easy maintenance.

4. SERVICE

- Liquid: seawater.
- Temp: 10°C - 30°C
- Environment: pump will be installed next to sea (environment with high corrosion)

5. TEST

The pump shall be hydrostatically tested to 1.5 times the maximum attainable pressure, but in no case less than 18 bar.

6. MATERIAL

- All material will be of OECD origin
- All materials must be approved by client prior fabrication
- All the Material specifications must be indicated on all drawings.
- Stainless steel welds must be passivated.
- The turbine bowls shall made of Ni-resist.
- Bearings shall be made of Thordon.
- The column pipe will be made of API 5l marine resist.
- The column pipes' flange connected with SS316 bolts.

7. NAME PLATE

SS 316 (2 mm thickness) nameplate shall be fixed to the pumps' body containing at least the following data:

7.1 pump nameplate:

- PEI equip. No: J-6
- Name of manufacturer
- Manufacturer model and serial number
- Year of manufacture
- Size, rating & RPM (chumming, nominal, 150%)

7.2 motor nameplate:

- PEI equip. No:__
- Name of manufacturer
- Manufacturer model and serial number
- Year of manufacture
- Motor speed (RPM), power

8. DRIVE

The pump shall be driven by an electrical motor:

- power: 250 HP / 184KW
- 400VAC - THREE PHASE 50HZ
- Speed: 1500 RPM

- Alignment: Vertical
- IP level: 55 TEFC
- Shaft: Hollow

9. PAINTING REQUIREMENTS:

Shall be color specification for marine environment, as C5-M High Durability:

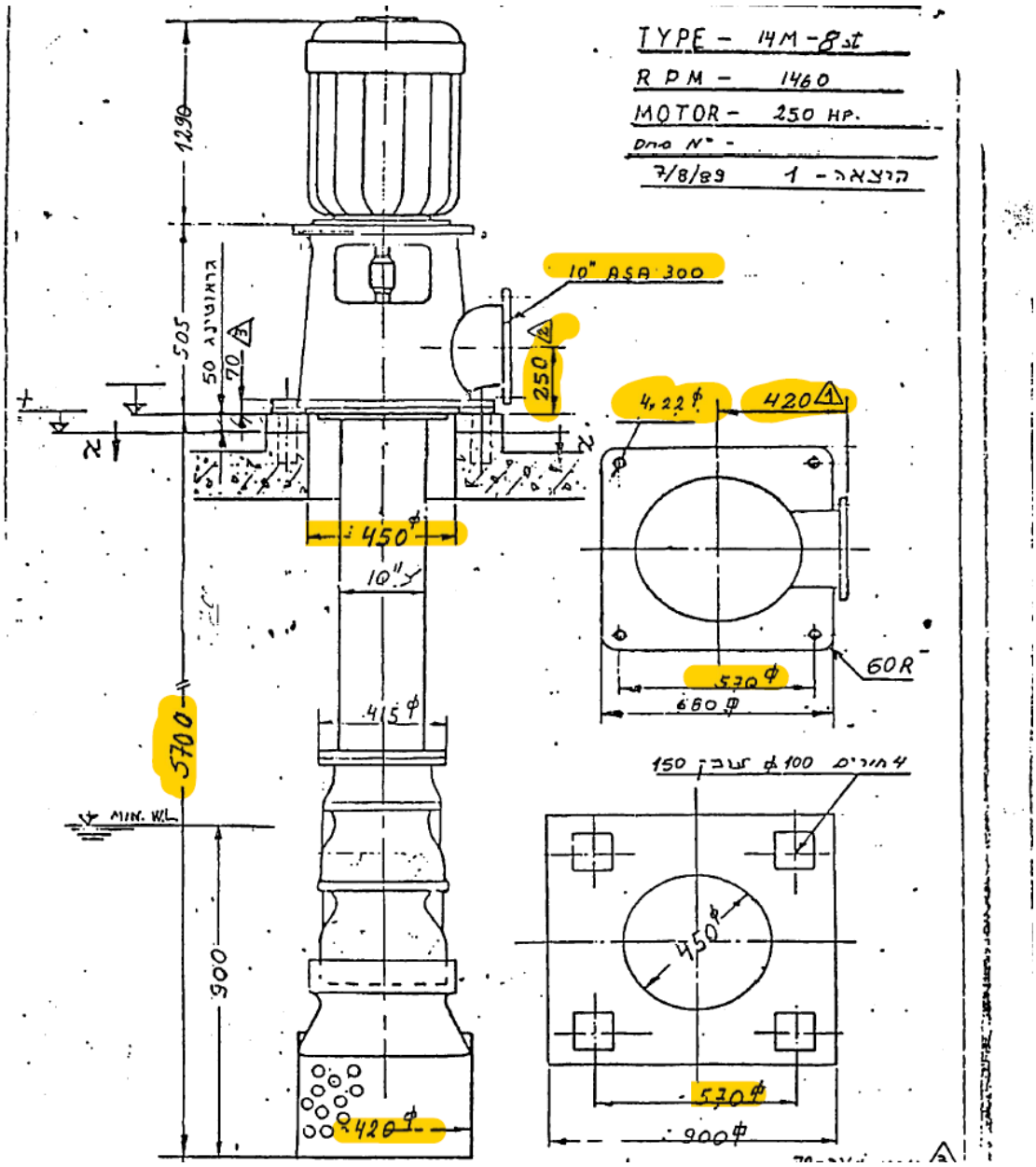
- Total dry thickness – at least 300 µm
- The column pipe will be painted both inside and out

10. DOCUMENTION

- Installation, operation and maintenance manuals will be sent to PEI for review with suppliers' proposal.
- Pump drawings include general outline dimensions of complete unit
- Pump and engine technical details and sketch.
- Pump performance curves
- Characteristic curve for engine, including power and torque against RPM and fluid consumption
- List of spare parts recommended for five (5) years operation with itemized prices
- Special tool list

11. Pump overall design and measurements

- The proposed pump shall meet all the marked measurements in the sketch below.
- All measurements are in millimeters, except flange size and grade.
- The max outer diameter shall not exceed 420mm.



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