

September 25th, 2024**ENERGY INFRASTRUCTURES LTD.****General Specification****FOR:****Emergency Drain Pump**

1. SCOPE

1.1 General

This document covers the technical requirements for design, manufacture, supply, and delivery of a single portable pump, fitted with **diesel-fueled engine** to be operated in Energy Infrastructures (EI), at Ashkelon Terminal in Israel. The pump will be operated as a single task, by means of pumping crude oil and distillate products (i.e. diesel, jet fuel and gasoline) from berms to a common header at a max' distance of 300 m.

1.2 Scope of supply

- 1.2.1 One (1) complete diesel-fueled pump.
- 1.2.2 The pump to include all accessories as specified in paragraph 7.
- 1.2.3 The engine will include all accessories as specified in paragraph 5.
- 1.2.4 Vendor to include all special service tools required for maintenance of the pump and engine.
- 1.2.5 Vendor to include documentation as specified in paragraph 11.

2. SITE CONDITIONS

- 2.1 The pump will be stored outdoors.
- 2.2 Site altitude is about 10 m above sea level.
- 2.3 Ambient temperature varies between 10°C- 45°C.
- 2.4 Relative humidity varies between 45% - 90%.
- 2.5 Rainfall around 250 mm/year.

3. SERVICE

- 3.1. Liquid: Crude oil and distillate products (SG = 0.75-0.95, Viscosity = 0.5-20 cSt)
- 3.2. Temp: 10°C to 50°C.
- 3.3. Environment: pump will be installed next to sea (environment with high corrosion).
- 3.4. The pump shall be placed outside the berm, discharging accumulated liquid from the berm to a drainage pipe outside, creating an elevation difference (pump location and bottom of berm) of approximately 7m.

4. PUMP REQUIREMENTS

- 4.1. The pump operational point will be: 60 meter @ flow rate: 400 m³/h.
- 4.2. The pump discharge flow shall allow flow regulation with either a mechanical device (e.g. a globe valve) or through a change in its rpm.
- 4.3. The pump shall be rated to a suction pressure of at least -0.5 bar (minus 0.5 bar) and a discharge pressure of at least 5 barg.



- 4.4. The pump's NPSH(a) shall be no more than 5m.
- 4.5. The pump's priming lift shall be of at least 5m.
- 4.6. The diameter of the suction and discharge sides shall be 6".
- 4.7. The pumps shall be fitted with ANSI flanges. The flanges shall be fitted with class 150, according to manufactured specification.
- 4.8. Easy maintenance.
- 4.9. The pump will be a self-priming pump.
- 4.10. The pump will have the ability to work for a short time with no fluid in the inlet.
- 4.11. The pump will be mounted horizontally, and shall have a minimum footprint.

5. DRIVE REQUIREMENTS

- 5.1. The engine's manufacture will be a leading & a well-known one.
- 5.2. The engine's exhaust shall include a non-sparking system suitable to operate in an ATEX zone 1 area.
- 5.3. The engine shall have a direct drive to the pump.
- 5.4. The engine shall have a control board with engine protection units: oil pressure, engine temperature, etc. The control box shall be of IP-65 type.
- 5.5. The engine shall work continuously for at least two (2) hours before refilling its diesel tank.

6. TEST & COMMISSINING

- 6.1. The pump's curves will be submitted to PEI for review.
- 6.2. The pump's ATP results will be submitted to PEI for review.
- 6.3. Vendor will do the commissioning of the pump at PEI's facility.

7. ACCESSORIES & FITTINGS

The supply of accessories and fittings shall include:

- 7.1. Safety shield on coupling between pump and engine.
- 7.2. The pump shall include a reducer from 6" to 4" with an OPW-type connection.
- 7.3. The pump shall include a grounding cable.
- 7.4. Pressure relief valve.
- 7.5. The pump shall be mounted on a mobile trailer fit to the pump's size. A lifting option shall be available. The trailer will have all means to be towed outside the operational area – licensing, lights, breaks etc' (see section 12 for further information on required licensing of the trailer).
- 7.6. A strainer shall be supply to the inlet side of the pump – strainer mesh shall be defined by vendor.

8. MATERIAL



- 8.1. All material will be USA/Europe origin.
- 8.2. All materials used shall comply with ASTM and ANSI standard.
- 8.3. All materials must be approved by client prior fabrication.
- 8.4. All the Material specifications must be indicated on all drawings.
- 8.5. Stainless steel welds must be passivated.

9. NAME PLATE

SS 316 (2 mm thickness) nameplate shall be fixed to the pump and engine containing at least the following data:

8.1 pump nameplate:

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

8.2 motor nameplate:

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

10. PAINTING REQUIREMENTS:

The paint specification shall be fitted for marine environment, as C5 - High Durability:

- Sigmazinc 68 SP @60 μm
- Sigmafast 278 @180 μm
- Sigmadur 520 (semi-gloss) @60 μm
- Total dry thickness – at least 300 μm

11. DOCUMENTATION

- 11.1. Installation, operation and maintenance manuals will be sent to PEI for review after the PO submittal.
- 11.2. Pump drawings include general outline dimensions of complete unit.
- 11.3. Skid structural steel details.
- 11.4. Pump and engine technical details.
- 11.5. Pump performance curves.



- 11.6. Characteristic curve for engine, including power and torque against RPM and fluid consumption.
- 11.7. List of spare parts recommended for two (2) years operation with itemized prices.

12. LICENSING

- 12.1. The pump's vendor or its local representative is required to register the pump-specific trailer with the Israeli Ministry of Transport and Road Safety as "O2 – Special Work Trailer".
- 12.2. The trailer shall be certified and signed by the Division of Motor Vehicles – Standardization Unit (Hora'at Rishum). The certification must list the trailer's full specifications, including the number of the trailer's chassis, the type and model of the pump, drawings, dimensions and allowed loads;
- 12.3. The maximum weight (pump and trailer) shall not exceed 2,800 kg.
- 12.4. The trailer's width shall not exceed 2m.
- 12.5. The trailer's height above ground level shall not exceed 2.8m
- 12.6. The trailer shall consist of a complete brake system including a handbrake, security chains, lighting system and a power outlet, as required by the Israeli law.

