1. General information
   1.2. Application of equipment: pumping of chemically dirty drains.
2. Technical parameters.
   2.1. Technical parameter of the pump:
   2.1.1. Flowrate, m3/h-50.
   2.1.2. Head, m - 50.
   2.1.3 Rotating speed, RPM - 2950 (+/-2%).
   2.1.4 The allowed net positive suction head of the pump, m - no more than 1,8.
   2.1.5 Driving depth, m (distance from a pump mounting flange to the filter on an intake line) - 3.7.
   2.1.6. The operational mode is continuous.
   2.1.7. Pump drive type - the electric motor.
   2.1.8. Sealing of a wet part - gland cord;
   2.2. Technical parameters of the electric motor.
   2.2.1. Electric motor type - asynchronous, single-speed, with the squirrel cage rotor.
   2.2.2. Mains voltage, V - 380 ±10%.
   2.2.3. Number of phases - three-phase.
   2.2.4. A type of current - AC.
   2.2.5. Current frequency, Hz - 50.
   2.2.6. A type of explosion protection - common industrial execution.
   2.2.7. Class of efficiency - IE3.
   2.2.8. IP - 68.
   2.2.9. operating mode - S1.
   2.2.10. Mounting of the electric motor - vertical.
   2.2.11. Bearing lubrication type - grease.
   2.2.12. Climatic category - UHL-1 (from -60C to +40C).
   2.3. Operation parameters of the pumped medium.
   2.3.1. The name of the medium - chemical drains.
   2.3.2. A phase condition - liquid.
   2.3.3. Medium composition:
   - ammonia (NH3), % - 15
   - solution of methyldiethanol amide, *% - 2.*
   - water (H2O), % - 83.
   2.3.4. Medium temperature:
   - minimum, ℃ - 0.
   - maximum, ℃ - plus 30.
   2.3.5. Crystallization - none.
   2.3.6. Toxicity - present.
   2.3.7. Volume content of solids, % - no more than 3.
   2.3.8. A particle size, mm - no more than 0.5.
3. Technical requirements for equipment.
   3.1. Technical requirements for the pump.
   3.1.1. The pump semisubmersible one-stage centrifugal type, vertical installation on the base plate in in a torsionally rigid version, with a stuffing box packing.
   3.1.2. The closed radial wheel with discharge openings.
   3.1.3. Bearing assemblies designly must have grease fitting with a possibility of extrusion of grease during pump is running.
   3.1.4. The unit of an antifriction bearing must be protected by non-contacting labyrinth seal.
   3.1.5. Material of friction bearings - SiC silicon carbide.
   3.1.6. The filter on the line of an inlet to a pumping unit with a cell of 2 mm.
   3.1.7. A presence of the filter on a delivery line of working fluid on friction bearings,
   3.1.8. The shaft IN work areas of seal gland and units of friction bearings must иу protected by quick-change sleeves.
   3.1.9. Materials of basic parts and pump assemblies:
   - casing - 12H18N12MZTL (1.4408 by EN) or an analog.
   - pump impeller - 12H18N12MZTL (1.4408 by EN) or an analog.

- protective sleeve of seal gland - 12X18HI2M3T (1.4408 by EN) or an analog.
- protective sleeve of friction bearings - 12H18N12MZT (1.4408 by EN) or an analog.
- impeller seal ring - 12H18N12MZT (1.4408 by EN) or an analog.
- shaft - 03X22H05AM2 (1.4462 by EN) or an analog.
- cantilever - steel 12H18N12MZT (1.4408 by EN) or an analog.
- fasteners - 12H18N12MZT (1.4408 by EN) or an analog.
- pump frame material - 12H18N12MZT (1.4408 by EN) or an analog.

3.1.10. The materials of other parts and components, pump fasteners contacting to the medium must be made of stainless steels corrosion resistant to the pumped medium according to item 2.3 of this technical specification.

3.1.11. Torque transfer from the motor through flexible coupling of cam type with a spacer.

3.1.12. A presence of draw bolts for dismounting of the electric motor from the pump support frame.

3.1.13. Providing replaceable O-rings of the impeller.

3.1.14. The connecting dimensions of flanges of suction *and* delivery nozzles of the pump must correspond to execution 1 according to GOST 12815-80.

3.1.15. A presence on a pump casing of the corrosion-proof plate with indication of the following information: pump type, serial No, year of manufacture, technical parameters, mass of the pump.

3.2. Design requirements to the electric motor.

3.2.1. A presence of ground bolts on the casing.

3.2.2. A presence of the removable front and rear bearing shields from cast iron or steel.

3.2.3. The cooling fan and a fan cover must be executed of steel.

3.2.4. The cooling fan must perform cooling of the electric motor at either direction of rotation of a rotor of the electric motor.

3.2.5. The electric motor must be painted in RAL7047 color (gray) and have the appropriate anticorrosion protection.

3.2.6. The label with technical data of the electric motor must be executed of stainless steel on the housing of the electric motor and on the inside of a cover of input device.

3.2.7. Bearing assemblies must be for the heavy-duty service, with rolling bearings not less than series #300 (an average series) included in the standard program of the manufacturer of bearings.

3.2.8. A presence of grease fittings for refill of bearing units by lubricant during electric motor is running.

3.2.9. In electric motors there must be bearings of global manufacturers: SKF, FAG or similar. Life cycle of bearings - not less than 40,000 hours.

3.2.10. Connection of power cable in input device - a cable terminal.

3.2.11. Joint of a stator winding must be executed in input device of the electric motor with possibility of turning of input device with a step 90 °(4x90 °).

3.2.12. A possibility of connection of windings is star/triangle in input device of the electric motor.

3.2.13. A presence of euro-entries for cables.

4. Scope of supply.

4.1. Scope:

4.1.1. A semisubmersible electric pump unit assembled on the support frame with filters on an intake line and on delivery line of working fluid for friction bearings, with mating flanges, a set of gaskets and hardware - 1 set.

4.1.2. Tools for dismantling and maintenance of the pump and the electric motor - 1 set.

4.1.3. A pressure gun of plunger type with a set of nozzles for injection of the consistent lubricant - 1 set.

4.1.4. Technical documentation (according to item 5) - 2 sets.

4.2. A spare part kit for repair and service:

4.2.1. A pump rotor - 1 piece.

4.2.2. A coupling of cam type with a spacer - 1 set.

4.2.3. Elastic elements for the coupling - 2 sets.

4.2.4. The protective sleeve for seal gland - 2 pieces.

4.2.5. The protective sleeve for friction bearings - 2 sets.

4.2.6. Wear rings of the impeller - 1 set.

4.2.7. Pump antifriction bearings - 1 set.

4.2.8. Pump friction bearings - 1 set.
4.2.9. Electric motor antifriction bearings - 1 set.
4.2.10. A labyrinth seal of the cantilever construction of the pump - 1 set.
4.2.11. Wet part seal gland - 2 sets.
4.2.12. O-rings, cups, gaskets for capital repair of a pumping unit - 2 sets.
4.2.13. Special pastes, sealers, lubricants - 2 sets.

4.3. Features of shipment:

4.3.1. The pumping unit is delivered assembled in the packaging protecting it from influence of mechanical, thermal and other damages.
4.3.2. Nozzles of the pump must be plugged and sealed up.
4.3.3. Reserve seal gland must be pressed and packed into a tube.

5. Requirements to technical documentation.

5.1. The list of operational documents on the purchased equipment:

5.1.3. The passport of the pump - 1 copy.
5.1.4. The passport of the electric motor - 1 copy.
5.1.5. The passport of the coupling - 1 copy.
5.1.6. The installation and operation manual of the pump - 2 copies.
5.1.7. The installation and operation manual of the electric motor - 1 copy.
5.1.8. Copies of certificates on compliance of TR CU according to item 6.4 - 1copy.
5.1.9. The copies of the certificate of a quality management system of ISO 9001:2015- 1 copy.
5.1.10. Copy of safety justification with risk assessment - 1 copy.

6. General requirements.

6.1. Tests of a pumping unit for flowrate, a head, efficiency and a positive suction head according to ISO 9906:2012.
6.2. Tests of a pumping unit for noise according to EN 12639:2000 standard.
6.3. Quality of balancing of a pump rotor and back-up rotor according to ISO 1940-1:2003.
6.4. A presence of the conformity certificate to the technical regulation of TR CU custom union 010/20 "About safety of machines and the equipment" for electric pumping unit and components.
6.5. A presence of the declaration or conformity certificate to the technical regulation of TR CU custom union 004/2011 "About safety of a low-voltage equipment" on the electric motor.
6.6. Presence of the certificate of ISO 9001:2015 "Quality management system. Requirements" confirming a quality of product.
6.7. The pumping unit must be brand-new, not been in use, original, not recovered, not assembled from the recovered components.
6.8. The pumping unit must provide the following normative indicators of an interrepair life:
- between routine repairs - 8640 hours
- between overhauls - 34,560 clocks.

6.9. A warranty period is not less than 18 months from the date of commissioning and not less than 24 months from the date of delivery.
6.10. The complete life cycle of equipment - not less than 25 years.
6.11. Technicians of the customer before dispatch of equipment conduct control of testing of a pumping unit, completeness of shipment and content of technical documentation for compliance with requirements of this technical specification. Acceptance and testing of a pumping unit is conducted at the manufacturer's site, according to the program agreed with the customer.

7. Requirements for the bidder

7.1. The bidder is obliged to provide a reference-list of shipments of similar pumping units for the last five years for similar ammonia production.
7.2. The bidder undertakes during warranty period in the shortest agreed time period to replace or repair the defective parts on his own account and on his own, taking into account that the defect of a product hasn't occurred because of the customer fault.
7.3. The bidder undertakes to provide spare parts during the whole life cycle of the equipment.

8. Requirement for the proposal.

8.1. The proposal must contain the complete list of items according to item 4 of this technical specification.