

MASHZAVOD Ltd

LIST OF EQUIPMENT - 2015

Address card

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Mashzavod Ltd manufactures steel welded vessels and apparatuses, that work under pressure up to 16.0 MPa (160 kgf/cm²) under loading and in vacuum with diameter up to 4000 mm made of carbon, low-alloyed, high-alloyed, heat-resisting steels, bimetals for oil and gas processing, chemical and other industries.

1. HEAT-EXCHANGING APPARATUSES:

- shell-and-tube type with increased heat efficiency, with diameters 159÷1400mm, of ТП, ТУ, ХП, КП types;
- shell-and-tube type heat-exchangers with fixed tube plate and shell-and-tube type heat-exchangers with on-shell temperature compensator;
- "gas-gas" type heat-exchangers for cooling and differential condensation of natural gas;
- heat exchangers with diameter 800 mm for heating of natural gas;
- shell-and-tube rod type heat-exchangers with longitudinal baffle plate;
- "tube-in-tube" type heat-exchangers, single-flow and multi-flow.

2. EVAPORATORS:

- steam volume types ИП, ИУ, with diameters 800, 1000, 1200, 1400, 1600, 1800, 2000 mm ;
- thermosyphon evaporators.

3. CONDENSERS vacuum.

4. EVAPORATORS AND CONDENSERS cooling.

5. TUBE BUNDLES (spare parts) for the equipment, specified in items 1-4 and under individual projects.

6. OIL COOLERS for cooling of oil, circulating in power transformer oil systems.

7. HEATERS:

- water-steam and water-to-water for heating systems;
- capacitive horizontal water-steam evaporators, type СТД 3068 ÷ 3071.

8. SEPARATORS:

- grid-type gas separators (ГС) with diameters 600, 800, 1200, 1600, 2000 mm designed to purify natural gas from impurities;
- oil and gas separators;
- input separators for high pressure up to 15.2 MPa;
- flare separators.

9. DUST SEPARATORS for cleaning natural gas from mechanical impurities and liquids with diameter 1200, 2000 mm.

10. FILTERS

- mud collectors ДУ 700 Py 40, ДУ 500 Py 40 and with other diameters;
- filters of СДЖ type.

11. COLUMN APPARATUSES for rectification, absorption, adsorption, desorption, cooling and purifying, with diameters 400÷4000 mm in assembly; with diameters more than 4000 mm - in parts, with different types of contact devices (trays):

- straight way valve trays as per ATK 26-02-1-89, ATK 26-02-2-89;
- valve ballast trays as per ATK 24.202.11-90, ATK 24.202.08-90;
- sieve as per ГП 648.000.000;
- S-shaped valve trays as per ATK 24.202.02-90;
- valve trapezoidal trays as per ATK 26-02-4-02, ATK 26-02-5-89;
- nozzle-type trays, irregular (Rushig rings);
- sieve with baffle elements as per ATK 26-02-3-89;
- grid-type trays as per OCT 26-02-2055-79;
- bubble trays as per OCT 26-01-66-86;
- sieve-valve trays as per OCT 26-01-108-85.

12. SCRUBBERS air scrubbers with diameter 1200÷2600 mm and nitrogen scrubbers with diameter 1400÷3200 mm.

13. MODULE-UNIT-CONSTRUCTION equipment for oil-and-gas industry:

- units, applied for purifying, measuring, drying and storage of impulse gas, gas heating units;
- dust separator units for pressure 5,5 MPa and 7,5MPa;
- filter-separator units;
- glycol regeneration units with productivity $Q = 0,5 \div 30 \text{ m}^3/\text{h}$;
- heat-carrying agent heating units with productivity $Q = 25 \text{ m}^3/\text{h}$;
- gas heating units $Q = 10\ 000, 30\ 000 \text{ m}^3/\text{h}$;
- gas low-temperature separation units;
- glycol purifying unit;
- process modules for automobile gas-filling stations $V = 10 \text{ m}^3$.

14. CAPACITIVE CYLINDRICAL APPARATUSES:

- horizontal and vertical tanks with volume up to 200 m^3 with operating pressure up to 16,0 MPa for gas and liquid media;
- butane storage tanks БС 50÷200 and propane storage vessels ПС 10÷200;
- air receivers;
- underground drainage tanks;
- liquid separators with volume up to 63 m^3 ;
- electric dehydrators and thermo dehydrators for dehydration and desalination of petroleum and gas condensate;
- steel horizontal cylindrical above-ground and underground flat-bottom storage tanks with volume of $3 \div 100 \text{ m}^3$, applied for petroleum product storage loading;
- tanks $V = 10 \text{ m}^3$ for automobile gas-filling stations;
- capacitive steel horizontal cylindrical apparatuses per ГЭЭ type (for chemical media) and БЭЭ type (for corrosion protection) according to the catalogue "Capacitive Apparatuses" of Severodonetsk Engineering Plant Research Institute;

15. AIR COOLING APPARATUSES AND SECTIONS TO THEM:

- horizontal type 1АБГ;
- horizontal type 2АБГ;
- low-flow horizontal and vertical (АБМ);
- zigzag type АБЗ;
- horizontal type АБГ;
- zigzag type, horizontal and low-flow.

16. CRYOGENIC ENGINEERING PRODUCTS.

17. VESSELS AND APPARATUSES FOR LOW-TEMPERATURE GAS SEPARATION.

18. AUTOMATED TANKER DISCHARGE-REFILL SYSTEMS (ACH) applied for equipping stationary wharves of coastal oil depots, designed for discharging and refilling oil and petroleum products, as well as for loading ballast water and removing air-steam mixture.

The ACH includes:

- loading arms AC-250 and AC-400 (diameter of product pipeline - 250 mm and 400 mm);
- oil pressure station CM-100-45;
- remote control ПУН-100-6;
- piping manifold.

19. MANIFOLD AND FIELD PIPELINE CONNECTORS with Pp up to 10 MPa:

- bends ОКШ with diameter 57÷1420 mm with turning angle 30°, 45°, 60°, 90°;
- bends OCC with diameter 530÷1420 mm with turning angle from 3° to 90° Pp ≤ 7.5 MPa;
- tees TCH, TCHP with diameter 530÷1420 mm;
- tees TC with diameter 57÷426 mm;
- tees TШC with diameter 720×325, 377, 426, 530, 630 mm;
1020×325, 377, 426, 530, 630, 720, 820 mm;
- reducing pipes ПШC with diameter 530×325 ÷1420×1220 mm;
- reducing pipes ПШ with diameter 57×38÷426×377 mm;
- heads ДШ with diameter 57÷1420 mm;
- manholes Дy 500 mm, Py 7.5 MPa for tube with diameter 720, 1020 mm.

MANIFOLD AND FIELD PIPELINE CONNECTORS with Pp up to 9,8 Mpa (100kgs/cm²):

- bends ОКШ with diameter DN 500-1400 mm with turning angle 30°, 45°, 60°, 90°;
- tees TШC, TШCP with diameter DN 500-1400 mm;
- tees TШ with diameter DN 200-400 mm;
- reducing pipes ПШC DN 500×<dN 400 - DN1400×dN1220 mm;
- heads ДШ with diameter DN 200-1400 mm;
- adapter rings КП with diameter DN 400-1400 mm.

MANIFOLD AND FIELD PIPELINE CONNECTORS with Pp up to 14,0 MPa:

- bends ОКШC with diameter DN 50-1200 mm with turning angle 30°, 45°, 60°, 90°;
- tees TШC, TШCP with diameter DN 500-1200 mm;
- reducing pipes ПШC DN 500×dN 400 – DN 1200×dN 1000 mm;
- heads ДШ with diameter DN 50-1200 mm;
- adapter rings КП with diameter DN 400-1200 mm.

20. GAS HEATERS TYPE ПГ-10, ПГ-30.**21. PIPING FLOW-LINE MEANS START-UP AND RECEPTION SYSTEMS with diameter 500, 700 mm.****22. BOILER-AUXILIARY EQUIPMENT:**

- deaerating plants;
- separators of continuous and discontinuous boiler purge;
- water preparation filters;
- vapour condenser OB 2÷24;

23. SHELF EVAPORATOR for separation solvents from sunflower seed extraction residues (fat-and-oil industry).**24. AUTOCLAVES for triplex glass heat treatment, diameter 2000 mm with operating medium temperature up to 140 °C.****25. DEGASATORS liquid with volume 2÷100 m³; with pressure 0.3; 1.6; 4.0; 6.3 MPa.****26. REACTOR EQUIPMENT with diameter 800÷4000 mm, pressure up to 16,0 MPa:**

- vertical reforming apparatuses;
- hydrotreating reactors with fixed catalyst layer.

27. OTHER EQUIPMENT ACCORDING TO THE INDIVIDUAL PROJECTS AND DIFFERENT TYPES OF WELDED METAL STRUCTURES.

Mashzavod Ltd has an implemented Quality Control System, confirmed by international certificate according to ISO 9001:2008 standard requirements and by UkrSEPRO certificate according to ДСТУ ISO 9001:2009 standard.

The quality of manufactured products is confirmed by the certificates of conformity in UkrSEPRO system and according to the Technical regulation, and for supplies to Russian Federation – in GOST R system and according to the Technical regulation.

Our plant manufactures and supplies to Europe the equipment, certified according to European Directive 97/23/EC requirements.

Mashzavod Ltd has the License of Gospromnadzor (State Industrial Control) of the Republic of Belarus for the right to manufacture and apply the technical equipment (vessels and apparatuses of I-IV groups, auxiliary boiler equipment, pipelines' details under working pressure up to 10,0 MPa) at the objects, regulated by Gospromnadzor.

Our plant is certified and entitled to manufacture equipment that works under pressure in compliance with the standard of the American Society of Mechanical Engineers (ASME) Sec. VIII div. I and div. II with "U" and "U2" stamp requirements.

General Director
Mashzavod Ltd



Viktor A. Sidlyar