



SARRZ
SARATOV RESERVOIR PLANT

**MODERN TANK
CONSTRUCTION TECHNOLOGY**

PRODUCTION ENGINEERING

98

PROJECTS

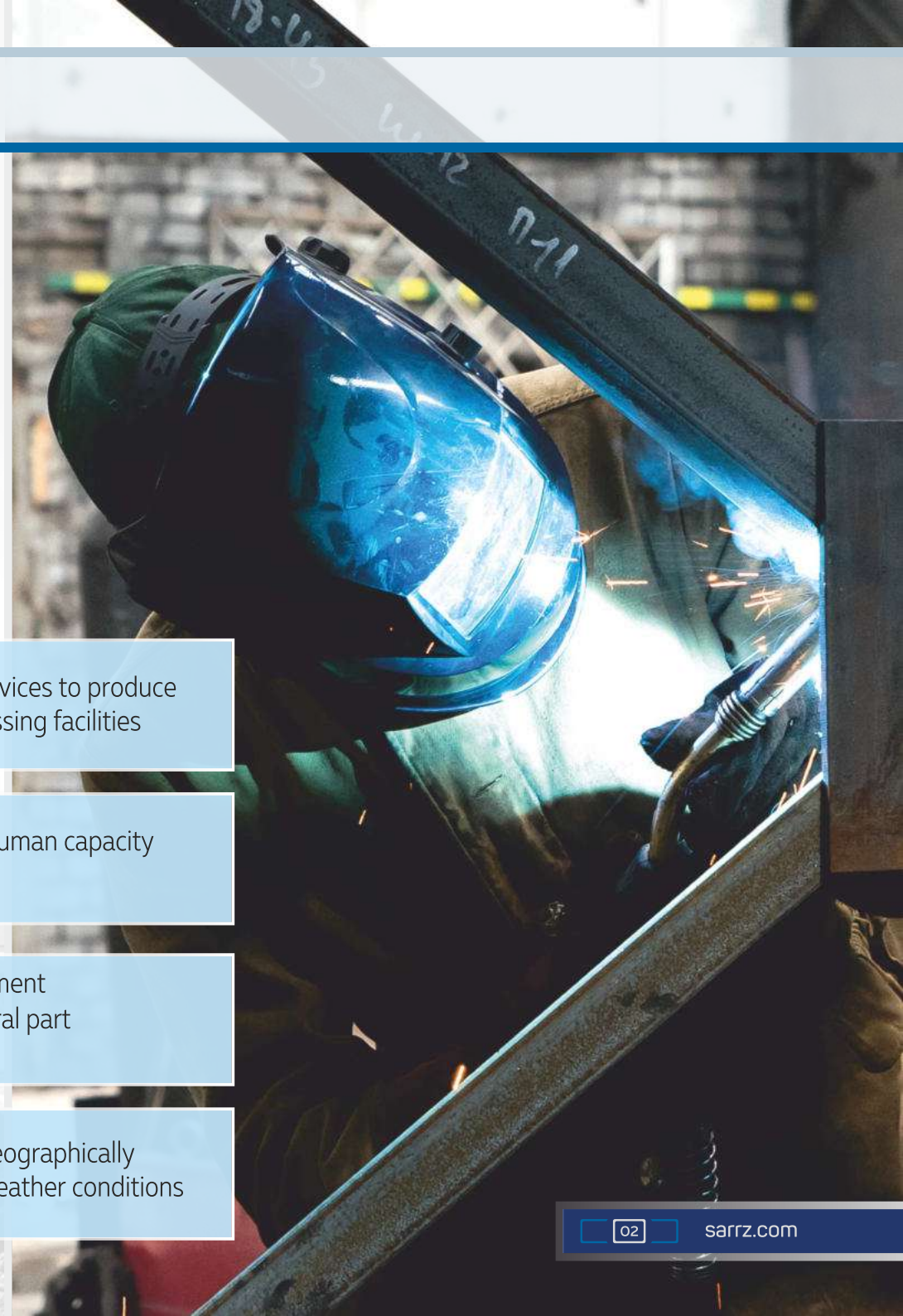
OF VARIOUS COMPLEXITIES HAVE BEEN SUCCESSFULLY IMPLEMENTED BY OUR COMPANY OVER THE COURSE OF 6 YEARS

THE RANGE OF SERVICES PROVIDED BY OUR COMPANY INCLUDES:

- Development of Main design solutions and Feasibility studies
- Design and survey activities
- Production
- Shipping logistics
- Construction and installation activities
- Pre-commissioning and commissioning operations
- Service (assistance in setting up of equipment, quick response, complaint management)

OUR PRIMARY ADVANTAGES

- 1 Capability of providing a full range of services to produce key-ready petrochemical and gas processing facilities
- 2 In-house production facilities and high human capacity of the Company
- 3 Design department, engineering department and montage department form an integral part of the Company
- 4 Capability of implementing projects in geographically remote areas and regions with severe weather conditions



DESIGN AND SURVEY ACTIVITIES

20

SPECIALISTS

WITH HIGH PROFESSIONAL SKILLS FORM THE DESIGN AND ENGINEERING GROUP OF OUR PLANT

DESIGNING STAGES:

- Source data collection for further design
- Feasibility studies of the project
- Conducting comprehensive engineering surveys
- Inspection of structures, buildings and facilities
- Optimization of process design solutions
- Development of design and operating documents
- Industrial safety expert review (if necessary)
- Designer's technical supervision (if necessary)

OUR PRIMARY ADVANTAGES

1

Capability of developing all sections of design documents in accordance with the Russian Federation Government Regulation N 87 of 16.02.2008 (as revised on 13.12.2017)

2

Providing design documents translated to Customer's native language (if necessary)

3

Development of design documents compliant with Russian and international standards

4

Niche specialization of our company, i.e. tank farms and petroleum equipment

PLANT PRODUCTION INFRASTRUCTURE

32

WORK ORDERS

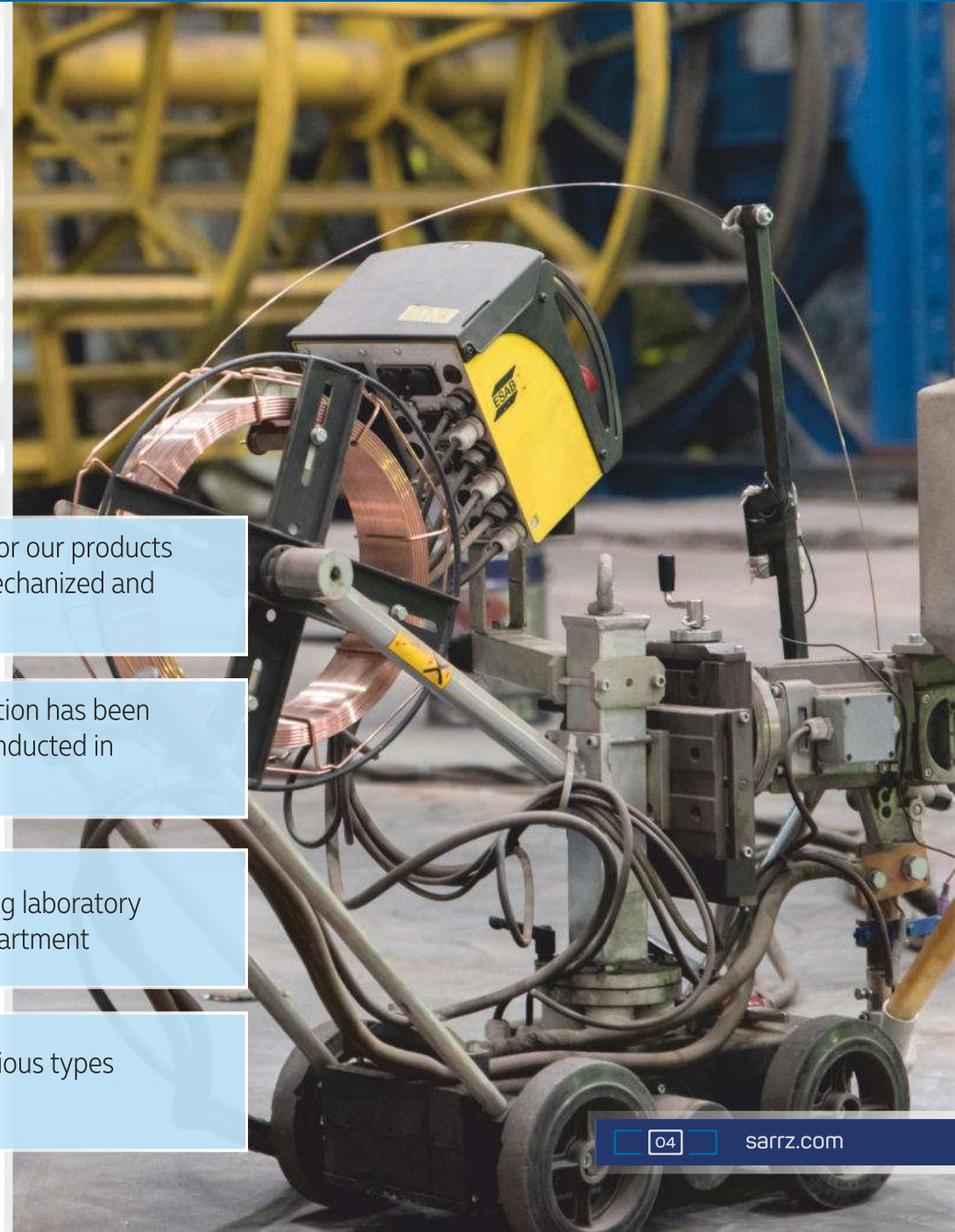
CAN BE PERFORMED SIMULTANEOUSLY
BY OUR PRODUCTION FACILITIES

PLANT PRODUCTION FACILITIES (8000 SQ. METERS) INCLUDE:

- Fabrication workshop
- Machine workshop
- Vertical tank production workshop
- Horizontal tank production workshop
- Stainless steel products workshop
- Non-destructive testing laboratory
- Mechanical polishing workshop (sand and shot blasting areas, spraying area)

OUR PRIMARY ADVANTAGES

- 1 Application of various types of welding for our products including automated submerged-arc, mechanized and manual metal-ark welding
- 2 Electric and gas welders whose qualification has been confirmed by production certification conducted in accordance with NAKS system
- 3 In-house certified non-destructive testing laboratory included into Plant's Quality Control Department
- 4 A wide range of tanks and vessels of various types of steel



VERTICAL STEEL TANKS WITH CAPACITY OF UP TO 50 000 CUB. M



EQUIPMENT PURPOSE: STORAGE OF OIL, PETROCHEMICALS, WATER, CHEMICAL AGENTS OR FOOD PRODUCTS

EQUIPMENT FEATURES:

Production time: 20 days or more

Technical Specification: TY-3615-001-69478442-2013

Production techniques: rolling, plate-by-plate, combined

Types of roof design: stationary, with a pontoon, floating type

Grades of steel: Ст3сп5, Ст20к, 09Г2С, 12Х18Н10Т, AISI304

Manufacturing plant warranty: up to 36 months

Service life: not less than 40 years



VST-10 000 WITH PONTOONS (4 UNITS)
SHIPPED TO REPUBLIC OF AZERBAIJAN



HORIZONTAL TANKS AND VESSELS WITH CAPACITY OF UP TO 200 CUB. M



EQUIPMENT PURPOSE: STORAGE AND EMERGENCY DISCHARGE OF LIQUIDS WITH DENSITY OF UP TO 1300 KG/CUB. M

EQUIPMENT FEATURES:

Production time: 20 days or more

Technical Specification: TY-3615-006-69478442-2014

Tank types: without heater, with steam-water or electric heater

Types of bottom design: cone-shape, ellipsoid, flat

Grades of steel: Ст3сп5, Ст20к, 09Г2С, 12Х18Н10Т, AISI304

Manufacturing plant warranty: 36 months

Service life: not less than 30 years



UNDERGROUND TANK-200 (8 UNITS)
SHIPPED TO REPUBLIC OF TATARSTAN (RF)



AIR COLLECTORS AND GAS STORAGE TANKS WITH CAPACITY OF UP TO 200 CUB. M



EQUIPMENT PURPOSE: COMPRESSED AIR, NITROGEN OR INACTIVE GAS STORAGE UNDER PRESSURE OF UP TO 16 MPa

EQUIPMENT FEATURES:

Production time: 25 days or more

Technical Specification: TY-3615-006-69478442-2014

Structural design: vertical and horizontal cylinders with ellipsoid bottoms, may include heater

Grades of steel: Ст3cn5, Ст20к, 09Г2С, 12Х18Н10Т, AISI304

Manufacturing plant warranty: 36 months

Service life: not less than 40 years



NITROGEN STORAGE TANK - 100 CUB. M (1 UNIT)
SHIPPED TO SAMARA OBLAST (RF)



SILO TOWERS FOR DRY GOODS WITH CAPACITY OF UP TO 3 000 CUB. M



EQUIPMENT PURPOSE: RECEIPT, STORAGE AND DISTRIBUTION OF DRY GRANULAR MATERIALS

EQUIPMENT FEATURES:

Production time: 30 days or more

Technical Specification: TY-5263-004-69478442-2013

Structural design: cylindrical, rectangular

Types of roofs and bottoms: cone-shaped, flat

Grades of steel: Ст3cn5, Ст20к, 09Г2С, 12Х18Н10Т, AISI304

Manufacturing plant warranty: 36 months

Service life: not less than 30 years



GRAIN SILO TOWER - 115 CUB. M (1 UNIT)
SHIPPED TO SAMARA OBLAST (RF)



CONSTRUCTION OF KEY-READY FACILITIES

7

FACILITIES

ARE CURRENTLY BEING CONSTRUCTED
SIMULTANEOUSLY IN RUSSIA AND ADJACENT
STATES

FACILITY CONSTRUCTION AND INSTALLATION GROUP CONSISTS OF:

- Project supervisor (coordinator)
- Production site supervisor
- Production line engineers and technicians (foreman, engineers installing automated control system for technological processes, service engineers, labor safety engineers)
- Safety procedure inspectors
- Electric gas welders (holding NAKS certificates) and installation crew
- Procurement specialists and warehouse attendants
- General workers and operation personnel

OUR PRIMARY ADVANTAGES

- 1 Fast solution of any technical issues related to the project due to close cooperation between design department, production crew and installation department of the Company
- 2 Decrease of construction costs due to delivered-as-scheduled index and absence of third party contractors
- 3 Effective management over construction process allowing finishing the work in accordance with schedule and time of delivery for the facility
- 4 Capability of constructing facilities within the entire territory of Russia as well as adjacent or remote countries



INSTALLATION SUPERVISION OF VST-250 IN WEST AFRICA

FOR ENTERPRISE MINING ALUMINUM



PURPOSE: STORAGE OF FUEL OIL

CONSTRUCTION SITE INFORMATION:

Customer: COBAD S.A (the Republic of Guinea)

Facility location: Africa, Republic of Guinea, Dugula District, Kamsar Sub-Prefecture, Boke Prefecture

Period of construction: February 2019 - April 2019

SCOPE OF SHIPMENT:

- VST metalworks with capacity of 250 cubic meters - 2 units
- Internal heating coil - 2 sets

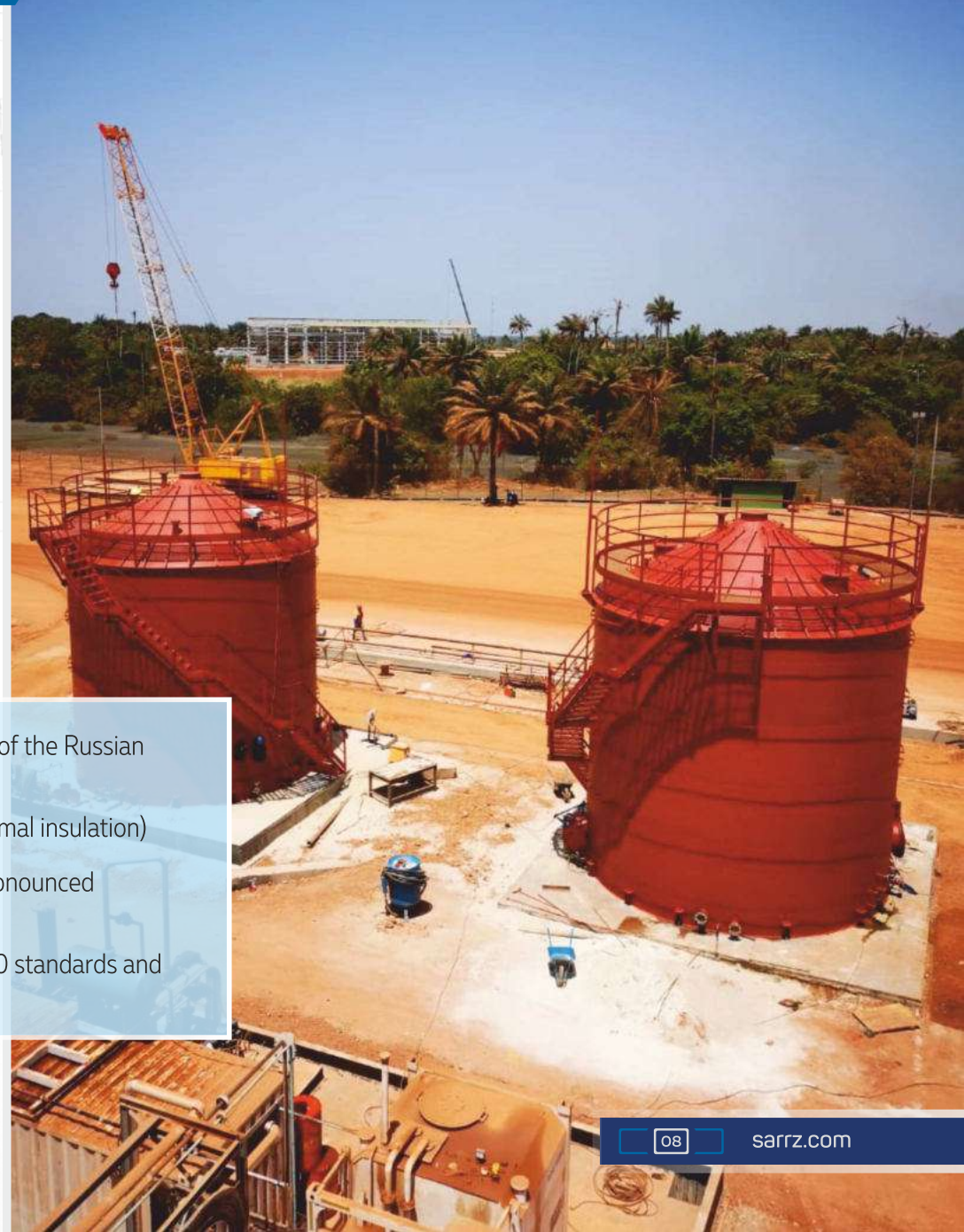
SCOPE OF OPERATIONS:

Designing, manufacturing, installation supervision, instruction of operation and maintenance of storage tanks



PROJECT FEATURES

- Implementation of the project for foreign customers outside the territory of the Russian Federation
- Designing of production drawings for KM (metal structures) and TI (thermal insulation)
- Installation supervision was carried out in a subequatorial climate with pronounced alternation of dry and wet seasons
- The original technical documentation was developed according to API 650 standards and adapted to GOST 31385-2016



STORAGE PARK OF 16 TANKS WITH CAPACITY FROM 104 TO 3520 CUB. M

FOR MANUFACTURER
OF CARDBOARD AND CELLULOSE



PURPOSE: STORAGE OF ALKALI

CONSTRUCTION SITE INFORMATION:

Customer: AO «Arkhangelsk Pulp and Paper Mill» (Arkhangelsk ACBK)

Facility location: the city of Novodvinsk, Arkhangelsk Oblast, Russian Federation

Period of construction: May 2018 - June 2019

SCOPE OF SHIPMENT:

- VST metalworks with capacity from 104 to 3520 cubic meters (total weight of tanks is nearly 1300 tons)

SCOPE OF OPERATIONS:

Designing of KM and КМД projects, design approval by Valmet, ArchHuproBum and Arkhangelsk ACBK, tank manufacturing, construction and installation works



PROJECT FEATURES

- Adaptation of Valmet (Finland) requirements to Russian standards
- Manufacturing of products with carbon CS (09G2S) and stainless (AISI 304L) steel
- Installation of tanks by plate-by-plate and rolling methods
- High requirements of the Customer for work performing and safety norms
- Tight working space at the construction site. Performing of works without stopping the production processes at the enterprise
- Tight deadlines



VST-5000 WITH THE EXTERNAL HEAT INSULATION

SHIPPED TO NITROGEN FERTILIZER
PRODUCTION PLANT



PURPOSE: STORAGE OF CARBAMIDE-AMMONIA
SALTPETER

CONSTRUCTION SITE INFORMATION:

Customer: KAO (Kemerovo Joint-Stock Company) Azot

Facility location: the city of Kemerovo, Kemerovo Oblast, Russian Federation

Period of construction: August 2017 - January 2018

SCOPE OF SHIPMENT:

- VST metalworks with capacity of 5 000 cubic meters - 2 units
- Heat insulation (100 mm thick) - 512 cubic meters
- Zinc-coated corrugated decks (0.7 mm thick) - 2396 cubic meters
- Ring-shaped flow-type heater (coil) - 2 units
- Tank equipment, paint coatings, construction materials

SCOPE OF OPERATIONS:

Tank design, production and installation



PROJECT FEATURES

- Construction was performed during winter below-freezing temperatures and increased air humidity
- Hazard rating of the operating environment according to GOST (State Standard) No. 12.1.007: III
- To maintain the required temperature of the operating environment serpentine were installed and rock wool was used as heat insulating material
- High requirements of the Customer for work performing and safety norms
- All operations were performed without stopping the production processes at the enterprise



VST-5000 WITH THE ALUMINUM PONTOON

FOR THE SWEET CRUDE OIL
PROCESSING PLANT



PURPOSE: STORAGE OF PETROCHEMICALS WITH
DENSITY OF UP TO 830 KG/CUB. M

CONSTRUCTION SITE INFORMATION:

Customer: OOO «Lukoil-UNP»

Facility location: the city of Ukhta, Republic of Komi, Russian Federation

Period of construction: December 2017 - September 2018

SCOPE OF SHIPMENT:

- VST metalworks with capacity of 5 000 cubic meters - 1 unit
- Aluminum pontoon - 1 unit
- Tank equipment, measuring-and-recording apparatus, automatic equipment, paint coatings, constructional materials

SCOPE OF OPERATIONS:

Geodesic survey, tank design, production, installation, dismantling operations, foundation construction, and reservoir tank final and facility commissioning



PROJECT FEATURES

- The project was implemented for the corporate Customer in strict adherence to internal norms, rules and regulations of the enterprise
- Geotechnical and geodesic surveys were performed
- The tank was produced with an aluminum pontoon in order to prevent evaporation of petrochemicals from the tank
- Works on dismantling of the old tank and the existing foundation were performed, and pile-slab foundation was installed (200 cubic meters; 137 nine-meters-long piles)
- The tank is equipped with Endress Houser measuring-and-recording apparatus, automatic equipment, firefighting and spray system, lightning protection system and earthing systems



VST-3000 WITH A SET OF DESIGN DOCUMENTS

SHIPPED TO CONFECTIONERY
PRODUCTION FACILITY



PURPOSE: DRINKING WATER STORAGE

CONSTRUCTION SITE INFORMATION:

Customer: OOO «Grand Candy»

Facility location: the city of Yerevan, Republic of Armenia

Period of construction: October 2017 - February 2018

SCOPE OF SHIPMENT:

- VST metalworks with capacity of 3 000 cubic meters - 1 unit
- Tank equipment, paint coatings, construction materials

SCOPE OF OPERATIONS:

Tank design, production and installation



PROJECT FEATURES

- The project was implemented for a foreign customer outside the territory of Russian Federation
- The project was designed for a facility located in an area with high seismic activity (score 9 on the Richter scale)
- We have developed a set of production drawings for metal structures, detailed metal structures, anticorrosive protection and reinforced concrete structures foundation
- We have performed abrasive blasting and anticorrosive treatment and subsequent painting of internal and external surfaces of the tank
- All operations were performed without stopping the production processes at the enterprise



PLANT DESIGN AND CONSTRUCTION

6

YEARS

OF SUCCESSFUL DESIGN AND CONSTRUCTION
OF PROCESS LINES

WE HAVE DESIGNED AND CONSTRUCTED FACILITIES FOR THE FOLLOWING SECTORS OF INDUSTRY:

- Oil and gas industry
- Heat and power industry
- Food industry
- Agricultural industry
- Transport industry
- Construction engineering industry

OUR PRIMARY ADVANTAGES

1

In-house production capacities and good business reputation based on our Customers' trust

2

Costs optimization via cooperation with only one equipment and service supplier

3

Capability to design and construct plants «from ground zero», re-equipment and modernization of production

4

Extensive construction experience - from petrochemical conversion facilities to complex knowledge-intensive chemical production facilities

ASPHALT CEMENT PRODUCTION LINE



PURPOSE: PRODUCTION OF ASPHALT CEMENTS AND ASPHALT EMULSION PRIME COATINGS

CONSTRUCTION SITE INFORMATION:

Customer: ICOPAL RUSSIA

Facility location: the town of Petushki, Vladimir State Oblast, Russian Federation

Period of operations: 2015

SCOPE OF SHIPMENT:

- Vertical tanks (50 cubic meters) with a heating system for asphalt storage - 2 units
- Horizontal steel tanks (double-wall) (50 cubic meters) for solvent storage - 4 units
- Horizontal steel tanks with capacity of 50 cubic meters for additional storage of asphalt cement or asphalt prime coatings - 1 unit
- Bulk capacity vessel with capacity of 6 cubic meters and a mixer device - 2 units
- Pumping equipment. Automated control system and control cabinets

SCOPE OF OPERATIONS:

Equipment design, production, installation and pre-commissioning



PROJECT FEATURES

- The temperature of heat carrier in heat exchanger system is $+250^{\circ}\text{C}$, thus allowing to preserve asphalt plasticity and mobility (operating temperature is $+180^{\circ}\text{C}$)
- The component composition can be changed if necessary; for example, plasticizers and other agents can be added without the need to rebuild the process system
- Horizontal steel tank for additional storage can be used as a reserve tank reservoir or a separate tank to mix the finished product with various additives
- The production lines utilize imported equipment intended for operations with aggressive media

SHIPPED TO WATERPROOF MATERIAL PRODUCTION FACILITY



AEROSOL PRODUCTION LINE



PURPOSE: STORAGE AND SUPPLY OF DIMETHYL ETHER AND LIQUEFIED PETROLEUM GAS TO AEROSOL CONTAINERS

CONSTRUCTION SITE INFORMATION:

Customer: TEKHNONIKOL Corporation

Facility location: the city of Ryazan, Ryazan State Oblast, Russian Federation

Period of operations: October 2016 - September 2017

SCOPE OF SHIPMENT:

- Aboveground double-wall gas storage tanks with capacity of 25 cubic meters – 2 units
- Double-wall gas storage tanks for dimethyl ether with capacity of 25 cubic meters – 2 units
- Compressor units with output capacity of 22 cubic meters per hour – 2 units
- Self-priming pumps with output capacity of 50 l per minute – 2 units
- Drainage platform with output capacity of 220 l per minute – 2 units
- Automated control system for technological processes

SCOPE OF OPERATIONS:

Equipment design, production, installation and pre-commissioning



PROJECT FEATURES

- High pressure in the operation environment (up to 1.6 MPa)
- Compressor units were used for 100% product pumping out
- Double-wall tanks exclude the possibility of the products contaminating the environment in the case of rapid depressurization of the internal wall
- The production lines utilize imported equipment intended for operations with aggressive media

FOR THE BASALT FIBERS PRODUCTION ENTERPRISE





MODERN TANK CONSTRUCTION TECHNOLOGY

**” We would like to invite you to visit
our enterprise as a guest.**

A blue ink handwritten signature, likely of Mikhail Gamayunov, the Director of SARRZ.

*Yours sincerely,
Mikhail Gamayunov,
Director of SARRZ*

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