



JRTECH  
MAGAZYNUJEMY WODĘ

# WATER STORAGE TANKS

| CONSULTING | PROJECT |  
| CONSTRUCTION | SERVICE |

**Get to know us better and build your tank with us**  
This is a simple way to make a successful investment

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Find out more about us!

[www.jr-tech.eu](http://www.jr-tech.eu)



# COMPANY

JRtech is a company on the Polish market, which was created out of the need to implement new ideas in the field of tank supplies and pre- and post-sales service. We started our business in 2015. The people who co-founded the company can boast many years of experience in the fire protection industry. Advantages of our company are youth and fresh perspective, which combined with extensive experience and enthusiasm for work allow us to compete with the biggest and best companies. Partner relations and reliable cooperation system provide the opportunity to set new standards. The variety of our products and a wide range of dimensions allow for optimal adaptation of the tank to the need to store the appropriate medium.





## OFFER

Our offer includes non-pressure tanks, above-ground, steel tanks tanks. Bolted and welded technology tanks intended for storing water for fire protection purposes, drinking water and process water. The tanks we offer are a source of water reserves for fire protection installations and networks, e.g. sprinkler or hydrant installations, and as water drawing points for fire brigades, drinking water buffers in water supply system, or volumes of process water used in industry or agriculture.

The tanks we supply meet the requirements and guidelines of fire safety norms and standards, such as:



| PN-EN 12845 |



| VdS CEA 4001 |



| NFPA 22 |



| FM 4020 |



## WHERE ARE WE BUILDING?

Our company operates throughout Europe. We have made investments in countries such as:

Germany, Czech Republic, Slovakia, Ukraine, Belarus, Lithuania, Estonia, Croatia, Finland, Norway, Sweden, Denmark, Hungary and of course Poland! This is where we come from.

# SERIES OF TANK TYPES

By using a modular design, we offer a wide range of dimensions and capacities. The standard range, presented in the form of a table, includes tanks with:

- capacities from 4 to 2834 m<sup>3</sup>
- diameters from 3 to 16 m
- heights from 1.25 to 14,45m

Our range allows the tank to be tailored to: design requirements, location, intended use and conditions of use.

D/H [m]	1,25	1,79	2,45	2,99	3,65	4,19	4,85	5,39	6,05	6,59	7,25	7,79	8,45	8,99	9,65	10,19	10,85	11,39	12,05	12,59	13,25	13,79	14,45
3,106	4	8	13	17	21	25	30	34	39	43	47	51	56	60	65	68	73	77	82	86	90	94	99
3,883	7	13	21	27	34	40	48	54	61	68	75	81	89	95	102	108	116	122	130	136	143	149	157
4,66	10	19	30	39	50	59	70	78	89	98	109	118	129	138	149	157	168	177	188	197	208	217	228
5,437	14	26	41	53	68	80	95	107	122	135	149	162	176	189	203	216	231	243	258	270	285	297	312
6,213	19	35	54	70	90	106	125	141	161	176	196	212	231	247	267	283	302	318	338	354	373	389	409
6,99	22	42	67	87	112	132	157	177	202	222	247	267	292	312	337	357	382	402	427	447	472	492	517
7,767	27	52	83	108	139	164	194	219	250	275	306	331	361	387	417	442	473	498	529	554	584	609	640
8,543	33	64	101	131	168	199	236	266	303	334	371	401	438	469	506	536	573	604	641	671	708	739	776
9,32	36	73	117	153	197	234	278	314	358	394	439	475	519	555	600	636	680	716	761	797	841	877	922
10,097	43	85	137	180	232	275	327	369	421	464	516	558	610	653	705	747	799	842	894	937	989	1031	1083
10,873	50	99	160	209	269	319	379	429	489	538	599	648	709	758	818	868	928	978	1038	1087	1148	1197	1257
11,65	57	114	183	240	310	366	436	493	562	619	688	745	814	871	940	997	1067	1123	1193	1250	1319	1376	1445
12,427	65	130	209	274	353	417	496	561	640	705	784	848	927	992	1071	1136	1215	1279	1358	1423	1502	1567	1646
13,203	74	147	236	309	399	472	561	634	723	796	885	958	1048	1121	1210	1283	1372	1445	1535	1608	1697	1770	1859
13,98	75	157	257	339	440	522	622	704	804	886	986	1068	1168	1250	1350	1432	1532	1614	1714	1796	1896	1978	2078
14,757	84	175	287	378	490	581	693	785	896	988	1099	1191	1302	1394	1505	1597	1708	1800	1911	2003	2114	2206	2317
15,534	93	195	318	420	543	645	769	870	994	1095	1219	1320	1444	1545	1669	1770	1894	1995	2119	2220	2344	2445	2569
16,31	103	215	351	463	599	711	848	959	1096	1208	1344	1456	1593	1704	1841	1952	2089	2201	2337	2449	2586	2697	2834

Table of tank capacities to EN 12845, NFPA® 22 and FM Class Number 4020 for suction pipe sizes up to DN300\* and tanks according to VdS CEA 4001 for suction pipe sizes up to DN500\*

**If the required dimensions are not in the "standard" table, please contact us!**

We will select the optimal parameters for you!

Configure your tank on our website soon!

[www.jr-tech.eu](http://www.jr-tech.eu)

# TANK DESIGN

The tank structure consists of hot-dip galvanized steel components. The cylindrical shell is made of bolted individual steel panels (sheets) of standardized dimensions. The thickness of the metal sheets used depends on the size of the tank and its standard design and is selected according to strength-static calculations. The sheets are made from S350GD steel, galvanized on both sides with a zinc coating thickness of Z275, Z350 or Z600. The shell panels are pre-punched and the horizontal and vertical joints are bolted. The selection of the zinc coating is based on a calculation of the design life of the tank structure, based on the corrosivity class of the environment in which it is to be sited. In the upper and lower parts, the tank is topped with a perimeter angle bracket.

The roof is made as a self-supporting structure, based on 'Z' type steel beams with a slope towards the centre of the tank. The roof is available in two variants: either uninsulated with T35 trapezoidal sheet metal or insulated with roof sandwich panels with a core of PIR. The roof panels allow for simple and quick installation into the structure using suitable through fasteners. Appropriately designed and profiled tongue-and-groove locks ensure very good tightness and fast installation. The roof construction ensures free drainage of rainwater outside the tank.

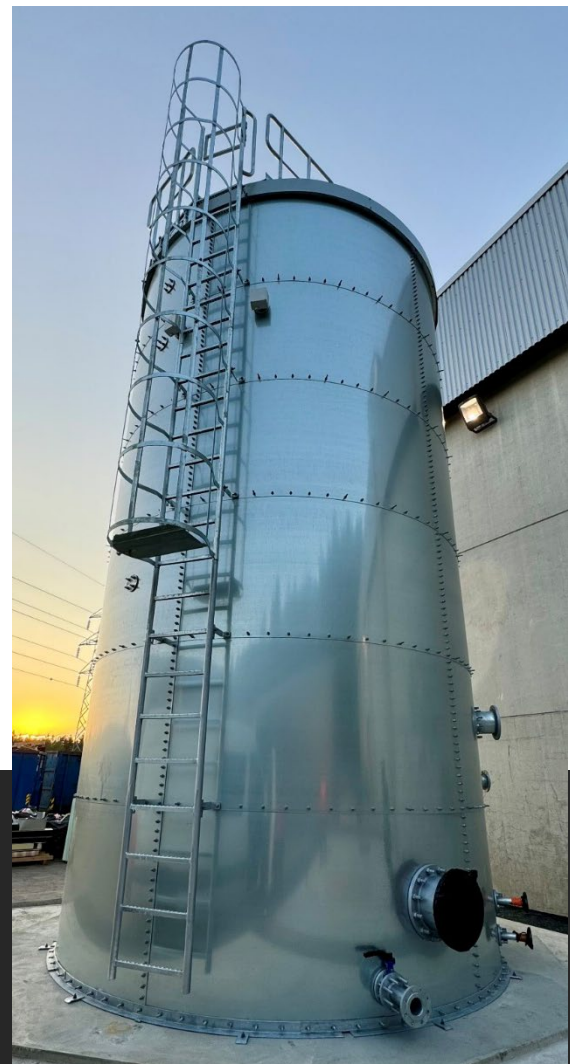
Depending on the static-strength calculations, we use perimeter "wind reinforcement" system ties.

Access to the roof of the tank is provided by a steel system ladder, together with landings, platforms. There is a hatch on the roof that allows a view of the inside of the tank. The tank is anchored with anchors to the foundation slab, which also forms the bottom of the tank.

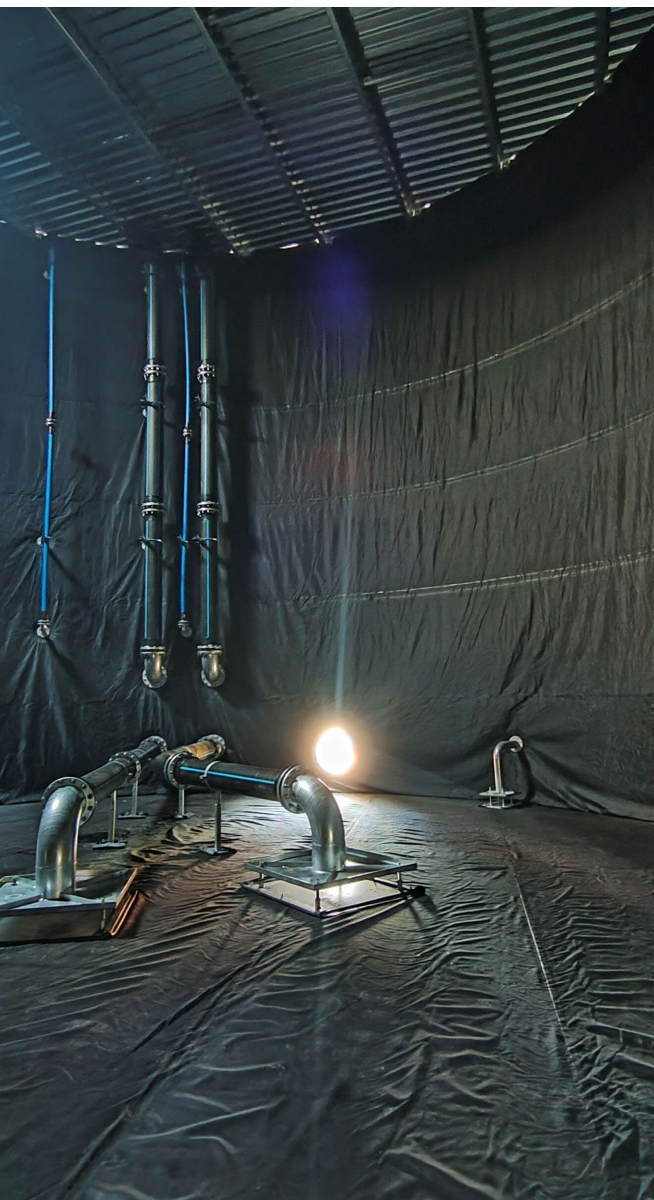
## CORROSION PROTECTION

All steel components, including bolts, used in the construction of the tank have been protected by a hot-dip galvanizing process. This is one of the best methods of protecting steel against the effects of atmospheric conditions, and such a solution guarantees its long-term protection. The advantages of such corrosion protection include: the speed of the coating, which protects the external and internal surfaces of the product, edges, hollows and corners, double corrosion protection - barrier and electrochemical, protection of steel surface against mechanical damage by varying hardness of the zinc coating, inseparable alloy bonding of the zinc coating with the steel, possibility of combining with paint coatings in the so-called duplex system, which is an additional degree of protection for the tank increasing its lifespan. The tank shell panels can be powder-coated in any RAL colour.

The selected membrane tank technology excludes direct contact between the tank walls and the stored medium, which considerably extends the service life of the shell.







## SEAL MEMBRANE

Our tanks are sealed with a prefabricated synthetic membrane Varnamo EPDM Elastoseal H<sup>®</sup>, which has a design life of 30 years and an expected life of 50 years!

### Why choose EPDM?

EPDM is a synthetic rubber (rubber) belonging to the group of elastomers. It is a homogeneous, chemically stable material, which does not contain plasticisers of substances that cause elasticity, e.g. PVC film membranes, which migrate, leach out and evaporate over time, adversely changing the properties of these materials, causing them to stiffen, which can lead to leaks..

The flexibility of EPDM membranes, which is very important for insulating tanks, is solely due to their specific molecular structure. Thanks to this, there is no stiffening of the EPDM membrane over the years.

No components are released into the environment, as confirmed by the water environment neutrality certificate and PZH certification for use in drinking water tanks.

The EPDM membrane is thermally stable and maintains its flexibility and strength over a wide temperature range, i.e. from - 40°C to + 120°C, which, among other things, makes it possible and safe to install the membrane even at very low temperatures.

Because of its chemical homogeneity, the EPDM membrane is much more resistant to weathering (EPDM is resistant to ozone, UV radiation, most aggressive chemicals and microorganisms, among other things) than other commonly used waterproofing materials.

EPDM has so-called shape memory - the material returns to its original shape and size after being stretched up to 300%.

The membrane installed by jrtech is of the highest quality and retains the required parameters, which pays off with a very high leak test performance and a long service life of the waterproofing!!!

## Prefabricated EPDM membrane

The EPDM membrane is prepared under production conditions. Prefabrication in advance enables constant control over material parameters and component seams. Maintaining the correct prefabrication parameters affects the quality of the final product. The membrane undergoes detailed quality control before being packaged and arrives on site ready for installation. The prefabricated membrane significantly reduces the assembly time of the tank, enables installation even in severe frosts, and increases the effectiveness of tightness tests by eliminating all the problems that can occur when making the membrane on site, as is the case with PVC membranes.

## TANK WALL THERMAL ISOLATION

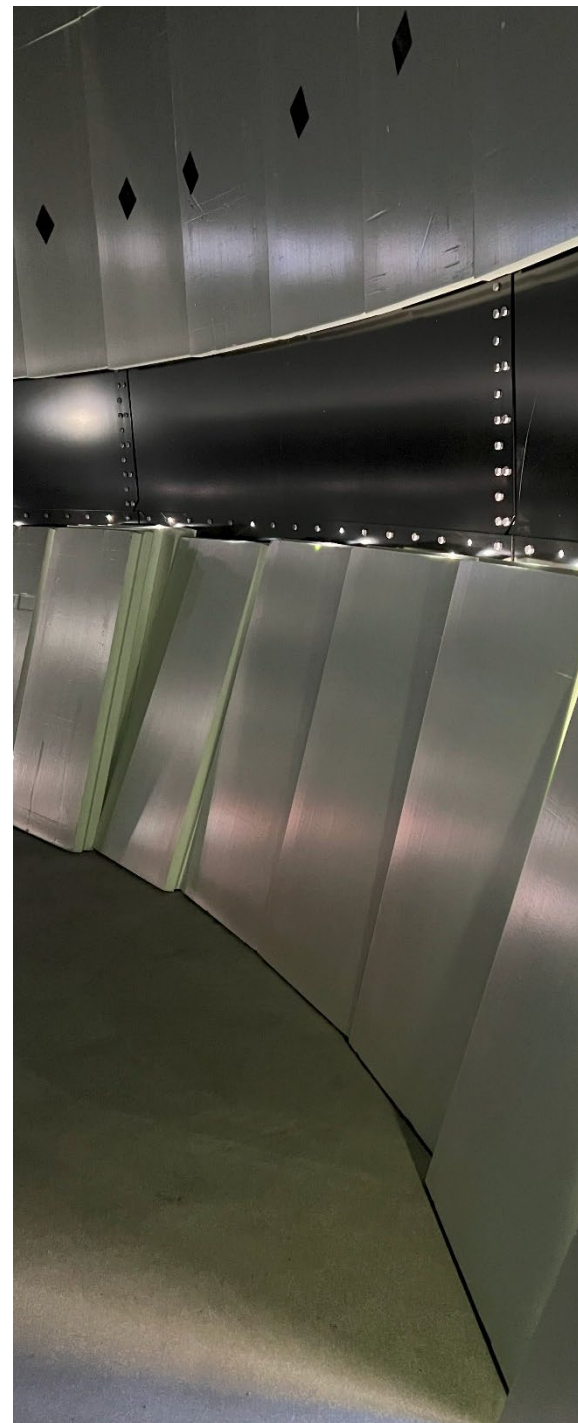
We offer two variants of tank shell insulation: internal and external.

For internal insulation, JRtech uses XPS boards, so-called styrodur, usually with a thickness of min. 40 mm. The use of XPS is supported by its unique properties, which include:

- exceptional hardness and resistance to pressure - polystyrene has a low degree of deflection, even when exposed to a high water column for long periods of time,
- overlap connection thanks to profiled edges;
- very good hygroscopic conditions - low degree of absorption,
- very good insulation properties,
- low flammability class E and C according to EN 13501-1,
- absence of dust harmful to health during its mechanical processing;
- high limit application temperature.

**XPS is the undisputed leader among polystyrene insulations. It effectively insulates and protects the EPDM membrane from contact with the steel walls of the tank.**

The second option is to provide mineral wool insulation on the outside, with the thermal parameters required by the customer and clad on the outside with trapezoidal sheet metal in commercially available RAL colours.





## ROOF ISOLATION

Roof isolation is made from sandwich panels. Roof sandwich panels with a core of mineral wool, polystyrene or PIR. With a coverage width of 1.0 -1.15 m, the roof panels can be easily and quickly fitted to the structure using suitable through fasteners. Appropriately designed and profiled tongue-and-groove locks ensure very good tightness and fast installation. The external facings of the panels, made of 0.5 mm thick steel sheet, are covered with metallic and organic coatings.

The tank isolation is extremely important for well-powered electric heaters to prevent the water surface from freezing. The tank loses most of its heat through the water surface (roof). By making a well-insulated tank, these losses can be reduced, giving the possibility of using less powerful heaters, which reduce the costs of tank operation during periods of low external temperatures.





# ELEVATION AND COLOURING OF THE TANK

To meet the customer's needs, we provide the option of choosing the colour of the tank. The choice of facade colour allows it to match the architecture of the building. As standard, the tank is in the colour of the galvanized elements. On request, the tank shell panels can be powder coated in any RAL colour. In order to completely cover the tank shell, we can also make an external façade. This will be made of trapezoidal sheet metal with a vertical profile in colours available on the market. With our experience, we are also happy to take on aesthetic challenges. Being open to all proposals, we will help to make, for example, company advertisements, which in the case of such large tank areas can reduce the costs of expensive advertising banners and additional constructions for their installation.

## TANK EQUIPMENT

Each tank is equipped with a set of technological lines required by the design. Their arrangement and size are related to the applied standard of execution and conditions of connection, among others, of pipelines of fire pumping stations. As a standard, the tank is equipped with:

- a supply line, which may be terminated with a so-called free outlet, one or two automatic float valves responsible for automatic filling of the tank.
- suction pipe with antivibration plate for pump set;
- suction pipe for fire brigade with shut-off valve - manual damper and STORZ attachment;
- test and return pipe,
- drainage pipe with manual shut-off damper;
- overflow pipe,
- redundant (cooling) pipe.

Depending on the project specifications, the pipes can be routed through the bottom (foundation slab) or through the wall (shell) of the tank.

The standard external equipment of the tank also includes:

- steel cage ladder for access to the roof, made in accordance with current health and safety regulations;
- a ramp, a platform with guardrail, a service hatch located on the roof - allow access to float valves and the inside of the tank;
- bottom service hatch;
- electrical switchgear including heaters, water level probes and cable routing within the reservoir;
- tank designation.

**At the detailed design level, we assist in the selection of the optimum solution taking into account terrain conditions, production and installation costs or subsequent operation**

# SCOPE OF WORK

**1**

## **Project**

JRtech is actively involved in the process of design arrangements for the incorporation of the reservoir into the planned fire protection system, both in terms of sanitary, electrical and instrumentation. We offer the preparation of a complete construction project, detailed design and workshop documentation. We assist in obtaining the construction permit by acting comprehensively.

**2**

## **Delivery**

JRtech's basic scope of supply includes the delivery including unloading of the tank shell design, the construction of the tank roof and its covering, EPDM sealing, membrane, thermal isolation, heating monitoring system for the tank, ladders, roof inspection hatch, a set of process pipes with the necessary fittings.

**3**

## **Installation**

Installation of the tank is carried out using external hydraulic jacks. It consists in the sequential lifting of the tank structure with simultaneous installation of the internal insulation and the EPDM membrane. Once the tank structure is complete, we proceed with the installation of the remaining equipment, i.e. process piping, water fittings, heaters and electrical switchgear with cabling.

**4**

## **Leakage test**

Once installation is complete, the tank is ready for filling and the leak tightness test. According to the standard, the duration of the leak tightness test for tanks with non-absorbent walls is 24 hours.

**5**

## **Commissioning of electrical equipment**

Once the tank has been filled, we calibrate and check the correctness of the water level readings, the correctness of the heaters and the communication with the master fire system. We carry out electrical measurements.

**6**

## **Training and operating instructions**

Once the tank has been installed, we provide training in its operation. We teach facility administrators how to perform basic checks, e.g. daily, weekly, monthly. How to respond to operational emergencies and what periodic maintenance to perform.

**7**

## **As-built documentation**

On completion of construction, JRtech will produce and deliver as-built documentation with the necessary approvals and declarations.

**8**

## **Warranty card**

Together with the completed construction and acceptance, we provide a product and service warranty card. The guarantee indicates the activities that should be carried out in order to properly protect the tank and maintain an effective guarantee.



# FOUNDATION PLATE

JRtech can provide a comprehensive service for the design and construction of the slab, including earthworks and the supply of the necessary process pipework.



The tank is founded on a flat foundation slab made according to JRtech guidelines. The basic scope of the foundation slab design includes:

- analysis of the characteristics of the ground and water conditions on the basis of the submitted conditions from the planned tank foundation site,
- determination of the geotechnical category of the object,
- issuing of foundation guidelines,
- issuing guidelines for the execution of construction embankments and works,
- construction design of the plate.

The foundation plate is normally made in a circular form. The designed diameter of the reinforced concrete slab should be larger than the diameter of the tank by min. 900 mm. As a standard, we use construction concrete of class C30/37 with the Concrete Exposure Class being XC3 and XF3.

# ELECTRICAL SWITCHBOARDS

Our product range includes power and control panels for water tanks for outdoor and indoor installation. Electrical switchboard is provided in two variants: standard and extended.

Depending on the standard chosen, water levels are monitored:

- lower dead zones,
- 50 % water in the tank,
- minimum tank water,
- 100% water in the tank (maximum),
- tank water overflow.

The standard control cabinet is equipped with a main safety switch, and a module to control the presence and asymmetry of the supply phases. On the façade of the control cabinet there are indicator lights with descriptive plates to inform the user of the current water level, the status of the heaters and the correct power supply. Each heater has a separate indication for confirmation of operation or failure.

## EXTENDED OPTION

It is equipped with a logic module having an integrated Ethernet interface. This makes it very easy to integrate the cabinet into the plant network, to read and visualise tank data in the SCADA system of your choice or, using any web browser, to view states thanks to the built-in Web Server. Each of the logic modules is equipped with the possibility of archiving data in the internal memory or on a microSD card from any period of time. In addition, new alarms have been implemented, as well as heater operating time archiving, which makes it easy to estimate the energy consumed at any given time. Signalling by lamps has been replaced by a simple and intuitive display, which indicates all states and alarms.

ON SPECIAL REQUEST THE SWITCHBOARD CAN BE EQUIPPED WITH A GSM MODULE







## WARRANTY

JRtech provides a 5-year warranty on its tanks, which does not include only fittings and electrical components, for which we provide a 12-month warranty. Proper operation of the tank requires periodical, annual inspections of the tank confirmed by a protocol under pain of voiding the warranty. The warranty period begins on the day following the signing of the acceptance protocol for the tank. During the warranty period, the user is entitled to free-of-charge repairs caused by defects resulting from hidden material and production defects of the device. Failure to comply with the instructions and recommendations contained in the operating and maintenance manual for the tank will result in the loss of the guarantee. A warranty card is supplied with the tank, with a list of records for future servicing and repairs that must be carried out therein to maintain the warranty.

# SERVICE

When supplying our products to you, our main focus is on quality. By giving you a guarantee on our equipment, we are convinced of the need for reliable equipment service. Systematic servicing and planning of the servicing schedule helps to maintain high efficiency of the equipment, optimizes their operating time, increases reliability and also helps to optimize the maintenance costs of the equipment and products in the long term.

JRtech provides a comprehensive and professional service for fire tanks. Our offer includes:

## Inspection of coatings of corrosion protection

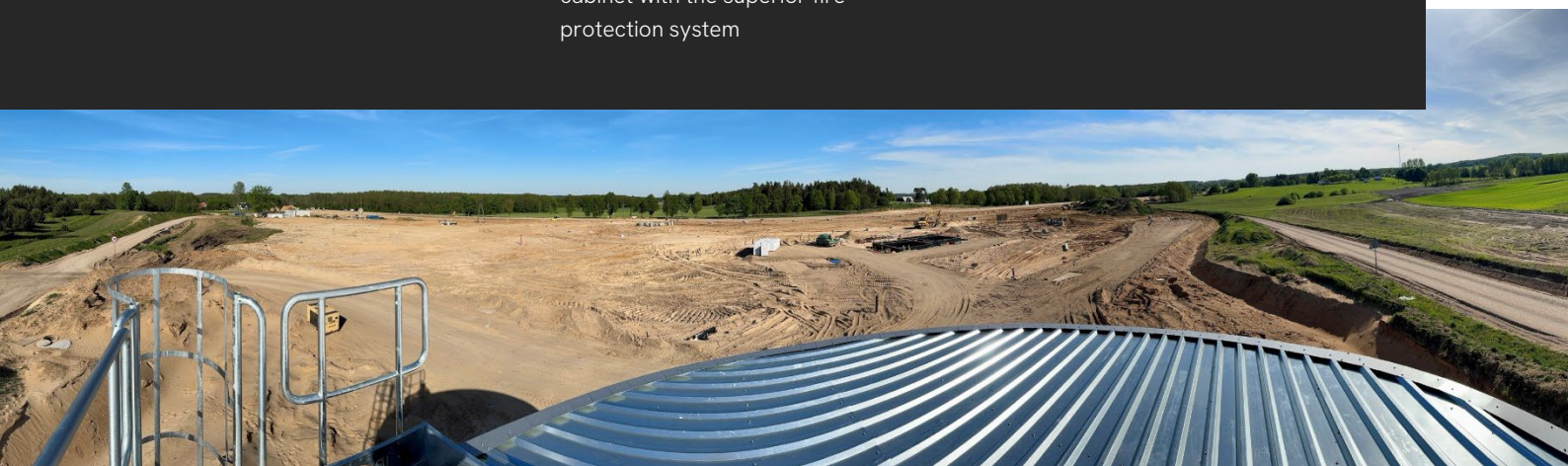
Tank wall  
roof sheathing  
access ladders and platform  
technological transitions  
cable route  
horizontal reinforcement of the tank  
and all structural components of the tank

## Checking the electrical switchboard

isolation of supply and control cables  
performing resistance and impedance measurements  
correct functioning of electric heaters  
correct functioning of the water level indication  
communication of electrical cabinet with the superior fire protection system

## Checking the technical condition of the tank

technological pipes  
bolted connections  
anchoring the tank  
membrane and thermal insulation (in the air cushion area)  
the tightness of the so-called tight passages  
adjustment and cleaning of float valves



We perform comprehensive upgrades of existing tanks. In our offer you will find services:

- sealing and replacement of membranes;
- repair and replacement of damaged components, e.g. fittings, roof structure;
- replacement of tank shell screws and internal insulation
- expanding the volume of existing tanks;
- installation of additional process lines on existing tanks;
- painting of existing tanks;
- demolition and relocation of tanks replacement of electrical components: complete electrical switchboards, heaters, probes, signal and power cables.





**We remain at your disposal**

Hoping for joint implementation, we guarantee a partnership relationship that will translate into the success of our joint investment.



## CONTACT US!

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