INNOVATIVE WASTEWATER TREATMENT SYSTEMS

We build compact treatment facilities of block and modular type.

Return purified water to the circulating water supply.

WHAT WE DO

- Complete water treatment of any complexity
- Automated stations with a capacity of 50 to 5000 m3/day for settlements and industrial enterprises
- Automated container-type stations for small objects

COMPLETE STATIONS FOR DRINKING WATER PURIFICATION

OUR CONTROL SYSTEM IS BASED ON AI SOLUTIONS AND STATE OF THE ART TECHNOLOGY

RETURN ON INVESTMENT IN 3-5 YEARS

OUR WATER TREATMENT

1. Electricity consumption by sewage treatment plants is 0.2-0.4 kW per 1m3 of treated runoff.
2. The possibility to construct sewage treatment plants without maintenance personnel.
3. It is possible to carry out commissioning and adjust the operation of our treatment plants remotely.

YOUR PROFIT

- You save money due to of low energy consumption.
- You can build and operate wastewater treatment plants without spending money on hiring maintenance staff.
- You can operate your treatment plants remotely from any location.

Equipment from leading world manufacturers

Purification by phosphorus without the use of reagents up to 90%

The ability to adjust the capacity of the treatment plan

More than 600 satisfied customers

Large companies, individuals and even small cities all using OUR technology.

COMPLETED PROJECTS IN CIS

	Location of completed treatment plants	Capacity, m^3/day
1	Stroitel, Russian Federation	10000
2	Yartsevo, Russian Federation	9500
3	Rogachev, Belarus	9300
4	Smolevichi, Belarus	7100
5	Berezino, Belarus	5000
6	Drogichin, Belarus	4000
7	Korocha, Russian Federation	2500
8	Svisloch, Belarus	2000
9	Novy Oskol, Russian Federation	1500
10	Voronovo, Belarus	1500
11	Malinovka, Ukraine	1500

COMPLETED PROJECTS IN CIS

	Location of completed treatment plants	Capacity, m^3/day
12	Shpitki, Ukraine	1500
13	Oktyabrsky, Russian Federation	1500
14	Cherikov, Belarus	1200
15	Proletarskiy, Russian Federation	1200
16	Raubichi, Belarus	800
17	Tavrovo, Russian Federation	800
18	Halch, Belarus	660
19	Veydelevka, Russian Federation	600
20	Grayvoron, Belgorod region	600
21	Politotdelsky, Russian Federation	600
22	Kozelsk, Russian Federation	500

COMPLETED PROJECTS IN CIS

	Location of completed treatment plants	Capacity, m^3/day
23	Pyatnitskoye, Russian Federation	400
24	Uborki, Belarus	323
25	Ivnya, Russian Federation	300
26	Khvastovichi, Russian Federation	200
27	Kartsova, Russian Federation	200
28	Lenino, Russian Federation	200
29	Shipilovichi, Belarus	160
30	Bolshetroitskoye, Russian Federation	120
31	Kutuzovskoe, Russian Federation	120
32	Holiday resort, Belarus	105
33	Military Unit Vornyany, Belarus	105

Names of wastewater plants	Capacity
Wastewater treatment plant in Zakia	3000 PE
Wastewater treatment plant in Dar Alkaramah	300 PE
Wastewater treatment plant in Ghasola	3000 PE
Wastewater treatment plant in Sida	2500 PE
Wastewater treatment plant in Talkalkh hospital	200 / Beds
Wastewater treatment plant in Alrasten hospital	200 / Beds
Wastewater treatment plant in Alajami	700 PE
Wastewater treatment plant in Jelin	3000 PE
Wastewater treatment plant in Alnashabia hospital	70/ Beds
Wastewater treatment plant in Ghrez prison	1200 PE
Wastewater treatment plant in Aldomier	6000 PE
Wastewater treatment plant in Alktifea hospital	50/Beds
Wastewater treatment plant in Habran	7000 PE
Wastewater treatment plant in Nemrah	6500 PE
Wastewater treatment plant in Salah	2700 PE
Wastewater treatment plant in Shahba hospital	60/ Beds
Wastewater treatment plant in Salaa hospital	60/ Beds
Wastewater treatment plant in Alayadt hospital	60/ Beds
Wastewater treatment plant in Nahas establishment	10 PE
Wastewater treatment plant in Khasib establishment	30 PE
Wastewater treatment plant in Carton factory	5 M3/day
Wastewater treatment plant in Biroty restaurant	50 PE
Many small plants for villas and farms	

Wastewater treatment plants in Syria

OUR TECHNOLOGY

THE DETAILS

EQUIPMENT SERVICE LIFE = MIN 30 YEARS

Filter housings and strapping are made of AISI 304 stainless steel and do not require additional anti-corrosion and other coatings.

Filters have hatches for maintenance.

Filter loading is a natural non-modified material that does not require replacement during the entire service life.

Components (valves, compressors and sensors) are standard products from top global manufacturers. Spare parts for repair and maintenance are available worldwide.

OUR TECHNOLOGY

The choice of technology depends on the quality of the customer's source water. Our specialists will select the optimal technology and equipment composition based on the customer's requirements, the quality of the source water, the availability of reagents, the specifics of station maintenance and other factors.

In most cases, a non-reagent method of water purification with simplified aeration is used directly in filters and loading, which allows for iron purification of no more than 0.3 mg/l.

The filters are flushed with purified water. The washing water can pass through cleaning cycle and return to the technology. The sediment is dehydrated and disposed of as solid waste.

MODULAR WASTEWATER TREATMENT

- Power of 1 module is up to 40m3 / day;
- Facility capacity is up to 240m3 / day (up to 6 modules);
- 100% factory readiness;
- Quick installation;
- Standard equipment;
- Phased launch;
- Convenience of design;
- Convenience of installation.

MODULAR WASTEWATER TREATMENT

Bioreactor:

Consists of a polypropylene tank, specifically divided into compartments and has 4 main zones: an anaerobic, an anoxic, and an aeration zone as well as secondary settling tanks. Inside are aeration elements, airlifts, drainage trays and distribution combs.

Additional equipment:

- Station to account for imported effluents;
- The giving SPS (Sewage Pump Station);
- Distribution chamber;
- Sludge dewatering basin;
- Aftertreatment filter;
- UV disinfection unit;
- Flow meter;
- SPS of pure water;
- Flocculant dosing unit.

MODULAR WASTEWATER TREATMENT

Facility Complex for cleaning 40 m3/ day

1. Pavilion for technological equipment (inside there is a blower and control cabinets);
2. The feeding SPS;
3. Wastewater treatment plant for 40m3 / day;
4. Sludge dewatering basin;
5. Aftertreatment filter;
6. UV disinfection unit.

The equipment delivery set is determined based on the customer requirements and the required wastewater treatment parameters.

MODULAR WASTEWATER TREATMENT

Facility Complex for cleaning 120 m3/ day

1. Pavilion for technological equipment (inside there is a blower and control cabinets);
2. The feeding SPS;
3. Distribution chamber;
4. Wastewater treatment plant for 120 m3 / day;
5. Sludge dewatering basin;
6. Aftertreatment filter;
7. UV disinfection unit.

The equipment delivery set is determined based on the customer requirements and the required wastewater treatment parameters.

Wastewater treatment for urban areas 250 - 50 000м3/ day

Based on the technical requirements of the customer, we can design and implement treatment plants with a daily volume of up to 50 000m3.

We can provide a complete package of works: beginning from the formulation of specific project targets and finishing with the installation of the finished product.

TECHNICAL SCHEMATICS

Within the treatment plant, wastewater is treated via preliminary and biological purification. The construction of the biological treatment consists of one container with separate wastewater treatment lines, with anaerobic and aeration chambers well as secondary sedimentation tanks installed inside.

In each section specific conditions are met ensuring the process of nitrification and denitrification . Activated sludge from the treated effluent is separated in settling tanks which are installed next to the aeration chamber. A well-known technique is offered for the removal of nitrogen and phosphorus, which involves nitrification and denitrification as well biological phosphorus removal.

- **The bioreactor consists of standard building blocks;**
- **The bioreactor body is made of reinforced concrete;**
- **The building is made of modular prefabricated structures;**
- **Standard technological equipment is used.**

RECEPTION CHAMBER

Equipment includes:

- Receiving branch pipe;
- Pneumatic valve;
- Pipeline;
- Electromagnetic flow meter;
- Measuring module with pH sensor;
- Outlet pipe;
- The pavilion of sandwich panels;
- Convector;
- Electronic key cards;
- Identification device;
- Software;
- Printer.

Productivity:

1. from 1 to 100m3 / hour;
2. Power consumption up to 7.5 kW;
3. Dimensions of the pavilion: 2400x1400x2400mm;
4. Weight: 600kg.

COMBINED MECHANICAL CLEANING PLANT

Equipment includes:

- Rake grate for trash;
- Sand trap;
- Screw for garbage discharge;
- Sand auger;
- Control cabinet.

Productivity:

1. from 30 to 720 m3/ hour;
2. Gaps in the gratings 2 - 6mm;
3. Power consumption: 2.2 - 8.4 kW;
4. Material: stainless steel.

ANAEROBIC AND ANOXIC ZONES

Equipment includes:

- Reinforced concrete tank;
- Polypropylene and reinforced concrete partitions;
- Airlifts.

The design of the denitrification zone in the form of a vertical labyrinth provides upward and downward movement of wastewater, which ensures thorough mixing with activated sludge without the use of stirrers. Airlifts provide circulation of activated sludge in the denitrification zone and allow maintaining the fluid velocity even in the absence of incoming effluents.

AERATION CHAMBER

Equipment includes:

- Reinforced concrete tank;
- Tubular aerators;
- Distribution combs;
- Airlifts.

At the bottom of the aeration chamber, tubular aerators are installed from a high-strength polyurethane film with a laser notch, through which air is supplied. Aerators are divided into groups and can be turned off using cranes on the distribution comb. Also, airlifts are installed in the aeration chamber for pumping excess activated sludge from the secondary sumps.

SECONDARY SEDIMENTATION TANKS

Equipment includes:

- Partitions made of reinforced concrete;
- Partitions made of polypropylene;
- Airlifts;
- Catchment tray;
- PVC piping.

The walls of the secondary sumps are made of reinforced concrete and polypropylene. The lower part is divided into 2 sections in the form of inverted pyramids, where activated sludge settles, and then is pumped out using airlifts. At the top is a stainless steel drain pan.

ADMINISTRATIVE BUILDING

Building structure includes:

- Room with blowers;
- Pre-installation room; mechanical cleaning;
- The room for mechanical dewatering of sludge;
- Household facilities.

In the building of the administrative-domestic facility (ADF) there is technological equipment for removing sand and garbage located in the incoming wastewater, as well as air blowing equipment. Also in the ADF building there are sludge dewatering rooms, rooms for staff, bathrooms and other technical rooms.

POST-TREATMENT AND DISINFECTION UNIT

Equipment can include:

- Drum type micro strainer;
- Ultraviolet disinfection units self-cleaning with ultrasound;
- Membrane Cleaning Systems

A drum microfilter allows you to achieve the parameters of a fishery pond, and the installation of ultraviolet disinfection neutralizes viruses and bacteria. As an alternative, a membrane cleaning unit can be used, which allows to achieve higher cleaning parameters and does not require further disinfection.

CONTROL SYSTEM
BASED ON ARTIFICIAL INTELLIGENCE

Information on the operating modes of equipment, readings from sensors and analyzers are accumulated in the database and analyzed. Based on the data obtained, patterns are determined by the maximum and minimum values of the incoming flow, by pollution, etc. Based on the obtained patterns, the system predicts the operation of the equipment in the near future. For example, at night or on a weekend, the equipment is used for 30% of the total capacity, and by the time of peak discharge, the system increases air supply and recirculation to maintain water purification.

However, if the current situation differs from the predicted one (for example, a sudden night peak discharge), then adjustments are immediately made to the equipment based on data from analyzers and measuring instruments. To operate at 100%, all that is needed is data on the PH, ORP and temperature.

Example of sewage treatment plant with a capacity of 5000m3/day

Time	0:00-6:00	6:00-12:00	12:00-18:00	18:00-0:00
Wastewater Consumption, m^3 / hour	83	340	250	158
Peak Flow, m^3 / hour	130	500	300	230
Total consumption, m^3	500	2050	1500	950
Number of working blowers, pcs	2	4	4	2
Working frequency, Hz	35	60	45	60
Work mode (work/simple), minutes	5/15	10/10	10/10	10/10
Total electric power spent, kWh	54	432	324	216

Example of sewage treatment plant with a capacity of 5000m3/day

Summary	
Sewage taken per day, m^3	5000
Electricity spent, kWh	1026
The specific energy consumption achieved was: ~ 0.2 kW * h / 1m^3, which is 3 times less than in any other technology used.	

1.Treatment plant capacity, m3 / day	400	5000	10000
2. Amount of waste and sludge from:			
gratings, m3 / year	55	367	467
sand traps, m3 / year	12	67	86
stabilized compacted activated sludge with a humidity of 96% m3 / year	128	1248	2610
3. Annual electricity consumption;			
3.1.Specific power consumption for technological needs kWh / year	71 540	638 750	839 500
3.2. Total power consumption, kWh / year	87 600	803 000	1 058 500
4.Specific power consumption per 1 m3 of cleaning:			
4.1. Specific power consumption for technological needs, kW * h / m3	0,49	0,35	0,23
4.2. Total specific power consumption, kW * h / m3	0,6	0,44	0,29
5. Land area:			
5.1.Bioreactor, ha.	20x16,2м = 0,032	70x45м = 0,32	107x46м = 0,49
5.2 Building of administrative-domestic facilities, ha	14,2x7,2м = 0,01	54x19м = 0,1	54x19м = 0,1
6. Operating costs, $			
6.1. Electricity costs/per year, $			
6.2. Salary costs/per year, $			
7.The need for reagents (name, quantity in tons or liters per year). Annual cost of reagents.			
7.1. Dephosphorization unit - (aluminum sulfate "Puro Tech"), m3	0,4	4,929	9,929
7.2. Dewatering unit - (flocculant) kg per year		850	1550
8. Other costs/per year, $			
9. Total operating costs/per year,$			
10.Cost of cleaning 1m^3 (9/1), $/per m^3			

Technical and economic indicators of treatment facilities for different treatment plant facilities

The use of a single concept in the design and construction of treatment facilities, as well as the use of standardized standard equipment and modular structures allows you to:

- Create model projects for quick examination;
- Build wastewater treatment plants without maintenance staff;
- Create a single centralized control room to control all facilities;
- Reduce operating costs.

UCT-type treatment

facilities map

Equipment from leading world manufacturers

Purification by phosphorus without the use of reagents up to 90%

The ability to adjust the capacity of the treatment plant

Low energy consumption 0,2-0,5 kW*h/m3

Control system based on artificial intelligence

Build wastewater treatment plants without maintenance staff

Advantages of our equipment

THE WORLD BANK

ОТКРЫТОЕ АКЦИОНЕРНОЕ ОБЩЕСТВО «ПОЛЕСЬЕЖИЛСТРОЙ»

EKOTON INDUSTRIAL GROUP

unibep

POTEK

БНБК BNBC

CITIC

中信建设 CITIC CONSTRUCTION

GREAT STONE

СК-ЕВРОИНВЕСТ

Our Partners

SEWAGE TREATMENT PLANT TYPES

OPEN

CLOSED

UCT-TYPE TREATMENT FACILITIES

The use of a single concept in the design and construction of treatment facilities, as well as the use of standardized standard equipment and modular structures allows you to:

- Create model projects for quick examination;
- Build wastewater treatment plants without maintenance staff;
- Create a single centralized control room to control all facilities;
- Reduce operating costs.

UCT-TYPE TREATMENT FACILITIES

By implementing sewage treatment plants according to a single concept, we obtain the following advantages:

- The ability to adjust the capacity of the treatment plant;
- Fast implementation time;
- Long term of operation;
- Design reliability;
- High parameters of biological treatment;
- Purification by phosphorus without the use of reagents up to 90%;
- The use of corrosion-resistant materials;
- Low operating costs.