

**VIT LLC**  
Water Innovative Technologies

# **The comprehensive solutions of water and wastewater treatment**



## **Dear customers, partners and friends!**

**We often can read and hear that we live in politically and economically turbulent times. That's why our company's goal is to offer you stability and continuity in an always high quality, a strict compliance with delivery time, continuous development and improvement of new and existing technologies in order to reduce capital and operating costs of our products' consumers.**

**A company strategy is a sustainable development and a social responsibility. Taking into account the forecast about the growing water scarcity in the whole world and clean water in our country and realizing the necessity to protect the environment, we consider as our responsibility to develop technologies and production which provide as low loss of water as it is possible and which require a small amount of reagents. Moreover, we develop disposal wastewater systems to reuse water for all industries. We can offer each consumer the optimal solution in terms of price – quality – effectiveness.**

**In conclusion, I would like to thank our regular customers and partners for the credibility of the company. We are still a reliable partner in all respects featuring energy, innovative approach, responsibility and sustainability even in this changeable time.**

**You can trust us.**

**Iu. Iu. Razorenov**  
*General Director «VIT» LLC*

**Professionalism and innovations  
are the basis of «VIT» LLC**



**Energy sector**



**Chemical and  
external chemical  
industry**



**Microelectronics**

**Specialization  
in water treatment:**



**Housing and  
public utilities**



**Laboratory  
equipment**



**Food industry**



**Medicine  
and pharmacy**

Water is the elixir of life, the gift of nature.

A modern filtration system of VIT Company helps to preserve one of the main elements on the earth for the future generation and to protect drinking recourses from herbicides and pesticides, hardness salts and heavy metals.

## **Technology and competence are two strong arguments**

Water treatment equipment of «VIT» LLC confirms its reputation in the following areas:

- drinking water supply;
- water treatment for mineral water, alcoholic and non-alcoholic drinks;
- water treatment for industrial facilities in the energy, chemical, metal and paper industries;
- water treatment in the pharmaceutical industry;
- mobile and container facilities creation;
- water treatment for swimming pools;
- chemical wastewater treatment;
- creation of groundwater treatment facilities;
- creations of special facilities;



















































Due to ecological requirement increase VIT Company always develops new water treatment technologies and creates new facilities along with the modernizations the old ones. Our organization has the necessary scientific potential in the new technologies development and in ready-to-use chemical water treatment creation:

- filtration;
- coagulation;
- liming;
- catalytic oxygen disposal;
- decarbonizing;
- water demineralization;
- water softening;
- alkalinity reduction by the ion exchange;
- adsorption/ desorption;
- organics' absorption in the ion exchange;
- impurity oxidation;
- micro-, ultra- and nanofiltration;;
- gas impregnation or disposal;
- sea water demineralization;
- ozone facilities and biological treatment.

## **Water Innovative Technologies (VIT) LLC offers:**

- engineering services for the design, manufacture, installation and adjustment of water treatment systems;
- improved automation systems' modernization and the introduction of new technologies such as:
  - ultrafiltration for suspended particles disposal;
  - Nanofiltration and reverse osmosis for the correction of the salt water composition;
  - ion exchange with weakly dissociative resins for water softening;
  - traditional technologies such as clarification in clarifiers and mechanic filtration in filling filters;
- pipes, fittings, shutoff valves and control-and-testing instrumentation tools supply;
- pumping and dosing equipment delivery;
- warranty and post-warranty service of water treatment system.

## The key technologies used by «VIT» LLC for water treatment for different purposes:

	Energy and large-scale industry	Medicine and pharmacy	Microelectronics	Food industry	Housing and public utilities
Microfiltration					
Ultrafiltration					
Nanofiltration					
Membrane degassing					
Reverse osmosis					
Electrodeionization					
Membrane bioreactor					
Multi-layer filtration					
Ion exchange					
Chemical treatment					
Disinfection					
Ozonization					
Evaporation					

# Modern technologies and water treatment systems equipment for food industry

Thousands of completed projects  
from Yuzhno-Sakhalinsk to Kaliningrad  
and from Magadan to Sochi are the evidence of the company's opportunities.

## We are interested in every customer!



Reverse osmosis facility



Ion change softening facilities



Automatic filling filters section



OAO «Deneb» – an ultrafiltration facility  
with capacity 20 Cbm/ h



OAO «Lebedyanskaya» – the biggest  
diverse osmosis system  
for food industry in Russia



OOO «Nestle Water Coolers Service» –  
a system of water ozonization  
with capacity of the ozone 150 g/h

# Nanofiltration and diverse osmosis systems DVC-M series for the salt water composition correction





## **A wide range of diverse osmosis facilities «UVOI» series**



**Multicolumn distillation facilities for water for injections and pure steam generators of the world's leading manufacturers are integrated into the complex water treatment systems of a pharmaceutical company.**

- A construction meets the recommendations of ISPE and FDA.**
- A compact modular design.**
- A facility flushing function in standby.**
- Membranes DOW Filmtec.**
- Module EDI IonPure.**



# Dosing equipment



# Equipment

## The systems of purified water and water for injections production

**The complex systems of water treatment production:**

- Are certificated and have the registration of the Ministry of Health of the Russian Federation**
- Are produced in accordance with the modern requirements of due process (ISO9001)**
- Meet the pharmacopoeia requirements (Russian, European, American, Japanese and others) as well as the international guidance documents and standards (GMP, ISPE, FDA, etc.)**

The water pre-treatment systems, based on the automatic filters «Aquaton» series, provide a stable and guaranteed functioning of the main water treatment equipment.



# Storage and distribution of water for injections systems

**High storage and distribution temperature limits the construction materials choice.**

- The high quality stainless steel pipelines and fittings AISI 316L with the rough inner surface less than 0,8/ 0,6/ 0,4  $\mu\text{m}$**
- Fully drainable pumps in a sanitary implementation**
- The sanitary heat exchangers with a double tube plate.**
- T-shaped diaphragm valve.**
- A system installation in compliance with the 3D rules and the sanitary principles.**



## **Modern, high-effective and resource-saving water treatment methods – pre-treatment**



### **Pressure filters**

**A pressure mechanical filtration along with coagulation (including contact) and aeration are an effective method of a suspended matter and metal disposal.**



**The systems are fully automated**

## Modern, high-effective and resource-saving water treatment methods – pre-treatment:

### Ultrafiltration systems



## **Modern, high-effective and resource-saving water treatment methods – pre-treatment:**

### **Ultrafiltration systems**

**The biggest system of water pre-treatment ultrafiltration before a reverse osmosis is realized in Ozersk (Chelyabinsk region) at the municipal station of drinking water production with the capacity 24000 m<sup>3</sup>/ day.**



**Ultrafiltration system capacity is 24000 m<sup>3</sup>/day.**

## **Hollow fiber ultrafiltration systems UFC series for suspended matter disposal**

### **The advantages of ultrafiltration:**

- **Reduced coagulants consumption;**
- **The complete absence of suspended matter in the treated water;**
- **The savings of the production area;**
- **A high degree of automation;**
- **Cost reduction of 1m3 treated water.**

**Ultrafiltration is a good microbiological barrier which allows reducing the dose of chlorine for water disinfection.**



### **VIT LLC offers:**

- **Experimental tests on ultrafiltration equipment of own production;**
- **The ultrafiltration system calculation based on the experimental tests' results and a project preparation;**
- **A manufacture of the ultrafiltration system on our own territory;**
- **Installation work and start of a turn-key system;**
- **Providing warranty and post-warranty service of the system.**

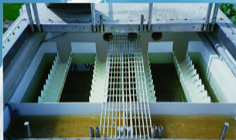


## **Ion exchange with weakly dissociative resins for water softening**



**High-efficiency systems for water hardness and mineral composition reduction.**

# Modern, high-effective and resource-saving water treatment methods – pre-treatment:



**Clarifiers with the thin-layer modules**

## Clarifiers



**The lower part of the clarifier with the thin-layer modules**



# Anaerobic reactor **HYDROTHANE STR ECSB** for the recycling of highly concentrated industrial wastewater

Reactor HydroThane STR ECSB is an anaerobic complex with external recirculation flow through the layer of anaerobic biomass.

A high-intensity anaerobic process in the reactor ECSB is by two stages so that biomass is kept in a reactor and there is high load of organic pollution (10-35 kg/m day). HydroThane STR ECSB technology allows purifying wastewater with the high concentration of suspended matter as well as non-saturated or diluted wastewater.

**Fields of application:**

**Oil refining industry;**

**Food and pulp and paper industry;**

**Pharmaceutical industry;**

**Housing and public utilities.**

**Advantages of HydroThane STR ECSB reactor:**

- **Optimal biomass keeping through the process of a two-stage separation;**
- **Portability and high efficiency;**
- **Control of hydraulic conditions at any load;**
- **A special system construction of the distribution of the incoming flow;**
- **Equipment works under high biogas pressure;**
- **Lack of leak and emission;**
- **Lack of special requirements for commissioning;**
- **Lack of complex internal mechanism;**
- **Reliable design that requires minimal maintenance.**

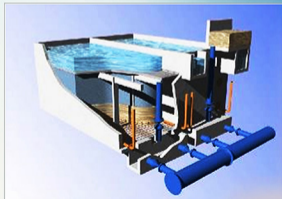


# Wastewater treatment

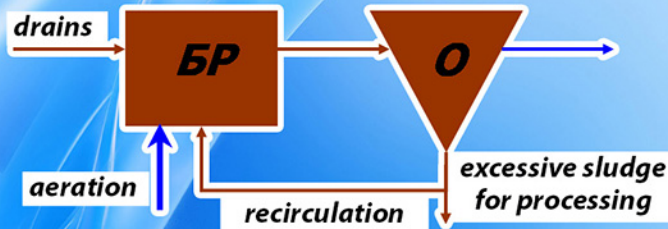
## Membrane bioreactor



- A higher degree of purification
- A compact layout;
- Savings at the stages of the secondary treatment, filtration, UV disinfection.



# Membrane bioreactor

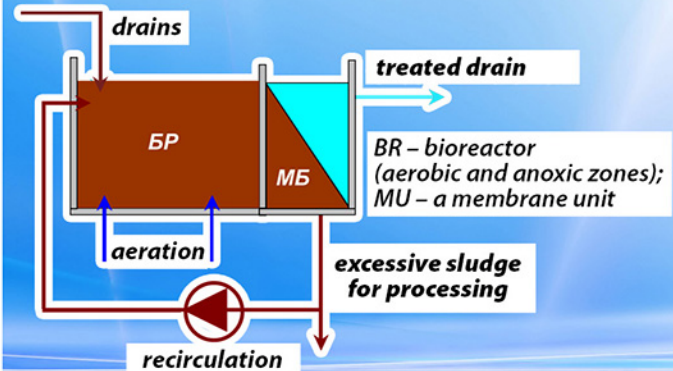


## Classical bioreactor:

- Simple but outdated process scheme;
- The automation complexity on the modern level;
- The risk of sludge return from the secondary sedimentation tank during a shock load

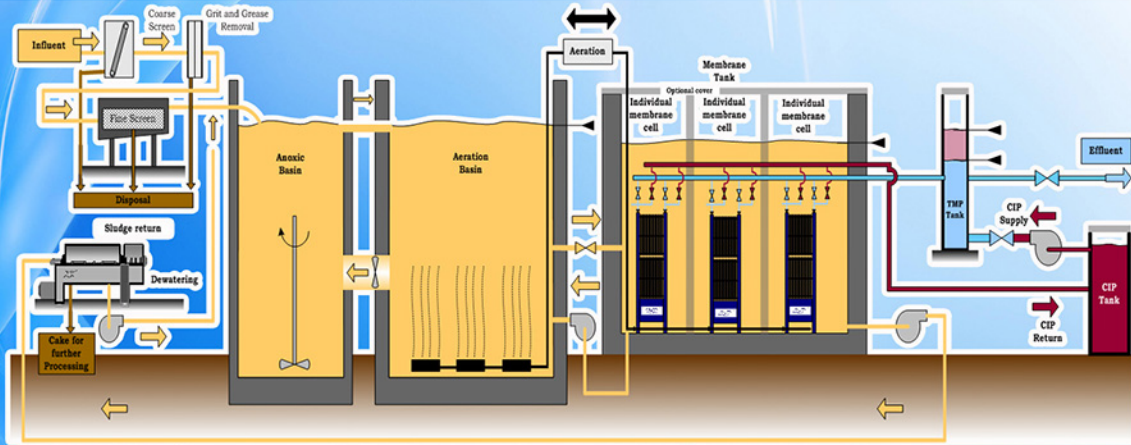
## Membrane bioreactor MBR:

- A significant reduction of construction areas;
- Increase of the treatment facility capacity more than twice;
- Lack of sludge and suspended matter return;
- A high quality purification;
- A resistance to volley discharge.



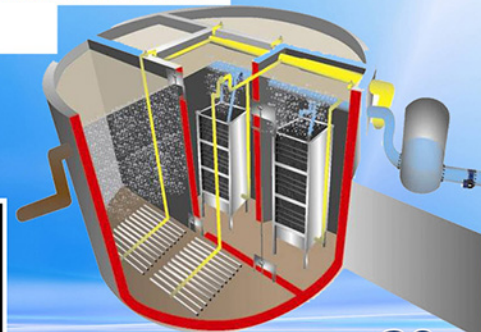
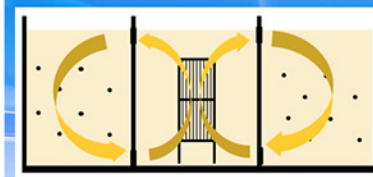
# Membrane bioreactor

The linear scheme of a biological treatment based on membrane bioreactor



The example of a modernization of a secondary sedimentation tank of a biological construction in a membrane bioreactor:

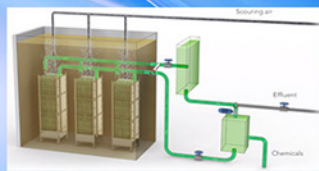
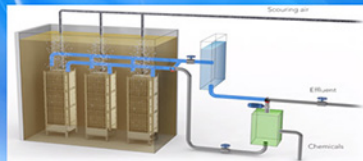
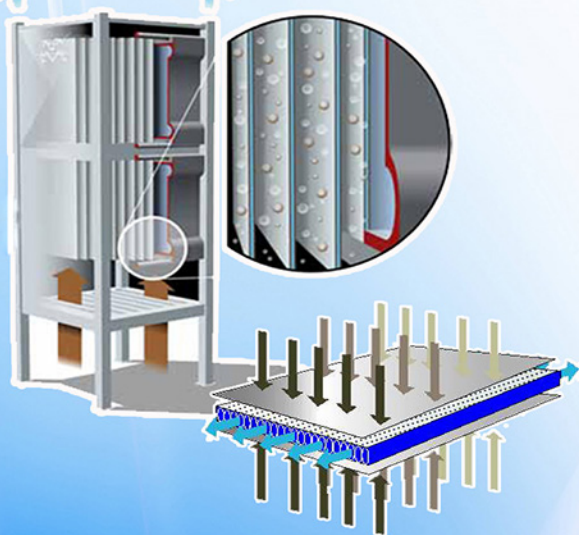
- A significant increase of the treatment facilities by increasing treatment aerobic zone volume;
- A developed solution of membrane module links;
- An increase of an active concentration in the reaction zone;
- Lack of risk of sludge return from the treatment facilities.



# Membrane bioreactor

## Membrane modules MBR Alfa- Laval:

- A revolutionary technology of purified water drainage by a gravity flow (without vacuum pumps);
- Simple and reliable control system process;
- Membrane elements are made of PVDF so that it has resistance to corrosives and oxidizers;
- Lack of sedimentation leads to longer service time of the membranes;
- Lack of a backwash necessity means low operating costs.

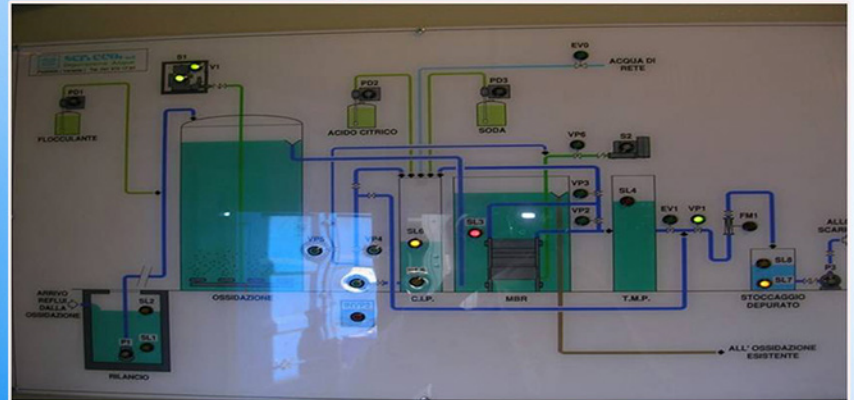


**Membrane modules operating mode:**  
**An operating mode is about 10 minutes;**  
**A relaxation mode is about 2 minutes;**  
**CIP washing mode.**

# Membrane bioreactor

## Fields of application:

- Meat and dairy industry
- Bioethanol
- Washing agents
- Laundries' drains
- Winemaking
- Starch
- Fertilizing
- Brewing
- Petrochemistry
- Malt houses





# Mobile water treatment facilities

They are available in standard 20- and 40-foot containers heat-insulated inside with the sandwich panels. The facilities are equipped with the heat setting and plenum-and-exhaust ventilation systems, the lightning and the internal grounding mat, the heating cables for the connection to external engineering services. They are adapted to the field conditions works at temperature from +50° to -60° C.

**Functionality:** the facilities are made for discoloration, clarification, deironing, demanganation, a salt composition correction and disinfection of natural water from underground and ground sources for drinking purpose standards.



The mobile facilities with the capacity more than 150 m<sup>3</sup>/ day are available in two or more containers.

**Fields of application:** autonomous water systems of rotational villages and localities; buildings; hotel, resort and sport complexes; military units and the MES divisions.

# Mobile water treatment systems «Aquablock» series in the heat-insulated block-containers

Water treatment facilities in a module design are used where the construction of permanent structures is difficult including remote areas of the Far North or where there are no insulated buildings for a facility installation.

The purpose:

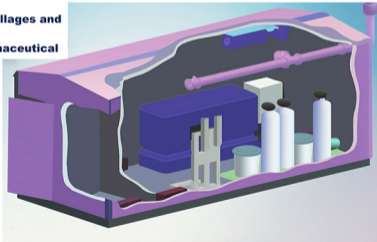
Clarification, deironing, demanganation, softening, desalination, degassing, a salt composition correction, disinfection of natural ground and underground water to standards.

Fields of application and consumers:

- housing and public utilities facilities, rotational villages and localities;
- gas, oil, mining-and-metallurgical, food and pharmaceutical industries enterprises;
- military units and the MES divisions;
- social facilities, hotel and resort complexes of energy sector;
- transport infrastructure enterprises;
- reconstruction of existing and construction of regulatory manufacturing;
- enterprises of seasonal production;
- seasonal and temporary change of sources of raw water;
- experimental production;
- emergency water supply.

Mobile water treatment systems advantages:

- minimal costs for design and construction work in the construction of water treatment complex;
- the possibility to provide objects with a guaranteed water quality in the shortest terms;
- the optimal use of existing areas in the construction process of water treatment facilities.



# Production department

## Assembly shop



**Shop №1**  
**(an average assembling)**



**Shop №2**  
**(a large-scale assembling)**



**Shop №3**  
**(a small assembling)**

# Production department



**Metalworking shop**

**Welding shop**

**Electric shop**

# Modern storage facilities



Modern storage facilities

## Pipelines, shutoff valves and control-and-testing instrumentation tools supply

1. Butterfly valves and ball valve with a set manual control, an electrical or pneumatic drive by VENTAR (Russia), EBRO ARMATUREN (Germany), ENOLGAS (Italy).
2. Solenoid and pneumatic valves, control-and-measure instruments and automatics by BURKERT (Germany).
3. Pressure regulators, check valves, safety valves, hydraulic shock dampers by ELITE LINE (Taiwan).
4. Plastic pipeline valves by GEORGE FISCHER (Switzerland), FIP (Italy).
5. Quick-release collet coupling by JOHN GUEST (Great Britain).



**Limited liability Company  
Water Innovative Technologies  
(VIT)**

**440011 Penza, Karpinskogo Street, 2  
Tel. / Fax: (8412) 991-990  
E-mail: [ooo-vit@mail.ru](mailto:ooo-vit@mail.ru)**

