



Carbon Polymer

**GAS AND WATER
CLEANING SYSTEMS**



NEW TECHNOLOGY INNOVATIONS

The background image shows a complex industrial plant. It features several large, white, cylindrical storage tanks or scrubbers. These tanks are interconnected by a network of white pipes and metal walkways. The walkways are equipped with railings and ladders. The sky is a clear, bright blue, and the overall scene is well-lit, suggesting a sunny day. The perspective is from a low angle, looking up at the structures.

Our company is a manufacturer of high-quality equipment for gas purification, including scrubbers. We are proud that the entire design process performed by our highly qualified specialists. This allows us to take into account all the individual needs of our clients and guarantee maximum efficiency and reliability of our systems.

OPERATION STEPS AND SERVICES

AFTER AGREEING ALL DETAILS WITH THE CUSTOMER, THE WORK PROCESS INCLUDES SEVERAL STAGES:

DESIGN:

Our specialists, trained abroad, develop an individual project for each client, taking into account all technical and operational requirements.



MANUFACTURING:

At the modern production base "CARBON POLYMER" equipment is manufactured using advanced technologies and high quality materials.



INSTALLATION:

Entrust the installation of equipment to our highly qualified specialists. Our experience and professionalism guarantee flawless installation of equipment on your object.



SERVICE:

We provide a full range of services of service and support, ensuring long-term, trouble-free operation of our systems. In addition to this, we offer post-warranty and service maintenance, providing our customers have confidence in the uninterrupted operation of equipment



Our gas cleaning solutions not only comply with all current environmental regulations standards, but also help to significantly reduce emissions of harmful substances into the atmosphere. We strive to ensure that cooperation with our company is as comfortable and profitable for you as possible.

CLEAN AIR -THE BASIS OF A HEALTHY LIFE

Caring for our planet means caring for our future. We must treat the environment with care environment to pass on a healthy and sustainable planet to our offspring.

President of the Republic of Uzbekistan expressed serious concern environmental situation and stressed that this is a priority task for the country.



SCRUBBERS

The use of modern air purification technologies plays an important role in maintaining its cleanliness and protecting the environment. Filtration systems and gas cleaning allows you to capture and neutralize harmful emissions, preventing them from entering the atmosphere. Technologies such as scrubbers help reduce air pollution and improve its quality.

Therefore, the development and use of modern air purification methods is an important step towards creating a safe and healthy environment for all living beings on the planet. Ensuring clean air is the key to health and well-being not only of today, but also of future generations.



PRINCIPLE OF OPEARTION



A scrubber is a type of equipment used to clean gas emissions, often used in industry. It is used for removing harmful components from emissions. Such equipment is also known as a wash tower water. Emissions are directed to the tower through the air pipe and pass through cleaning layer.

Gas and absorbent the liquid is in contact allows the process of absorption and neutralization to occur. Under pressure, created by a water pump, liquid sprayed from the top of the tower through spray pipes and heads, after which he returns back for reuse. Peeled gases comply with local standards emissions and exit through the outlet pipe.

Spray tower usually used to process emissions acid fog, and can also work with hydrogen sulfide waste ammonia gas (NH_3), organic waste volatile organic compounds, waste gases from domestic waste, combustion exhaust gases waste or dust.



WHY SHOULD YOU CHOOSE SCRUBBERS?

CLEANING EFFECTIVENESS

Scrubbers can effectively remove a variety of pollutants from the gas stream, including acidic gases, heavy metals, ammonia and other toxic substances.



FLEXIBILITY

They can be configured to work with different types of pollutants and volumes of gas emissions, making them suitable for various industries.



COST EFFICIENCY

Compared to other gas purification methods, scrubbers can be more cost-effective profitable solution, especially for large volumes emissions.



EASY MAINTENANCE

Scrubbers generally require minimal maintenance and can be easily integrated into industrial processes.



COMPLIANCE

The use of scrubbers helps companies comply with environmental standards and cleaning regulations gas emissions.



THE ROLE OF SCRUBBERS IN IMPROVING AIR QUALITY



Before the introduction of scrubbers, the atmosphere may be dangerous due to the high content of harmful substances emitted into the atmosphere by industrial enterprises. These hazards include:

1. Air Pollution: Emissions of harmful gases and particles can lead to pollution air, which increases the risk of respiratory diseases and other diseases in people, and also harmful to plants and animals.

2. Acid rain: Emissions of sulfur and nitrogen oxides can lead to the formation of acidic rains that damage plants, soil, water and ecosystems.

3. Ozone Pollution: Some emissions can contribute to the formation of tropospheric ozone, which is a harmful pollutant that can lead to problems with human health and ecosystems.

4. Climate Change: Emissions of greenhouse gases such as carbon dioxide may enhance the greenhouse effect and contribute to climate change, including global warming.

After the introduction of scrubbers, the atmosphere can change for the better:

1. Reduce emissions: Scrubbers help reduce emissions of harmful substances such as sulfur and nitrogen oxides, as well as particles that leads to improved air quality.

2. Reduce Pollution: Less amount of harmful substances in the atmosphere leads to a reduction in air pollution, what can have a positive effect on health people and ecosystems.

3. Increased safety: Reduced emissions of harmful substances also reduces the risk occurrence of acid rain and other forms of pollution, which increases safety environment.

4. Compliance with legislation: The introduction of scrubbers will allow companies to comply legislation and requirements to reduce emissions, which will help avoid fines and prosecutions.



METHOD OF APPLICATION OF SCRUBBERS

Scrubbers are used for processing or purification of the following chemical substances

- Ammonia
- Chlorine
- Hydrochloric acid
- Chlorinated silanes
- Sulfur oxides
- Nitrogen oxides
- Hydrogen sulfide
- Boron trifluoride
- Amines

Scrubber is the solution for flue gas problems for these industries

- Oil and gas
- Asphalt recycling
- Pharmaceuticals
- Landfills and biogas
- Textile recycling
- Thermal power plants
- Acid fog control
- Steel recycling
- Food processing
- Extraction of precious metals
- Wood products
- Scrubber efficiency 98%



WORKING TEMPERATURE



Safe operating temperature: from -15°C to $+80^{\circ}\text{C}$.

If the exhaust gas temperature is from -15°C to $+80^{\circ}\text{C}$, a wet scrubber can be used directly. When the temperature is low, it is recommended to take insulation measures such as cotton insulation.

If the exhaust gas temperature is between $+80^{\circ}\text{C}$ and $+400^{\circ}\text{C}$, it is required using a capacitor. First the cooling process occurs, and then a wet scrubber is used.

If the exhaust gas temperature is higher than $+400^{\circ}\text{C}$, our condenser cannot be used, and customers must take cooling measures by themselves, to reduce the temperature to less than $+80^{\circ}\text{C}$, and then use our wet scrubber.

GAS PURIFIER PARAMETERS

Air volume (m ³ /h)	Diameter, mm	Height, mm	Wall thickness, mm	Bottom thickness, mm	Spray quantity	Layer quantity for defogging	Water storage tank size, mm	Window size	Drainage size	Hydration size	Inlet and outlet hole size ,mm	Pump power
12000-17000	1800	5100	10	10	2	1	850*600*H700	500	63	25	650	4
17000-21000	2000	5100	10	12	2	1	850*600*H700	500	63	25	700	4
21000-25000	2200	5200	10	12	2	1	950*600*H700	500	63	25	750	4
25000-32000	2500	5200	12	12	2	1	950*600*H700	500	63	25	800	5.5
32000-40000	2800	5500	12	15	2	1	1000*700*H700	500	63	25	900	7.5
40000-48000	3000	5500	12	15	2	1	1000*700*H700	500	63	25	1000	7.5
48000-80000	3500	5500	12	15	2	1	1000*700*H700	500	63	25	1000	7.5
80 000 - 160 000	4000	7000	14	18	2	1	1200*1000*H1000	500	63	25	1200	10
160 000 - 220 000	4500	10000	16	20	2	1	1200*1000*H1000	500	63	25	1400	12
220 000 - 300 000	5000	12000	20	25	2	1	1500*1200*H1200	500	63	25	1400	12

The above sizes are standard sizes developed by our specialists. In case the client has additional size preferences, we can approach this individually.

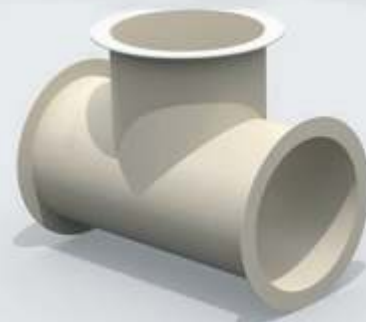
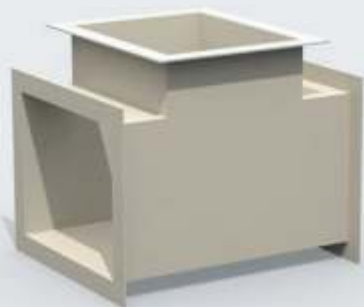
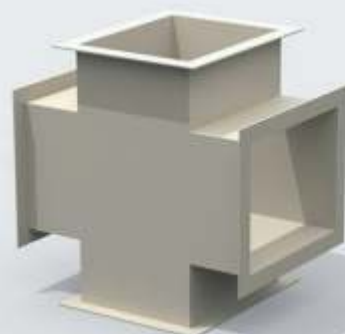
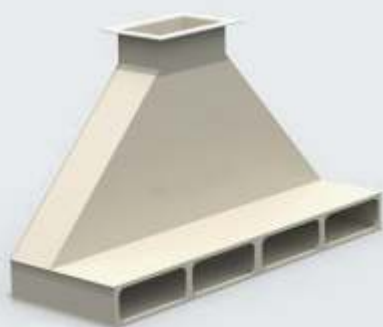
The size of the wet scrubber inlet can be adjusted to according to customer requirements.

DUCT AND VENTILATION

Ventilation (industrial ventilation) is the process of air circulation, and also its abduction using air purification elements, that is, removing contaminants from its composition and replacing exhaust air to air from the external environment. Air ducts and various elements of ventilation systems are basic equipment.

The main tasks of ventilation residential, industrial premises and other objects is to ensure sanitary and hygienic conditions of the air environment in the room, to ensure safe human stay, as well as meeting technological processes.

Ventilation also refers to a system of devices, instruments and equipment that perform the tasks described above.



FANS



OOO "Carbon Polymer" manufactures industrial, chemically resistant radial fans of low and medium pressure from polypropylene. Fans made of polypropylene are used for both the exhaust and supply parts of the ventilation system. Fans made of polypropylene are resistant to most vapors of acids and alkalis used in production processes.

High corrosion resistance allows the use of polypropylene fans in workshops and laboratories where chemically aggressive environments are used, as well as in rooms with high humidity, such as swimming pools.

Fans made of polypropylene are manufactured in general industrial, corrosion-resistant and explosion-proof versions.



WATER COOLING SYSTEM

A reverse osmosis water purification system uses semi-permeable membranes to remove contaminants from water. The water is forced to pass through the membrane under high pressure, leaving behind contaminants and clean water passes through. Process based on the fact that water naturally flows from an area of low concentration to high until chemical potentials do not equalize. Osmotic pressure can be overcome by applying enough pressure, resulting in a change in flow direction water.

This method effectively removes many contaminants, including salts, bacteria and heavy metals, providing high quality drinking water. Waste left after the process are discharged as wastewater, but they can

be recycled to reduce water consumption. Temperature inlet water plays an important role in cleaning process, with an optimal range from 12°C to 40°C.

Water purification using reverse method osmosis is widely used in the following industries:

- Mining industry
- Chemical plants
- Metallurgical plants
- Processing plants
- Thermal power plants
- Pharmaceutical industry, etc.

Reverse osmosis system diagram



PROCESS DESCRIPTION

PROJECT RAW WATER CHARACTERISTICS

Raw water subjected to reverse osmosis method usually contains various contaminants such as salts, bacteria, viruses, organic substances, heavy metals and other impurities.

To achieve the best results with the method reverse osmosis it is important to analyze the raw water, select a suitable system and maintain it regularly equipment, maintain the right conditions work, maintain hygiene and periodically test quality of purified water.



PRODUCT QUALITY

The quality of water obtained using a reverse osmosis system usually fully meets customer requirements. This is because the process is reversed osmosis is very effective at removing a wide range of pollutants, ensuring a clean and safe water. For customers requiring high quality drinking water or water for specific processes, reverse osmosis systems are often optimal choice.



DESIGN FUNDAMENTALS


This method consists of four parts: preliminary purification, reverse osmosis purification, post-purification and rinsing. Pre-cleaning removes large particles, protecting the membrane. Reverse osmosis purification forces water through the membrane, removing pollutants. Tertiary treatment improves water quality by removing residual molecules. Flushing clears the system of deposits, extending its service life.




PART A - PRE-CLEANING

Pre-treatment: At this stage, the raw water passes through several filtration levels, starting with coarse cleaning to remove large particles, such as sand, rust, fibers and other mechanical pollutants. Then water can pass through a carbon or activated carbon filter to remove organic matter, chlorine and other suspended particles. "CARBON-POLYMER" selects pre-treatment depending on the condition of the raw water from equipment such as sand filter, activated carbon filter, cartridge filter, chemical dosing system (such as anti-scale, metabisodium sulfite, etc.)


CARTRIDGE FILTER

	27	Water flow through the filter housing
	2	Filter housing piece
	5	Micro filter size
	10 bar	Maximum working pressure
	Stainless steel	Material of the press filter housing

DOSING SYSTEM

	antiscale	Type of chemical
	1	pcs
	350 liter/1 pcs/polyethylene	tank
	50Wt /1pcs/ stainless steel	mixer
	transmission of power from the engine to the mixer	Transmission
	Linear diaphragm device	Injection pump type
	Polypropylene/polytetrafluoroethylene	Head type/diaphragm type
	5 liters hour / pressure 5 bar	Flow rate/working pressure
	220v/single phase/50Hz	Voltage/Phase/Frequency

SAND FILTER

	10.8	Water flow speed (m ³ /h)
	Fiberglass plastic	Tank type
	4-5 bars	Work pressure
	6 (1 pcs as an alternative)	Total approx. silica height
	1 m	Coefficient homogeneous silicon dioxide into the filter
	1.35	Coefficient homogeneous silicon dioxide into the filter

PART A - PRE-CLEANING

CARBON FILTER



10.8	Water flow speed (m ³ /h)
Fiberglass plastic	Tank type
4-5 bars	Work pressure
6 (1 pcs as an alternative)	Total approx. silica height
1 m	Coefficient homogeneous silicon dioxide into the filter
1.35	Coefficient homogeneous silicon dioxide into the filter

Guide to the PnIP scheme (Pneumatic and instrumental circuit)
of the Post-treatment unit

EQUIPMENT CODE	EQUIPMENT NAME
TK-01	Raw water storage tank
TK-02	Sand filter
TK-03	Activated carbon filter
TK-04	Cartridge filter
TK-05	Dosing tank
TK-06	Dosing tank
P-01	Feed pump
P-02	Dosing pump
P-03	Dosing pump



PART B - REVERSE OSMOSIS CLEANING

This stage is the main process in the reverse osmosis system. Water under high pressure is passed through a semi-permeable membrane, which has microscopic pores. These pores are small enough to hold molecules of salts, contaminants and microorganisms, allowing only clean water to pass through the membrane.

This process effectively removes up to 99% of contaminants from water. However, it also requires significant pressure to overcome the osmotic pressure and force water through the membrane. Therefore, reverse osmosis systems are usually equipped with pumps to create the necessary pressure.

Clean water passing through the membrane is collected in a clean tank, and a concentrated solution of contaminants is removed from the system. This makes it possible to obtain high-quality purified water for use in industrial processes.

SEMI-PERMEABLE MEMBRANE



BW8-400LP/BW30-400	Model
Thin film polyamide	Type
Spiral winding	Form
42	Piece
20.32 cm	Diameter

PRESSURE CHAMBER



Side port	Model
Fiberglass plastic	Type
5	Membrane housing piece
6	One piece of elements in each chamber
21.09 kgf/cm ²	Work pressure
20.32 cm	Diameter

PART B - REVERSE OSMOSIS CLEANING

HIGH PRESSURE PUMP



Multistage	Pump type
2	Pcs
28.3 m ³ /h	Flow speed
23	Head (bar)
380V/3 phase/50Hz	Voltage/phase/frequency
Stainless steel	Type

Guide to the PnIP scheme (Pneumatic and instrumental circuit)
of the Post-treatment unit

EQUIPMENT CODE	EQUIPMENT NAME
V-01	Pressure vessel
V-02	Pressure vessel
V-03	Pressure vessel
V-04	Pressure vessel
V-05	Pressure vessel
P-01	High pressure pump




PART C and D – POST CLEANING AND FLUSHING


CARTRIDGE FILTER

	17.5 m ³ /h	Water flow consumption via filter housing
	2	Filter housing piece
	5	Micro filter size
	10 bar	Maximum working pressure
	Stainless steel	Материал корпуса фильтра


PUMP

	Horizontal throttle	Pump type
	1 pcs	1 pcs
	36.8m ³ /h	Water flow speed
	4	Head (bar)
	380V/3 phase/50Hz	Voltage/phase/frequency
	Stainless steel	Type

TANK

	2000 liters	Power
	Polyethylene (HDPE)	Type
	1pcs.	Pcs

DOSING SYSTEM

	NAOH	Type of chemical
	1	Pcs
	350 liter/1 pcs/polyethylene	Tank
	50Wt /1pcs/ stainless steel	Mixer
	transmission of power from the engine to the mixer	Transmission
	Linear diaphragm device	Injection pump type
	Polypropylene/polytetrafluoroethylene	Head type/diaphragm type
	5 liters hour / pressure 5 bar	Flow rate/working pressure
	220v/single phase/50Hz	Voltage/Phase/Frequency

Guidance on the PnID scheme
(pneumatic and instrumentation scheme) of the unit after cleaning

EQUIPMENT CODE	EQUIPMENT NAME
TK-07	Dosing tank
TK-08	Raw water storage tank
P-04	Dosing pump
P-05	Water pump
TK-09	Clean-in- place tank
TK-10	Cartridge filter
P-06	Clean-in-place pump

Let's save the environment- together!

Uzbekistan, Almalik city, Totuvlik street -5

Tel.: +99870 613 79 10

Fax: +99870 613 78 91

E-mail: kva-servis@mail.ru, carbonpolymer@mail.ru

www.uzkva.com, www.carbon-polymer.uz