FACTORY ECOPOLYMER

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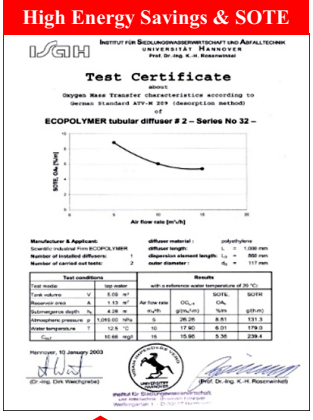


Advanced Aeration **Diffuser Technology**

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Advanced Aeration **Diffuser Technology**



Global leaders in R&D and leading market share in polymer membranes

Headquartered in Moscow with **specialization in process, design & engineering in 21 Countries**

Patent on Triple Layer Polyethylene & Polymeric Braid Structures

Single Structure of **2 meters** length with **no moving parts**

UNIQUE STRUCTURE

12 YEARS LIFE

Closed Loop Diffuser Technology

SLUDGE

Inner -

Nodeless Polyethylene Mesh braid

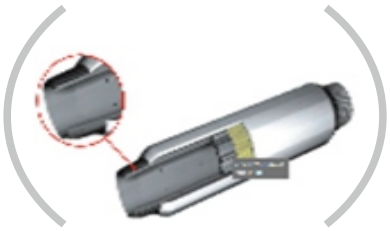
Middle -

Polymeric Braid Disperser

Outer -

Spray Applied Polyethylene

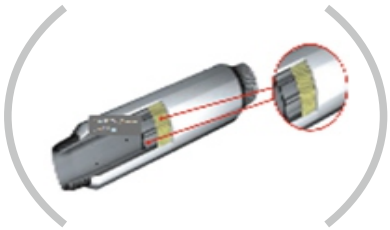




Conical Thrust Thread



Stiffening Ribs



Optimal Air Distribution

ADVANTAGES



*Terms and Conditions Apply

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«**Ecopolymer factory**» one of the first in Russia organized the production of equipment for wastewater treatment plants. It all started in far 1990, when a group of young engineers started the production of tubular aeration systems from polymeric materials. The name "Ecopolymer" was born from the first advertising slogan "Polymers at the service of ecology!". Over 30 years of its activity, the company has become a recognized leader on the Russian market, which produces a full range of equipment made of metal and polymers for water and wastewater treatment - more than 30 items.

Our company is located in the Kaluga region, 180 km from Moscow. The production area is more than 5000 m2 and is equipped with modern high precision SMART equipment from European manufacturers. This allows to make a closed production cycle on the territory of the enterprise and minimize the manufacturing terms.

Self-contained manufacture of all parts and the applying of components from leading world manufacturers allows us to achieve such high quality products that meet international standards and is competitive in the global market. Quality is one of the priorities of our company.

We are proud of our qualified staff. Our design office is one of the best in the industry, the personnel structure is stuffed by experienced high-level workers.

We have been successfully working in the field of water and wastewater treatment for over 30 years. This allows us to proudly say:

Our **Customers** are:

- more than 1000 industrial plants, water supply companies and waste water treatment plants;
- main contracting, trading companies.

Our **Service** Includes:

- consultation and equipment selection recommendation;
- adapt the equipment for your needs;
- warranty and post-warranty service.

...our equipment ecoLOGICALLY solves your problems!

«Our experience is the best guarantee of quality!»

We produce products of European quality by Russian prices.
Cooperating with us, you will make it sure for yourself!

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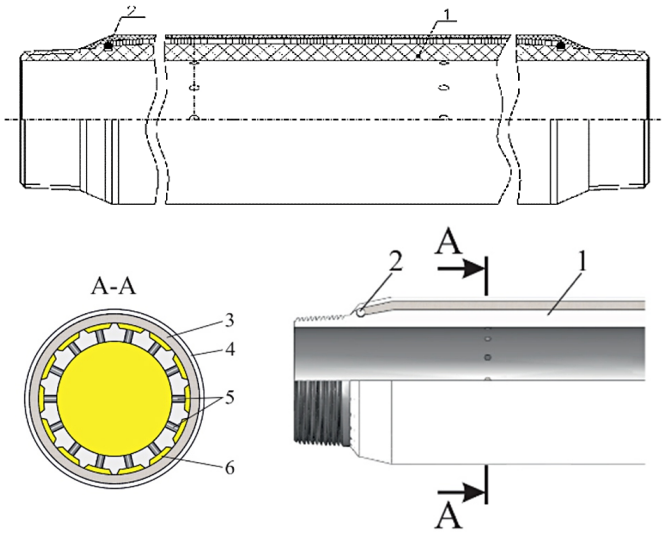
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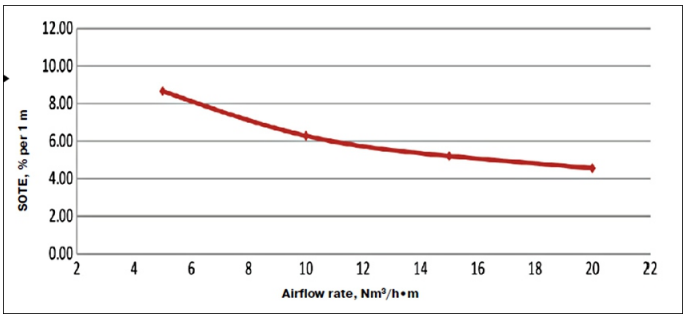
AQUA-PRO AERATION SYSTEM

AQUA-PRO aeration system based on tubular diffusers APM-128T with porous polymeric non-elastic membrane. The diffusers feature stable operation in tough operational conditions – within treatment of any kinds of industrial wastewater, uneven air supply, and significant variations of wastewater and air flow rates. The diffusers are capable to operate in aerobic mineralizers and aeration tanks for 10 years without any maintenance and trouble-free service under severe operating conditions.

The main element of the aeration system is diffuser produced on the basis of a profiled frame tube. These are universal fine-bubble diffuser with increased strength, durability and reliability

1. PE tube
2. Sealing rubber O-rings
3. Inner diffuser layer (braid of polymer material around pipe)
4. Outer diffuser layer (porous PE)
5. Air holes
6. Air pockets





Standard oxygen transfer efficiency (SOTE) of the aerators depending on airflow rate

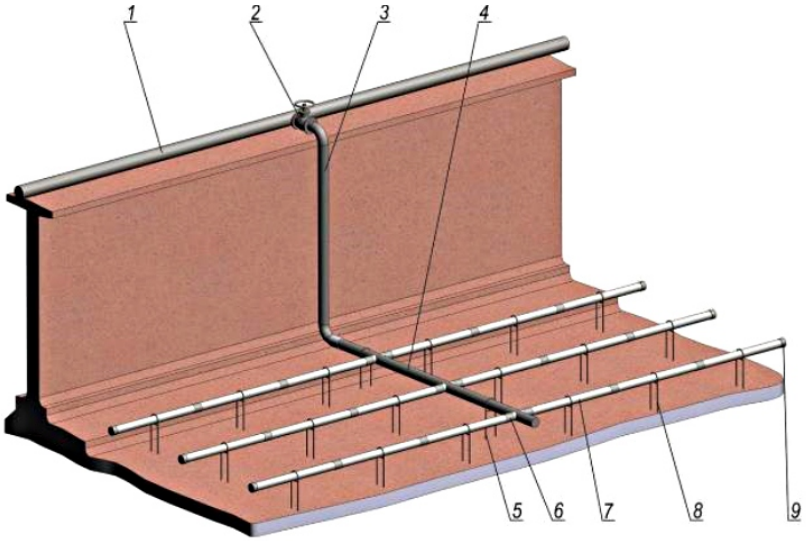
DIMENSION	VALUE	VALUE
Diffuser nomila length, m	1	2
Outer diameter, mm	128	128
Inner diameter, mm	88	88
Oxygen transfer efficiency, % per 1 m of water coloumn	5.6	5.6
Headloss, kPa	0.85 to 2.73	0.85 to 2.73
Airflow, m^3/h		
Minimum	4 to 6	8 to 12
Optimum	10 to 12	20 to 24
Maximum	Up to 22	Up to 42
Bubble size, mm	2 to 5	2 to 5

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AERATION SYSTEM COMPONENTS

1 - Main Air Duct;
2 - Gate Valve;
3 - Downflow Tube
4 - Air distribution manifold;
5 - Air distribution manifold support
6 - Adapter sleeve
7 - AQUA-PRO-128T tubular diffuser
8 - Mobile diffuser support;
9 - Plug.

**Items 1, 2, 3 are not included in the AQUA PRO aeration system.*



Downcomers and air distribution manifolds are thick-walled polyethylene pipes with diameter from 160 to 315 mm (the diameter is determined depending on the configuration and volume of the aeration system). The air distribution manifold is supplied by adapter sleeves with outside thread for attaching diffuser grids.

The aeration system based on diffusers AQUA-PRO has the following advantages compared to a system based on standard tubular membrane diffusers:

- The applied special conical thrust thread guarantees the reliable and tight connection of the diffusers along the entire length of grids;
- The design with longitudinal stiffening ribs and two layers of dispersant made of polymer material and sprayed polyethylene ensures optimal air distribution along the entire length of the aeration grid;
- The cost of the completed aeration system is less, since there is no need for additional pipelines and fittings;
- The design of diffusers allows to reduce the requirements to the quality of air cleaning from dust;
- The actual service life of diffusers is 10 years.

A diffuser is a tubular structure made from polymer materials. It consists of profiled perforated frame 1 with radial openings 5, and two-layer dispersion coating with inner layer 3, and outer one 4. Taper threads from both ends ensure diffuser connection into system. Seal rings 2 prevent uncontrolled air outlet through the diffuser's ends. The frame is manufactured with the help of technique developed by SIF Ecopolymer which has no analogues. This technology guarantees observance of the frame dimensions and profile shape.

Disperser coating inner layer is made in the form of braiding from knotless polyethylene net which also has no analogues in the world practice. Such design allows for changing of diffuser required hydraulic characteristics in a wide range both with the help of the net parameters changing during its manufacture, and with control of net tension degree during its winding on the frame.

Outer dispersion layer is formed at the special equipment with the help of pneumoextrusion of polyethylene melt.

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AQUA-PRO-M makes use of technological innovations containing know-how in terms of application of multicomponent raw material, and modes of thermomechanical compaction of outer dispersion layer, which resulted in less air bubbles, and higher oxygen transfer efficiency.

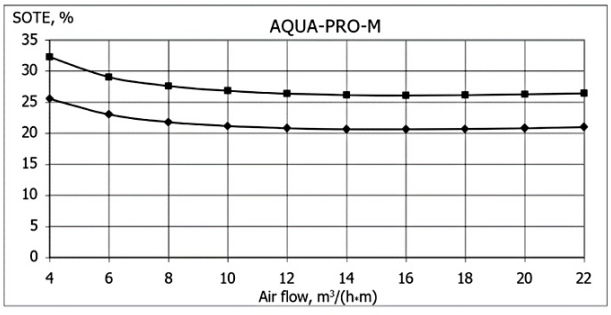
For diffuser frame, coupling and plug components manufacturing LDPE is used as a raw material, while both layers of dispersion coating are manufactured from HDPE of grades approved for potable water supply.

All the diffuser components including the frame, seal rings, net for inner dispersion layer and outer sprayed layer are manufactured at Ecopolymer SIF at its own equipment.

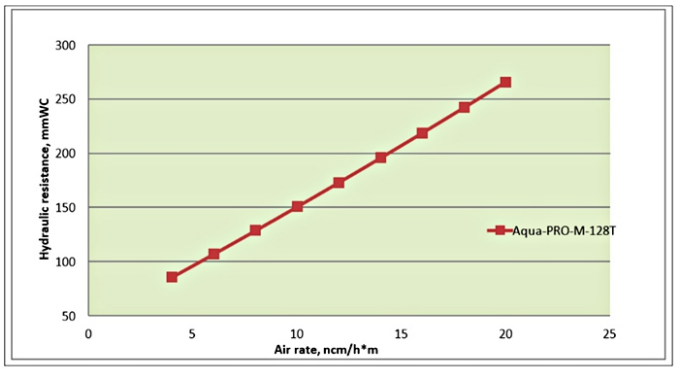
DIMENSION	VALUE	VALUE
Diffuser outer diameter	mm	146 ± 4
Support tube inner diameter	mm	100 ± 4
Radial opening diameter	mm	5 + 0.2
Radial openings spacing	mm	215 ± 5
Tube diameter	mm	975 ± 5, 1950 ± 5
Operating pressure	m w. c.	1 . . . 10

Hydraulic and mass-transfer characteristics of ECOPOLYMER diffusers were studied in the Diffusers and Filters Test laboratory accredited for technical competence in the UkrSEPRO certification system, as well as in research laboratories of a number of independent organizations in Russia, Ukraine, China and Korea.

Mass-transfer properties were studied with the technique of variable oxygen deficit on deoxygenized tap water in experimental column reactor in accordance with «ASCE Standard: Measurement of Oxygen Transfer in Clean Water. ASCE, 1984», and that of off-gas method in accordance with «ASCE Standard: Standard Guidelines for in-Process Oxygen Transfer Testing. ASCE, 1998». Concentration of dissolved oxygen was defined with the help of
laboratory YSI-57 oxygen-measuring device with automatic compensation for temperature, pressure and salt content manufactured by YSI Inc. (USA). For oxygen content measuring in off gases 9101 gas content metering device was used (Kane International Ltd.). Processing of data obtained was carried out in accordance with the standard program of American Society of Civil Engineers (ASCE).



Dependence of standard oxygen transfer efficiency (SOTE) on air rate at submergence depth: ♦ – *3.8 m;* ■ – *4.8 m*

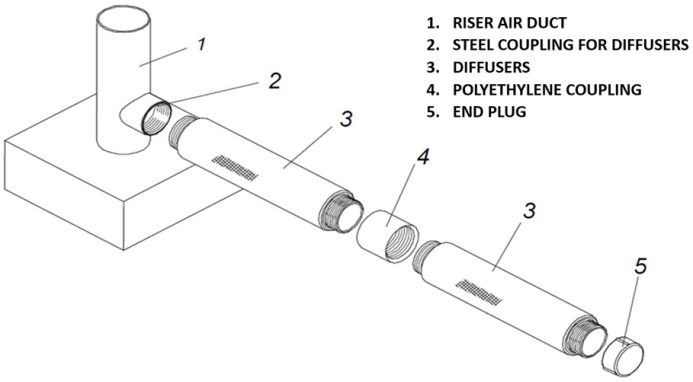


Dependence of pressure loss at diffusers on air rate

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AQUA-PRO-M diffusers are allowed for application in waste and natural water treatment on the basis of the following documents:

1. Hygienic certificate of RF Health Ministry No. 40.01.17.335.II00390 05.00 of 25.05.00.
2. Certificate of products conformance No. POCC RU.II01.H.01737.
3. Certificate of quality conformance to GOST P ISO 9001-96 pertaining to diffusers design and manufacturing No. POCC RU.0001.13II20.



CHARACTERISTIC **FEATURES**

AQUA-PRO-M diffusers differ from the basic model AQUA-PRO in a number of design and technical characteristics:

1. Frame cross-section profile has been changed – air holes were calibrated and are of larger volume compared to those in AQUA-PRO model. Thus, diffuser dust capacity was increased which results in its longer service life.

2. Seal rubber rings were introduced which prevent air outlet from the disperser's ends. This facilitates stabilization of diffuser mass-transfer and hydraulic characteristics.

3. Diffusers connection with the help of taper thrust thread ensures much simpler and quicker assembly of diffusers into a system, as well as higher reliability of threaded joint.

4. The techniques of outer dispersion layer coating is complemented with thermomechanical compaction operation due to which diffusers show better mass transfer characteristics.

ENVIRONMENTAL SUSTAINABILITY

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