

## NV – m type biological wastewater treatment plant

**NV 1÷4 m** type wastewater treatment plant of domestic wastewater consists of two chambers present in one tank (Figure 3). At first, wastewater, flowing into the plant, enters into the aeration chamber, where it is mixed with the activated sludge with the help of air. Compressed air is necessary for supporting life of activated sludge and internal recirculation of treated wastewater. Air is provided with the help of the compressor (airblower). Wastewater is mixed with the activated sludge by the air, lifting through the aerator from the bottom to the top. Biological wastewater treatment is performed with the help of microorganism's that decompose organic substances.

Purpose of the process is to bind soluble, colloidal and biogenic substances from wastewater into activated sludge and separate active sludge. Flake forming microorganisms multiply and form groups that cause adherence of protozoos and other bacteria. Microorganisms metabolise ("eat up" and decompose) and destroy organic substances. Decomposition of organic materials and formation of activated sludge takes place in the aeration section. Mixture of the activated sludge from the aeration chamber enters the external chamber (the secondary settling vessel), where, due to gravity forces, the activated sludge separates and falls down into the bottom part of the plant, from which, with the help of aeration system, once again rises into the aeration section - aerotank. Clarified wastewater enters into the collection duct, installed in the perimeter of the whole secondary settling vessel, and by passing through the flow regulator is removed through the outflow pipe.

If the mass of microorganisms increases, the amount of the activated sludge also increases. With the help of the airlift, excess sludge is removed into the bag of dewatered sludge, fitted in the upper part of the plant. When the amount of the excess sludge in the bag is about 2/3 of its capacity, then the sludge is removed. Working cycle of the airlift is adjusted with the help of the airblower. By removing the sludge, air supply is stopped for 30 minutes for the sludge to settle at the bottom part of the plant. With the help of the airlift, the settled particles of the sludge are removed into the bag of dewatered sludge, fitted in the upper part of the plant. A more precise working cycle of the airblower is set during the commissioning operations.

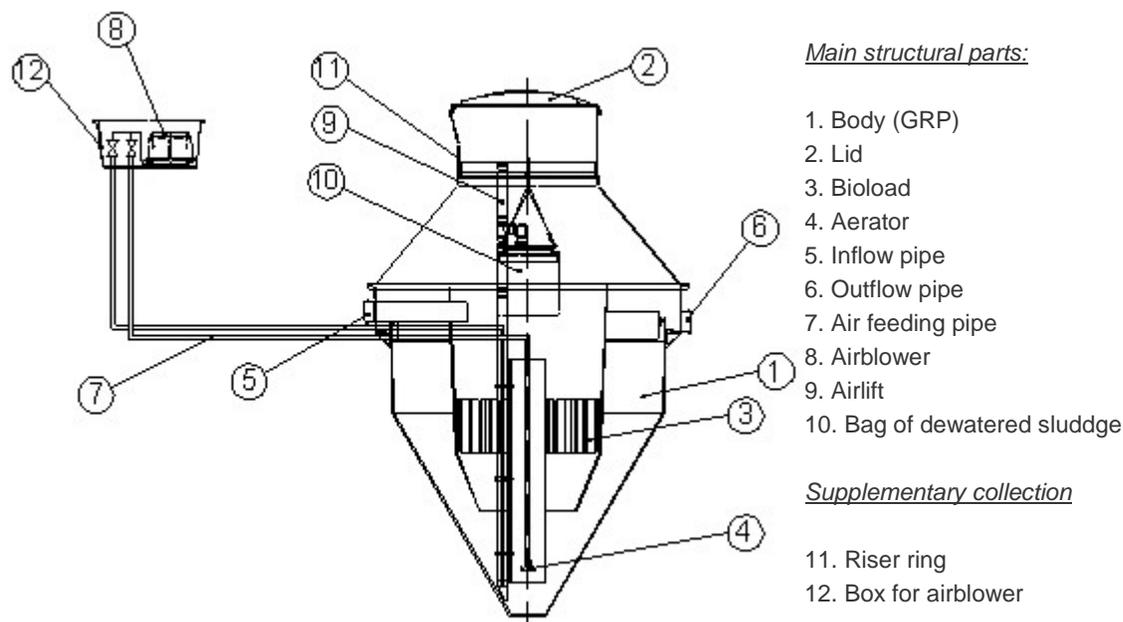


Figure 1. NV 1-4m type biological treatment plant with bags of dewatered sludge

Table of parameters for NV 1÷4m type biological treatment plant of domestic wastewater

Identification (according to capacity)	Capacity			Arbitrary number of population	Removed pollutants (indexes)	Initial pollution of wastewater		After treatment		Removal of occurring waste (slime, sludge, sand, etc. ) change of filters (in every element)			
	m <sup>3</sup> /d	m <sup>3</sup> /h	l/s			kg/d	mg/l	mg/l	%	Waste (from filter) designation	Removal (dewatering) frequency, in times per year according to the fact	kg SS / removal	m <sup>2</sup> / removal
NV-1m	0,8	0,3	-	4	BOD <sub>7</sub>	0,28	350	<29	94,3%	Excess sludge	1-2	0,171	0,017
					SS	0,28	350	<35	95,1%				
					ChDS	0,48	600	<125	88,9%				
NV-2m	1,44	0,4	-	8	BOD <sub>7</sub>	0,56	390	<29	94,3%	Excess sludge	1-2	0,24	0,024
					SS	0,56	390	<35	95,1%				
					ChDS	0,96	670	<125	88,9%				
NV-3m	2,52	0,8	-	14	BOD <sub>7</sub>	0,98	390	<29	94,3%	Excess sludge	1-2	0,42	0,042
					SS	0,98	390	<35	95,1%				
					ChDS	1,68	670	<125	88,9%				
NV-4m	3,42	1,0	-	19	BOD <sub>7</sub>	1,33	390	<29	94,3%	Excess sludge	1-2	0,56	0,056
					SS	1,33	390	<35	95,1%				
					ChDS	2,28	670	<125	88,9%				

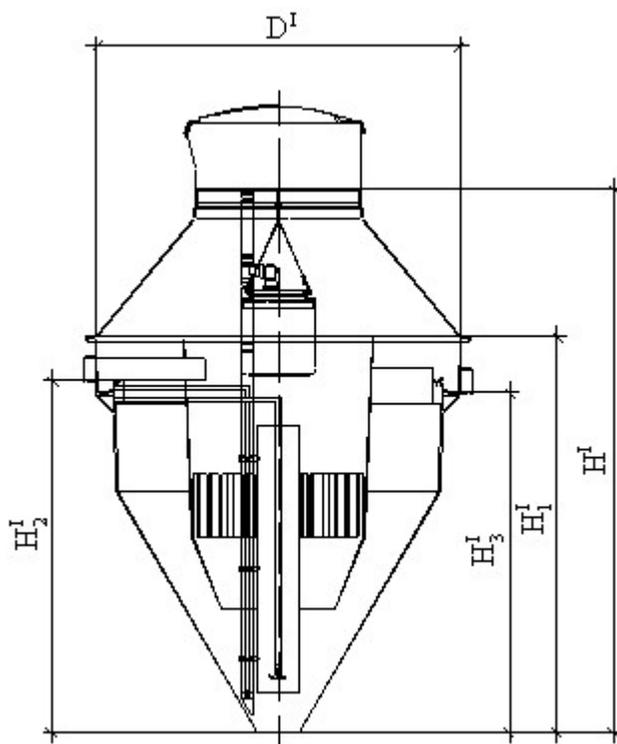


Figure 2. The main overhaul dimensions of the NV 1÷4m type treatment plant

**Technical data of the plants**

Model	Dimensions, m					Weight (netto), kg	Airblower type	Installed capacity, W
	H*	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	D <sup>1</sup>			
NV-1m	2,53	1,84	1,65	1,59	1,71	188	EL-60	76
NV-2m	3,035	2,345	2,25	2,195	2,15	289	EL-80	114
NV-3m	3,725	3,1	2,95	2,895	2,73	578	EL-100	141
NV-4m	3,99	3,3	3,15	3,095	3,0	1000	EL-120	183

*The manufacturer reserves the right to change parameters of the product, retaining treatment efficiency.*

*H\* - adjusted according to the required height.*

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