



Water Recycling Technologies

Modernization of WWTP Pharmaceutical production

By order of our clients - (Pharmaceutical company for the production of antibiotics and food additives), we have developed an installation that improves performance, reduces operating costs and stabilizes wastewater performance within or below the MPN. (MPN - Maximum permissible norms)

1. Customer requirements:

- ✓ Minimum reagents
- ✓ Stable operation in case of variable pollution (when changing the range of manufactured drugs)
- ✓ Possibility for integrated installation in an already existing treatment plant.
- ✓ Quality of treatment - MPN for discharge into the environment.

2. Results:

Laboratory analyzes and research of 3 (three) samples of wastewater with different degree of pollution and origin have been processed and performed. The purification process allows the results to be adjusted, in a positive or negative direction, at the request of the client

Photo: Input- Output



✓ Results of wastewater treatment **type 1**

Nº	Indicators	Unit	Before processing	After processin
1	pH	mg/L	6,36	7
2	TSS	g/L	0,121	0,0005
3	BOD ₅	mgO ₂ /L	350	16,2
4	COD	mgO ₂ /L	5345	51
5	NH ₄ -N	mg/L	272	0.78
6	SO ₄	mg/L	405	60
7	Total (P)	mg/L	10,5	0.05

✓ Results of wastewater treatment **type 2**

Nº	Indicators	Unit	Before processing	After processing
1	pH	mg/L		7
2	TSS	g/L		
3	BOD ₅	mgO ₂ /L		
4	COD	mgO ₂ /L	9867	86
5	NH ₄ -N	mg/L	215	0.72
6	SO ₄	mg/L	426	41
7	Total (P)	mg/L	3,65	0.08

✓ Results of wastewater treatment **type 3**

Nº	Indicators	Unit	Before processing	After processing
1	pH	mg/L	6,79	8,18
2	TSS	g/L	1390	
3	BOD ₅	mgO ₂ /L	810	16,9
4	COD	mgO ₂ /L	1645	32
5	NH ₄ -N	mg/L	13,17	0,09
6	N-Kjeldal	mg/L	50.99	2.52
7	NO ₃ -N	mg/L	4	11
8	PO ₄	mg/L	27,95	0,16

3. Choice of technology:

Given the requirements of the client, a technological scheme was developed that works like a "broom" and does not depend on the degree and type of pollution. The technological algorithm (base + superstructure) includes physico-chemical methods of impact such as disintegration, activation, ozonation, filtration.

- ✓ The technology is based on wave methods that have not been used in this direction so far. Physico-chemical processes, such as dispersion, disintegration, ionization, combine under the influence of electromagnetic fields. In this regard, in the processed

substances, the physico-chemical reactions proceed immeasurably quickly. Substances change at the intramolecular level.

✓The developed technological algorithm of purification allows the installation to work in two variants:

1. Independent - as a treatment plant.
2. Modular version - integrated into the scheme of an existing treatment plant in the process of its m If desired, the purification process can be demonstrated at our specially built for this purpose, demonstration complex.

Photo: Installation



If desired, the purification process can be demonstrated at our specially built for this purpose, demonstration complex.

The installation is designed and manufactured individually for each case

If you are interested, we will provide clarifying information.

Awaiting your questions and comments!

"WATER RECYCLING TECHNOLOGIES-BG" LTD

Varna,Bulgaria,
Tel.+359 898487873
Tel.+359 876474620
Tel.+359 898460415
E-mail: wrt.varna@abv.bg