

Crivina Drinking Water Treatment and Production Plant



str. Aristide Demetriade nr. 2,
sector 1, București
Tel.: 021/207.77.77
www.apabucur.ro



Crivina Plant Treatment Network

Crivina Drinking Water Treatment and Production Plant

Crivina Plant is located on the left shore of the river Arges, at approximately 30 km upstream from Bucharest Municipality, in the west of Crivina locality (Bolintin Vale town, Giurgiu County), downstream from the water intake from the river Arges (the Arges dam).

It is the newest plant of those belonging to Apa Nova Bucuresti. It started producing drinking water for Bucharest in July 2006. Its production capacity is 3 m³/s, i.e. 259,200 m³ per day.

It is equipped with a treatment network that permits the elimination of all toxins and harmful substances from the water of the river Arges. In the water treatment procedure, water is also treated with ozone, in addition to the classic methods.

► 1 Raw Water Pumping

Taken over from the second battery of sand-clearing basins of the water intake on the river Arges, the water is pumped by means of a pumping plant consisting of two pumps with a fixed speed, each having a 4,000m³/h flow.

The pressing pipes of the pumps go the hydro-technical node Nho. From this point the raw water is carried to the treatment installations through free flowing (gravitationally).

On the aqueduct leaving from Nho to the pre-ozonation installation there is a debitmeter that meters the raw water quantity entering the treatment plant.



► 2 Pre-ozonation

In this treatment stage, raw water is injected in the ozone by means of porous diffusers. The use of ozone leads to the correction of organoleptic parameters, oxidation of organic substances, decomposition of iron and manganese combinations, inactivation of viruses, etc.

► 3-4-5 Coagulation - Flocculation - Decantation

Very fine particles suspended in the water gather in the form of flakes, under the action of a coagulant. By the recirculation of water and, with the help of added reaction agents, the flakes become bigger and, carried by their own weight, finally settle down in the four lamellar clearing basins. The deposits in the clearing basins are extracted by means of pumps and then directed to the mud drying layers. The result of such stages is the clearing of the water.



► 6 Interzonization

It is the second stage in the water treatment process in which ozone is introduced. The ozone is a powerful oxidant that produces, in this stage, the disinfection of water and the improvement of the water quality parameters. By the use of such treatment stage, the contamination of filters with germs is also avoided.

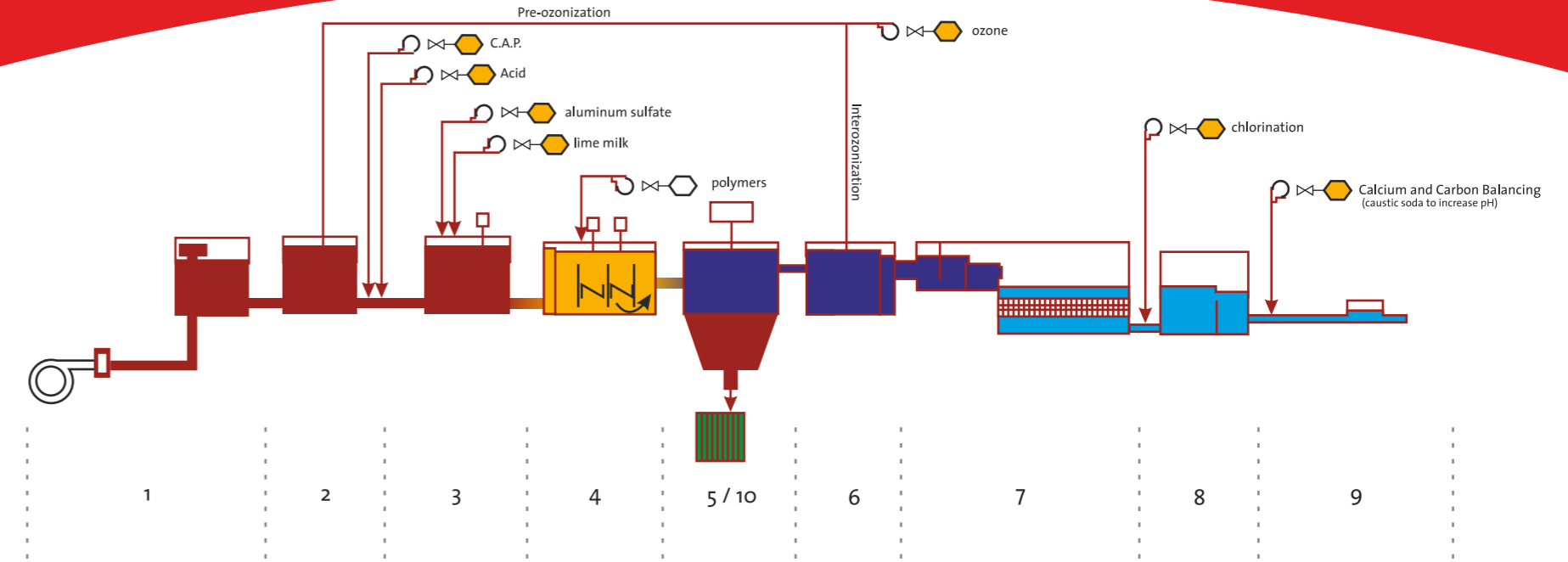


► 7 Filtering in the Sand

Subsequent to decantation and interzonization, the cleared water is directed toward filters with sand (12 filters with a filtration capacity of 1060 m³/h). Such treatment stage permits the elimination of all particles left after decantation, thus resulting very clear water, with the normal organoleptic parameters for drinking.



The treatment network comprises the following stages:



► 8 Disinfection with Gaseous Chlorine

Disinfection is a treatment whose role is to eliminate germs: bacteria, viruses and parasites. The chlorine quantity introduced in this stage is high enough to avoid the return of the bacteria in the distribution network.



► 9 Calcium and Carbon Balancing

This stage, in which water is treated with soda permits pH correction at the exit from the plant, prevents the blocking of the pipes because of lime deposits and the corrosion of distribution pipes, made of steel.



► 10 Mud Treatment

The mud resulted from the decantation and clearing processes in relation to water used for filter washing is directed toward drying blankets.

Legend

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|-----------------------|--|----------------------------------|
| 1 - Raw Water Pumping | 5 - Decantation | 9 - Calcium and Carbon Balancing |
| 2 - Pre-ozonation | 6 - Interzonization | 10 - Mud Treatment |
| 3 - Coagulation | 7 - Filtering in the Sand | |
| 4 - Flocculation | 8 - Disinfection with Gaseous Chlorine | |