System of basic water preliminary purification GDB

System of basic water preliminary purification (GDB) is used to reduce the content of suspended substances, iron, organic compounds in basic water before it will be delivered to reverse osmosis plant of GDF system.

The basic water for the system is water from the river Vilia. Basic water demand is 360 m^3/h.

GDB system is on constant duty. In normal operational period the basic water is supplied to the block of reticulated filters with filtration thinness of 1000 mcm and then it is delivered to plate heat exchangers, where it is heated to 25°C. Heated river water is accumulated in tanks of basic water. Then it is supplied to the block of reticulated filters with filtration thinness of 200 mcm.

After pumps of basic water sulphuric acid is provided in order to achieve the optimal pH in coagulation. pH correction of basic water enables to increase purification quality from organic impurities and iron with minimum level of aluminum in clarified water. The optimal pH value upon coagulation with aluminum oxychloride ranges from 6,5 to 7,5.

After acid addition aluminum oxychloride is supplied as a coagulant. Coagulant addition provides colloidal impurities agglomeration. The calculated dose of coagulant is 11,05 mgAl_2O_3/dm^3. Coagulant dose changes throughout the season and is defined on the results of chemical analysis of basic water and purified water.

Water goes through two contact volumes for improvement of coagulation. Then it goes to the blocks of ultrafiltration to remove the suspended substances, organic compounds, iron and to reduce chrominance.