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The Method of degassing water

(57) Abstract:

FIELD: chemistry.

SUBSTANCE: invention can be used to produce deaerated and decarbonised water and its use in heat engineering. Method of water degassing includes preliminary clarification of initial water, supply to Na-cation filters, wherein hardness of softened water is maintained in range of 0.02–0.1 mg-eq/l. Solution of caustic soda is dosed into the softened water; the amount of sodium hydroxide is not more than 10–15 % of the amount of carbon dioxide in the water. Solution of sodium sulphite is then dosed into the water, wherein the amount of sodium sulphite is selected based on the concentration of dissolved oxygen in the treated water. Then, water is directed to reverse-osmosis water desalination unit, at that ratio of permeate to initial flow is set within 75–90 %. Obtained partially desalted and degassed permeate is supplied to consumer, concentrate is drained into sewerage.

EFFECT: method provides higher efficiency of chemical bonding of oxygen dissolved in water, excludes increase of salt content of treated water, and also considerably reduces total salt content of treated water.

3 cl, 1 dwg, 4 tbl, 1 ex

The proposed simple technology of membrane water degassing allows for a significant reduction in the cost of water treatment equipment, as well as a significant simplification of the technological scheme in comparison with thermal degassing. The proposed scheme also avoids the disadvantages of traditional chemical deaeration of water, since the proposed scheme does not increase the salinity of chemically deaerated water. The proposed scheme allows you to remove free carbon dioxide from the water, while the usual alkalizing of water only binds carbon dioxide, without removing it from the water.

Claim

1. Method of degassing water which consists in the fact that the water is pre-clarified, is directed at the Na-cationite the filters, while the hardness of softened water is maintained in the range of 0.02-0.1 mg-EQ/l, and then in softened water is metered solution of sodium hydroxide, the quantity of caustic soda chosen is not more than 10-15% of the amount of carbon dioxide in water, then water is metered solution of sodium sulphite, wherein a quantity of sodium sulfite is selected on the basis of dissolved oxygen concentration in the prepared water, then the water is directed to the installation of reverse osmosis water desalination, in this case, the ratio of permeate to the initial flow is set within 75-90%, then the resulting desalted and degassed permeate is sent to the consumer, and the concentrate is drained into the sewer.

2. The method of claim 1, characterized in that the amount of sodium sulfate is selected is equivalent to the amount of oxygen dissolved in water.

3. The method of claim 1, characterized in that the amount of sodium sulfite is selected at least 10-30% more than the amount of oxygen dissolved in water.

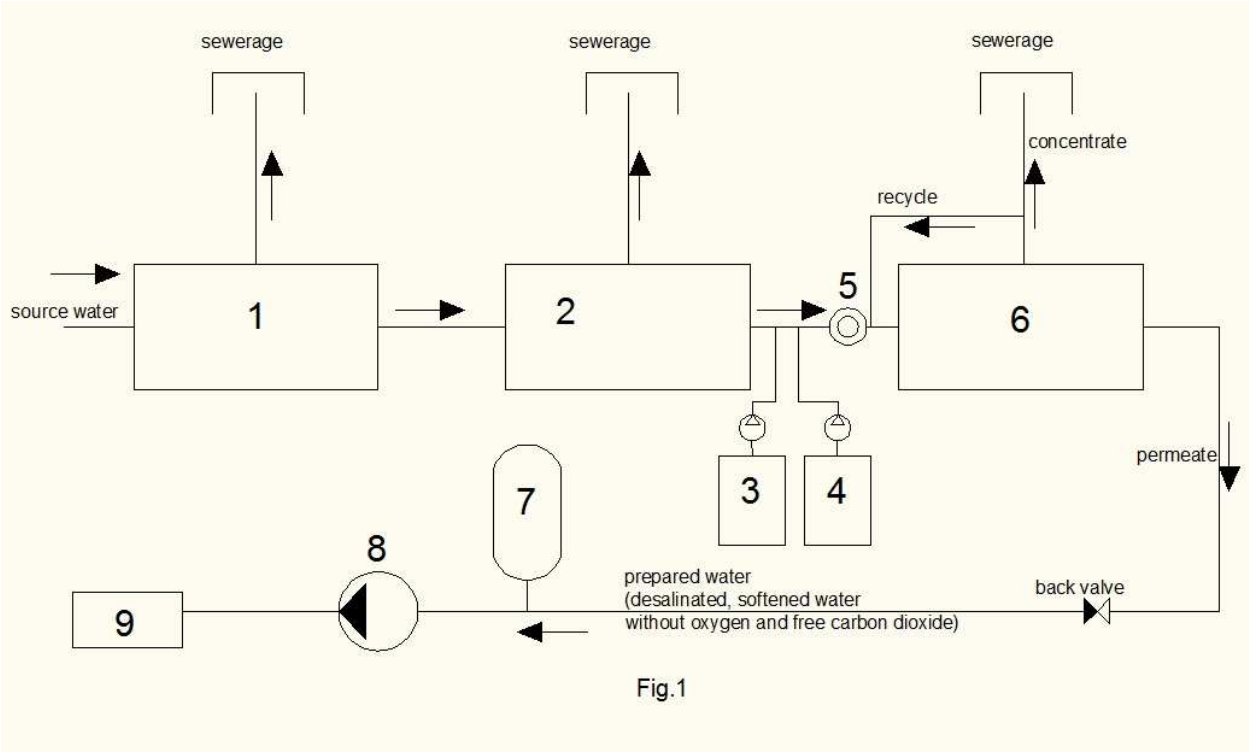

Fig.1

1 – the installation of continuous water clarification;

2 – the installation of a system of continuous Na- cation exchange water softening;

3 - dosing system for sodium hydroxide;

4 - sodium sulfite solution dosage system;

5 - microfilter;

6 – reverse osmosis water desalination system;

7 - membrane accumulator tank;

8 – boiler feed pump or filtrate pressure booster pump;

9 – high temperature storage tank.

Figure 1 Scheme of water treatment system with water degassing on reverse osmosis unit