Nanofiltration and Reverse Osmosis in drinking water treatment
Pilot tests and concept study on Softening and Sulfate Removal

01/2016

Project:
Pilot tests and concept study regarding softening and sulfate removal from drinking water in the waterworks of Bad Langensalza (Germany).

Customer:
Water utility of Bad Langensalza

Verbandswasserwerk Bad Langensalza

Project description:
The hardness of the Bad Langensalza drinking water is high (38 °dH = 530 ppm $CaCO_3$). Furthermore, due to geogenic reasons, the drinking water has a high sulfate concentration (approx. 350 mg/l).

Objective of the investigations was to find out the most suitable operating conditions for RO/NF in order to decrease hardness (goal: 12 °dH = 210 ppm $CaCO_3$) and sulfate concentration in drinking water.

IWW's performance:
- Data Evaluation (e. g. raw water analyses, drinking water flow)
- Additional lab analyses and specific lab tests (e.g. SDI-test)
- Design of the pilot tests incl. selection of membranes and antiscalant
- Installation and start-up of the pilot plant in the waterworks

- Staff instruction regarding pilot plant operation
- Supervision, maintenance and support during 7 months of pilot plant operation (incl. process data evaluation, on-site and lab analyses)
- Development of a basic concept and rough dimensioning of a full-scale plant
- Assessment of the future drinking water quality regarding its corrosion chemistry
- Concept on concentrate disposal
- Estimation of future operation costs and investment costs
- Support during discussion with public authorities
- Recommendation regarding further procedure
- Final report and presentation

Technical data of the pilot tests:
Flow rate: approx. 0.8 m^3/h permeate
Membrane elements: 4 (4 inch)
Online-Parameter: Pressure, Flow and conductivity (feed, permeate, concentrate)
Variation parameters: permeate recovery, antiscalant-type and dosage
Duration of pilot tests: 7 months

Total project duration: 12 months

Contact at IWW
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