

Demonstration of four different drinking water treatment processes

Pilot Tests on Nitrate removal from groundwater in Mashhad (Iran)

02/2016

Project:

Demonstration of High-performance Technologies, developed in Germany, for Nitrate Removal from Drinking Water in Iran

Client:

Mashhad Water and Wastewater Company

Funding authorities:

- German Ministry of Education and Research (BMBF)
- Iranian Ministry of Energy and Water

Project Partners:

- Karlsruhe Institute of Technology Germany
- VA Tech Wabag Co. Vienna (formerly Wabag Butzbach, Germany)

Project description:

In 2004 about 85 % of Mashhad's drinking water originated from groundwater. Due to significant sewage dumping, the groundwater was widely affected by high nitrate concentrations. The goal of this project was to demonstrate treatment technologies (at pilot scale) which are capable for nitrate removal and to identify the most suitable technology for Mashhad's water supply.

The following treatment technologies were tested in pilot scale in Mashhad (Iran)

- Biological denitrification
- Ion Exchange
- Reverse Osmosis (RO)
- Electrodialysis

IWW's performance:

- Data Evaluation (e. g. time series of raw water and drinking water analyses)
- Design of the pilot tests
- Detail planning of the pilot plants (in co-operation with the project partners)
- Installation, start-up and operation of the pilot plants
- Training of the local technicians
- Optimization and adaptation of the processes to the local conditions
- Evaluation of the pilot test results
- Development of basic concepts for full scale treatment plants
- Estimation of capital and operating costs for different plant sizes
- Assessment of the treatment processes regarding different aspects:
 - Effectiveness and stability of the treatment process
 - Operating and investment costs
 - Drinking water quality
 - Required technical and human resources
 - Impacts on the environment

Duration of pilot tests: 2.5 years

Total project duration: 4 years

Contact at IWW

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