

## Implementation of QA/QC program in research related to the membrane processes used in geothermal water treatment

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### ABSTRACT

Testing physicochemical parameters of water with sufficient certainty and reliability requires always the implementation of quality assurance/quality control (QA/QC) systems in the laboratory practice. The paper presents the results of QA/QC program realized during nanofiltration (NF) process. The analyses of geothermal water (raw water), permeate and retentate in normal and control (duplicate) samples were conducted by the accredited hydrogeochemical laboratory. All samples were collected by a single sampler using the same sampling protocol and delivered to the laboratory within a short time (several hours). The samples were analysed by qualified analysts, using analytical methods that were validated for these purposes. A detailed analysis of test results is shown for one selected indicator – boron. The concentration of boron in samples of the permeate and the concentrate has not been particularly changed upon NF process. Therefore it was really important and necessary to estimate uncertainty of measurements for the results of such tests. On the basis of the data collected, the precision and uncertainty of determinations of this indicator were estimated in the context of the assessment of the quality of raw water, permeate and retentate. Relative measurement uncertainty of boron does not exceed 5%.

*Keywords:* Geothermal water; Boron; QA/QC; Duplicate (replicate) control samples

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