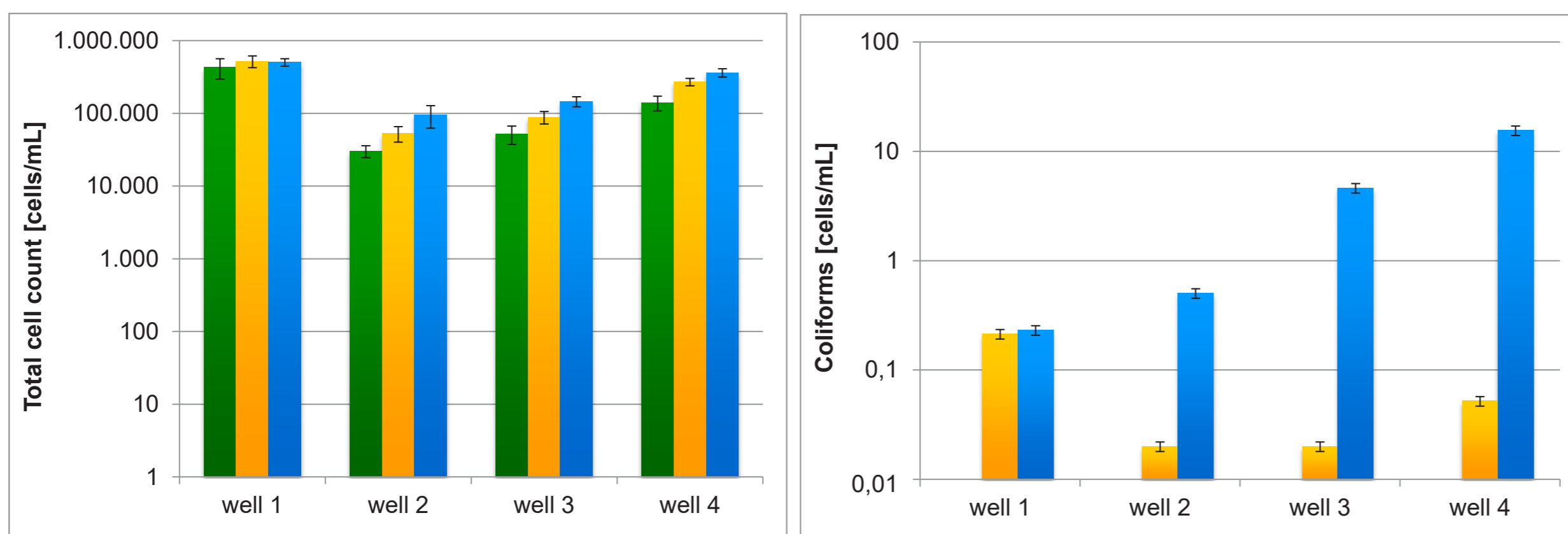


Groundwater Sampling for Microbiological Analysis by means of a Gastight Sampling System



The enhanced gastight, sterilizable sampling system. a) Removal of a sample vessel from the gastight sampling system b) Close-up of the inner workings of the gastight sampling system c) Cooling box for transport of the sampling vessels

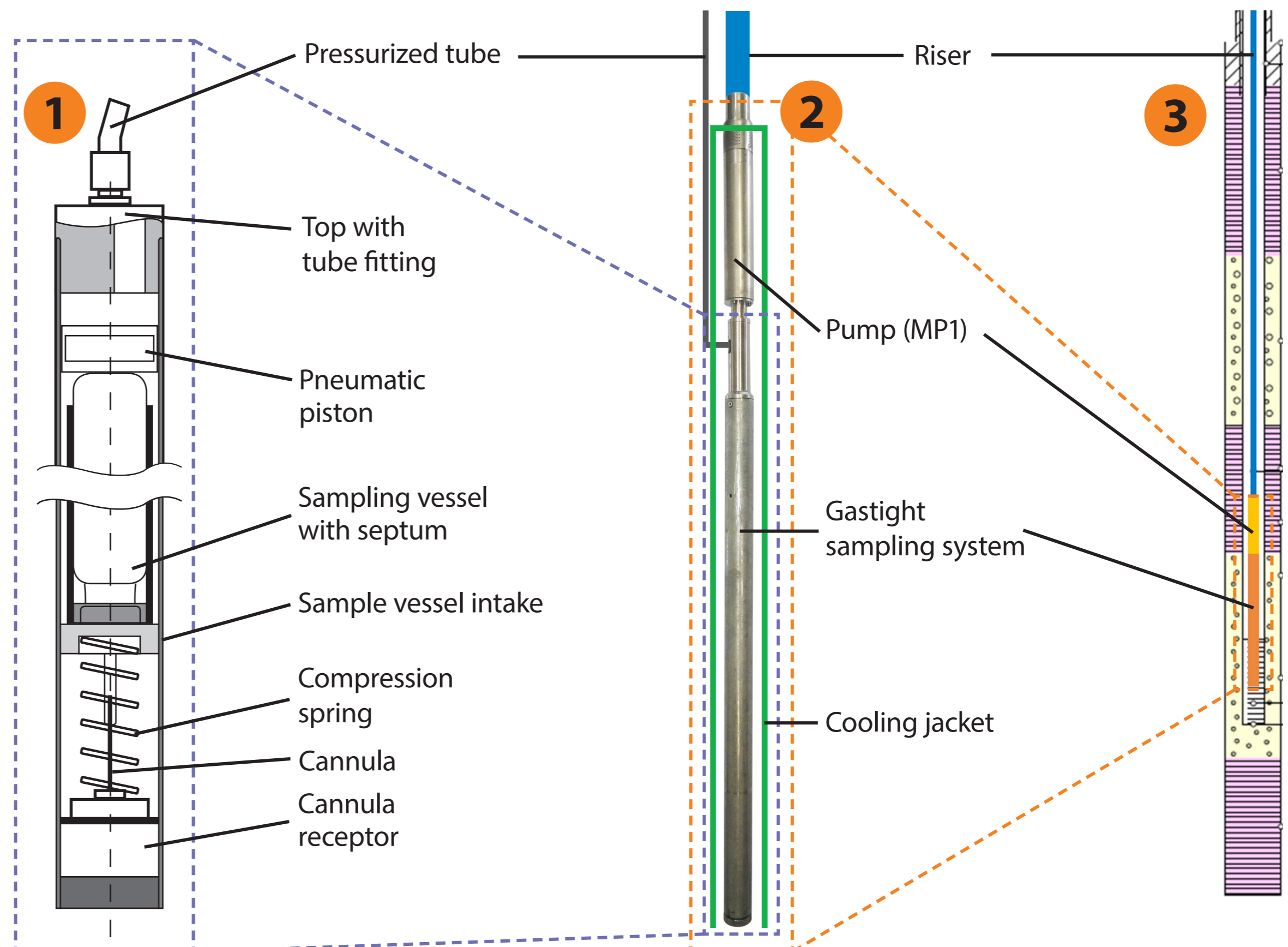


Comparison of different sampling techniques

For comparative studies samples were taken by means of conventional sampling, a conventional bailer and the enhanced gastight sampling system. The measured values for the total cell number and the coliform cell number show that microbial contamination is significantly reduced through sampling by means of a gastight sampling system. (■ gastight sampling system, ■ conventional sampling, ■ conventional bailer)

In order to meet the requirements of groundwater sampling for microbiological analyses, the use of a gastight, sterilizable sampling system is being tested in combination with a pump technique. The following criteria are implemented according to DVGW Worksheet W 112 (2011):

- The sample characterizes only the autochthonous, not the monitoring well influences of altered groundwater biocoenosis.
- Contamination by sampling devices is avoided.
- The in-situ conditions are maintained until sample preparation.
- The withdrawal fitting and sampling vessels are sterilizable.



Legend

- 1 Cross section of the gastight sampling system (developed and manufactured by Umwelt- und Ingenieurtechnik GmbH Dresden)

- 2 Gastight sampling system in combination with a pump technique and cooling jacket
- 3 Installation of the sampling system in a groundwater monitoring well

Further questions which are addressed through sampling by means of a gastight sampling system are:

- Prevention of the liberation of gases or volatile substances dissolved in groundwater and
- Avoidance of material influences on trace and non-target analysis.

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