# Correlation between the occurrence of microbial clogging and the hydrochemical and operational properties of drinking water wells

## Context

The sub-project AntiOcker carried out by KWB is part of the joint research project Microbial Clogging in Technical Systems supported by the German Federal Ministry of Education and Research (BMBF). The project is coordinated by the department of Environmental Microbiology of the Technical University Berlin.

The project focuses on the investigation of neutrophilic and acidophilic iron bacteria which may cause the formation of clogging materials in wells and pipe systems. The prevention of such deposits but also the improvement of removal methods will help to save both energy and resources during well operation.

Previous studies of the project partners, particularly performed in the scope of KWB research project WellMa, have revealed that the well ageing phenomena are determined by multiple correlated biological and chemical processes. For this reason, it is the sound understanding of the main processes and key parameters that will provide the basis for the systematic control of iron bacteria occurrence by an optimized well operation. The first successful identification of existing iron bacteria and their linkage to certain geochemical and hydrochemical environmental conditions of the wells investigated has shown that the bacterial activity and the resulting clogging degree can indeed specifically be influenced by operational measures.

KWB's main task is to supervise the early transfer of applicable results from research into routine operation. The statistical analysis of the results and a test programme performed at 30 wells operated by Berliner Wasserbetriebe will facilitate this step.

Main objective of the KWB sub-project is the quantification of the energy saving potential resulting from reduced clogging and prolonged maintenance interval. Well operators will be enabled to perform cost-benefit analyses. The conclusions will be summarised in a best-practice guideline for optimised well operation.

*Measurement and sampling campaigns at clogged drinking water wells*

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## Contact

**HELLA SCHWARZMÜLLER**
**Kompetenzzentrum Wasser Berlin gGmbH**
**hella.schwarzmueller@kompetenz-wasser.de**

→ www.kompetenz-wasser.de

## Project Partners

KOMPETENZZENTRUM WasserBerlin
TU berlin
seit 1558
UNIVERSITÄT DUISBURG ESSEN Offen im Denken
HTW
KAGE MIKROFOTOGRAFIE
HAMMANN COMPREX® IMPULSE FÜR SAUBERE ROHRNETZE
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