

TECHNOLOGY OFFER

TESTING FOR MICROBIAL CORROSION IN NATURAL WATERS

The device MICRA-buoy is an autonomous acquisition system for electrochemical corrosion data of material samples in a rugged design. Exposed to a natural water body, the acquired data provide information on the corrosion behaviour of the tested materials including the microbial influences.

BACKGROUND

The corrosiveness of natural water for metallic materials is not only determined by the chemical composition, it is also influenced by microbial activity. Microbially Influenced Corrosion (MIC) may lead to unexpected corrosion damages in technical systems like hydropower plants^{1,2}, pipes¹, pumps³, or heat exchangers³. Assessing the MIC risk from water samples is very limited, as are laboratory tests lacking the complexity of the natural environment.



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Microbially Influenced Corrosion Risk Assessment buoy (MICRA-buoy) is a device which is placed in the water body of interest for a limited time (few weeks, typically). It carries specimens of metallic materials, which are connected to an integrated acquisition system for electrochemical data. After exposition, data evaluation provides information on the risk of MIC, and the biofilm on the specimens may be investigated.



MICRA-buoy 1 and its integrated sample holder



Application of MICRA in a hydropower project

ADVANTAGES

- Direct assessment of corrosion relevant electrochemical data
- in the original environment with freely selectable materials
- generating authentic biofilm

FURTHER READING

- ¹P. Linhardt, Mater. Corr. 61 (2010), 1034.
- ²P. Linhardt, Mater. Corr. 66 (2015), 1536.
- ³Failure cases investigated by P. Linhardt, TU-Wien, CTA (unpublished)

REFERENCE:
M009/2014

APPLICATIONS:

Microbial corrosion risk assessment / testing, in natural waters, for hydropower and related projects, for failure analysis, for research

DEVELOPMENT STATUS:

Prototypes with basic functionality in various designs, tested and applied in hydropower projects. Extended electrochemical functionalities under development.

KEYWORDS:

microbial corrosion, natural water, fresh water hydropower, wells, water works, cooling water

OPTIONS:

- R&D - Cooperation

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