

# Project F198: Optimising sewer cleaning, exploiting operational synergies



Conserving resources: Sewer cleaning only when and where necessary

Cleaning is an important factor in maintaining the correct functioning of sewer system, and absorbs a significant portion of municipal budgets in North Rhine-Westphalia. It is, however, often the case that system operators' resources are not used efficiently, or that, due to inadequate knowledge of the condition of sewer systems, lengths of sewer are cleaned without this being really necessary.

The introduction of optimising sewer cleaning strategy is frequently cited as an obvious solution, against the background pressure of rising cost. However, the restructuring of cleaning strategies is not always easy for system operators since there is no universally applicable concept for implementation. Also, the effects of such changes on the drain/sewer system and on the environment can in many cases not be estimated in advance.

The basic principles of optimising sewer cleaning strategies and their operational procedures and potentials for enhancement of efficiency have been elaborated in this research project. A large number of workshops and working meetings with sewer-system operators from all over Germany have been held to facilitate these changes for system operators. These provided an opportunity to compile and discuss the operators' problems, wishes and requirements, and their experience with the use of various cleaning strategies. These findings have been compiled to provide other system operators with assistance in the optimisation of their own cleaning strategy.



Discussing measured data: How efficient is the sewer flushing vehicle?

Comprehensive findings on the performance of HP nozzles and on the behaviour of depositions subjected to HP jetting have already been compiled in "Sewer cleaning – Nozzles, pressures, high-pressure jetting" project (Bosseler and Schlüter, 2004). The loads exerted on various pipe materials by HP jetting were also examined.

The current project examined the technical aspects of the formation and removal of depositions, with a view to optimised planning of cleaning operations (when, how often).

Scientific tests performed on a test length of sewer were used to determine how quickly depositions accumulate under defined

conditions, how they change and the forces necessary to erode them. Supplementary laboratory-scale investigations studied the generation of hydrogen sulphide and the erosion-resistance of such depositions.

The results were used to draw conclusions concerning the selection of cleaning intervals, the aim being to reduce cleaning input and effort without risking blockages or other impairment of correct sewer-system functioning.

## **Project title**

“Investigations of optimising sewer cleaning, exploiting operational synergies – Phase 1”

## **Download report**

(German version only)

Report (194 pages)

Annex: Materials for communications activities for promotion of strategy change (252 pages)

Working aid (9 pages)

## **Project management**

Ruhr University Bochum, Chair of Urban Water Management and Environmental Engineering

## **Project participants**

IKT - Institute for Underground Infrastructure

## **Client**

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