



## **Influence of Transient Behaviour on the Settling of Solids in Storm Water Tanks**

N. Vosswinkel<sup>1\*</sup>, G. Lipeme Kouyi<sup>2</sup>, S. Ebbert<sup>1</sup>, A. Schnieders<sup>3</sup>, C. Maus<sup>1</sup>,  
A.-G. Laïly<sup>2</sup>, R. Mohn<sup>1</sup> M. Uhl<sup>1</sup>

<sup>1</sup>Muenster University of Applied Sciences, IWARU (Institute for Water Resources Environment), Corrensstr. 25, FRG-48149 Muenster, Germany

<sup>2</sup>University of Lyon, INSA Lyon, LGCIE (Laboratory of Civil & Environmental Engineering) F-69621 Villeurbanne cedex, France

<sup>3</sup>Ruhrverband, Kronprinzenstraße 37, FRG-45128 Essen, Germany

\*Corresponding author, e-mail vosswinkel@fh-muenster.de

### **ABSTRACT**

This paper deals with the experimental and numerical description of the transient flow and sedimentation processes in storm water settling tanks of urban sewer systems.

Authors investigated: i) the influence of transient effects on the sedimentation behaviour of solids within settling tanks and ii) the CFD numerical strategy which enables the accurate representation of transient phenomena.

The processes which were observed experimentally showed a high influence of macro-turbulent coherent structures in the flow field with time-dependent behaviour, particularly close to the bottom. Furthermore the 3D-numerical simulation with a steady computational solution procedure showed extreme problems with stability and it was uncertain whether the converged solution mirrored the observed flow characteristics. Therefore special attention was focused on the transient characteristics of the flow field, both – experimentally and numerically.

### **KEYWORDS**

CFD modelling, storm water tank, sedimentation, transient flow