

Focused Electrode Leak Location

Proposal BSc & MSc internship or thesis @ TU Delft

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Project duration 2-6 months

Research field
Urban drainage / geosciences

Subject title
Focused Electrode Leak Location

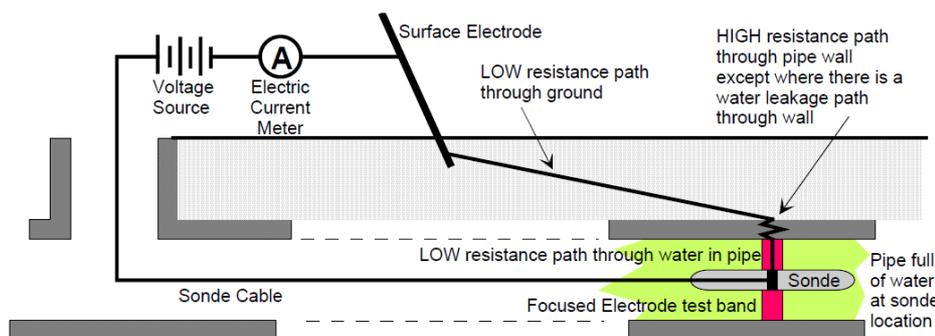
Project proposal



Introduction

Leakage is one of the dominant causes for structural failure of pressure mains and an important cause of structural failure of gravity sewers. In addition, exfiltration of sewage might have detrimental environmental effects and threaten groundwater quality used for drinking water production, whereas infiltration of ground water results in an increased hydraulic loading of wastewater treatment works and a decreased treatment efficiency.

In order to be able to deal with leakage, sewer operators need to be able to detect, quantify and locate leakage. In this research focused electrode leak location (FELL) will be analyzed for its capabilities to detect and locate leakages. In the FELL system an electric voltage is applied between an electrode in an pipe (the sonde) and an electrode on the surface (see figure). The probe is pulled through a pipeline and changes in current could indicate leakage locations.



¹Standard Practice for Locating Leaks in Sewer Pipes By Measuring the Variation of Electric Current Flow Through the Pipe Wall (ASTM 2013)

Experimental description

A first version of the FELL is constructed. In a special build lab setup at Deltares (Delft) we are investigating different configurations to improve understanding and further development. Results of the first experiments are promising; small leakages can be detected. To get more insight in limitations; we want to perform experiments at different parameter combinations; such as groundwater level and electrode distance.

Requirements

We are looking for a student who is enthusiastic about lab work and interested in geo-electrical measurements. In close collaboration and guidance of the PhD candidate you need to be able to work precisely.