

Development of a full scale test setup for the inspection of drinking water pipelines made of PVC

N. Chidambaram MSc, C. Vinh MSc, Dr.ir.R.Loendersloot, Dr.ir.D.Yntema

The first part of the master assignment is building a full scale test set up for different grades of PVC pipe segments that have different levels of degradation (Figure 1). Measurements will be made for ultrasonic and stress strain response of the materials. The second part of the master assignment is data processing, gaining insights and drawing conclusions based on the comparisons made between different grades of PVC. (Optional) - Building the test setup alone can be done as a part of an internship (duration - 3 months).

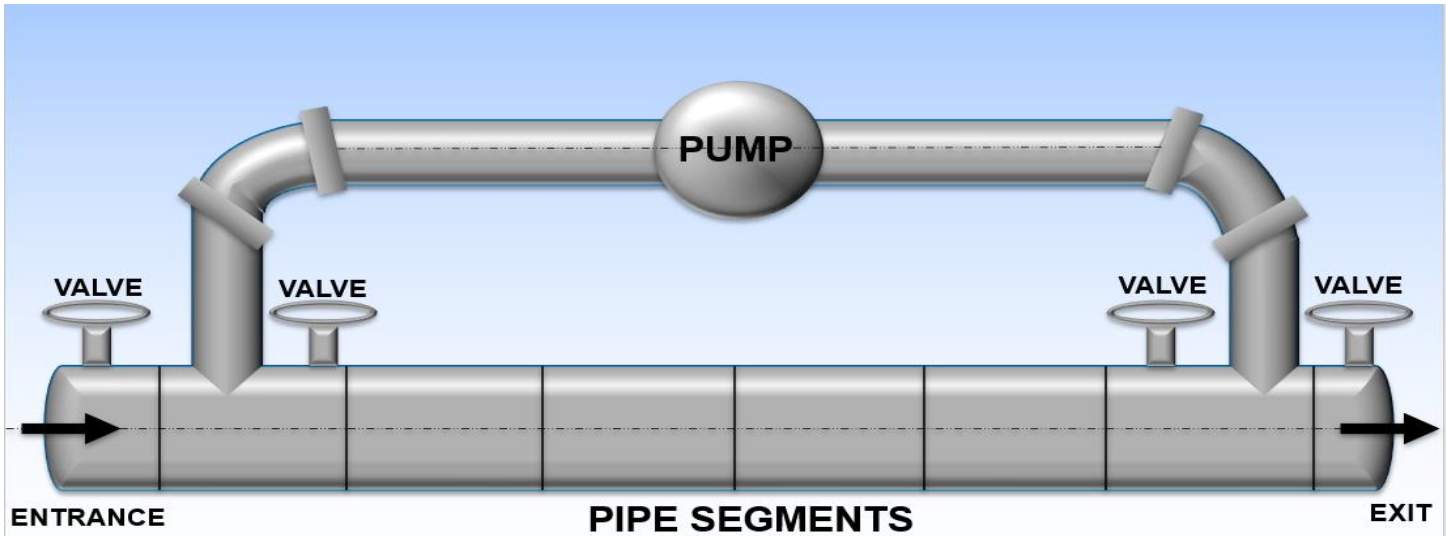


Figure 1: Test setup consisting of segments of PVC pipelines with different manufacturing properties and with different levels of degradation

Main characteristics of test setup

- Pipe segments made of PVC
- Straight section of approximately 2 metres, 160 mm diameter (which is indicated to be the common diameter of distribution mains)
- Interchangeable segments of 150 – 200 mm
- Close water circuit operating under atmosphere pressure

Research objectives

- Gaining insights on the effect of different grades of PVC and different degradation levels of PVC on ultrasonic and stress-strain response measurements.
 - Gaining insights on the differences in measurements based on a more realistic testing environment i.e. the effect of curved surface of pipes and sensitivity to the misalignment of sensors.
- (Optional)
- Gaining insights on the differences in measurements obtained by changing operational parameters such as flow conditions (linear/turbulent), temperature and deposition on inner surface of pipelines.

Requirements

- EU students/ non-EU students enrolled in a Dutch university
- A highly motivated, enthusiastic and proactive student with an aptitude for building test setups and carrying out field measurements
- Preferably with a background in acoustics, electronics, mechanical or computer science engineering
- Experience in working with data processing software packages such as MATLAB and PYTHON

Our offer

- Chance to work in a versatile project in a great social environment with Dutch water companies interested in your work
- Chance to work in a multidisciplinary and international environment at Wetsus and in the water pipeline inspection company Acquaint B.V. in Leeuwarden, Netherlands
- Monthly allowance: 175 Euros
- Starting Date: From July 2021
- Duration: 7 - 8 months (master assignment)

How to apply

If you are interested in doing this internship, please send an email to any of the following ID's

Nandini Chidambaram
Nandini.Chidambaram@wetsus.nl

Cao Vinh
Cao.Vinh@wetsus.nl