

Self-diagnostic PVC pipes for capturing threats in underground water pipeline

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Motivation

Efficient pipeline maintenance

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Self-diagnostic PVC pipes

Causes

A premature crack

Pipe bending

Methodology

Good
Cracked/Bending
Strain

Change of pressure-strain characteristic

Result

Crack

Strain gauges 1, 2, 3

Bending

Strain gauge index	Slope change (%)
1	-10
2	-7
3	-11

Strain gauge index	bend	crack	@ 13°C
1	-0.45	0.05	-0.35
2	-0.42	0.02	-0.28
3	-0.35	0.08	-0.45

Future work

Detect and classify threats from the changes of pressure-strain characteristic

Experiment

Hand pump

ADCs

Crack

PVC pipe

Strain gauges

Beam for bending

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