# Step Test with GPRS in Arnand, Veolia Eau

**Case Study CS4 -XS-044-1.0**

## Introduction


Localising leakage in the network by means of closing valves to quantify the volume of water loss by sector is particularly effective; especially in municipalities with PVC pipes. A good example of this technique was used with Veolia Eau, in the town of Arnand, close to Lake Annecy in Eastern France, on 20th June 3013 using **XStream**.

## Implementation

- Define and prepare the areas and sector valves to be closed.
- The **XStream** was connected to the outlet flowmeter on the tank. It is essential to have a high flowmeter pulse-rate (preferably 1 litre/pulse) to obtain high resolution flowrate changes. In this test the pulse-rate was 10 litre/pulse such that the minimum value was used after each closing.
- A pressure connection could not be made due to no available hydraulic connection.
- Closing the sector valves commences.


*The tank supplying the sectored network.*

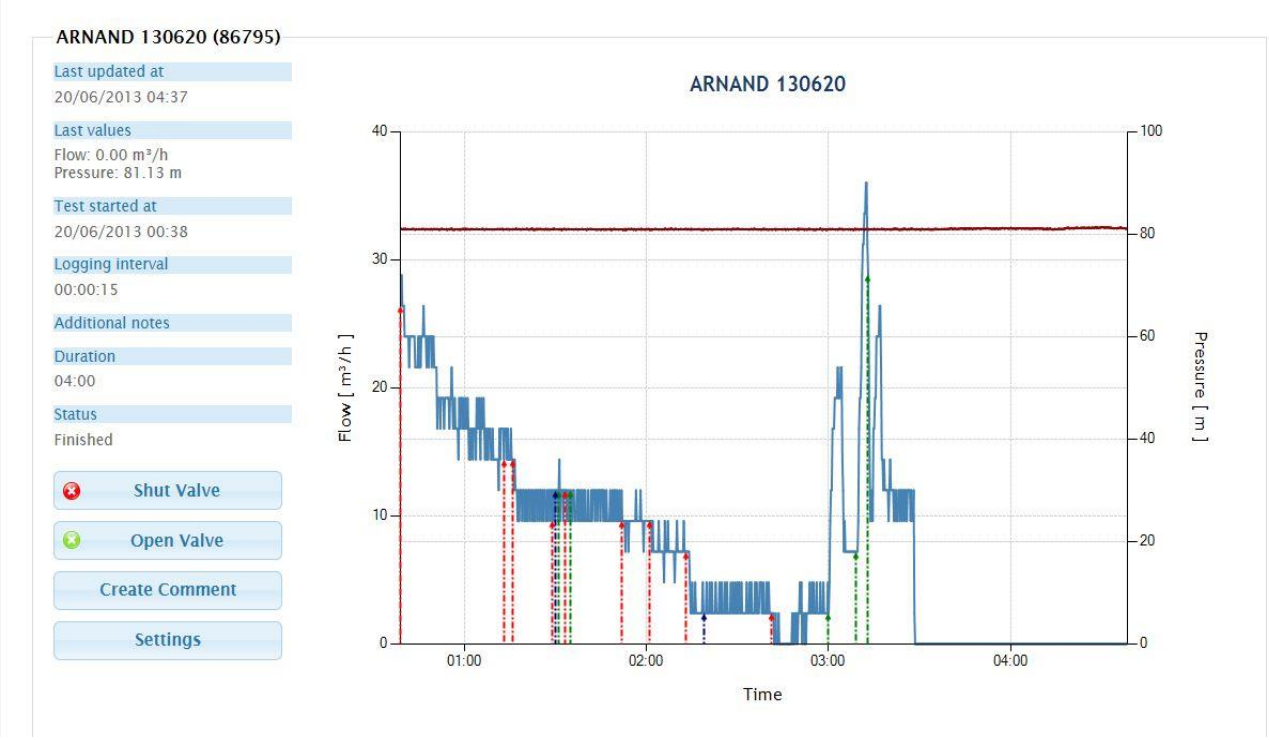
*Despite no GSM signal (phone had no connection) using GPRS 100% of data uploaded by the XStream*

*The network was divided into nine sectors prior to commencement of the step-test.*

Primayer

## Results

Real-time display of data is available on PC, tablet or Smartphone devices equipped with a GPRS connection. Data access is secure and displayed continuously.



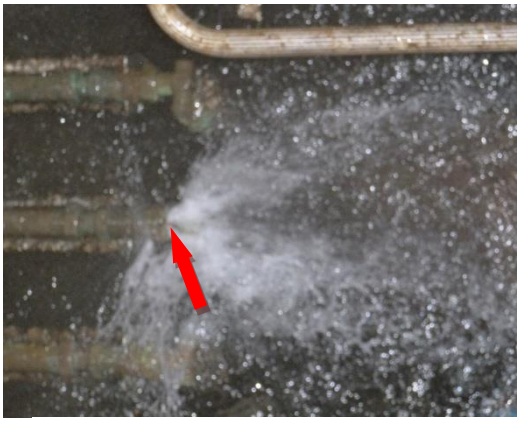

The test commenced at 00.40. The graphical results are shown above; blue curve is flow (m3/hour) and red curve is pressure (not used in this test). Comments are added with the "create comment" button. Opening a valve is in green using the "valve open" button and closing in red "shut valve."

## Summary

The area had a high flowrate of 22 m3/hour at the beginning of the test. Significant drops in flowrate occurred as follows;

- Valve shut 1: 7 m3/hour
- Valve shut 3: 5 m3/hour
- Valve shut 7: 2.4 m3/hour
- Valve shut 8: 4.8 m3/hour (leakage in PVC sector)
- Valve shut 9: 2.4 m3/hour (leakage directly identified)

Other valve shuts resulted in insignificant flow reductions and no further leakage location surveys in these sectors.



*The leak identified at valve shut 9.*

This exercise demonstrated successfully;

- Reliable operation despite a low GSM coverage
- Remote data visualization
- Real time flow data at valve closures
- Avoids the need for a person at the flowmeter and any miscalculations
- Avoid a test on the network of 34 km, reduced to only 2.5 km to carry out further investigation
- Leakage identified in an area of PVC pipes where acoustic leak detection difficult
- Check test made no network changes by ensuring flow returns to original value when valves open

**Primayer Limited**
Primayer House, Parklands Business Park, Denmead, Hampshire, PO7 6XP, United Kingdom
T +44 (0)23 9225 2228 F +44 (0)23 9225 2235
sales@primayer.co.uk **www.primayer.com**