

# AREZZO LEAKAGE DETECTION WITH ENIGMA HYQ



## BACKGROUND

Carabinieri district lays on a wide residential area of the hydric network of Arezzo (Tuscany region, Italy), managed by Società NUOVE ACQUE S.p.a. The water distribution system is characterized by a grid network hydraulically interconnected to the main backbone of Via Fiorentina.

## TECHNICAL SOLUTION

The water leakage search was initiated via a Step-Test operation during the night on predefined areas of the network using Ovarro hydrophones, in particular, Enigma system for the correlations.

The precise localization of the leakages is critical due to the high "environmental acoustic noise pollution" created by the intensive urban traffic of Via Fiorentina and the particular position of the pipe, placed underground for long portions inside private properties and covered by vegetal ground, adding complexity to reach these access points.

Initial conclusions highlighted that some direct junctions on the main pipe of Via Fiorentina with derived taps of 1/2 inch, female were housed inside small underground street rooms. Over the taps, Ovarro hydrophones were installed. The distances of the correlated sections varied from 6000 to 8000m covering the whole length of the piping. The hydraulic load available on the network varying between minimum daily values of about 3.7 bar to maximum values of 4.5 bar.



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WATER



MONITORING  
& CONTROL



LEAK NOISE LOGGERS  
& CORRELATORS



# RESULTS

During the leakage search campaign using Ovarro's hydrophones, verification was carried out on the whole backbone of Via Fiorentina.

Due to the location, a night was chosen that considered the needs of both minimum environmental acoustic noise and the highest hydraulic load on the network. The accurate analysis of "Coherence" function enabled the team to discover a vast leakage, estimated in about 4.5 l/s, on a line derived from the main pipe DN150 of Via Fiorentina.



"With accuracy from the Enigma, a leak of 4.5 litres a second was discovered within the network."

Leak Detection



# KEY DELIVERABLES

- Increased situational awareness
- Improved operational efficiency
- Cross correlation accuracy
- Reduced manpower

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