

# Enigma™

## Multi-point correlation system for leak location

**Enigma** is a state-of-the-art digital correlation logging system for determining the location of leaks in buried water pipes. **Enigma** combines noise logging and noise correlation into one operation to provide improved operational efficiency.

**Enigma** offers the following:

- Leak detection and location in one operation
- Optimum performance in difficult leak detection situations
- Avoids costly night-time working
- Three sound samples separate genuine usage from leakage
- Latest 24-bit technology
- Finds multiple leaks
- Powerful analysis software

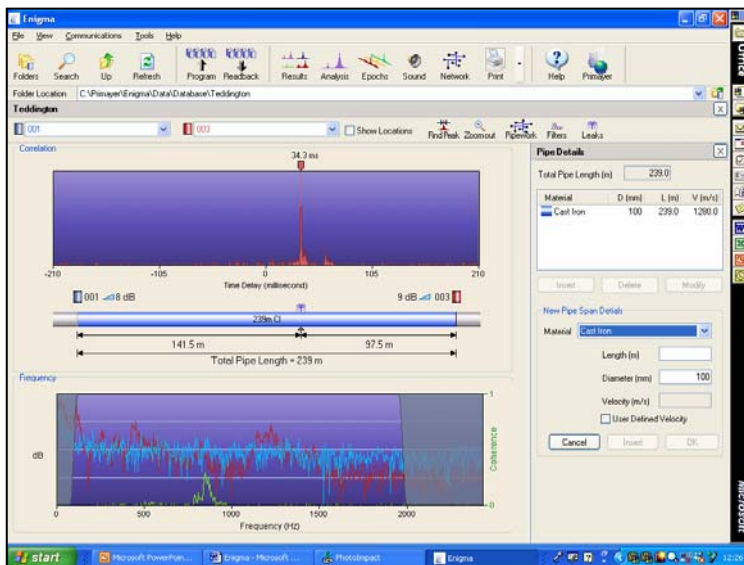
### Multi-point network correlation

**Enigma** loggers are deployed at multiple positions, typically on valves or hydrants, during normal working hours. They may be programmed for either daytime or night-time operation. The loggers record the actual leak sound. When retrieved the leak



sound is transferred to the host software where it is processed to display all leak positions between loggers.

Programming and data readback utilises optical and USB communications to ensure rapid operation.



## Optimum leak sensing

Use overnight provides ideal conditions for leak detection. This is because background acoustic noise from traffic, water usage and other sources, is lowest and, at the same time, water system pressure can be higher which greatly aids leak sound propagation.



## Product features

- Up to 8 loggers per system
- Loggers programmed via PC or default in the Communications Case
- Fast logger communications
- Loggers powered for 5 years
- Loggers submersible to IP68

## Host software features

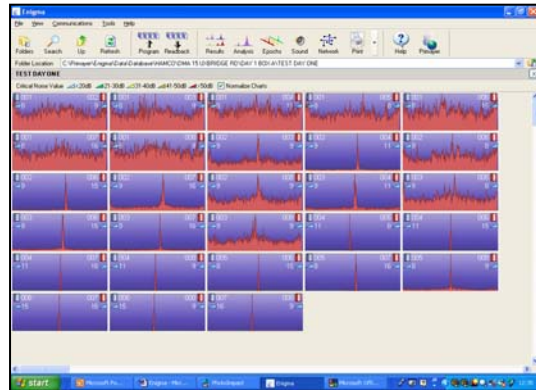
- Advanced correlation, coherence and filtering
- Windows® 'Explorer' style browser
- Logger positions optionally shown on pipe schematic or digital map
- Automated velocity measurement



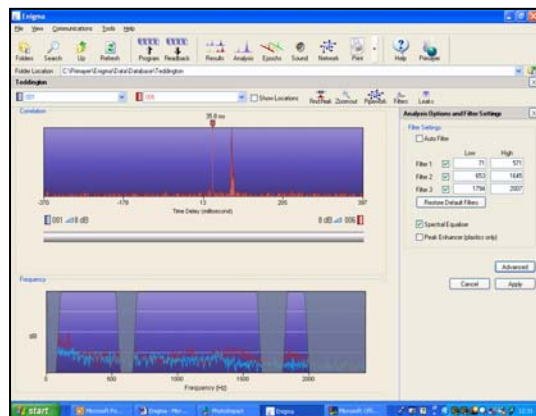
Enigma hydrophone version

## Separating genuine water usage

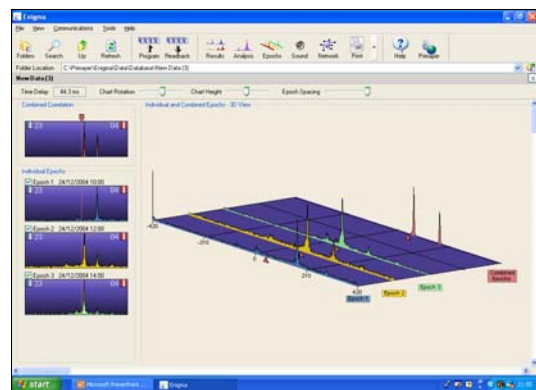
Each logger records during three sample periods, typically spaced one hour apart. A leak noise is always constant and so if the correlation peak is not present during all three samples then it is due to water use and not leakage.



Automated thumbnail display of preliminary results from up to 28 possible combinations



Multiple filter and auto-filter options



Multiple epochs to determine if leakage or legitimate use of water