Remote leak detection utilising GPRS and 3G communications

Phocus3m is an acoustic logger that automatically detects and localises leaks on water distribution networks. The Phocus3m is deployed underground and utilises low cost GPRS and 3G telecommunications* without the need for costly above ground technology.

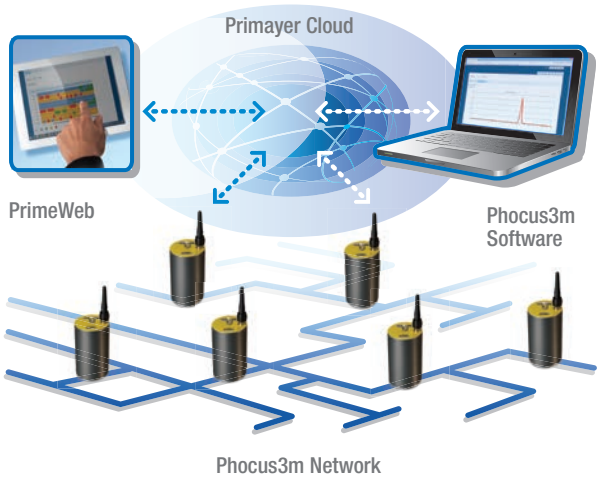
Benefits

- **Remote leakage identification to reduce leak run-time and improve efficiency**
- ***PrimeWeb* map based data available using a web browser**
- **Leak confirmation**
  - **Audio files available for remote listening to confirm presence of leak noise**
  - **Evaluation of daily leak noise histogram**
- **Phocus noise algorithm reduces incidence of undetected leaks**
- **Three sample periods to separate usage from leakage thus reducing false alarms**
- **No infrastructure above ground required**
- **One, small, low cost logger per installation**
- **Embedded roaming SIM for optimum network communications**

Rapid leak identification

Use of modern telecommunications network technology enables rapid identification of leak alarm status to facilitate reduction of leakage levels. Data is monitored on the *Phocus3* software or on an internet browser via *PrimeWeb*. Indication of leak status via Google Maps allows easy identification and management of leakage teams.

Connectivity and data retrieval



Operation

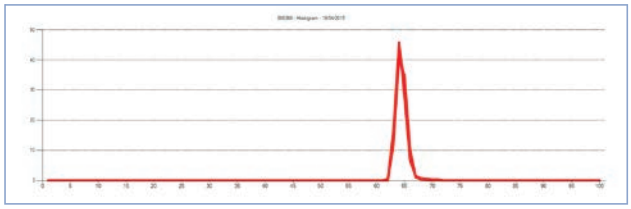
The logger samples pipeline noise at one second intervals during each of three sample periods (termed epochs) during the night when background acoustic noise is lowest. Statistical analysis on each of the three epochs determines the Leakage Confidence Factor. If this is high a leak has been detected. The lowest leak noise amplitude, termed the Critical Noise Value, is also measured and can be a useful indication of how close to the leak the logger is situated.

Leak confirmation – *listen remotely to the leak noise*

When the Leakage Confidence Factor is high the leak noise audio file is transmitted. This allows operators to remotely listen to the noise and confirm the presence of a leak prior to sending leakage teams to site.

Logger characteristics

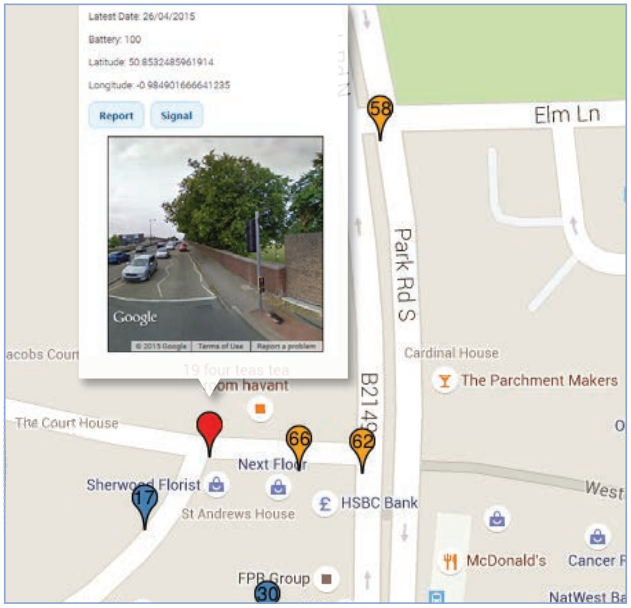
- Intelligence in logger to determine the presence and level of leak noise
- Large data memory
- GPS location stored – no need to mark position on paper map
- High sensitivity integral accelerometer
- Small size
- Powered for up to 5 years (dependent upon GPRS/3G signal conditions)
- Submersible to IP68



Histogram display aids leak confirmation

On-site data and leak listening

On-site display of the most recent Leakage Confidence Factor and Critical Noise Value is available via the Communications Module. Live leak listening can also be carried out to confirm the presence of a leak. All data can also be downloaded into the Communications Module for transfer directly to the host software or, alternatively, for upload to a server.



Courtesy of Google Maps

Data for managing leakage

Leak noise data and audio files are transmitted to a server and analysed via the Phocus3 software or available on-line using *PrimeWeb*. Loggers are shown over large or small areas using Google Maps and colour coded to show leak alarm status indicating the location of potential leakage. Clicking on an individual logger shows full current and historical data in tabular, histogram and graphical formats. 'Street view' of the logger's location is also available. Reports are available for field leakage teams.

Status report for deployed loggers

Products

Phocus3m logger - GPRS only	**BXG 201**
Phocus3m logger - 3G / GPRS (not inc. North America)	**BXG 203**
Phocus3m - 3G (North America only)	**BXG 204**
Communications Module	**BXG 901**

Please refer to Price List for SIM, antenna and data service provision options.

*sms facility available, contact Primayer for details

*Google Maps is a registered trade mark of Google Inc.

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