wrc infrastructure

The Sahara® Pipeline Inspection System Sonar Profile Surveys

Sonar surveys can be carried out to provide information on the internal profile and cross section of live sewers, water pipes, tunnels and tanks.

Profile information allows identification of blockages and quantification of the effects of a build-up of sediment. The tool allows direct measurement of features detected – the depth of sediments, pipe diameter etc.

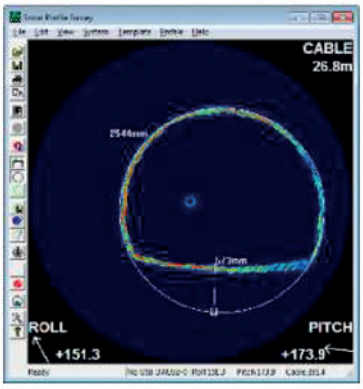
Typical applications include:

- Sewers – detect broken or damaged sections
- Rising mains and sewers – identify build-up of solidified fats, oils and greases
- Raw water mains – determine the level of infestation of zebra mussels
- Tanks – locate sediment

WRc Infrastructure will adapt the system to allow its use in non-standard applications. Recently the tool has been used in large diameter raw water pipelines and tunnels to quantify the blockage caused by zebra mussels.

As seen in the picture (top right) the tool will provide a full profile of large structures even if the water is turbid making CCTV inspection impossible.

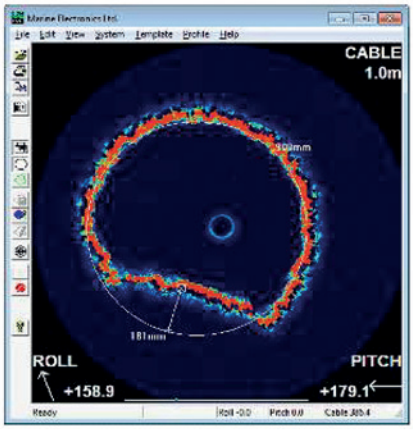
The photograph right shows the sonar head mounted in a flotation collar ready for use in a raw water main. Where the device is to be carried by the flow of water, access must be through an opening of 80 mm diameter or larger.

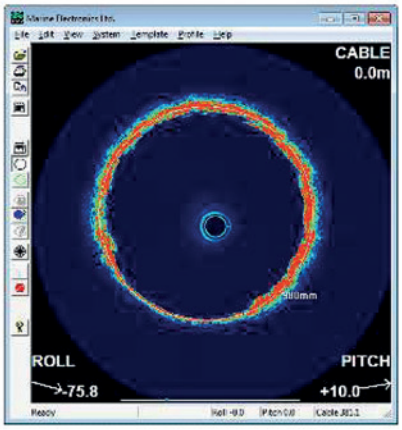


Profile of 100 inch diameter tunnel

Sonar head ready for use

Case Study: 900 mm Ductile Iron Raw Water Main – Zebra Mussels





A 900 mm raw water main with a known infestation of zebra mussels was surveyed both using CCTV and the sonar profiling tool. While CCTV showed that zebra mussels were present it was the sonar tool that showed the level of blockage arising from their presence. The sonar survey (above left) showed a significant build-up of sediment (dead mussel shells) in the bottom of the pipeline.

After the initial survey the main was treated and flushed resulting in removal of the majority of the zebra mussel shells. The change can be clearly seen by comparing the “before” and “after” profiles, above.

Normal Operating Parameters

Minimum pipe size	200 mm
Maximum pipe size	4000 mm
Minimum working pressure	No lower limit
Maximum operating pressure	16 bar (higher pressures may be possible – please ask)
Entry requirement	Sonar requires 80 mm (minimum diameter) entry point
Maximum survey length	200 m

The technique uses the flow of water to carry the sensor through the pipeline. The sensor is mounted on an umbilical cable so results are obtained immediately. Location information is provided by monitoring the length of cable deployed.

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