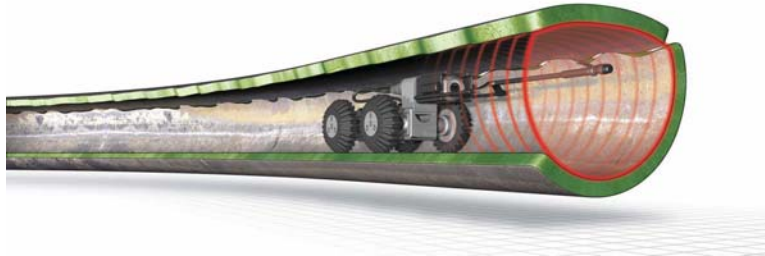


CLEARLINE LASER PROFILER
Measuring Pipe Ovality

The ClearLine Profiler - The Profiler for ROVER® and SuperVision® Systems

The ClearLine Profiler has been developed to provide pipeline engineers and contractors very accurate empirical data on the ovality, capacity, and other conditions in new and existing pipelines. The ClearLine Profiler simply attaches to your existing CCTV Camera and the resulting CCTV images are analysed using innovative 'machine vision' software.



The Concept - Simple and Easy

- A ring of laser light projected onto the internal pipe surface
- Laser image in the field of view of the camera while the camera moves through the pipe.
- Analysis performed on the ring of light using the ClearLine Profiler software to build digital pipe profile.
- For use with live or pre-recorded to video or mpeg.

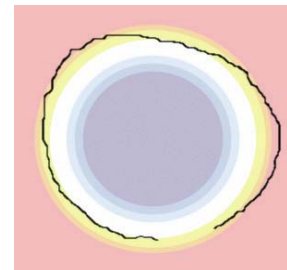
The Hardware

- Easily attaches to your existing Ipek CCTV Camera.
- High-strength carbon fibre and aluminium construction.
- Internally battery powered (rechargeable) so no electrical connections are required.



Benefits include:

- Fast cross-sectional area calculations for determining flow reduction.
- Deformation measurement as an out-of-circle percentage.
- Erosion loss of pipe wall can easily be ascertained.
- Quantifies defects, holes or other abnormalities.



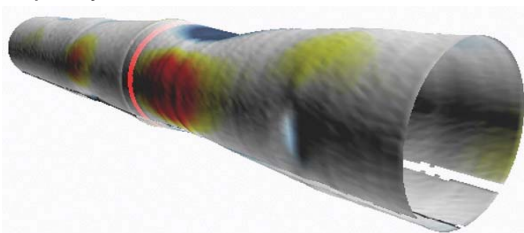
ClearLine Profiler - The Software

Manual Measurements

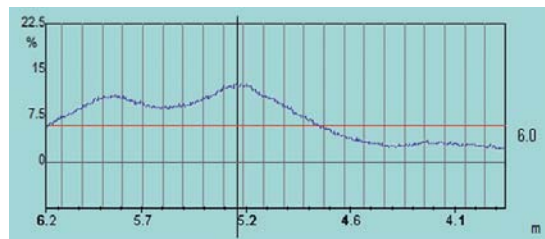
Precise measurements can be taken from a single frame captured from the pre-recorded live video. This captured frame, with its measurement data, can then be stored as a JPEG or BMP file. Manual measurements can be performed on the captured digital profile to an accuracy of 1mm (for a 200mm pipe - accuracy will vary depending on pipe size, material and condition).

Automated Analysis

The ClearLine software uses machine vision. Machine vision is used to find where in the video image the laser profile (red laser line) exists. Each frame of the inspection video is analysed to build a digital profile of the pipe. From this 'profile', the ClearLine Profiler built-in functions display: Ovality, Capacity, Delta.



3D relief of pipe color-coded to depict radial deviation.



Graph showing change in pipe ovality over length.