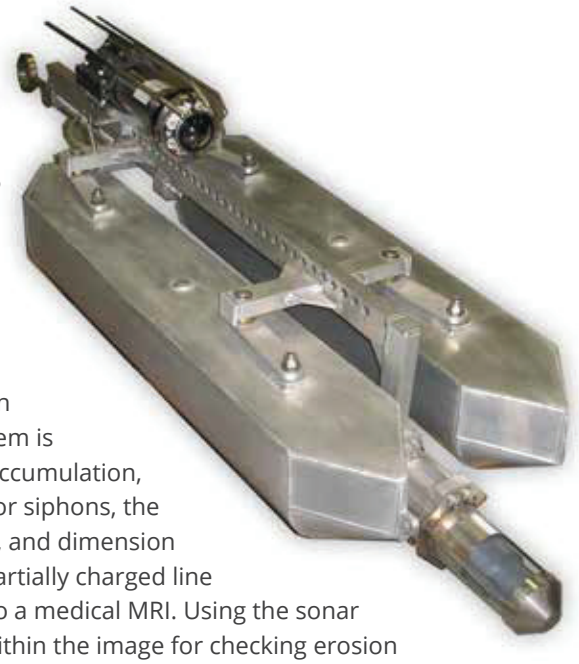
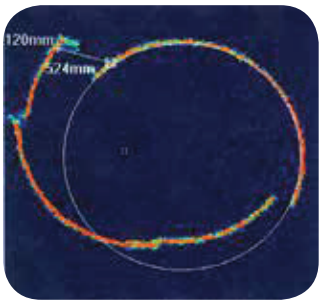
Sonar Profiler System

for Submerged and Semi-submerged Pipes

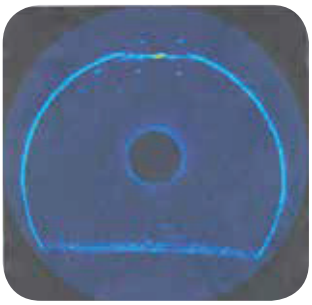


While CCTV is the standard acceptable method of visually inspecting pipelines above the waterline, it cannot provide visual information on internal pipe conditions below the waterline. The Sonar Profiler System is designed to provide accurate dimensional data on silt level, grease accumulation, pipe deformation, offsets, etc, below the waterline. In charged lines or siphons, the Sonar Profiler System provides the visual profile, profile comparison, and dimension data of significant items or defects. A sonar inspection of a fully or partially charged line provides a two-dimensional profile of the interior pipe wall similar to a medical MRI. Using the sonar software, a circle overlay is projected, sized, and moved anywhere within the image for checking erosion or remaining wall thickness. Accurate measurements can be made between any two points within the sonar image. Thus, offset, debris level, size of blockage, grease level, defects and so forth can be quantified. In partially charged lines, the Sonar can be combined with CCTV to provide a simultaneous composite image of the pipe both above and below the waterline! Two (2) different sonar systems, (1) for submerged pipelines and (1) for semi-submerged pipelines, are available to survey pipelines measuring 12" up to 18' in diameter. Both systems provide 'real time' cross-sectional views of the pipe by utilizing high resolution/short range sonar. For semi-submerged pipelines, the non-submerged portion of the pipe is displayed on the video monitor as a standard video image.

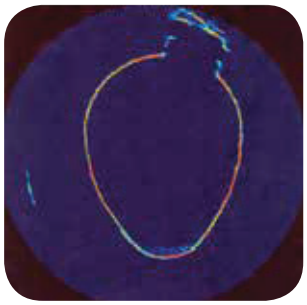
SONAR PIPE PROFILES



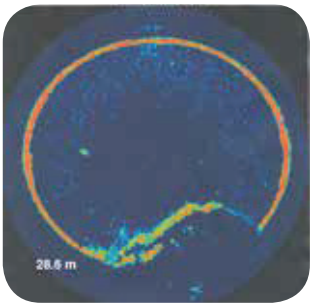
Broken Pipe w/ Circle & Measurement



40 Inch Siphon



Pipe Image with Lateral Opening



GRP Pipe w/ Debris

SONAR SYSTEM FOR SUBMERGED PIPE

- Base system includes the following equipment: Underwater Scanner Unit, Collapsible Sonar
- Siphon Float, Sonar Processor/Monitor, Skid Set, and all necessary interconnect cables
- Specifically designed to survey fully submerged (all water, no air) pipelines and/or pipelines containing heavy silt without disrupting the service
- Capable of inspecting fully submerged pipelines from 24" to 18' in diameter
- Includes a collapsible Sonar Siphon Float with slightly positive buoyancy designed to accommodate different pipe sizes; the Float is designed to position the sonar in the center of the pipeline to ensure accurate measurements
- Includes a specially designed skid set to align the Sonar System in 12"-60" submerged pipelines
- Designed to operate as a multi-conductor 'stand-alone' system

SONAR PROFILER SYSTEM FEATURES & BENEFITS:

- Operates with CUES Standard CCTV to provide underwater profiles of pipe interior and conditions
- Operates in pipes, lines or siphons from 12" though 18' without flow interruption
- PAL or NTSC outputs for recording on standard VHS or S-VHS recorders
- Real time continuous interior scanning over full 360 degrees in under 1 second
- Direct image capture to hard disk for recording still frames on CD at full resolution
- Screen display of distance location from entry point for positive location confirmation
- Operates both in fully charged and partially charged lines
- Analysis can be performed in a CCTV inspection vehicle or on a remote computer
- Collects, stores, and prints pipeline inspection data (footage count and inclinometer data) & video images for display/report generation
- Stores inspection files on disk to be exported into other computers
- Surveys approximately 4 inches/per second
- Includes an inclinometer designed to collect pitch and roll data
- User can display distance measurements and/or draw a circle around the pipe image to determine pipe diameter
- User can add titling information to the video or to a computer report while printing
- Operates off of 115 or 240 volts AC current
- Underwater Scanner Unit provides communications with the scanner, sampling of the acoustic signals, and interfacing to the cable counter for each Sonar System

...provides a two-dimensional profile of the interior pipe wall similar to a medical MRI!

SONAR / TV SYSTEM FOR SEMI-SUBMERGED PIPE - An optional system is available as an integrated Sonar with video for use in submerged and large semi-submerged pipelines.

- The base system is designed to operate as part of a multi-conductor TV Inspection System and includes the following equipment: Underwater Scanner Unit, Sonar Processor/Monitor, Picture in Picture system, and all necessary interconnect cables
- Designed to survey large semi-submerged (part air/part water) pipelines without disrupting the service
- Capable of inspecting large semi-submerged pipelines from 24" up to 18' in diameter.
- For use in conjunction with a camera transporter float and pan & tilt camera in larger pipelines; the float is designed to position the camera above the waterline and the sonar below the waterline
- Designed to display live television pictures of the pipeline and the sonar image with the Picture in Picture (PIP) display
- Uses the USATI (United Sonar and TV Inspection) survey method for semi-submerged pipelines greater than 24 inches in diameter. With USATI, the camera is positioned above the waterline and the sonar is positioned below the waterline to provide a 360-degree survey of the pipeline. The sonar image is super-imposed on the picture to display views above & below the waterline on one monitor!