

# TECH TIPS

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## HD VIDEO INNOVATIONS FOR CHALLENGING APPLICATIONS

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High-definition (HD) video is an emerging trend in pipe inspection, particularly in challenging applications where detail is fine and distance-to-target is great. HD video delivers up to three times more detail than standard-definition (SD) analogue video formats, but it may also demand correspondingly greater IT overhead (network bandwidth, digital storage capacity and processing power). Considerations like these make HD a necessary fit for some applications, and a customer preference for others. Unlike consumer applications, for inspection there needs to be a benefit like ROI, quality enhancement or productivity. Here, we look at the applications individually to help you understand where HD is today and where it will go in the future.



AN HD VIDEO NOZZLE IS RETRIEVED AT A RAPID SPEED UTILIZING HD VIDEO TO CAPTURE MAXIMUM PIPEWALL DETAIL.



HD CRAWLER SYSTEM CRISPLY STARES DOWN THE BARREL OF THE SMALL DIAMETER PIPE TO THE UPCOMING MANHOLE.

### Digital Side-Scanning.

Digital side-scanning captures a pipe's entire circumference in a single video frame. This makes HD a natural choice when scanning large lines using a float or mainline crawler. High-resolution side-scans also benefit more from the algorithms used to auto-detect joints and taps. Several side-scan systems currently offer megapixel resolution.

In smaller pipe diameters, however, HD simply captures excessive detail and increases the size of inspection files. In these applications, it can be more of a preference than a need.

### Push Cameras & Inspection Crawlers.

Traditional inspection techniques usually involve down-pipe viewing, side viewing, or both. For inspection of smaller diameter pipes, SD push cameras capture sufficient detail by virtue of the camera's proximity to the pipe wall and recent ability to pan and tilt. For this reason, no HD models have yet been brought to market.

For mainline inspection, SD inspection crawlers are commonly equipped with pan and tilt capability to target specific areas of the pipe wall for detailed viewing. In larger diameters, the camera may also offer zoom capability to further enhance detail. Beyond these common applications, HD can offer additional detail in large trunk lines with sufficient illumination. HD footage also yields greater accuracy when image measurement is performed. Such needs are less common, therefore availability of HD pan and tilt crawlers is available, but limited.

### Zoom Survey Cameras.

From inside a manhole, a zoom survey camera uses high-powered optics to view deep into adjoining pipes. This unique application places high demands

on all technologies that contribute to visual clarity. Illumination must be sufficient for targets as far as 400 feet, and precision zoom optics are needed to resolve detail at such distances. While there are no HD zoom survey cameras currently on the market, this application would benefit significantly from the enhanced detail HD offers.

### Video Nozzles.

Video nozzles operate at high speed without operator intervention, so good illumination, fast shutter speed and high video resolution are essential to ensuring that every frame captures maximum detail. Video nozzles also generate shorter video sequences, making HD video worth the IT overhead.

### Transmission/Storage/Viewing/Sharing.

Storage bandwidth can be a concern when it comes to HD video. With a larger file than conventional analog video generates, HD video requires a larger storage media which directly can affect secured internal server workflows, and can require hardware upgrades. To combat the potential of costly server upgrades, more economical choices like external hard drive storage and the development of secured cloud based CCTV Programs give IT departments some additional options that can be more cost effective.

Delivering innovation for pipe inspection means focusing on the application and finding the most suitable technology combination to address it. There are many HD consumer products, and the digital infrastructure to support HD is constantly improving to keep up with market demands. As a result, HD CCTV is gaining traction in the pipeline inspection world. Not suited for every application currently, HD inspection and more challenging applications and will continue to be a growing trend in the industry.