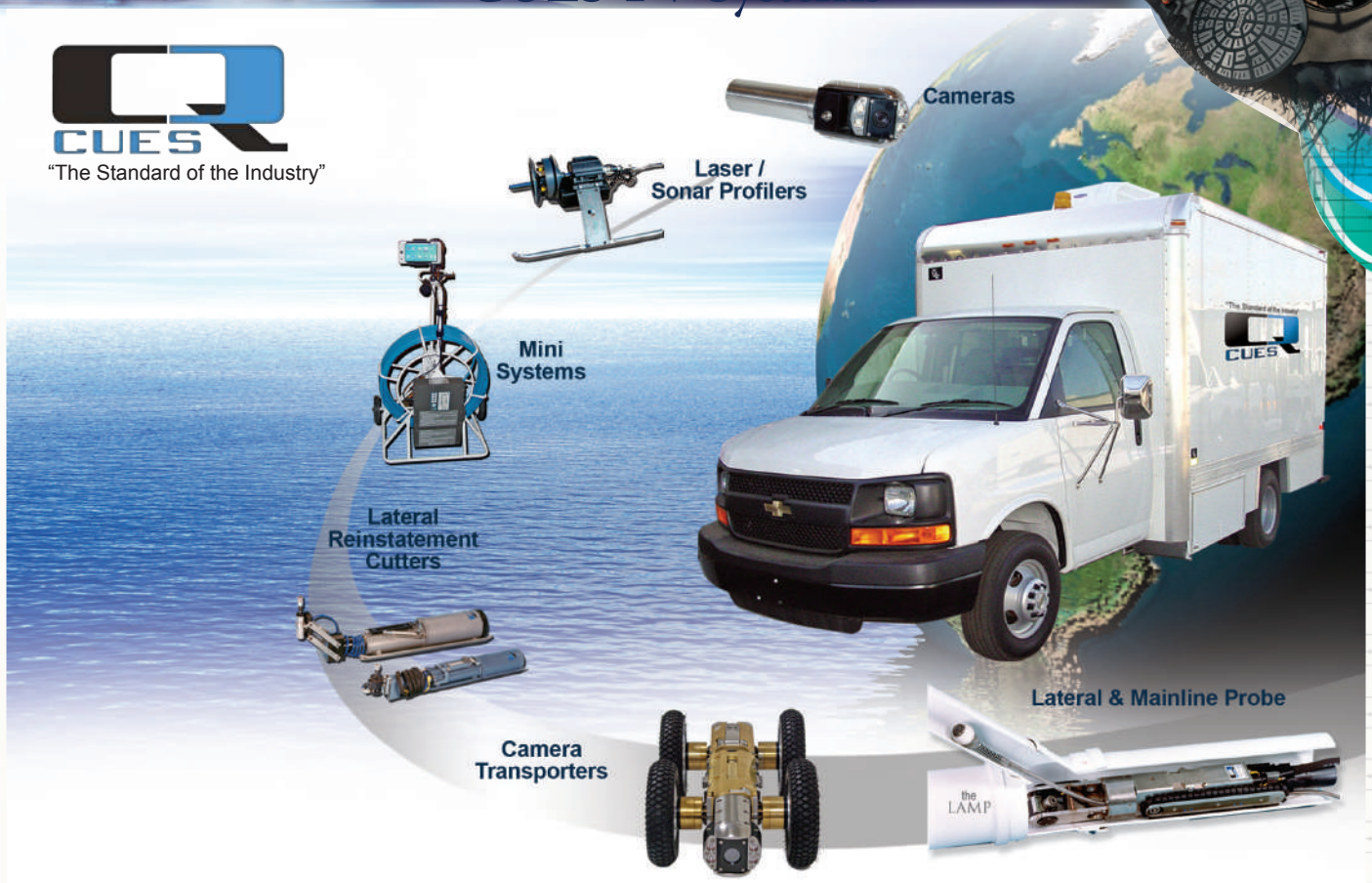
WECO INDUSTRIES

CUES TV Systems

CUES
"The Standard of the Industry"



TV Systems

Full-circle solutions for the Water, Wastewater, & Stormwater Industries for over 40 years!

CUES is the world's leading manufacturer of closed circuit television video (CCTV) inspection, rehabilitation, pipe profiling equipment and asset inspection/decision support software for sanitary and storm sewers, industrial process lines, and water lines. For over 40 years, CUES has provided innovative pipeline inspection technology and solutions to the Water/Wastewater industry to enable accurate condition assessment and proactive maintenance programs for buried infrastructure.

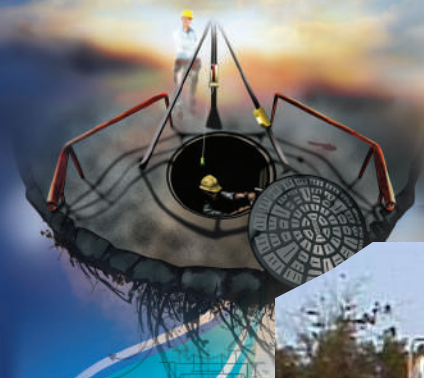
CUES continues to be the industry leader by designing and manufacturing a full-circle solution of products for pipe profiling, pipe rehabilitation, closed circuit television systems, and data acquisition with bi-directional interfaces to ESRI ArcGIS and asset management software such as Hansen and Azteca Cityworks

In addition to inspection equipment, CUES also designs, manufactures, and sells a broad range of pipeline rehabilitation and profiling equipment. These include chemical grouting systems for sewer line pipe joints capable of using a wide variety of grouting products. CUES also makes lateral reinstatement cutting systems which enable the reinstating of laterals in mainline sewers after they have been relined with any of a wide variety of liner materials. Pipe profiling is accomplished via Laser or Sonar based systems.

CUES after-sales support is a foundation of our business model. We provide professional videotapes, manuals, and CD format for system operation, safety, and maintenance. We also provide loaner equipment and full-time customer support and training by experienced industry professionals. Operator training schools with resultant certification are provided for our customers. Our emphasis on innovation and customer support has made CUES the world's largest supplier in our industry.

CUES operates its manufacturing and development operations from over 50,000 square feet of facilities in Orlando, FL. We maintain facilities for sales, service and repair in California, Georgia, Canada, and The Netherlands.

We appreciate the opportunity to serve you and look forward to hearing from you at your earliest convenience.



Custom Vehicle & Trailer-mounted Systems

WECO INDUSTRIES

TV Systems

CUES proudly offers custom truck-mounted systems for all of your TV inspection and rehabilitation needs! Made to withstand the most severe conditions and ergonomically designed for comfort and efficiency, CUES truck mounted systems can include TV inspection equipment for sewer/storm/potable water lines, mainline joint or lateral sealing, and lateral reinstatement cutters for the relining industry. A truck chassis can be specified to contain all or any combination of the aforementioned equipment! CUES is a licensed truck dealership/truck-body converter and stocks various Ford, GMC, Chevrolet, Workhorse, International, and Freightliner chassis, ranging from 9500 GVWR to 23,000 GVWR. With our in-house, state-of-the-art Vehicle Assembly area, CUES can substantially reduce the manufacturing time required for your turn-key truck-mounted system! Customize your truck interior, cabinets, equipment, and mounting configuration to fit your unique requirements! Depending on the specific vehicle, chassis are available in diesel, gas, and natural gas configurations. Optional dry freight box mounted systems are also available.

TV Only

TV Lamp

TV Cutter

TV Cutter Grout

TV Grout

TV Inspection Trucks - CUES offers a wide variety of chassis choices with custom interiors. Equipment can be ergonomically mounted to inspect 6" through 200" mainlines and 3" through 8" lateral services. User friendly Granite XP data acquisition software can interface with various asset management and ESRI ArcGIS systems.

TV Mainline/Lateral Inspection Trucks - Equipment can be ergonomically mounted to inspect 6" through 200" mainlines and 3" through 8" lateral services with optional equipment to inspect 3" through 8" lateral services with access from the mainline or a clean-out. The optional CUES LCS (Lateral Cleaning System) can also be supplied.

TV/Grout Inspection Trucks - This all-in-one production unit can complete TV Inspection of mainlines, laterals (optional), joint sealing of mainlines or laterals, and lateral reinstatement (cutting). Pipe inspection operations and the resultant rehabilitation action are facilitated by one integrated system.

TV/Cutter Inspection Trucks - Custom Cutter / TV inspection trucks include full capabilities for reinstating lateral services, removal of protruding taps, brush finishing existing cuts, and pre and post TV inspection.

TV/Cutter/Grout Inspection Trucks - This all-in-one production unit can complete TV Inspection of mainlines, laterals (optional), joint sealing of mainlines or laterals, and lateral reinstatement (cutting). Pipe inspection operations and the resultant rehabilitation action are facilitated by one integrated system.

Evolution Interior Series - All of the above vehicle mounted units are available with the state of the art Evolution Interior, featuring an ergonomic design to achieve ease of operation, safety, and convenient storage to produce the most efficient, rugged, and reliable system in today's market.

CUES

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Custom Trailer-mounted Systems

NEW K2 Portable Inspection System - Trailer-mounted

CUES
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Custom Trailer-mounted Systems

Another effective alternative to truck-mounted systems! CUES proudly offers custom trailer-mounted systems for all of your TV inspection and rehabilitation needs! CUES trailer-mounted systems can include TV inspection equipment for sewer/storm/potable water lines, mainline joint or lateral sealing, and lateral reinstatement cutters for the relining industry. A variety of options can be added to expand your system, as needed. Customize your trailer interior, cabinets, equipment, and mounting configuration to fit your unique requirements!

Features & Benefits:

- Can be used with a variety of vehicles
- Save the cost of a dedicated vehicle
- Can be set up with the same equipment as conventional truck-mounted systems
- Optional configurations are available

more options *more flexibility* *upgradeable to meet your needs*

The Summit

Portable, wireless control of all camera, transporter, and reel functions!

CUES proudly introduces the Summit, a fully integrated power control system that is compatible with all CUES cameras, transporters, and the LAMP II wheeled lateral launcher. Power, system control, and video overlay functions are consolidated in the Summit system and mounted in minimal rack space to increase counter space and work area. Summit provides simplistic system initialization, operation, and shut down procedures, with an option for a wireless compact controller for all camera, transporter, reel, LAMP II lateral launcher, and camera lift functions.

- Operates all CUES pan and tilt / zoom pan and tilt cameras
- Operates all CUES steerable and non-steerable transporters
- Integrated portable controller for all camera, camera lift, transporter, video cable reel functions
- Integrated portable controller for LAMP II wheeled lateral launcher
- Optional wireless control from front and rear of unit
- Increased rack space and counter space due to consolidation of power, camera, transporter, and reel controls, and video overlay
- Simplicity: one switch enables the entire system initialization

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CUES®

The Summit

The Summit can be mounted in any vehicle, including a Trailer, Van, Sprinter, Hi-Cube, Stepvan, or ATV. Customize your vehicle interior, cabinets, equipment, and mounting configuration to fit your unique requirements!

An optional wireless, compact controller is available for all camera, transporter, reel, LAMP II lateral launcher, and camera lift functions.

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CUES

Evolution Series II Interior

TV Reel

Viewing Room with Electronic Components Mounted Above the Desktop & additional counterspace

Viewing Room flat screen monitors & Indirect Lighting

Evolution Series II Interior provides an ergonomic design to achieve ease of operation, safety, and convenient storage to produce the most efficient, rugged, and reliable system in today's market. The Evolution Interior II offers the same state of the art interior as the Evolution Series I Interior, but also features additional mounting options for equipment components and enhanced lighting.

OPTIONS:

- Sliding drawer storage in rear kick plate of truck for tools and accessories
- Lockable storage cabinet in rear kick plate for camera/transporter and downhole poles
- Hazard strobe warning light system
- Front and rear directional light bars
- Rear awning for protection from the sun and rain
- Intercom system for communication between the two rooms
- Retractable water hose reel
- Side entry door
- Wireless keyboard and mouse
- Additional custom cabinetry (customer to specify)
- Custom laminate colors (customer to specify)
- 20 gallon washdown system
- Remote (Equipment room mounted) flat-screen monitor with adjustable arm
- Custom flooring patterns and colors (customer to specify)
- 12V courtesy lighting with 15 minute timer
- Electronic gear selector for reel transmission

Features & Benefits:

- Contemporary, ergonomically enhanced design
- "Safety Plus Visual" viewing window allows operator to see manhole/reel area plus the Equipment Room while seated comfortably at the control station
- Indirect lighting - produces even lighting, which eliminates glare on monitors
- Electronic components mounted above the desktop to increase countertop space
- Flat screen video and computer monitor on desktop increases valuable counter top space
- All Standard electronic components mounted in climate controlled cabinet
- All plywood cabinet construction
- Seamless walls and ceilings for easy cleaning
- Viewing room can be secured with locking door handles
- Rear floodlights placed inside of rear doors for quick, simple adjustments
- Certain areas of Viewing and Equipment rooms intentionally left "open" for customer
- specified cabinetry and/or storage containers
- Designed for even weight distribution from side to side
- Storage shelves in the Equipment Room

Equipment Room with large viewing room window

- An optional electronic gear selector is available for the reel transmission
- An optional retractable water hose reel is available in the Equipment Room
- Storage shelves are provided in the Equipment Room

- Includes a contemporary, ergonomically enhanced design
- Flat screen video and computer monitors are provided on the desktop to increase countertop space
- An optional wireless keyboard and mouse are available
- Electronic components are mounted above the desktop for added space
- All standard electrical components are mounted in a climate-controlled cabinet

- Includes a "Safety Plus Visual" viewing window to allow the operator to see the manhole/reel area plus the Equipment Room while seated comfortably at the control station
- An optional intercom system is available to communicate between the equipment and viewing rooms
- Includes indirect lighting to produce even light distribution and eliminate glare on the monitors
- Optional 12V courtesy lighting with a 15-minute timer is available in the Viewing and Equipment Rooms
- Viewing room can be secured with locking door handles

- Seamless walls and ceilings for easy cleaning
- All cabinets are constructed of plywood
- Certain areas of the Viewing and Equipment rooms are left "open" for optional customer-specific cabinetry and/or storage containers
- Optional custom cabinetry, laminate colors, flooring patterns / colors are available
- Rear awning provides protection from extreme weather conditions (optional)
- An optional 20-Gallon (minimum) washdown system with a 12 VDC water pump in the Equipment Room helps maintain water pressure for wash down of all cameras, transporters and other related equipment; the washdown system includes a stainless steel sink with a gooseneck faucet located on top of the plywood worktop
- An optional side entry door is available to provide easy access
- Layout is designed for even weight distribution from side to side
- Rear floodlights are installed inside of the rear doors for quick, simple adjustments
- An optional remote (equipment-room mounted) flat-screen monitor with adjustable arm is available
- Optional directional light bars are available on the front and rear of the vehicle
- An optional hazard strobe light warning system is available
- Optional sliding drawer(s) are available in the rear kickplate to store additional tools and accessories
- An optional lockable cabinet in the rear kickplate is available to store the camera/transporter and downhole poles

WECO INDUSTRIES

CUES DUC DIGITAL UNIVERSAL CAMERA

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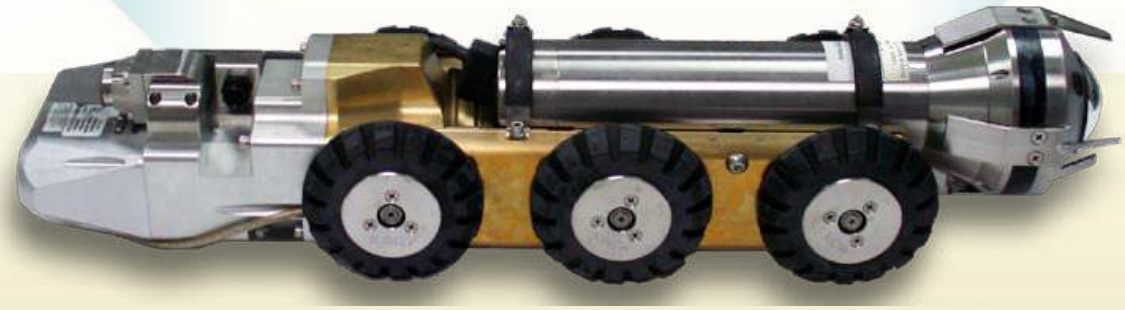
CUES

DIGITAL UNIVERSAL CAMERA SYSTEM

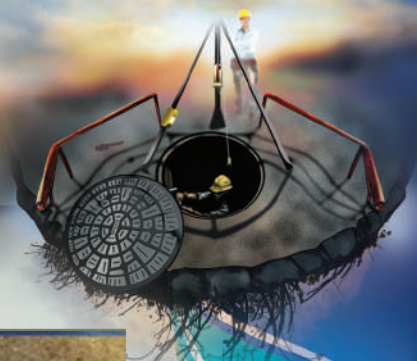
IMPROVE THE OPERATIONAL, ENVIRONMENTAL, AND FINANCIAL PERFORMANCE OF YOUR WASTEWATER SYSTEM TODAY!

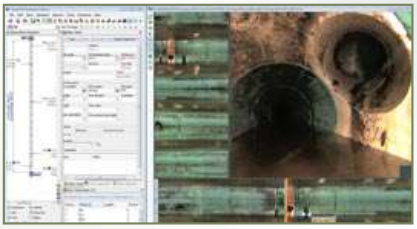
The CUES Digital Universal Camera (DUC) is a semi-autonomous, high resolution digital CCTV side scanning camera designed for rapid and detailed condition assessment of your wastewater system. When used in conjunction with CUES asset-based Granite XP decision support software, you can inspect and assess 5000 feet or more per day, increasing your revenue, while reducing your expenses. The system can be packaged for off-road applications to minimize the costs of traffic control.

The CUES Digital Universal Camera system produces a continuous hemispherical scan of the internal pipe conditions in 6-60" pipe. The Digital Universal Camera operates at a constant speed in 6"-60" pipe without the need to stop or pan and tilt. Simply drive the unit on cruise control to the remote manhole or through multiple manholes for maximum efficiency. Reduce your labor costs while tripling or quadrupling the productivity of your existing workforce!



The Digital Universal Camera System will outperform any autonomous robotic system. Call your CUES representative today!





The DUC Universal Camera System facilitates the following benefits:

- Achieve proactive sewer repair and replacement recommendations with transparent justification to the public for allocation of sewer capital funds. The EPA has stated that proactive management of sewer assets can reduce total asset cost by 20-30%.
- Identify the most critical problems to address in your wastewater system. Quickly create an accurate understanding of the present condition of your wastewater system. Achieve predictive failure analysis, based on rapid, accurate, and detailed condition assessment.
- Establish a centralized system of record keeping accessible to all decision makers to assure proper, defensible spending.
- Identify short and long term concerns to be considered into your future CIP and O&M budgets.
- Establish solid priorities in order to maintain and improve services at any given time.
- Show compliance with local, state, and federal regulatory agencies.
- Maintain compliance with CMOM and GASB 34 while establishing a solid baseline to apply for various State and Federal grants.
- Protect your system from premature failure.
- Use life-cycle costing and value engineering to reduce the expense of planned investments.
- Identify, assess, and score your entire system within 12 months!

The DUC Universal Camera System contains the following features and more:

- Video is stitched via the CUES Granite XP Digital Processing Module and is available at the end of the inspection run. Virtual pan, tilt, and zoom plus a flat view of the surveyed pipe enables rapid condition assessment review-- 5-10 times faster than traditional video inspection review.
- Simply assign the observations via CUES asset-based Granite XP software in the office environment to create a high quality, uniform product.
- DUC can be used for emergency inspection requirements due to its unique ability to function as a traditional CCTV pan and tilt / zoom camera inspection system during live inspection.
- High output strobe lighting system illuminates 6”-60” lines without externally-mounted lighting.
- 3.1 megapixel high resolution camera produces unparalleled detailed images.
- One-person operation.
- Integration with CUES asset-based Granite XP decision support software and GIS systems provides a powerful tool for Capital Improvement Planning.
- Compatible with other data acquisition software systems.
- No moving parts on the camera – simply drive the unit on a CUES wheeled or tracked transporter through multiple pipe sections for maximum efficiency.
- DUC can be retrofitted to any CUES or industry standard multi conductor truck mounted system!
- Significantly more cost efficient than European digital camera systems!

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OZIII

Pan and Tilt Optical Zoom Camera

The OZIII optical zoom pan-and-tilt camera system offers built-in directional field replaceable lighting for 6" to 48" pipe to produce the highest quality image to enhance the details of your CCTV inspection. The camera is also able to provide adequate lighting for 48" and larger diameter pipe with the addition of external lights. The OZIII camera provides up to 40:1 optical/digital zoom, automatic focus, remote focus and iris control to assure the best quality video within varying pipe conditions. The robust design of the OZIII camera includes protective forks for the camera head to protect it during insertion and retrieval and to shield it from roots and other obstructions in the pipe. Get the finest detailed video inspections with the CUES OZ III (Optical Zoom) Camera!

This unit can be used in conjunction with the steerable Compact Pipe Ranger (CPR) to inspect 6" relined through 30" sanitary and storm sewers and connects directly to the CPR transporter with no exterior wires or cables. When the OZ III is installed on the CPR transporter, it produces a compact assembly with superior pulling power and the ability to negotiate difficult entry conditions and standard 45- and 90-degree sweeps and turns. An optional built-in inclinometer is also available to read and transmit pipe grade variations.

CUES "Light Enhancement Technology" eliminates the need for an external lighthead! Easy operation at the controller allows the operator to change the sensitivity of the camera at their fingertips! There's no need to remove the camera to install an external lighthead if the pipe material or pipe diameter changes! Let the CUES "Light Enhancement Technology" do it for you!

Nite Lite III

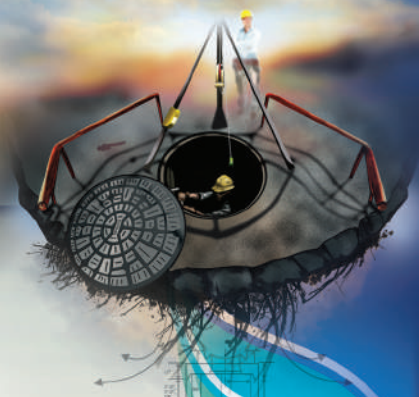
Pan and Tilt Camera

The Nite Lite III is a unique pan-and-tilt inspection camera that incorporates the latest video technology to provide up-close imaging of pipe walls and surfaces during sewer line inspections of 6" relined pipe through 48" diameter pipe. The camera is also able to provide adequate lighting for 48" and larger diameter pipe with the addition of external lights. The multi-conductor Nite Lite III pan-and-tilt camera system offers unparalleled imaging technology to produce the clarity of pictures with enhanced detail. The Nite Lite III camera is designed to pan 285 degrees and rotate 360 degrees. Remote control for iris and focus is provided to assure the highest picture quality in unusual or special conditions. An optional built-in inclinometer is also available to read and transmit pipe grade variations.

Easy Upgrade to the OZIII optical zoom camera!

The Nite Lite III can be easily upgraded to include 10x optical zoom and 4x digital zoom! Refer to the OZIII information in this brochure!

The OZIII & Nite Lite III cameras include an optional sonde to accurately locate the camera in metallic and non-metallic pipes!



OZIII Features & Benefits

- 10X optical zoom and 4X digital zoom; total 40:1 zoom capability
  - *Enhances image details from faraway distances for inspection and assessment*
- NTSC at 470 H lines of resolution
  - *Higher image resolution means sharper pictures with maximum detail*
- Sensitivity: 1.5 lux (F1.8, 1/60 s) and 0.13 lux (F1.8, 1/4 s) Electronic shutter speed: 1/4 to 1/10,000 s
  - *Increased sensitivity provides brighter pictures with reduced lighting requirements*
- 360 x 285 degree pan and rotate viewing capability
  - *Pan and tilt simultaneously while the transporter moves!*
- 4 x 5W white LED's, long-lasting & field replaceable
  - *Optional 4 x 6W Xenon incandescent lamps*
  - *Internal lights are directional with the moving camera head for optimum illumination in various pipeline conditions*
- Back light compensation
  - *No spotlight reflection blooming in image*
- Auto-tracking white balance
  - *Perfect color under all conditions*
- Auto-focus
  - *Quickly focus on an area of interest*
- Manual override of focus, iris, and shutter
  - *Flexible for unusual or special conditions*
- Pan, rotate, zoom, and focus homing
  - *Quick and easy to reorient to the current location*
- Waterproof to 50 psi
  - *Camera can be submerged in water over 100 feet deep without compromising integrity*
- 360 degree rotation optical viewing angle; 331 degree pan viewing angle range
  - *View minute defects and voids around the entire diameter of the pipe wall*
- Can be used in pipelines as small as 5" in diameter
- Optical-grade sapphire camera window
  - *Helps prevent image distortion*
- Includes an internal diagnostic system
  - *Continually monitors camera functions, including run time, serial number identification, camera head temperature, humidity, light supply voltage, and camera input voltage*
- An optional built-in inclinometer is available to read and transmit pipe grade variations
- The OZIII & Nite Lite III cameras include an optional sonde to accurately locate the camera in metallic and non-metallic pipes

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OZII

Pan and Tilt Optical Zoom Camera

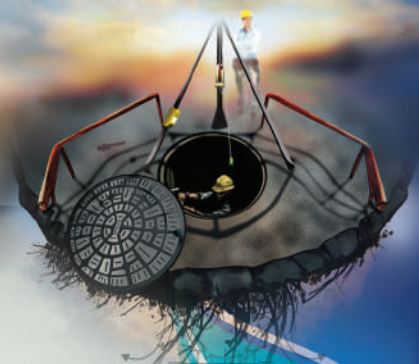
The OZII & Nite Lite cameras include an optional sonde to accurately locate the camera in metallic and non-metallic pipes!

Available in multi or single conductor format, the OZII optical zoom pan-and-tilt camera system offers unparalleled imaging technology and built-in lighting for 6" to 72" pipe to produce clarity of picture with enhanced detail. Auxiliary lighting is available to inspect 84" through 200" diameter pipe. The OZII camera provides up to 40:1 optical/digital zoom, automatic focus, remote focus and iris control to assure the highest quality picture within varying pipe conditions. When an obstruction blocks movement in a pipe or for quick-look inspections, details can be observed from far-away distances with perfect clarity. Get the finest detailed video inspections with the CUES OZ II (Optical Zoom) Camera!

CUES *"Light Enhancement Technology"* eliminates the need for an external lighthead. Easy operation at the controller allows the operator to change the sensitivity of the camera at their fingertips. There's no need to remove the camera to install an external lighthead if the pipe material or pipe diameter changes. Let the CUES "Light Enhancement Technology" do it for you!

Features & Benefits:

- 10X optical zoom and 4X digital zoom; total 40:1 zoom capability; *Enhances image details from faraway distances for inspection and assessment*
- NTSC at 470 H lines of resolution; *Higher image resolution means sharper pictures with maximum detail*
- Sensitivity: 1.5 lux (F1.8, 1/60 s) and 0.13 lux (F1.8,); PAL Version is also available. 1/4 s) Electronic shutter speed: 1/4 to 1/10,000 s; *Increased sensitivity provides brighter pictures with reduced lighting requirements*
- 360 x 285 degree pan and rotate viewing capability; *Detailed lateral inspection up to 250 feet without having to traverse the lateral*
- Four field replaceable lights (available with white LEDs or halogen lamps); *Internal lights are directional with the moving camera head for optimum illumination in various pipeline conditions*
- Back light compensation; *No spotlight reflection blooming in image*
- Auto-tracking white balance; *Perfect color under all conditions*
- Auto-focus; *Quickly focus on an area of interest*
- Manual override of focus, iris, and shutter; *Flexible for unusual or special conditions*
- Pan, rotate, zoom, and focus homing; *Quick and easy to reorient to the current location*
- Waterproof to 50 psi; *Camera can be submerged in water over 100 feet deep without compromising integrity*
- 400 degree rotation optical viewing angle; 331 degree pan viewing angle range; *View minute defects and voids around the entire diameter of the pipe wall*
- Compatible with up to 4000' multi-conductor cable and up to 2000' single-conductor cable; *Camera is compatible with existing CUES TV inspection systems with minimal modification*
- Can be used in pipelines as small as 5"
- Optical-grade sapphire camera window; *Helps prevent image distortion*
- Includes an internal diagnostic system; *Continually monitors camera functions, including run time, s erial number identification, camera head temperature, humidity, light supply voltage, and camera input voltage*
- An optional built-in inclinometer is available to read and transmit pipe grade variations
- The OZII & Nite Lite II cameras include an optional sonde to accurately locate the camera in metallic and non-metallic pipes



The Nite Lite camera includes an optional sonde to accurately locate the camera in metallic and non-metallic pipes!

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CUES

Nite Lite

Pan-and-Tilt TV Inspection Camera

The Nite Lite is a unique pan-and-tilt inspection camera that incorporates the latest video technology to provide up-close imaging of pipe walls and surfaces during sewer line inspections of 6" relined pipe through 200" diameter pipe. Available in multi or single conductor formats, the Nite Lite pan-and-tilt camera system offers unparalleled imaging technology to produce the clarity of pictures with enhanced detail. The Nite Lite camera is designed to pan 285 degrees and rotate 360 degrees. Remote control for iris and focus is provided to assure the highest picture quality in unusual or special conditions. An optional built-in inclinometer is available to read and transmit pipe grade variations

Easy Upgrade to the OZII optical zoom camera!

The Nite Lite can be easily upgraded to include 10x optical zoom and 4x digital zoom! Refer to the OZII information on the opposite page!

Nite Lite shown with the CUES Steerable Pipe Ranger

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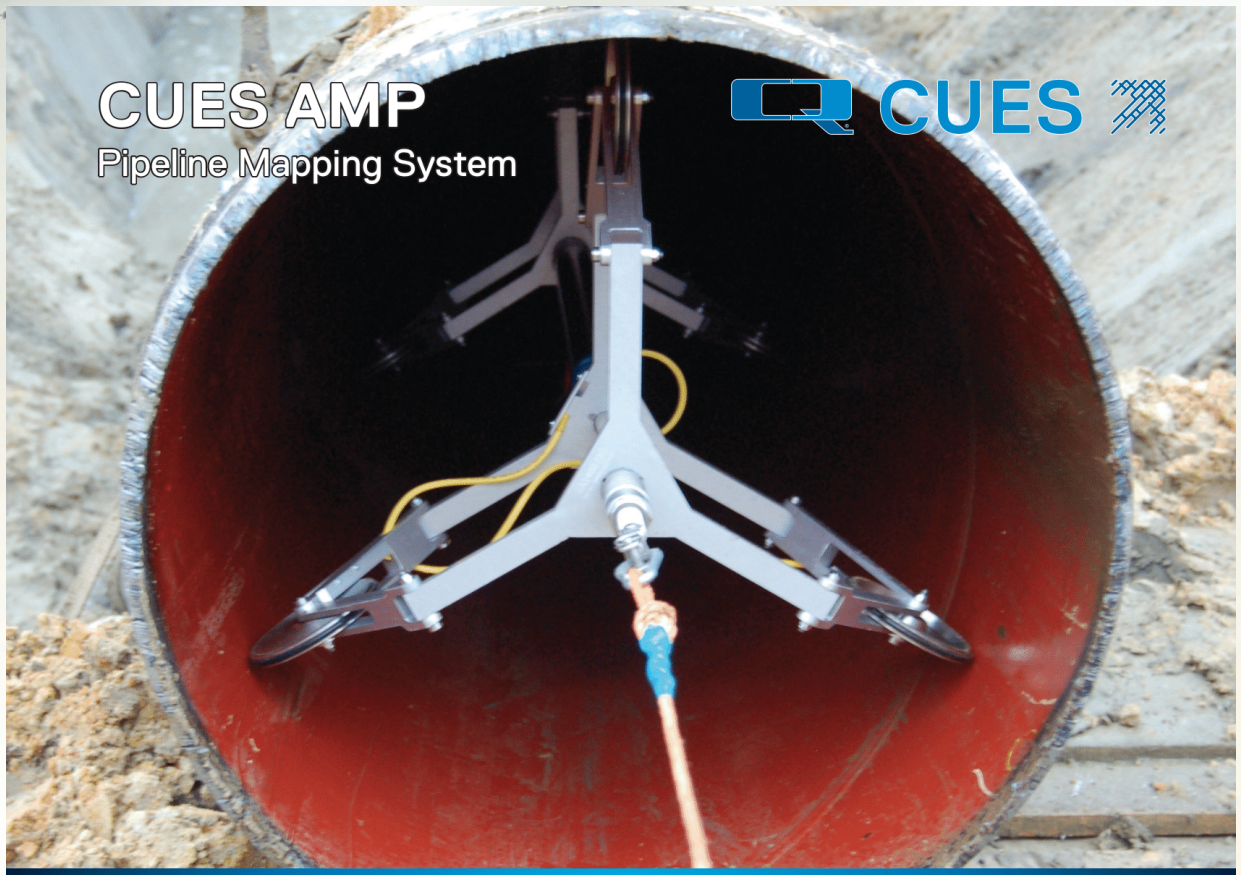
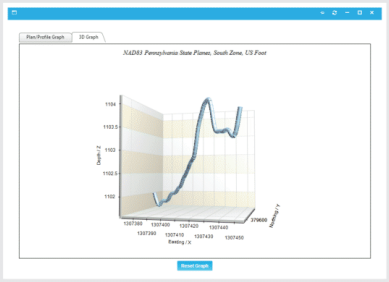
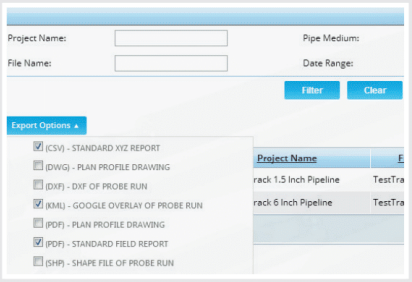


CUES AMP, THE WORLD'S MOST VERSATILE AND UNIQUE AUTONOMOUS MULTI-PURPOSE PIPELINE MAPPING SYSTEM, DELIVERS EXACT 3D POSITIONAL DATA. THE GYROSCOPIC BASED PIPELINE MAPPING SYSTEM IS DESIGNED FOR RAPID AND ACCURATE XYZ LOCATION OF YOUR WASTEWATER SYSTEM.

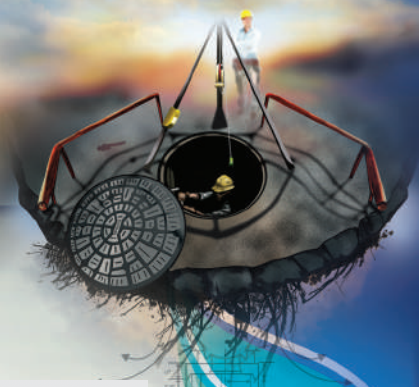
The Accurate Mapping Probe (AMP) provides precise and efficient 3D location of any underground pipeline asset quickly and easily, including wastewater, utilities and directional drilled lines. AMP's accurate data can be used for as-built drawing verification and defect locating including pipe sags, misaligned joints, horizontal and vertical design problems and hydraulic modeling. The system includes interchangeable wheel sets allowing AMP a wide operational range from 3" (76 mm) in diameter to 58" (1473 mm) in any and all pipe materials including VCP, iron, plastic and concrete.



- AMPVUE™ 3D Graph



- AMPVUE™ Data Transfer Download Screen



CUES AMP

Features & Benefits

AMPVUE, a cloud based free service for all users of CUES AMP is available to manage all the data produced by the CUES AMP. This tool provides industry standard enterprise GIS outputs, multiple CAD formats and standard detailed reports.

- Provided as a free service to all users of the CUES AMP.
- AMP data is immediately converted and available for download in industry-standard GIS & CAD formats.
- Cloud technology, accessible via a web browser.
- Manages all data produced by the CUES AMP.
- Permits non-technical users to easily access data.
- Standard reporting modules, allowing easy documentation of projects performed with the CUES AMP.
- Easy data integration (import/export) with any existing enterprise GIS.

AMPVUE Professional is available for any size operation requiring a GIS (Geographic Information System). AMPVUE Professional provides a cost effective web-based GIS platform at a competitive cost and includes all of the functionality in AMPVUE, plus:

- All-in-one information repository, includes modules for Document and Photo Libraries.
- Easy to use web-based GIS display (can integrate data from any other location/mapping technology).
- Allows for seamless integration of legacy information (e.g. old CAD maps).
- Allows for creation/use of custom, industry-specific queries and reports.
- Municipalities without a GIS can be up and running with minimal cost.
- Automated bend radius analysis modules utilizing CUES AMP results.
- Custom reporting modules can be created for various industry-specific Key Performance Indicators (KPI).

CUES

CUES AMP IS THE WORLD'S MOST VERSATILE AND UNIQUE AUTONOMOUS MULTI-PURPOSE PIPELINE MAPPING SYSTEM THAT DELIVERS EXACT 3D POSITIONAL DATA.

- Use AMP for precise location of your underground pipeline assets for proactive sewer repair and replacement.
- Identify the critical problems, such as inclination, sags, bends, etc. in your wastewater system.
- The CUES AMP data can be used with your centralized system of record keeping and be accessible to all decision makers to assure proper defensible spending.
- Identify short and long term concerns to be considered in future CIP and O&M budgets.
- Integration of exact positional location with CCTV-identified anomalies and CUES asset-based GraniteNet decision support software allowing for accurate and cost-effective spot repairs.
- Use data for as-built drawings and confirm that installations meet location specifications.
- Project specific custom carriers available upon request.

WECO INDUSTRIES

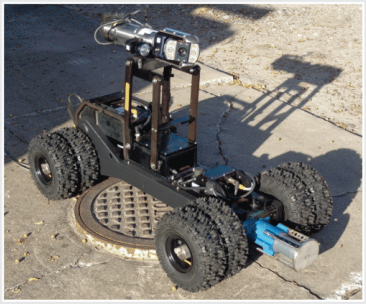
CUES CATVS

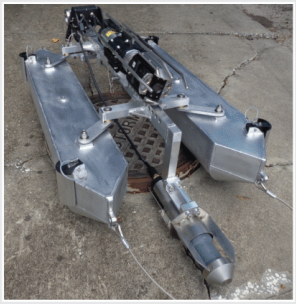
Combined Analog TV & Sonar

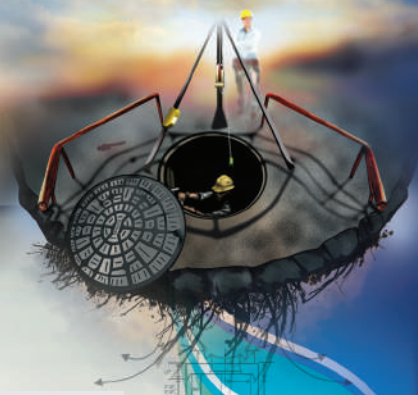
CUES

TV & SONAR TOGETHER ON A SINGLE CABLE

The CUES CATVS system is a single cable TV & sonar system that transmits both video and sonar on a single multi-conductor cable. This system is designed to work with the OZII camera and the Marine Electronics Sonar using a standard CUES gold cable. It can be adapted to multiple platforms including: Sonar Float, steerable and non-steerable Pipe Ranger transporters, and the MudMaster transporter.

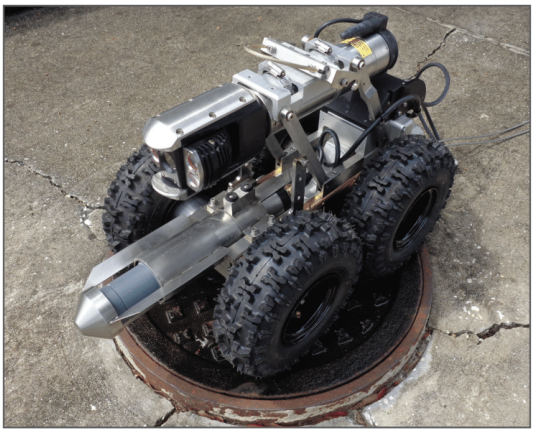


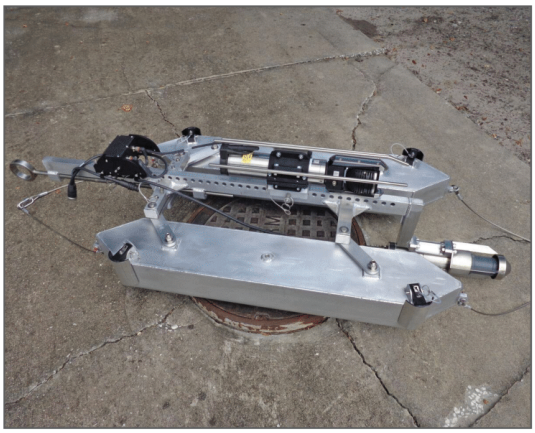




CUES CATVS

Features & Benefits





CUES

TV AND SONAR ***TOGETHER*** ON A SINGLE CABLE

- Perform up to 5000' (1524 m) inspection distances, depending on the equipment configuration.
- Diameter Range: 3' - 20' (1 - 6 m)
- Double your productivity by performing both Sonar and TV inspections in one run.
- A full-size truck is no longer required to perform simultaneous TV/Sonar inspections - only one reel is required.
- Use your existing TV truck for Sonar work, too! It's quick and easy to retrofit and upgrade most trucks to CATVS. CUES' receiver only requires a single 1U rack opening in the control room for installation, since installation and the receiver is plug and play with only a few adapter cables.
- Bolt-on upgrades to your existing transporter and float make for a simple and efficient retrofit.
- Eliminate the winch and tagline to improve productivity using transporters for TV/Sonar work.
- Configurable with the CUES Base Station.

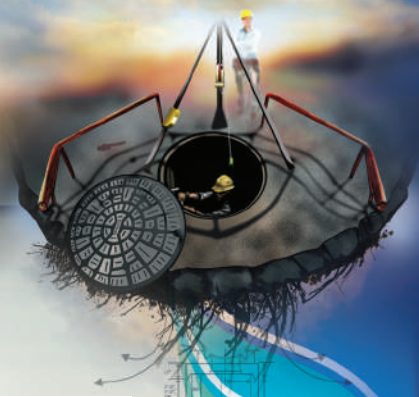
CHEMICAL SEALING PACKERS

Compact Collapsible Packers

CUES

CUES OFFERS THE MOST ADVANCED LINE OF JOINT SEALING PACKERS FOR LARGE SIZED SEWERS - THE CUES COMPACT/COLLAPSIBLE PACKER. THESE PACKERS CAN BE QUICKLY DISASSEMBLED TO PROVIDE EASY INSERTION INTO THE MANHOLE.

Save time, labor and money over conventional style packers. CUES compact/collapsible packers are rugged, but lightweight for easy handling. The packers compact design, along with the collapsible feature, means any of the CUES large pipe sized packers can be inserted through a minimum 21" (533 mm) standard manufactured manhole without having to remove the ring or cone. The savings in time, labor and money are significant over conventional style packers.



PACKERS - Compact

Features & Benefits

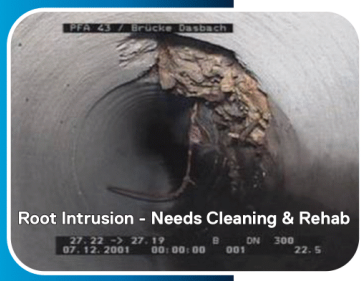
CUES

- Save time, labor, and money with the compact/ collapsible packers.
- Packers can be quickly disassembled to provide easy insertion into the manhole.
- The packer cylinder is made of aluminum to minimize corrosion.
- The packer single sleeve is made of multi-ply rubber for increased strength and flexibility.

CUES GROUT REHABILITATION VEHICLES ARE AVAILABLE FOR MAINLINE JOINT SEALING/LATERAL SEALING AND CAN BE EQUIPPED WITH THE LATEST CCTV EQUIPMENT FOR PIPELINE INSPECTIONS.

- All CUES packers, beginning with the 18" (457 mm) size, are compact with the maximum width being 19.5" (495 mm). The packers beginning with the 24" (610 mm) size are collapsible.
- Packers can be quickly disassembled to provide easy insertion into the manhole.
- The cylinder is aluminum to minimize corrosion.
- The single sleeve is made of multi-ply rubber for increased strength and flexibility.
- The compact feature, along with the collapsible feature, means any of the CUES large pipe sized packers can be inserted through a minimum 21" (533 mm) standard manufactured manhole without having to remove the ring or cone.
- The 3/4 inch (19 mm) rubber thickness means the sleeve will not easily stretch out of shape, which so often occurs with some of the thin type sleeves available.
- The multi-ply wrap resists cuts and abrasions while in the sewerline.

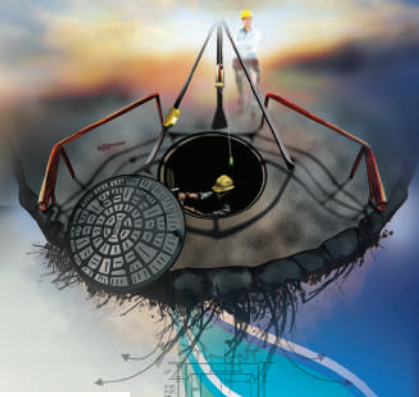
WECO INDUSTRIES



CUES

CUES-LOCK

STRUCTURAL POINT REPAIR SYSTEMS THAT CAN BE COMBINED WITH CIPP FOR ENHANCED SOLUTIONS



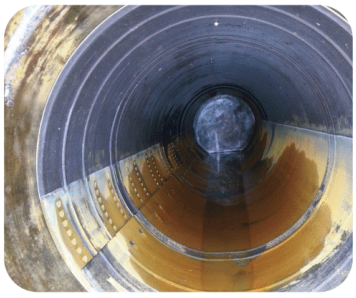
CUES Lock
Features & Benefits

CUES

CUES-LOCK

How CUES-Lock can help you GO THE DISTANCE

CUES offers innovative no-dig sewer line solutions for efficient and reliable repair. CUES-Lock products are designed to be used for stand-alone spot repairs or to enhance quality and simplicity of cured-in-place relining. CUES-Lock products are easy to install, require very little equipment, and most repairs can be carried out in live sewer operating conditions. Proven CUES-Lock technologies do not require digging or external point repair.



STENTS

CUES-Lock Stents provide a quick and easy way to bridge holes, voids, cracks and weakened/broken sections in pipes to help and allow easy installation of any type of cured-in-place pipes through the stents. They also can be used to push sagging or delaminating cured-in-place pipes back into place.

BENEFITS:
- Quick and easy installation allows cured-in-place liners to be designed to partially deteriorated pipe standards instead of fully deteriorated, further reducing the repair costs.
- Effective bridging of cracks, holes and infiltration in host pipes in conjunction with cured-in-place liners.
- Limiting water infiltration into the pipe allows cured-in-place pipe to cure without washing away the resin.

STRUCTURAL & SEALER SLEEVES

CUES-Lock Structural & Sealer Sleeves restore damaged areas to full structural strength and seal infiltration.

Structural & Sealer Sleeves can be used as a stand-alone spot repair or in junction with cured-in-place liners.

BENEFITS:
- CUES-Lock Structural & Sealer Sleeves aid structural spot repair of damaged pipes and restore the integrity of host pipe to full structural strength prior to relining.

END SEALERS

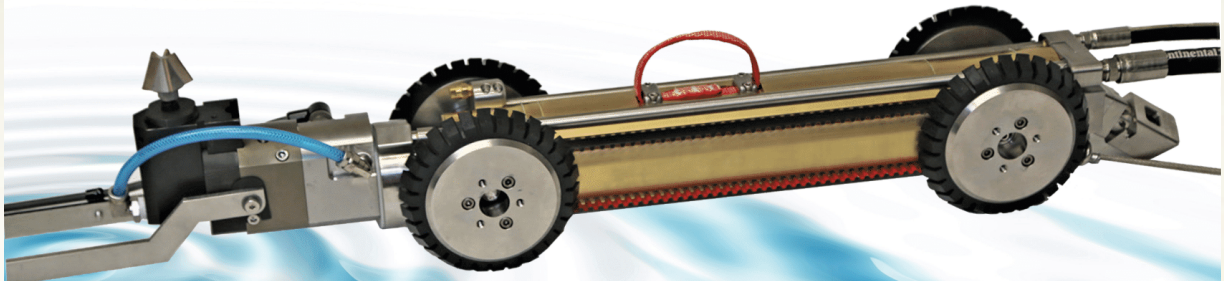
CUES-Lock End Sealers are used to seal the annular space between the cured-in-place liner and the host pipe at the pipe ends. They prevent the ends of the cured-in-place liner from delaminating or sagging from the host pipe.

BENEFITS:
- Seals the annular space between the cured-in-place liner and the host pipe at the pipe ends.
- Prevents the ends of the cured-in-place liner from delaminating or sagging from the host pipe.
- Can be installed prior to cured-in-place installation or after, depending on the application.

WECO INDUSTRIES

CURRAHEE
IN HONOR OF OUR TROOPS
CUES

CUES



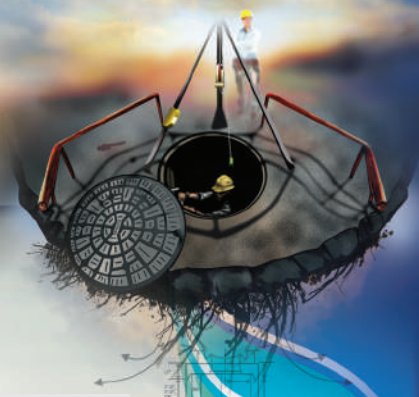
MADE IN THE USA

> SIMPLICITY
> DURABILITY
> PRODUCTIVITY

CUES Currahee Cutters provide a number of solutions for pipe inspection and rehabilitation--from clearing blockages, debris, protruding laterals, and roots, to reinstating laterals in a CIPP liner. These are just a few of the applications for this product.

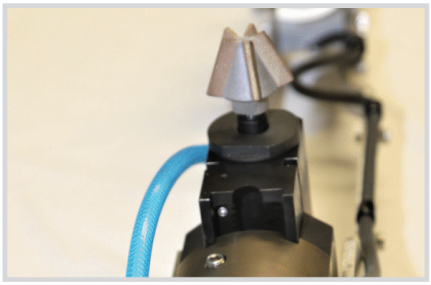
These cutters are specifically designed to reinstate wastewater service laterals, remove protruding taps, and brush-finish existing cuts. The cutters function in a range of 5.25"- 36" (133 mm - 914 mm) pipe, are equally effective in CIPP or fold and form liners, and can be installed on a CUES K2 truck-mounted cutter system. Both cutter systems perform optimally using 1000'- 1500' (305 m - 457 m) of cable and are operated with the CUES gamepad controller!

ONE CONTROLLER FOR ALL SYSTEMS!
The Currahee Cutters operate off the same gamepad controller that operates CUES mainline, digital side-scanning, lateral-launch, and grout equipment.

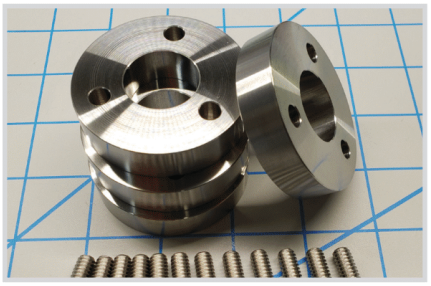


Currahee Cutters

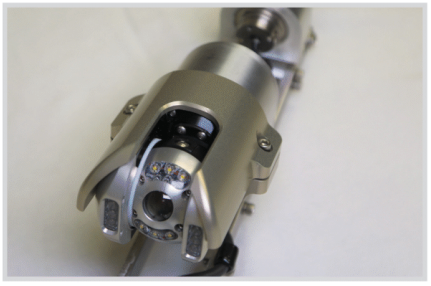
Features & Benefits



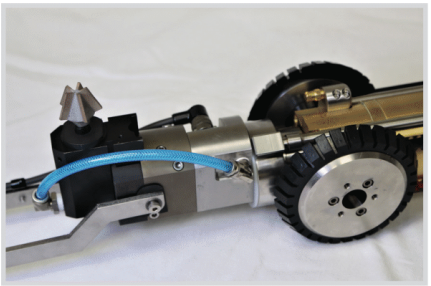
> VARIETY OF BITS AVAILABLE



> OPTIONAL PARTS AVAILABLE



> CURRAHEE CUTTER CAMERA



> WATER BLOW-OFF & WIPER

CUES

CUES CUSTOM CUTTER VEHICLES

CUES custom CCTV/Cutter truck and trailer-mounted units include full capabilities for reinstating lateral services, removal of protruding taps, brush-finishing existing cuts, and pre and post TV inspection.

- Box Trucks, Step Vans, and Trailer-Mounted Units
- Dry freight box mounted for export
- Can be mounted with lateral-launcher equipment or joint & lateral sealing equipment in a self-contained unit
- Compressor can be mounted inside the truck, on the engine, or used with tow-behind

WECO INDUSTRIES

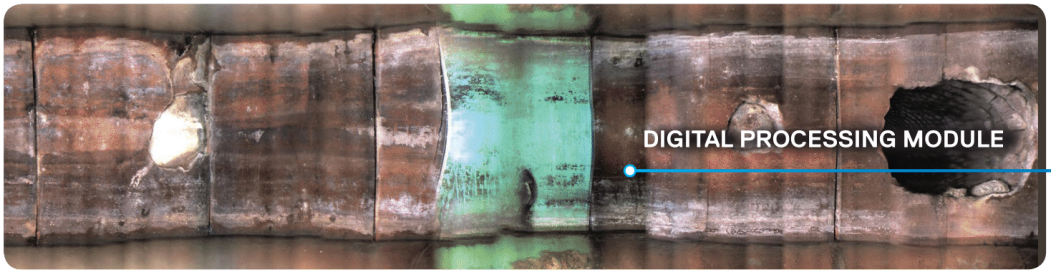
DUC
Digital Universal Camera

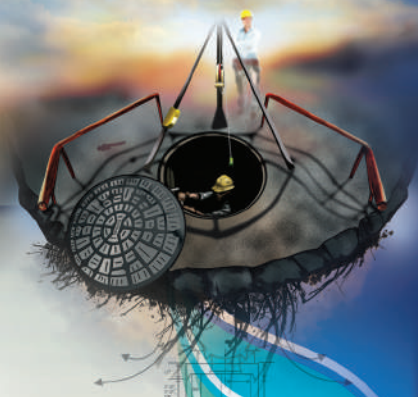
CUES

DUC Camera shown on the optional Ultra Shorty 21 transporter.

THE CUES DIGITAL UNIVERSAL CAMERA (DUC) IS A HIGH RESOLUTION DIGITAL CCTV SIDE-SCANNING CAMERA DESIGNED FOR RAPID AND DETAILED CONDITION ASSESSMENT OF YOUR WASTEWATER OR STORMWATER SYSTEM.

When used in conjunction with our GraniteNet software, customers double their daily footage, on average, while significantly reducing the overall cost of an inspection. The system can be deployed from both portable and vehicle-mounted systems, providing a versatile solution for CCTV pipeline inspection needs.





DUC Camera

Features & Benefits

CUES

- Allows for proactive sewer repair and replacement recommendations. The EPA has stated that proactive management of sewer assets can reduce total asset costs by 20-30%.
- Show compliance with local, state, and federal regulatory agencies; maintain compliance with CMOM and GASB 34 while establishing a solid baseline to apply for various State and Federal grants.
- Identify the most critical problems to address in your wastewater system and achieve predictive failure analysis, based on rapid, accurate, and detailed condition assessment.
- Establish a centralized system of record keeping accessible to all decision makers to assure proper, defensible spending.
- DUC ReDUCtions: overall cost of inspection per foot, such as traffic control costs, equipment maintenance, vehicle expenses, coding of observations, inspection review/viewing, reduces risk of monetary fines.
- Perform a full inspection, including condition assessment of a 400' (122 m) pipe segment, in under 15 minutes!
- High output strobe lighting system illuminates 6"-60" (152-1524 mm) lines without externally-mounted lighting.
- 3.1 megapixel high resolution camera produces unparalleled detailed images - industry leading resolution!
- Integration with CUES GraniteNet software and GIS systems provides a powerful tool for Capital Improvement Planning.
- No moving parts on the camera – simply drive the unit on a CUES wheeled or tracked transporter through multiple pipe sections for maximum efficiency.
- DUC can be retrofitted to any CUES or industry standard multi conductor truck mounted system.

Captures and provides LIVE video, not just still images.

Offers 2x to 3x production over traditional analog systems.

Reduces overall operations cost per foot by more than 50%.

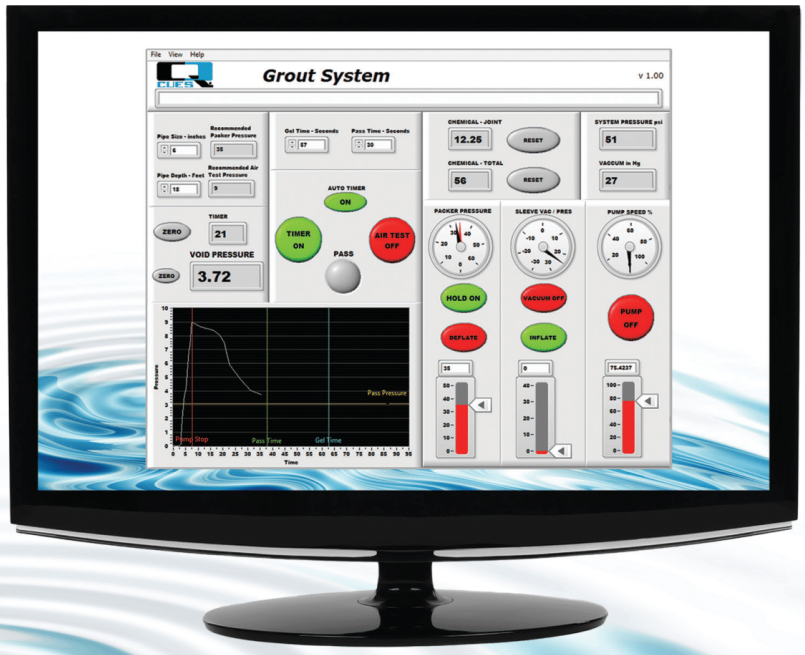
Can inspect the largest range of pipe sizes of any digital side-scanning system, 6"- 60"(152 - 1524 mm).

Video is stitched via the CUES GraniteNet software digital processing module. Flat images are available immediately following the inspection while LIVE video is available during/throughout the inspection. Virtual pan, tilt, and zoom plus a flat unfolded view of the entire surveyed pipe, enables rapid condition assessment review, significantly faster than traditional video inspection review. An expanded flat view is provided for additional detail with measuring capabilities.

EASY GROUT

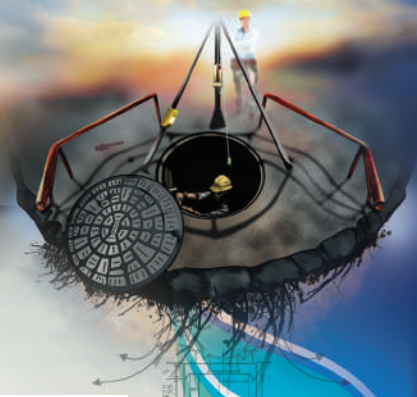
Computerized Grout Control System

CUES



THE CUES EASY GROUT SYSTEM IS A COMPUTERIZED GROUT CONTROL SYSTEM DESIGNED TO CONSOLIDATE ALL VALVES, ELECTRICAL CONTROLS, ETC., INTO AN INSTRUMENTATION CABINET THAT CAN BE MOUNTED IN ANY LOCATION.

The Easy Grout graphical user interface (GUI) leads you intuitively through the grouting process. Easy Grout includes help files and tool tip descriptions to assist new users and refresh users who have been away from operating for some time. Automated entry logic provides recommended settings for the grouting process automatically based on the basic inputs of pipe size, depth, etc. Because the grout panel is now a computer user interface, it is no longer physically tied to the grout process equipment and can be located virtually anywhere a computer connection, wired or wireless, can be made.



EASY GROUT System

Features & Benefits

CUES

- Modern look and feel; displays packer pressure, sleeve vacuum/ pressure, pump speed, daily and per joint totalizers.
- Reduction of training time for grout operators due to intuitive graphical user interface.
- Operate the grout system from wherever you like because the grout panel is now a computer interface.
- Quick repair time since the entire control cabinet can be easily replaced to get you back up and running quickly.

EASY GROUT INCLUDES INTEGRATED HELP FUNCTIONS TO WALK NEW OPERATORS THRU THE GROUTING PROCESS, WHICH REDUCES TRAINING TIME AND MAKES GROUTING LESS INTIMIDATING.

- Modern look and feel of the computer interface makes grouting more appealing to new users.
- Graphical, real-time, trending, display of void pressure aids in the grouting process by allowing the operator to “see” what is happening in the void, making the grouting process much easier to perform.
- Automatic calculation of recommended settings based on field conditions and pipe size makes it easier to set up and get to work.
- Automatic totalization of grout volumes pumped per joint and per job eases the job of recording information.
- The wall mounted, replaceable, control cabinet makes for easy maintenance access and repair. In the event of a system failure, a new cabinet can be replaced in the field by the customer to get back up and running quickly.
- The modularity of the system allows the user to operate the grout equipment from another vehicle or use a wireless controller.

WECO INDUSTRIES

CUSTOM GROUT
INSPECTION VEHICLES

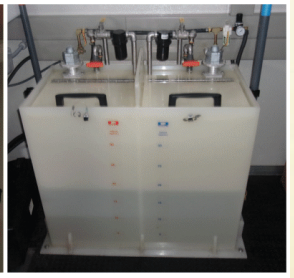
CUES

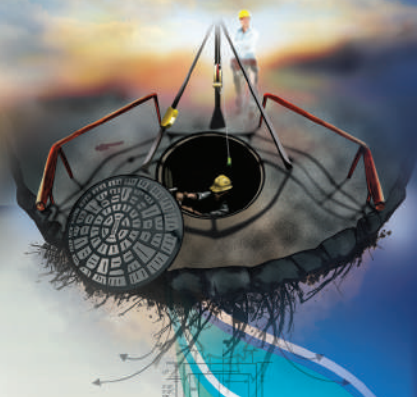
CUES OFFERS A FULL LINE OF PORTABLE AND TRUCK-MOUNTED CHEMICAL GROUT REHABILITATION SYSTEMS. GROUT PACKERS ARE AVAILABLE FOR MAINLINE AND LATERAL SEALING.

Truck-mounted grout rehabilitation systems are available for mainline joint sealing/lateral sealing and can be equipped with the latest CCTV equipment for television inspection. Applications include joint testing and sealing of mainline and lateral joints, manholes, junction boxes, large diameter pipes, or any other low pressure waterproofing application. All systems can be configured to run Urethane, Acrylamide and Acrylate grouts. Dry freight box (for export) and trailer-mounted systems are also available.









CUSTOM Grout Vehicles

Features & Benefits

CUES

CONTROL PANEL	Easy Grout computer program, graphic user interface, intuitive, easy to train, lower operational cost.
CHEMICAL TANKS	Chemical resistant, polypropylene, clearly labeled, can order 30 gallon (114 L) or 60 (227 L) gallon capacity with heaters.
FLOORING	Lonseal lonplate industrial-rated vinyl throughout.
WALLS	Kemlite, scratch, dent and chemical resistant; white finish makes the interior brighter.
GROUT TANK MOTOR & HEATER	Variable-speed, pnuematic, with small stainless steel propellers located near the bottom of tank to eliminate air from entering the grout hoses.
TUBING/FLOOR/REEL FRAME	Stainless steel construction on all grout-related equipment and components.
CAT PUMPS	Custom build, chemical resistant, explosion proof, nitrogen-charged pulsation dampers and pressure regulators to ensure even pumping for ideal chemical mixture.
CAT PUMP MOTOR	3 hp, 3 phase, variable speed, stainless steel, chemical resistant, motor.
FLUSH LINES	Automatic, simply move a shut off/bypass valve to divert the chemcals/water back to the tanks.
CHEMICAL FILTERS	Black to eliminate premature chemical set-up.
TRUCK SIZE	Available from 16' to 24' (4.88 m - 7.32 m) custom design builds for contractors or municipalities.
AIR COMPRESSOR	2.0 hp with 30 gallon (114 L) tank.
GENERATOR	Typically Onan 10Kv or higher depending on the pump requirement.
PENTA HOSE	3 lengths to choose - 500', 650', and 800' (152, 198, 244 m) for manhole, mainline and lateral grouting.
WATER TANK	Non-metallic, can be heated, 75 gal (284 L) to 125 gal (473 L) capacity.
CONTROLS	Computer program and K2, wireless for camera and packer, can control lateral packer using our wireless handheld controller.

- Stop Leaks in sewers, manholes, tanks, vaults, tunnels, and many other applications.
- Chemical grouting is the least expensive rehabilitation method available and also the least disruptive.
- Best, long-term defense against infiltration of groundwater into structurally sound sewer systems.
- Test & seal operation can be recorded for a permanent record of the exact pipeline condition.

- Plenty of room for packers & grout material.
- Climate-controlled office.
- ***Contractor-grade.***
- Retrofit any vehicle or trailer.
- Combo trucks are available for TV, Cutter & Easy Grout.
- Do not need an office using wireless Easy Grout.

WECO INDUSTRIES

C550c HUNTER BASE STATION

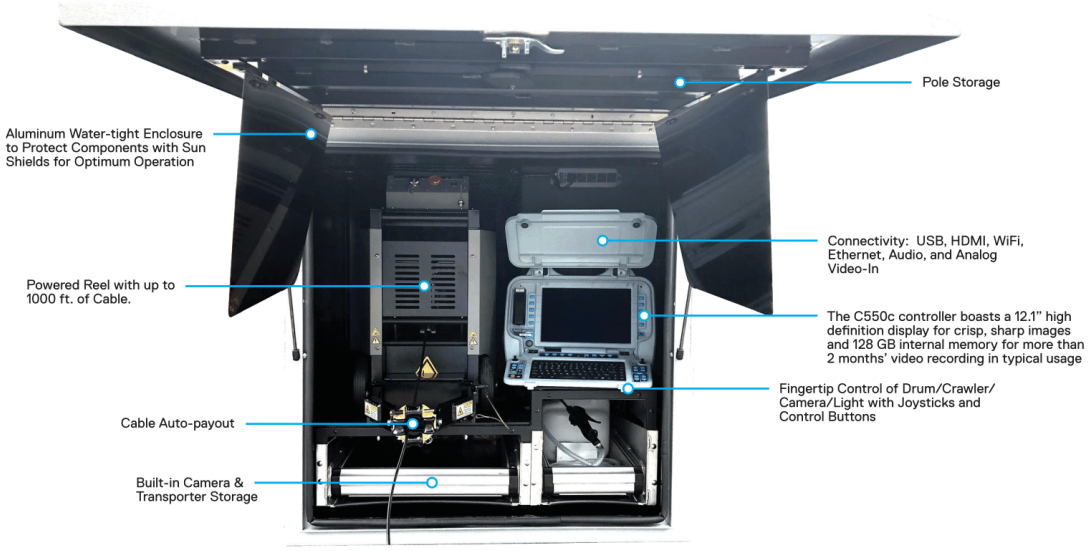
C550cHUNTER™
IN HONOR OF OUR TROOPS
CUES

THE CUES C550c HUNTER IS MOUNTED IN A COMPACT AND RUGGED WEATHERPROOF ENCLOSURE THAT CAN FIT INTO AN ATV, VAN, OR PICKUP TRUCK TO ACCESS EASEMENTS AND HARD-TO-REACH AREAS.

Featuring the C550c controller, the Hunter is designed around the user, helping you to create survey reports more easily and efficiently. With a wide variety of manual and advanced powered drum options, wide choice of wheels, elevators and tires allow you to inspect pipes from relined 6" all the way up to 60".

C550c HUNTER BASE STATION CUES

Features & Benefits



- Select either a cost-effective manual cable drum or an advanced powered drum - each with up to 1000ft cable.
- Three interchange-able cameras & two powerful crawlers are designed to withstand the most challenging sub-surface conditions.
- A wide choice of wheels, elevators and tires optimize your inspection needs enabling you to inspect pipes from relined 6"- 60".
- CUES C550c is also compatible with range of pushrod cameras, adding pipes as small as 1 1/2" to your capabilities.

- Sealed front door is hinged, supported by a gas shock, and functions as an awning in the open position.
- Compact, rugged, weatherproof enclosure: can fit into a pickup truck, ATV, trailer or van.
- Intuitive menus and dedicated function buttons guide you through your survey, allowing you to move to the next job more quickly.
- The C550C controller with built in rechargeable battery and rugged IP55-rated case provide reliability and usability in most challenging environments.
- The C550c incorporates reporting templates to comply with multiple standards. Reports are available to share as soon as you have completed your survey.
- GraniteNet compatibility helps you manage tasks, perform inspections and make informed decisions about the condition of assets.

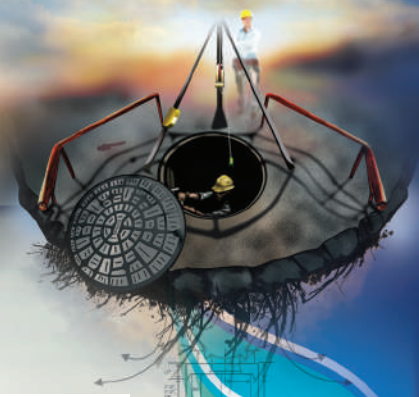
WECO INDUSTRIES

K2 WIRELESS BASE STATION

CUES

THE CUES K2 BASE STATION IS MOUNTED IN A COMPACT, RUGGED, WEATHER-PROOF ENCLOSURE AND CAN FIT INTO AN ATV, VAN, OR PICK-UP TRUCK TO ACCESS EASEMENTS AND HARD-TO-REACH AREAS.

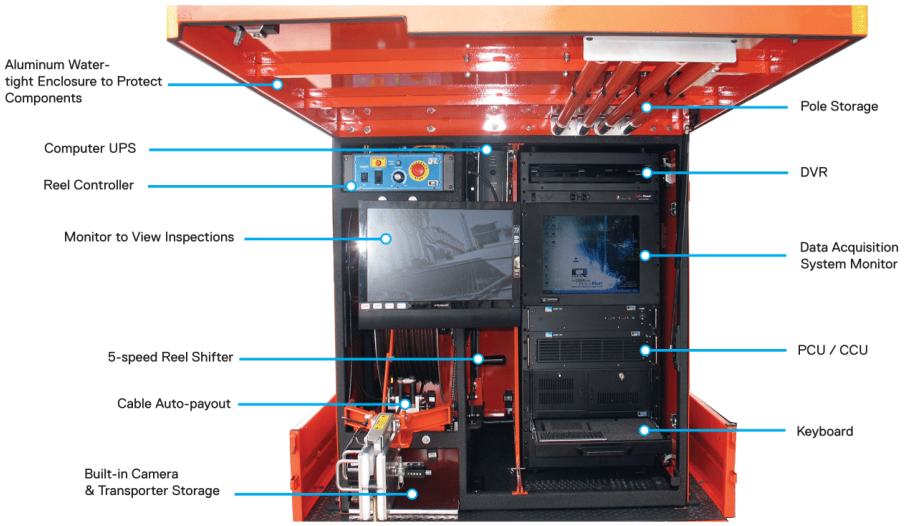
Featuring wireless control, the K2 Base Station is a compact, portable, easy-to-use pipeline inspection system that operates all CUES transporters, cameras, and video cable reel functions to accommodate 6"- 200" (152 mm - 5080 mm) pipe inspection. The reel features automatic payout with a capacity of 1700' (518 m) video cable. Heavy duty welded lifting eyelets and forklift skids are provided for quick deployment to the host vehicle. The unit can operate with the CUES Digital Side Scanning Camera (DUC).



K2 BASE STATION

Features & Benefits

CUES



- Wireless control of all camera, transporter, and reel functions.
- Compact, rugged, weatherproof enclosure; can fit into a pick up truck, ATV, trailer or van.
- Covered with protective aluminum sheets and industrial grade weather resistant paint.
- Operates CUES cameras and transporters to accommodate 6"- 200" (152 mm - 5080 mm) pipe inspections.

- Partition separates the video cable reel with tractor and camera storage from the power control unit, monitor, and optional computer.
- Racks are mounted with shock-isolators to prevent equipment damage from jarring and vibrations.
- Sealed front door is hinged, supported by a gas shock, and functions as an awning in the open position.
- Easy access to service and maintain the unit via removable panels.
- Optional, heavy-duty welded lifting eyelets or forklift skids available for quick deployment or removal from an ATV or truck.
- Automatic video cable payout on the reel to maximize transporter pull distance.

WECO INDUSTRIES

KANGAROO & GIANT KANGAROO

Lateral Reinstatement Cutters

CUES

CUES KANGAROO CUTTERS ARE DESIGNED FOR USE AFTER THE PIPE LINING PROCESS IS COMPLETE, FOR REINSTATING SERVICE LATERALS BACK INTO SERVICE, AS WELL AS REMOVING PROTRUDING SERVICE LATERALS AND ROOTS FROM THE MAINLINE. THESE ARE JUST A FEW OF THE APPLICATIONS FOR THIS PRODUCT.

These cutters are rugged, waterproof, and built to withstand the shock and vibration of everyday use during these applications. CUES Giant and Small Kangaroo Cutters are equally effective in CIPP or Fold and Form liners and can be installed on most CCTV manufacturer's system. Both Cutter systems perform optimally using 1000'- 1500' (305 m - 457 m) of cable and can be operated with the Dual Kangaroo Cutter Controller!

The Dual Kangaroo Cutter Controller includes all switches, potentiometers, controls, and meters required to operate and monitor the Giant and Small Kangaroo Cutters.

Kangaroo Cutters

Features & Benefits

BOTH SMALL & GIANT KANGAROO CUTTERS:

- 110 or 220 VAC.
- Requires (8) Conductors: (6) for the cutter and (2) for the reel mounted remote air valve.
- Recommended minimum air requirements: 38 CFM (1,076 Lpm) @ 125 psi (9 bar).
- Controls, Electrical: 360-degree rotate, up/down, in/out, on/off, and polarity.
- Controls, Pneumatic: cutter motor, cutter locking brake.
- Includes (3) 24v DC electrical drive motors assembled into a waterproof housing.
- Includes (2) router bits and pipe lock assembly.

SMALL KANGAROO CUTTER ONLY - For use in 6"- 12" (152 mm - 305 mm) Diameter Relined Pipe.

- Includes low profile metal skids for 6" (152 mm) pipe mounted to the cutter housing and extenders for 8" (203 mm) and up.
- Includes a .9hp air motor to provide more power, increased productivity, and a smoother cut when operating in 8"- 12" (203 mm - 305 mm) relined pipe.

GIANT KANGAROO CUTTER ONLY - For use in 12"- 30" (305 mm - 762 mm) Diameter Relined Pipe.

- Removes protruding lateral services.

DUAL KANGAROO CUTTER CONTROLLER – Operates both Large and Small Kangaroo Cutter.

- Includes all switches, potentiometers, controls, and meters required to operate and monitor the Giant Kangaroo and Small Kangaroo Cutter.
- Controls the cutter head movements in (6) directions: IN / OUT, RIGHT / LEFT ROTATION, and UP / DOWN.
- A rotary potentiometer is provided to adjust the speed of each control motor.
- An Amp meter is provided to display the current draw by each motor.
- The Air Motor/Clamp - ON/OFF switch opens and closes the air flow of the remote air solenoid while simultaneously activating or deactivating the pipe lock system and cutter air motor.

CUES

Custom CCTV/Cutter Truck and Trailer-mounted units include full capabilities for reinstating lateral services, removal of protruding taps, brush finishing existing cuts, and pre and post TV inspection.

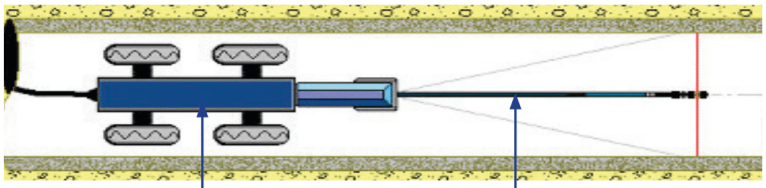
- High Cubes, Step Vans, and Medium Duty Chassis and Trailer Mounted Units.
- Dry freight box mounted for export.
- Can be mounted with joint and lateral sealing equipment in a self-contained unit.
- Compressor can be mounted inside the truck or towed behind.

OPTIONAL EQUIPMENT

- Desktop control unit for both cutters.
- Protruding lateral cutter attachments.
- 12" (305 mm) extenders for Small Kangaroo Cutter.
- Air Hose Reel with speed control / retrieve with 500' (152 m) 1/2" (13 mm) or 3/4" (19 mm) ID air hose.
- Automatic level wind for Air Hose Reel.

LASER PROFILER SYSTEM

CUES



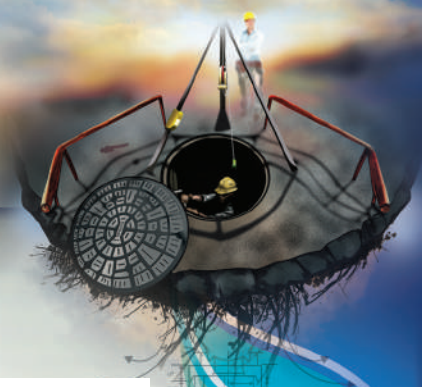
THE CONCEPT - SIMPLE AND EASY:

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

THE LASER PROFILER IS A STAND-ALONE, SNAP-ON TOOL FOR USE WITH A CUES CCTV SURVEY SYSTEM AND CUES CAMERA TO COLLECT SURVEY DATA AND CREATE PIPELINE REPORTS CONTAINING THE MEASUREMENT OF FAULTS AND OTHER FEATURES INSIDE THE PIPELINE.

The Laser Profiler is designed to provide the contractor, municipality, or consulting engineer with the ability to determine internal pipeline conditions prior to and/or after rehabilitation. This includes measurements of pipe size, laterals, water levels and other features, as well as automatic analysis of pipe ovality and capacity up to 30 times per second. The Laser Profiler simply attaches to your existing CCTV Camera and the resulting CCTV images are analyzed using innovative machine vision software.

- Can operate in pipe sizes ranging from 6"- 72" (152 mm -1829 mm).
- Internally battery powered (rechargeable); no electrical connections are required; no moving parts.
- Software can be used on a TV inspection vehicle or on a remote computer.
- Can capture a single frame of video from video, previously stored file, CD, DVD, etc., when utilized on a remote computer.
- Designed to project a laser light in a radial plane perpendicular to the CCTV camera's line of sight and create a red line on the inside wall of the pipe; laser is designed to provide sufficient intensity to view the video image with normal CCTV camera lighting.
- Easily attaches to your existing CUES CCTV Camera or Transporter.
- Designed to capture and display a single frame on the data monitor for measurement and analysis in industry standard formats to include JPEG, BMP, or TIFF formats.
- Text can be placed anywhere within the captured video image.
- A line graph displays the cross-sectional amplitude over the entire length of the pipe run from entry to exit access.
- High-strength carbon fiber and aluminum construction.
- Designed to obtain the actual degradation of the pipe by utilizing the laser profiling and measurement tools
- Certified by WRc.



LASER Profiler

Features & Benefits

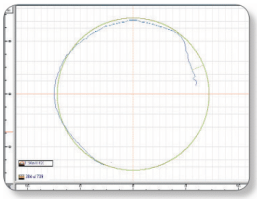
CUES

THE SOFTWARE

Manual Measurements - Precise measurements can be taken from a single frame captured from the prerecorded or live video. This includes pipe size verification, size of laterals, water levels, holes, and off-set joints. The 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*.

Examples of quantifying lift in liner using both the manual and the automated digital measurement methods. The 3-D model can be seen below.

MANUAL



AUTOMATED

THE LASER PROFILER BASE SYSTEM INCLUDES THE FOLLOWING:

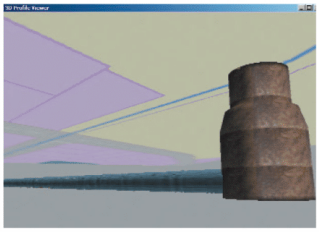
- For 6"- 15" pipe (152 mm - 381 mm): Camera mounting assembly, single laser head, battery charger, 3D measuring software, rod extension for 10" (254 mm), 12" (305 mm), 15" (381 mm), barrel distortion target, calibrator target, AC adapter, and hardware case.
- For 8"- 42" (203 mm - 1067 mm) pipe: Laser wand, triple laser head, battery charger, 3-D measurement software, barrel distortion target, calibrator target, AC adapter, camera skid assembly 8"- 30" (203 mm - 762 mm), skid plate assemblies for 36" (914 mm) and 42" (1067 mm), skid adapter plate, and hardware case.

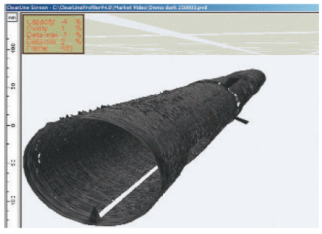
AUTOMATED ANALYSIS

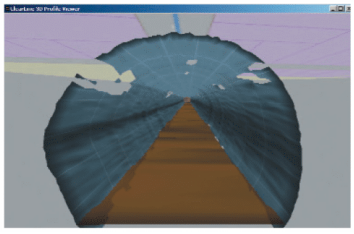
The software uses machine vision. Machine vision is used to find the video image of the laser profile (red laser line). Each frame of the inspection video is analyzed to build a digital profile of the pipe. From this profile, the Laser Profiler built-in functions display the following:

- Ovality - The Ovality function calculates the "q" (as per ASTM F 1216, the internationally recognized standard for CIPP rehabilitation).
- Capacity - The Capacity (X-sectional Area) function calculates the cross-sectional area for each profile and normalizes the results against the expected internal pipe area.
- Interfaces with CUES software.
- Delta - The Delta calculation finds the maximum and minimum pipe radius for each profile.

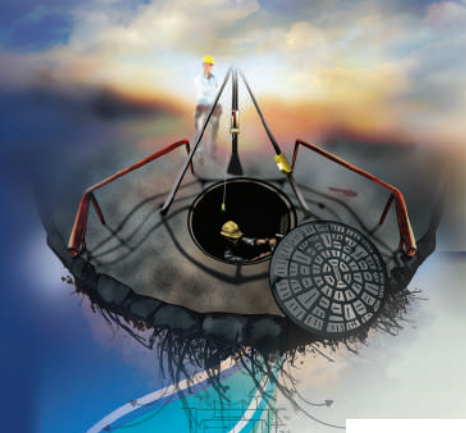
THE LASER PROFILER 3D DEVELOPMENTS:







3D Modeling- Using the digital profile, the Laser Profiler creates a fully interactive 3D model of the pipe. This allows the user to navigate through the selected pipe within its local environment, thereby providing a new perspective to traditional CCTV inspections.



WECO INDUSTRIES

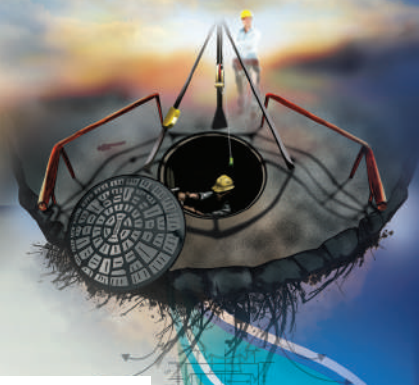
CUES

LIFTER PLUS II

HYDRAULIC, VEHICLE-MOUNTED ACCESS COVER LIFTER

Why struggle to remove access covers? Have The CUES Lifter Plus II do it for you! Save time. Save money. Save workers from injury.

The CUES Lifter Plus II is the practical solution to an everyday workplace problem! The CUES Lifter Plus II is a front or rear-vehicle mounted, hydraulic solution for access cover removal. Use the Lifter Plus II on conventional sized covers/grates or more challenging removal tasks.



Lifter Plus II

Features & Benefits

CUES

LIFTER PLUS II

3 EASY STEPS

1 APPROACH

2 ACTIVATE

3 REMOVE

KEY FEATURES AND BENEFITS

- Don't expose workers to injury and work inefficiency
- Remove covers with the push of a button
- A quick solution for stuck-in-place covers
- Put your equipment to work, safely, efficiently
- Broad range of vehicle applications
- It's the sensible way to manage a challenging task

SPECIFICATIONS - GENERAL

- Front or rear-vehicle mounted: 3/4 ton vehicle
- Easily mounts into a 2 inch receiver
- Powered by vehicle battery
- Remote control operated
- Powerful magnetic gripping capacity: up to 3500 lbs
- Lifter PLUS II weights: 75 lbs, magnet 46 lbs

SAFETY AND EFFICIENCY BENEFITS

- Automating process improves task safety and efficiency
- Manually removing covers exposes workers to injury
- Injuries can seriously impact employees health
- Injuries can be very expensive for the employer
- Can greatly benefit an aging and diverse work force
- Provides ergonomic safety and improves task efficiency

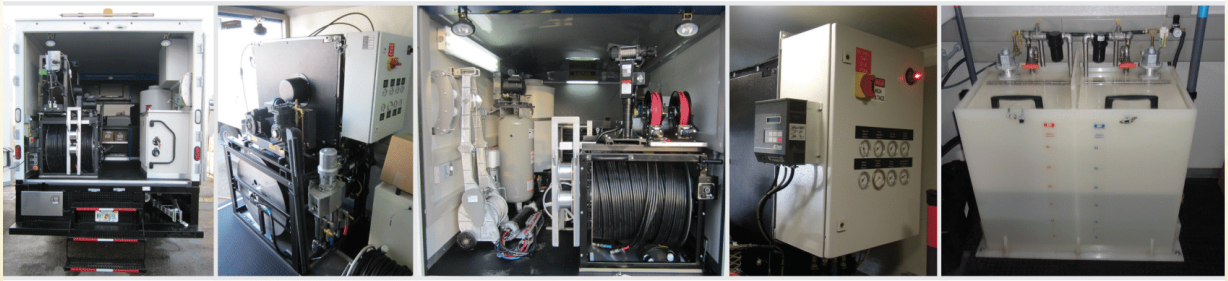
WI - FI

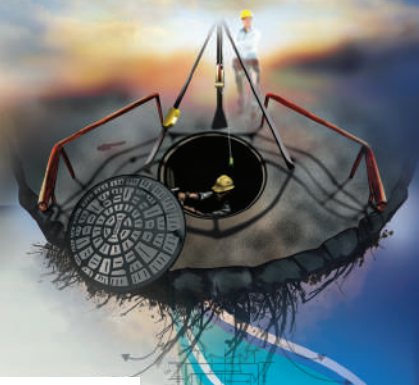
WiFi CONTROLLER TO OPERATE FROM YOUR PHONE, HAND-HELD REMOTE, OR ONBOARD CONTROLS

WECO INDUSTRIES

CUES LOW VOID PACKERS ARE LOW-VOLUME, CHEMICAL INJECTION, MULTI-GROUT PACKERS. LOW VOLUME PACKERS WORK WITH ACRYLAMIDES, URETHANE, AND OTHER COMMON CHEMICAL GROUTING MATERIALS.

CUES low void packers are fully compatible to and intended to be used with acrylamides, urethane and other common chemical grouting materials. Other design features include the ability to air or water pre-test, grout seal, and re-test without the need for repositioning. Its low profile design insures a minimum grout ring residue remaining at the joint with maximum dispensing efficiency of the grout material.





PACKERS-Low Void

Features & Benefits

CUES

- Both water and air-testing capabilities.
- Fully compatible for acrylamides, urethane and other chemical grouts; multi compatibility saves the cost of different packers for different grouts.
- Minimum residual grout ring remaining assures maximum flow in the sewer after grouting; low volume operation provides a cost effective use of grout.
- Operates with existing grout systems.
- Field-replaceable sleeves reduce overall repair and downtime.
- Combination pressure test and seal efficiency; dual pressure and seal capability minimizes operational time required for inspection, seal and check.

- Low void packers are available for 8”- 42” (203 mm - 1067 mm) diameter pipe sizes.
- Field-replaceable sleeves reduce overall repair and downtime.
- Packers can be operated and used with existing CUES Grout Systems.
- Low volume operation provides a cost effective use of grout.

CUES IS THE INDUSTRY LEADER OF PORTABLE, TRUCK, AND TRAILER MOUNTED GROUT REHABILITATION SYSTEMS FOR MAINLINE, MANHOLE, AND LATERAL JOINT SEALING.

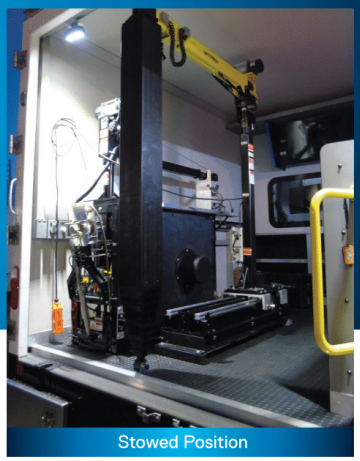
CUES

MANHOLE DEPLOYMENT SYSTEMS

Crane-Mast Deployment


Boom Arm-Out Position


Deployed Position


Stowed Position

CUES MAST SYSTEMS

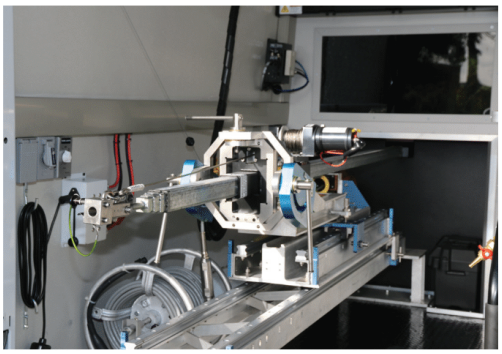
- The truck-mounted mast can position the camera 50' (15 m) below the surface of the road and is designed to achieve optimum picture stability throughout the optical zoom range of the camera.
- The camera unit can be electronically raised and lowered.
- Prevents the need for an operator to enter the manhole to position and/or reposition the camera height.
- Perform manhole & mainline inspections and gauge the manhole depth without the need for a camera transporter!
- Can be installed on existing TV inspection systems without the need for modifications to other existing equipment already installed on the unit.

Manhole Deployment

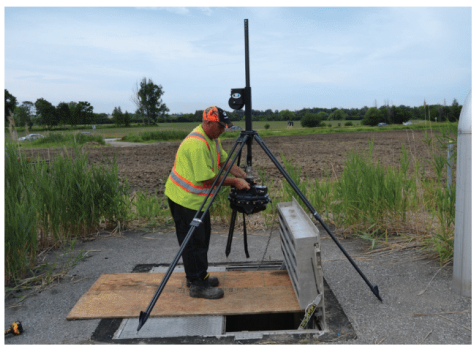
Features & Benefits

CUES

Rail-Mast Deployment



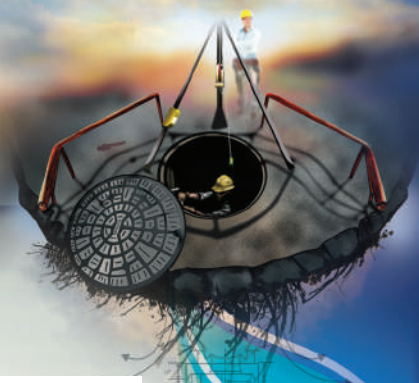
Tripod Deployment



WECO INDUSTRIES

THE CUES MANHOLE INSPECTION VEHICLE (MIV) ELIMINATES THE PICTURE QUALITY AND PRODUCTION LIMITATIONS OF TRADITIONAL HAND-HELD, CABLE, OR TRIPOD MANHOLE INSPECTION SYSTEMS.

The CUES MIV is designed to operate all CUES manhole cameras with a user-friendly interchange mounting bracket. The MIV is the only vehicle in the industry that can INSPECT and SCAN most types of structures such as: Sanitary/Storm Manholes (up to 50' (15 m) deep), Sanitary/Storm Pipelines (6"- 120" (152 mm - 3048 mm) diameter), Lift Stations, Gravity Interceptor Pipelines (without bypass pumping), Vaults, Outfalls, and more.



Manhole Inspection Vehicles

CUES

Features & Benefits

CUES MANHOLE INSPECTION VEHICLES CAN OPERATE ANY CUES MANHOLE CAMERA:

DUC

ZOOMX II

SPiDER

- Use CUES MIV's to determine where to perform rehab and CCTV inspections.
- Reduce costs and save time! Prescreen pipeline conditions during the manhole inspection.
- Stable deployment up to 50' (15 m) deep; Inspect up to 40 manholes per day!
- 3D point cloud for precise manhole measurements; 360 degree field of view.

- Stable deployment up to 50' (15 m) deep.
- Prescreen pipeline condition during manhole inspection - REDUCE costs and save time.
- Camera is remote controlled from ground level – no heavy lifting.
- Motorized pan and tilt manhole camera for optimum video.
- One truck setup per day for maximum production and ease of use.
- Camera remains deployed between manhole visits.
- Determine where to perform rehab and CCTV inspections.
- System can be deployed off-road.

WECO INDUSTRIES

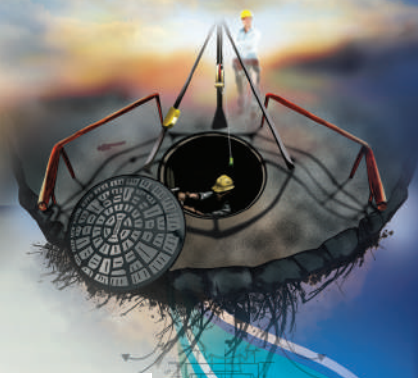
MARK3

CUES

On the Mark: a compact, durable, and portable inspection system.

You asked, we listened!

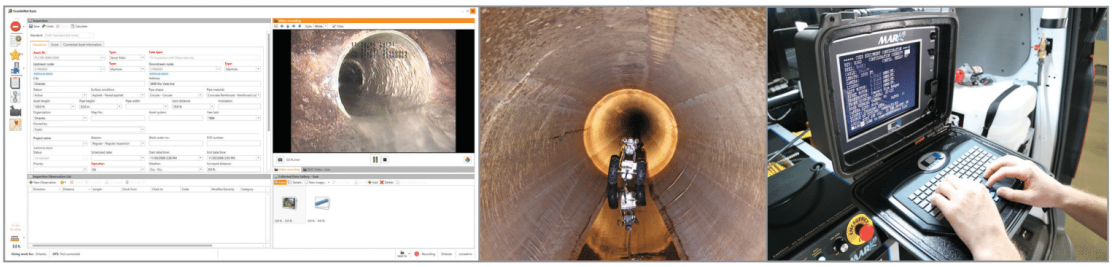
We value our customers' input and are proud to offer a new solution to pipeline inspection demands. Sanitary and storm sewer in-pipe conditions are difficult enough; simply getting the equipment to the access point should not be the issue. The CUES MARK3 is a crossover tool for those needing a portable system for easement/off-road work, complementary mainline work, or an affordable platform for those performing infrequent inspections. As a complement to our time-tested mainline equipment, the MARK3 fills the void between portable and traditional vehicle-mounted systems and is compatible with existing CUES equipment.



MARK3

Features & Benefits

CUES



- Durable and portable system for mainline inspections in 6”- 72” (152 -1829 mm) diameter pipelines.
- Compact and easy to mount in a variety of smaller vehicles, including an ATV, van, trailer, etc.
- Fully compatible with CUES GraniteNet asset inspection & condition assessment software.
- Can operate with the CUES Digital Side-scanning Camera (DUC).

- Will operate 1000’ (305 m) multi conductor cable.
- Made from stainless steel and aerospace-grade aluminum.
- LCD display case contains built-in keypad with high-resolution monitor mounted on a reinforced RAM assembly; adjustable for height and rotation.
- Weatherproof, removable display case with keypad (can be mounted up to 15’ (49 m) away with optional extension cord).
- Dimensions: 14” W x 20” H x 31.5” L (356 mm W x 508 mm H x 800 mm L)
- 12-conductor sealed slip-ring
- Automatic-payout and retrieve for video cable.
- Connection ports including (1) AV, (3) USB (2 on the PCU; 1 on the display case), (1) VGA, ethernet, serial cable, SD card, and standard microphone.
- Local control via front-mounted reel control panel, or control from standard CUES gamepad controller.
- Easily accessible hand brake, hand crank, and freewheel activation.
- Low-maintenance design to reduce contaminants in the vehicle.

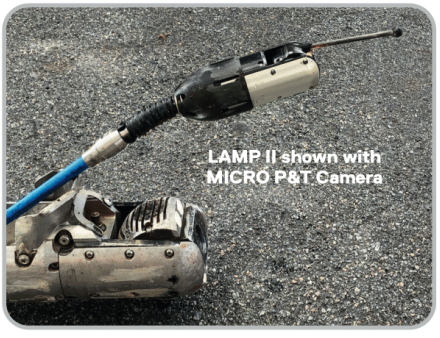
MICRO
Pan & Tilt Camera

CUES

THE CUES MICRO PAN & TILT CAMERA IS DESIGNED TO WORK WITH THE LAMP II LATERAL LAUNCHER.

Use the optional CUES Micro Pan & Tilt Camera with the CUES LAMP II for pipe inspections. The CUES Micro Pan & Tilt Camera is designed to navigate through multiple wyes and 45 and 90 degree bends / sweeps with the integrated directional rod. All pan and tilt functionality is integrated into the systems' controller.

The Micro Pan & Tilt Camera includes a detachable steering wand, self-leveling camera head, built in lens wiper, 360 degrees pan and tilt, (2) banks of LED's with variable light intensity, and a built in sonde with switchable frequencies.



MICRO Pan & Tilt Camera

Features & Benefits

CUES

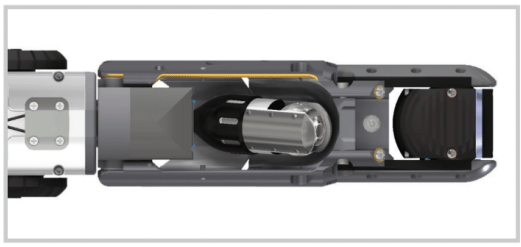
- Rotation: Continuous 360 degree rotation; Pan: Continuous 360 degree rotation.
- Illumination: White LED Lighting.
- Scratch-resistant sapphire window.
- Ability to direct the camera and lights to observe all defects, including joint separations, cracks, offsets, spotting, and roots.
- Built-in multi-frequency sonde transmitter; 512 Hz or 8 kHz.
- Detachable steering wand provides the ability to navigate through multiple wyes.
- Built in lens wiper.
- Self-leveling camera head.
- LED lighting with variable intensity.
- Rugged carrying case.

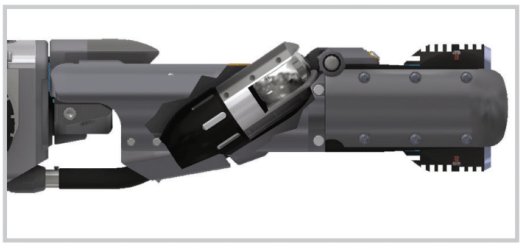
Built in multi-frequency sonde transmitter; 512 Hz or 8 kHz.

Direct the camera and lights to observe all pipeline defects.

Built in camera lens wiper; no need to remove the camera from the pipe to clean the lens.

Detachable steering wand to navigate through multiple wyes.



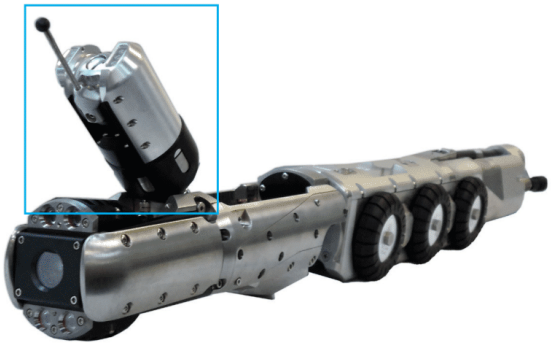


MINI Pan & Tilt Camera

CUES

THE CUES MINI PAN & TILT CAMERA IS DESIGNED TO WORK WITH THE LAMPII LATERAL LAUNCHER OR WITH THE MPLUS+ XL SYSTEM FOR MAINLINE PIPE INSPECTIONS.

The Mini Pan & Tilt Camera is designed to navigate through multiple wyes and 45 and 90 degree bends / sweeps with the integrated directional rod. All pan and tilt functionality is integrated into the systems controller.



MINI Pan & Tilt Camera

Features & Benefits

CUES

- Rotation: Continuous 360 degree rotation; Pan: Continuous 360 degree rotation.
- Illumination: White LED Lighting.
- Scratch-resistant sapphire window.
- Ability to direct the camera and lights to observe all defects, including joint separations, cracks, offsets, spotting, and roots.
- Built-in multi-frequency sonde transmitter; 512 Hz or 8 kHz.
- Detachable steering wand provides the ability to navigate through multiple wyes.
- Built in lens wiper.
- Self-leveling camera head.
- LED lighting with variable intensity.
- Rugged carrying case.
- Optional skid packages available for mainline use.

Built in multi-frequency sonde transmitter; 512 Hz or 8 kHz.

Direct the camera and lights to observe all pipeline defects.

Built in camera lens wiper; no need to remove the camera from the pipe to clean the lens.

Detachable steering wand to navigate through multiple wyes.

Use the optional CUES Mini Pan & Tilt Camera with the CUES LAMPII or MPlus+ XL system for mainline pipe inspections. The Mini Pan & Tilt Camera includes a detachable steering wand, self-leveling camera head, built in lens wiper, 360 degrees pan and tilt, (4) banks of LED's with variable light intensity, and a built in sonde with switchable frequencies.

MPlus+ & MPlus+ XL

Portable Lateral & Mini-Mainline Push System

CUES

The CUES MPlus+ offers the most flexible and feature packed lateral and mini-mainline push system on the market. The MPlus+ modular design combines easy operation with its refined all-in-one set up with the flexibility of facilitating quick removal of the control unit to be used separately for off road or remote jobsites or to accommodate compact storage. The MPlus+ is the most versatile push system available in the market today.

- The advanced MPlus+ system stands out by integrating all of the most sought after features into an easy to use and intuitive package.
- This lightweight system is manufactured for rugged reliability and designed to handle rigorous field use.
- Push cables incorporate exclusive HDPE jackets and advanced fiberglass rods designed for longer pushes and extended life.
- Contact your CUES Regional Sales Respresentative for a complete list of optional equipment!

MPLUS+ COILER & CAMERA

- Two coiler configurations for lateral & mini-mainline push applications:
  - Industry leading push cables with exclusive HDPE jackets
  - Configurable for any installed push rod length
  - On-screen customizable distance counter
- Standard configuration lateral coiler – 100, 200, 300 and 350' (31, 61, 92, 107 m) push cable lengths available:
  - .444" (11 mm) optimized push cable (.197" (5 mm) fiberglass rod) for pushes
- XL coiler configuration for mini-mainline applications – 300, 350, 400 and 500' (92, 107, 122, 152 m) push cable lengths available:
  - .517" (13 mm) rigid push cable (.236" (6 mm) fiberglass rod) for larger pipeline applications.
  - Configurations include standard SR3 self-leveling camera for 2-12" (51-305 mm) pipelines and an optional advanced pan & tilt camera head for 4" - 12" (102-305 mm) pipelines.

MPlus+ & MPlus+ XL

Features & Benefits

- Full featured control unit offers advanced text writing, observation coding, digital recording and more in a weather/water resistant enclosure.
- The large 8.4" (213 mm) industrial grade optically bonded monitor offers the clearest picture in adverse conditions.
- Extensive video titling includes multiple predefined and customizable screens for job documentation. Customized screens and operator data are retained in memory for efficient operation.
- The advanced digital recorder features USB mpg. recording and playback of video and screenshot picture images. The operation is fully integrated with easy to understand intuitive controls. 16GB external and 128GB internal memory is included.
- Operate the MPlus+ anywhere with 110/220 AC mains power, 12VDC power or the advanced internal Li-Ion battery delivering 4+ hours of use on a single charge.
- The standard and XL coilers will deliver years of service with their heavy gauge and corrosion resistant stainless steel construction.

OPTIONAL EQUIPMENT

- Optional adapters for the MPlus+ to work with truck-mounted/portable mainline systems and asset management software.
- Wireless digital video for operation with a mainline truck or any other remote location with receiver.
- Mainline interface cable for operation with a CUES multi-conductor TV truck.
- Optional pan & tilt camera for mainline or large pipe applications features continuous 360 deg rotation and pan:
  - All pan & tilt functionality is fully integrated into the systems' controller; built-in multi-frequency 512 Hz and 8kHz sonde transmitter.
- Locator/receiver for accurate camera location in metallic and non-metallic pipelines.
- A large array of optional skids and skates.
- Quadrature footage interface for external asset management software.
- Optional line trace post for 128Hz, 1kHz, 8Hz and 33kHz locating.

MPLUS+ CONTROLLER

- 8.4" (213 mm) display mounted in a weather resistant control unit that features a quick connect mount for attaching to the coiler.
- Digital recorder with integrated controls featuring intuitive buttons for all recording and playback functions. Features dual drive recording for redundancy and file safety.
- System Interface connection offers flexibility for unique applications and includes video, audio, and 12VDC outputs and a video input. Quadrature footage output for optional asset management software.
- Internal Li-Ion Battery with Intellicharge technology offers 4+ hours of continuous use on a single charge. Also accepts AC and 12 VDC power input.

MPlus+ XL with Optional Pan & Tilt Camera

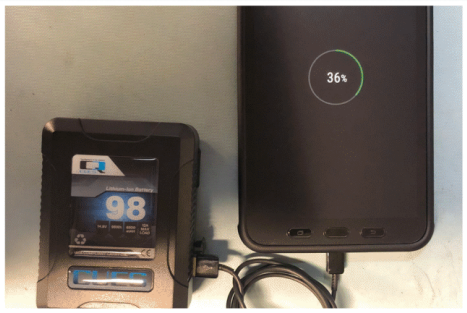
WECO INDUSTRIES

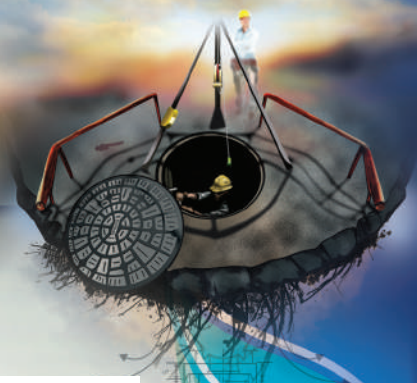
THE QZ3 IS A LIGHTWEIGHT, PORTABLE, VIDEO INSPECTION SYSTEM THAT CAN BE OPERATED BY ONE PERSON!

QZ3 is a lightweight, portable, video inspection system that can be operated by one person! Accomplish safe-viewing in industrial or environmental areas with no man entry. Perform swift inspections and surveys of pipelines, wet wells, manholes, sewer treatment plants, steam generators, tanks, vessels, and other areas that are difficult to reach. QZ3 can also be used to locate lateral services or to identify a blockage at a manhole, access port, or other entry point without entering the line or structure. QZ3's wireless streaming enables cable-free inspections within the immediate manhole area. For additional range up to 100+ feet from the manhole ask about the Wi-Fi Range Extender accessory!

QZ3 is mounted on a lightweight carbon fiber adjustable telescopic pole that can extend up to 24' (7 m) (optional 34' (10 m) pole is available). Get full HD views of cracks, breaks, pipe separations, scale, and various defect conditions from hundreds of feet away!

OPTIONAL TRIPOD AVAILABLE

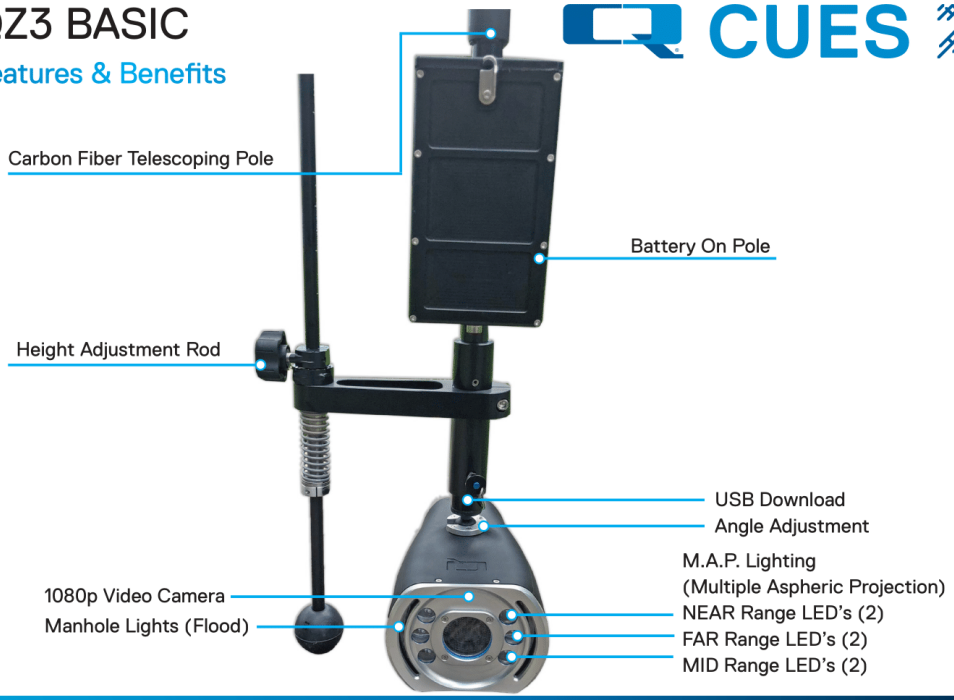




QZ3 BASIC

Features & Benefits

CUES



- Simple to use and light weight!
- Establish condition assessment priorities.
- FAST-look, single-person inspections!
- On-screen menu for easy set-ups.

- Image Sensor: 1/2.8-type CMOS
- Lens: 30x optical zoom
- Picture Quality: Full HD 1080p (1920 x 1080)
- Minimum Illumination Color: 0.01 lux
- Digital Zoom: 12x (360x with optical zoom)
- Full, Waterproof Camera Housing (*Submersible to 1m for <30 min)
- Distance to Defect Approximation
- Adjustable Height for 6"- 72" (152 mm -1829 mm) Pipe
- Viewing Angle: 63.7° to 2.3°
- Video Output: Digital
- Pixels: 2.38 Megapixels
- Signal System: 1080p
- Battery: Lithium-Ion 4 hrs minimum operation

WECO INDUSTRIES

CUES

REDI

REMOTE EVALUATION DIAGNOSTIC INSPECTION KIT

Take the TROUBLE out of TROUBLESHOOTING

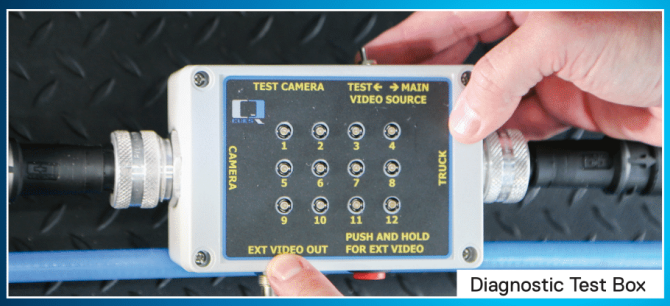
CUES is proud to introduce REDI Kit, the first CCTV pipeline inspection troubleshooting kit available on the market today! CUES equipment is manufactured for rugged durability and designed to withstand the harshest environments found in sewer/ pipeline systems. Like all manufacturers, CUES equipment is powered electronically. Even with preventative maintenance and precautions, equipment failures can still occur.

To significantly reduce unplanned downtime, use the CUES REDI Kit! This handy diagnostic kit includes tools that are indispensable at remote sites for electrical issues, troubleshooting, and repair. Use the REDI kit, along with your CUES technical staff, and take troubleshooting and support to the next level! Get up and running quickly and **GO THE DISTANCE** with the CUES REDI Kit!

REDI KIT

Features & Benefits

CUES



Diagnostic Test Box

Footage Test Box

- A hi-resolution web camera allows for two-way video conferencing with CUES Technicians, Parts Specialists, and Engineers to expedite troubleshooting, enhance parts identification, and provide for specialized support by the Engineers that designed your systems.
- A Diagnostic Test Box provides easy access to the TV cable conductors via test points. This makes taking voltage readings much safer and easier and can be done with the camera and transporter attached for a more accurate reading while under load.
- The Diagnostic Test Box also contains a built in mini-camera, which can be used to send video back thru the TV cable and truck if you believe you may have a problem with your camera. Having this back-up camera helps to eliminate the need to locate an alternate mainline camera for video path troubleshooting.
- The Footage Test Box can be substituted for your footage head encoder, on both newer and older CUES reels. This will allow you to generate the footage signal in place of the encoder, if you suspect the encoder is malfunctioning. Test points are also provided to allow you to verify that operating voltage is present at the encoder.
- A USB diagnostic tool is included to help troubleshoot computer issues relating to the 5 volt power supply and any USB peripherals that are connected to the computer.
- A user friendly multi-meter is provided. CUES Technicians are very familiar with its operation and can assist, as needed. Video cables and adapters are also included, as they are sometimes helpful during troubleshooting.

WECO INDUSTRIES

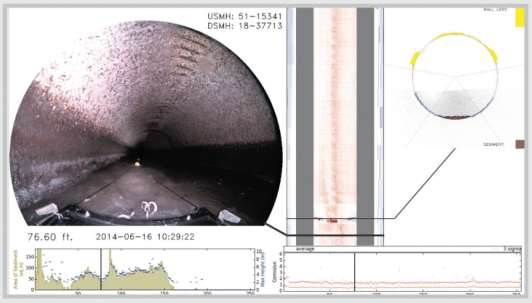
SoLID FX

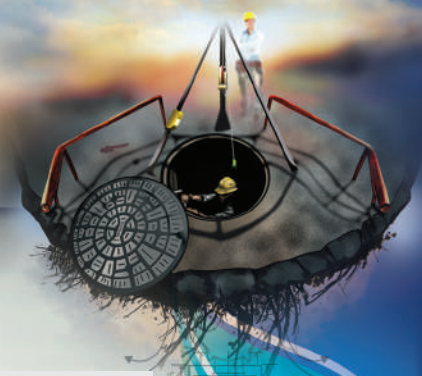
SONAR/LIDAR Profiling System

LARGE PIPE INSPECTION DONE RIGHT! LIVE LIDAR, SONAR, AND CCTV FOR PIPELINES 18" AND LARGER.

The CUES SoLID FX (SFX) is the preferred multi-sensor inspection (MSI) system for large diameter pipes. Whether the need is for condition assessment [2D] to determine the 'remaining-useful-life' or rehab planning [3D] to obtain accurate dimensions of bends and underground structures, SFX is the tool for both! The standard sensors, including our high-definition digital video camera (DUC), 2D-LIDAR and profiling SONAR can be deployed up to 3,000' (914 m) from a CUES Steerable MudMaster crawler or up to 5,400' (1,646 m) on a CUES SFX FLOAT.

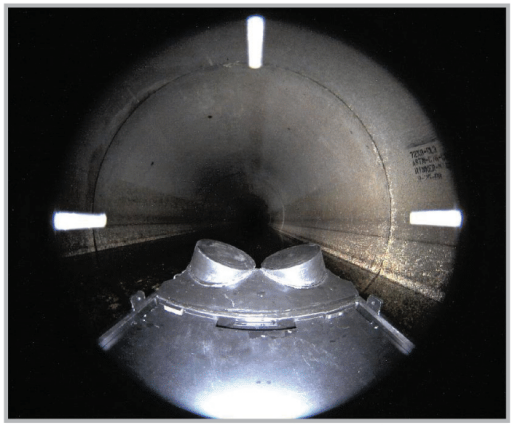
- STATE-OF-THE-ART LIDAR INSPECTION
- LIVE HIGH DEFINITION (HD) CCTV, SONAR & LIDAR
- PIPES SIZES 18" (457.2 MM) AND LARGER
- FAST REPORT TURNAROUND
- DEDICATED CUSTOMER SUPPORT

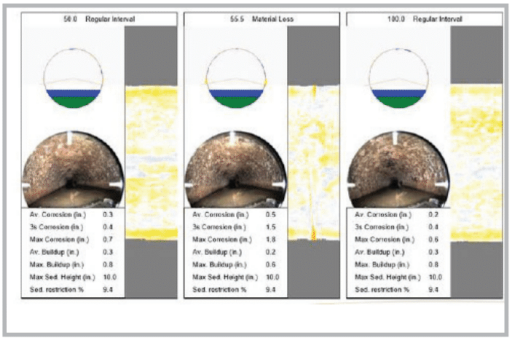




SoLID FX

Features & Benefits





CUES

SOLID FX (SFX) IS THE PREFERRED MULTI-SENSOR INSPECTION (MSI) SYSTEM FOR LARGE DIAMETER PIPES.

- Lens-clearing system for the camera and the LiDAR eliminates missing data and the need for interpolation due to water droplets and debris on lenses.
- HD Sonar displays debris levels and pipe capacity.
- LiDAR is independent of a camera, allowing visuals of laterals, open joints, holes, etc.
- Video, captured by CUES GraniteNet DUC module, allows office viewing with virtual Pan, Tilt, and Zoom.
- SoLID FX runs on CUES Gold Cable.

WECO INDUSTRIES

3D Wireless Manhole Scanning

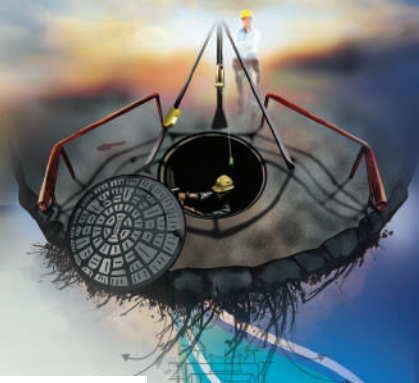
SPiDER is a revolutionary portable manhole scanning technology

ACCURACY	SPEED	WEIGHT	CABLE
1 to 5 mm	7' (2.1 m) / min	30 lbs (14 kg)	none


>Tablet Controlled


> Measurable Color Point Cloud


> Wireless Connection



SPiDER Manhole Scanner

CUES

Features & Benefits

- Measureable Data
  SPiDER collects millions of three-dimensional (3D) points during each manhole scan that provides engineering and survey quality information on manhole geometry and condition. Output can be used for structural assessment, pre and post rehabilitation analysis, hydrological surveys, as well as general condition assessment.
- Portability
  SPiDER weighs less than 30 pounds (14 kg) and can be hand carried to difficult to access sites. Additionally, SPiDER does not require a truck or data/power cable for operational use. Scanning data is recorded on the unit.
- Tetherless Positioning
  SPiDER can calculate its position in the manhole shaft by using its internal sensor data to measure its incremental motion. This technology frees manhole scanning from problems associated with inaccurate, poorly calibrated cable counters and poorly managed cables.
- Tablet Controlled
  SPiDER is operated with a tablet which controls the scanner's cameras and lights.
- 3D, Textured Point Clouds
  SPiDER provides renderings of manhole geometry to provide three dimensional visualization that can be imported into a wide range of 3D viewers.
- File Format Deliverables
  - 3D MPEG Video (.MPG)
  - Point Cloud (.PLY) which can be converted to:
    - Surface Model (.STL)
    - CAD Model (.DXF)
    - Virtual Model (.OBJ)
  - MACP Report using your preferred NASSCO Certified Software
- Live Video
  SPiDER provides a 190 degree field-of-view live video stream - making it an ideal tool for Infiltration and Inflow (I&I) studies which depend on live video to detect moving water.

SPiDER weighs less than 30 pounds (14 kg) and can be hand carried to difficult to access sites.

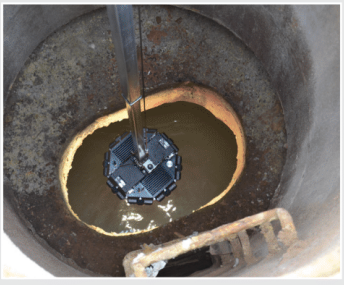
SPiDER is operated with a tablet which controls the scanner's cameras and lights.

Output can be used for structural assessment and pre/post rehabilitation analysis.

SPiDER provides a 190 degree field-of-view live video stream making it an ideal tool for I&I studies.

> Live Video

> Portability



> Virtual Tether

WECO INDUSTRIES

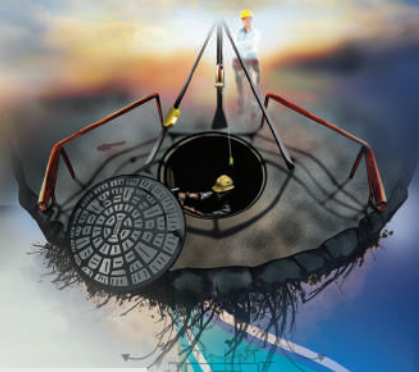
CUES

TruVue

Increase the Efficiency and Quality of Your Cleaning & CCTV Operations

THE CUES TRUVUE VIDEO TRANSMISSION SYSTEM ENABLES THE JET TRUCK OPERATOR, INSPECTOR, REMOTE EQUIPMENT OPERATOR, CONSULTING ENGINEER, OWNER, ETC., TO REMOTELY VIEW REAL TIME VIDEO IMAGES, AS GENERATED BY A CCTV INSPECTION SYSTEM UP TO 1500' (457 M) AWAY.

TruVue applications include the minimizing of the potential for unintended collisions between the jet nozzle, saving water during the cleaning process, and simultaneous remote viewing by multiple parties in less than ideal weather conditions and/or temperatures. The CUES TruView operates with all manufacturers video inspection systems, requiring only a standard (NTSC or PAL) video output. The CUES TruVue works with all manufacturers' video inspection systems, requiring an available video output and AC power.



TruVue System

Features & Benefits

CUES

THE CUES TRUVUE ENABLES THE JET TRUCK OPERATOR TO REMOTELY VIEW REAL TIME VIDEO IMAGES, AS GENERATED BY A CCTV INSPECTION SYSTEM.

- The jet truck monitors pipe conditions in real time view identical to the CCTV inspection operator's view; keeps your camera safe from a possible collision with the nozzle.
- CCTV Truck can remain at one entry point while the jet truck can move from manhole to manhole, decreasing set up time and enabling the inspection of multiple cleaned pipe sections from one access point.
- Easy to use – set up within a few minutes.
- Use for any operation where remote video monitoring is beneficial, including point repair and other rehabilitation processes.
- High resolution 8.4" (213 mm) LCD monitor mounted in a weather proof case with protective sun shade.
- Built in lithium iron phosphate battery provides minimum 12 hours battery power.
- Built in diagnostics includes display for voltage, amperage, charge/discharge indicator, percentage of charge, and bar graph displaying remaining charge.
- Supplied with mounting tripod and battery charger.

flexitrax C550c

Portable Video Inspection System

CUES

The flexitrax C550c is designed around simplicity of operation. Ready to use in 30 seconds from powering on, it requires minimal training to operate, letting you concentrate on pipe inspection.

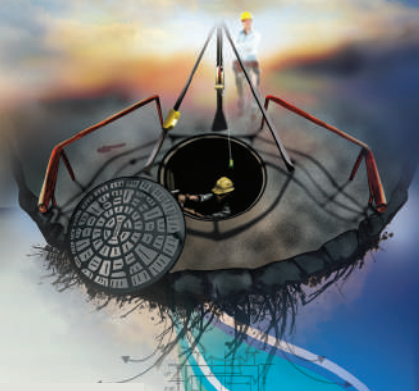
A large 12.1"/307mm HD, daylight visible screen combined with full-size keyboard and dedicated function keys guide you through the survey process.

Built in is a high capacity internal lithium-ion battery, providing power for up to a full day's typical usage, and 128Gb of solid state memory.

- Inspect pipes faster to complete more surveys each day. The intuitive interface is quick to set up and simple to operate.
- Reports are ready to share as soon as your survey is complete using advanced connectivity with USB, HDMI and ethernet.
- The flexitrax C550c gives you flexibility when you need it, enabling you to survey pipes from 1¼"/32mm to 60"/1500mm.
- Expand your client base by offering a variety of tailored surveys through the integration with CUES GraniteNet software.
- Modular by design, the flexitrax C550c system can be paired with a range of products and accessories.

Pushrods

A choice of pushrod reels of varying length and flexibility can be connected to the flexitrax C550c system. Use a pushrod to survey pipes as small as 1¼"/32mm.



flexiprobe C550c

Features & Benefits

Wheels

Select from a range of small, medium or large wheels and/or spacers to suit your pipe size and terrain.

Cameras

Choose from three camera models; Forward view only, Pan and Tilt or Pan and Tilt, with 10 x optical zoom.

Elevators

Both manual and powered elevators are available, for centered inspection up to 36"/900mm.

Cradle

Combine the cradle and elevator together with the large crawler for centered inspection up to 60"/1500mm.

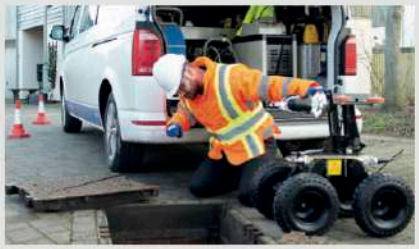
Other accessories are available.

CUES

THE FLEXITRAX C550C SYSTEM PROVIDES A PORTABLE, MODULAR PIPELINE INSPECTION DESIGNED WITH YOU IN MIND.

Inspect pipes faster to complete more surveys each day:

- The intuitive interface is quick to set up and simple to operate.
- Dedicated function keys make it easy to use.
- Built-in rechargeable batteries lasting all day.
- WiFi connection for sending reports via DropBox or email.
- Advanced connectivity with USB, HDMI and ethernet, making it easy to view and export your data.
- Video streaming to nearby devices.
- Integrate with Cues GraniteNet software to create NASSCO standard compliant reports including PACP, LACP, and MACP.
- Basic reports.
- Modular by design, the flexitrax C550c system can be paired with a range of products and accessories.
- Our solution gives you flexibility when you need it, enabling you to survey pipes from 1¼"/32mm to 60"/1500mm.



WECO INDUSTRIES

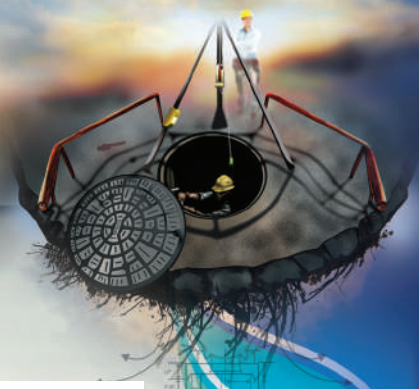
CUES

LAMPII

Lateral & Mainline Probe

The self-propelled, robust LAMPII is a CCTV pipeline inspection tool for identifying infiltration and inflow, potential crossbores, pipe defects, and structural conditions in lateral services and mainlines. The LAMPII is able to accomplish this by utilizing a self-propelled lateral launcher, transportation platform, and two cameras, one for pan/tilt/optical zoom operations (mainline) and one for lateral launching. The LAMPII with the optional Mini Pan & Tilt Camera will inspect laterals services and traverse multiple bends and wyes when deployed with or against the flow.

LAMPII shown with the optional Mini Pan & Tilt Camera.



LAMP II

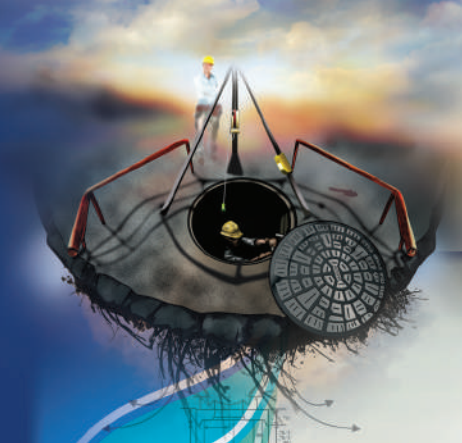
Features & Benefits

CUES

- True one-pass mainline and lateral inspection; inspect more in less time.
- Self-leveling lateral camera with built in sonde.
- Traverse multiple bends and wyes with or against the flow.
- Can be added onto existing CUES units.

PAN & TILT INSPECTION OF ALL LATERAL CONNECTIONS, WITH OR AGAINST THE FLOW! SIMULTANEOUS PAN, TILT & ZOOM INSPECTION OF MAINLINES!

- Easily launches with or against the flow.
- Inspect mainlines and laterals with one inspection run.
- Front-mounted pan and tilt / zoom camera (40:1 optical/digital zoom): Completes mainline inspection and monitors lateral camera; Articulates to facilitate invert entry; Automatic centering.
- Traverse up to 1000' (305 m) of mainline pipe while still being able to launch into laterals.
- Self-leveling lateral camera with built in sonde.
- Supplied with 4 sets of wheels for 6"- 30" (152 mm - 762 mm) lines.
- Traverses 45 and 90 degree bends in lateral services.
- Fiberglass push cable: up to 150' (46 m) push cable.
- Rear tip-up connector.
- Optional Equipment: mini pan & tilt lateral camera with directional rod for steering; rear-view camera; high traction steel wheel sets; big pipe package available to increase pipe size range to 36" (914 mm).
- Robust 6 wheel drive with single point wheel removal.
- Can be added onto existing CUES units.



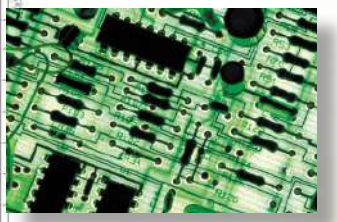
Slopemaster
Inclinometer

Improperly installed or sunken lines often results in rapid pipe failure. Failures may include the accumulation of dangerous materials, debris, early fatigue, fractures, and open joints. In water waste lines, it can also include the heavy accumulations of grease, increased levels of hydrogen sulfide gas, foul odors, increased bacterial growth, internal/external leakage, corrosion and reductions in flow.

The heart of the Slopemaster system is a vertical sensing, single axis, inclinometer mounted on a single internal circuit board. It's accuracy, rugged construction, reliability, and wide range environmental parameters meet the special requirements necessary for verification of slope measurement in industrial and utility pipelines.

The Slopemaster operates with CUES multi conductor or single conductor TV inspection systems. The simultaneous display of the grade information with the live television picture precludes possible misinterpretation of slope due to debris, offset joints, etc., which is a restriction that's often found with measurement-only type verification systems.

A CUES inclinometer-equipped camera has a tilt-angle measurement range of +/- 5 degrees with a typical accuracy of 0.2 degrees. It is mercury free and does not contain any hazardous materials. The Slopemaster can be used with many CUES data display and recording systems. Data systems are available for automatic slope data collection, display, recording, and plotting.

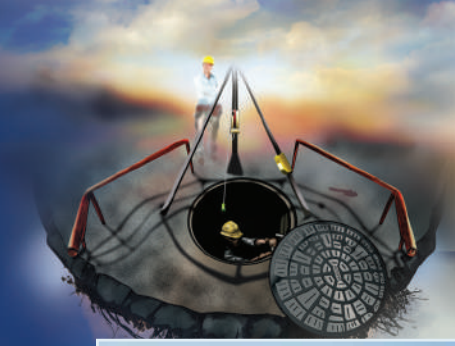


The new CUES Inclinometer has been redesigned to read and transmit pipe grade variations in the range of +/- 5 degrees (+/- 8.7% grade) from horizontal with an error of +/- 0.2 degrees (0.3 % grade) while providing greater stability over a wider range of conditions.

Features & Benefits:

- The system is supplied with a pipe grade verification system to detect and record variations in pipe angle from true horizontal.
- The inclinometer is able to read and transmit pipe grade variations of +/- 5 degrees from horizontal (+/- 8.7% grade) with an error of +/- 0.2 degree (0.3 % grade).
- Depending on the data system used in conjunction with the inclinometer, the data shall be able to be displayed in a numerical or graphical format, which may be printed or exported to an external database.
- The inclinometer includes a vertical sensing, single axis, precision sensor mounted internally to the camera.
- The Pipe Grade Verification System (Inclinometer) can operate with all CUES pan & tilt and pan, tilt & zoom cameras

Disclaimer:
Due to the many varying factors involved in performing an inclination assessment of a pipeline (condition of transporter, speed of inspection, pipe debris, etc.), a CUES inclinometer equipped camera is not intended to take the place of a survey tool, but to be used as a reference to identify potential problem areas during an inspection.



"The Standard of the Industry"

CUES

NEW! WTR III

Wheeled / Tracked Transformer Transporter

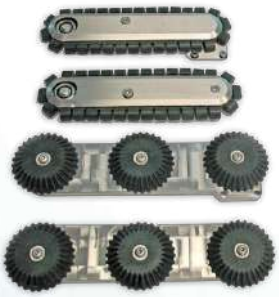
2- in -1 unit!

TV Systems

Transform your transporter to accommodate varying pipe conditions!

- Traverse varying pipe conditions with quick install of wheels or tracks
- Inspects 6" relined through 30" pipe
- Single point removal of wheels
- Optional high-traction tracks are available, easy to install
- Weighted adapters optically center the camera in each pipe size and increase bottom clearance
- Various wheel sets available to maximize performance in various pipe conditions
- Compact transporter enables traversal of offsets in small diameter pipe and entry into tight spaces
- Camera connects directly into transporter with protective carriage assembly
- Works with CUES OZ III pan and tilt zoom camera or CUES OZ III Nite Lite Pan and Tilt Camera
- WTR III base configuration includes wheels; optional tracks are available

Adapt the transporter based on your needs!



Go GREEN with CUES Blue!

Improving your environment one pipeline at a time.

800.327.7791
www.cuesinc.com
salesinfo@cuesinc.com

"The Standard of the Industry"

CUES

Compact Pipe Ranger

Multi-Conductor Wheeled Transporter

The Compact Pipe Ranger (CPR) is a lightweight, compact, and rugged steerable CCTV camera transporter that is used to inspect sanitary and storm sewers. It is made to traverse long distances and tough pipe conditions, and to facilitate ease of handling during insertion and retrieval.

The Compact Pipe Ranger (CPR) is designed to operate on a minimum of 1000' ft of multi-conductor TV cable to inspect 6" relined pipe through 30" diameter pipe. The Compact Pipe Ranger (CPR) includes full-proportional steering to traverse meandering pipe and 45 and 90 degree turns.

When assembled with the CUES OZIII zoom pan and tilt camera, the compact length enables the unit to negotiate most difficult entry conditions and standard sweeps. The superior pulling power of the CPR, combined with the optics and directional lighting of the compact OZ III zoom pan and tilt camera (with the ability to rotate in a 4" circle), creates video inspection quality that's unsurpassed in the industry.

Multiple wheel sets are available to maximize bottom-clearance, traction, and optimize camera position. Ease of operation is accomplished with one joystick control for all transporter and camera movements. A variable "cruise control" setting is available for transporter speed for hands-off operation!

Features/Benefits:

- Optional mechanical or power camera lift is available to prevent the need for a operator to enter the manhole to position and reposition the camera height and to optically center the camera in varying pipe diameters
- Optional rear-viewing camera, which is mounted to the CPR transporter, is available to help avoid obstacles and potential tip-overs in the pipeline by providing visibility when retrieving the transporter or driving in reverse
- Superior pulling power
- Wheels can be installed or removed from a single point of contact
- 2-speed transmission doubles the torque of the transporter for large pipe inspections
- Locking bayonet-style rear bulkhead connector - durable/stable
- Operates in 6" relined pipe through 30" diameter pipe and larger
- Full proportional steering and can complete a 360 degree turn within its own radius
- Multiple wheel sets to accommodate your needs
- High-traction wheels are available for slippery PVC pipe
- Operates with CUES OZIII & Nite Lite III cameras, multi-conductor cable

Go the distance with the Compact Pipe Ranger (CPR)!

Compact Pipe Ranger (CPR)

Multi-conductor Wheeled Transporter

Optional Mechanical Camera Lift

Optional Power Camera Lift

Optional Rear-Viewing Camera

Specifications

- Operates with CUES multi conductor systems
- Operates with the CUES OZ III zoom pan and tilt camera
- Designed to traverse sanitary sewers, storm drains and pipe with debris and silt
- Freewheel, powered reverse, forward variable speed control, all wheel drive
- Rugged, durable and sealed to eliminate water intrusion
- Provides clearance in a 6" diameter relined pipe; can inspect up to 30" diameter pipe and larger
- Two-speed transmission doubles the torque and maximizes traction in varying pipe conditions
- Can turn 360° within its own radius; pinpoint control maximizes the ability to traverse challenging pipe conditions
- Flight stick controller to operate the transporter, optional camera lift, and camera movements with one hand; provides operational simplicity
- Multiple wheel sets for small, intermediate, and large diameter pipes; optional high-traction steel wheels are available
- Rear swivel bulkhead connector minimizes strain on the cable connection during insertion and retrieval of the unit
- Compact camera/transporter length with optical zoom pan & tilt camera (OZ III) facilitates entry into small inverts, small manholes, dead end lines, and traversal of sweeps
- Full proportional steering control to traverse meandering pipe with 45° and 90° turns; minimizes transporter turnover in small diameter pipe

Compact Pipe Ranger in the 8" Configuration

Compact Pipe Ranger in the 6" Steel Configuration

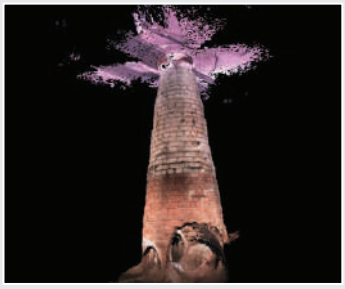
Operates with CUES OZIII & Nite Lite III Cameras

3D Wireless Manhole Scanning

SPiDER is a revolutionary portable manhole scanning technology

ACCURACY	SPEED	WEIGHT	CABLE
1 to 5 mm	10 ft / min	30 lbs	none


>Tablet Controlled


> Measurable Color Point Cloud


> Wireless Connection

SPiDER Manhole Scanner

Features & Benefits

"The Standard of the Industry"

Measureable Data
SPiDER collects millions of three-dimensional (3D) points during each manhole scan that provides engineering and survey quality information on manhole geometry and condition. Output can be used for structural assessment, pre and post rehabilitation analysis, hydrological surveys, as well as general condition assessment.

Portability
SPiDER weighs less than 30 pounds and can be hand carried to difficult to access sites. Additionally, SPiDER does not require a truck or data/power cable for operational use. Scanning data is recorded on the unit.

Tetherless Positioning
SPiDER can calculate its position in the manhole shaft by using its internal sensor data to measure its incremental motion. This technology frees manhole scanning from problems associated with inaccurate, poorly calibrated cable counters and poorly managed cables.

Tablet Controlled
SPiDER is operated with a tablet which controls the scanner's cameras and lights.

3D, Textured Point Clouds
SPiDER provides renderings of manhole geometry to provide three dimensional visualization that can be imported into a wide range of 3D viewers.

File Format Deliverables
- 3D MPEG Video (.MPG)
- Point Cloud (.PLY) which can be converted to:
  - Surface Model (.STL)
  - CAD Model (.DXF)
  - Virtual Model (.OBJ)
- MACP Report using your preferred NASSCO Certified Software

Live Video
SPiDER provides a 190 degree field-of-view live video stream - making it an ideal tool for Infiltration and Inflow (I&I) studies which depend on live video to detect moving water.

SPiDER weighs less than 30 pounds and can be hand carried to difficult to access sites.

SPiDER is operated with a tablet which controls the scanner's cameras and lights.

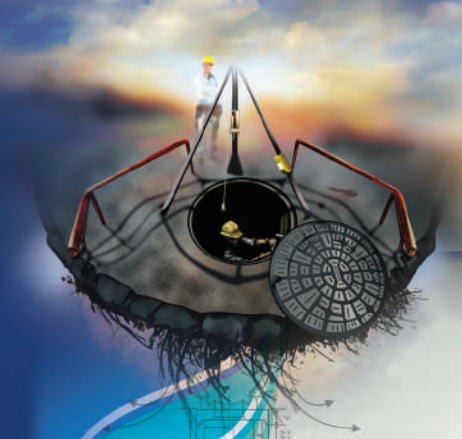
Output can be used for structural assessment and pre/post rehabilitation analysis.

SPiDER provides a 190 degree field-of-view live video stream making it an ideal tool for I&I studies.

> Live Video

> Portability

> Virtual Tether



WECO INDUSTRIES

Pipe Ranger

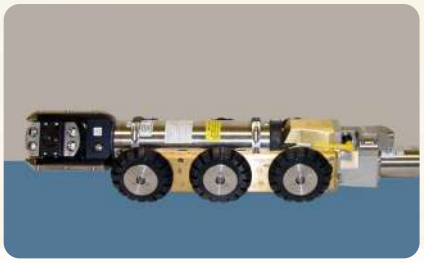
Multi and Single Conductor III Wheeled Transporters

The Pipe Ranger is a rugged and versatile low-maintenance transporter that's specially designed to traverse silt, mud and debris commonly found in storm and sanitary sewers. Three standard wheel sizes and optional manual or electric camera lifts are available to maximize performance. Optional high traction tires are available for extreme slippery conditions.

The unit is designed to operate with 2000' of single-conductor cable or 1500' of multi-conductor cable to inspect 8" relined pipe through 60" diameter pipe. Its unique two (2) speed transmission doubles the torque of the unit to produce maximum pulling power in large diameter pipe when the 10.5" diameter tires are installed.

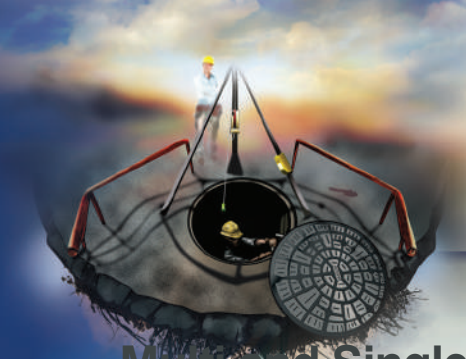
When assembled with a pan-and-tilt camera, the reduced length of the transporter / camera assembly can negotiate most difficult entry conditions and standard sweeps. The Pipe Ranger combined with the CUES OZ II optical zoom camera offers you one of the most compact assemblies in the industry. Optional steerable units with remote or manual camera lifts are also available.

Operates with multi & single conductor systems!



Features & Benefits:

- Operates with CUES multi or single conductor systems
- Can operate on all truck-mounted and portable systems
- Operates with all CUES cameras: pan-and-tilt and optical zoom
- Designed to traverse storm drains and pipe with debris and silt
- Freewheel, powered reverse, forward variable speed control
- Rugged, durable and sealed to eliminate water intrusion
- Designed to provide clearance in a 7" diameter pipe; can inspect 8" relined pipe
- All-wheel drive is enclosed and sealed; all brass and stainless steel construction
- Two-speed transmission doubles the torque and maximizes traction in larger diameter pipe or in tough conditions
- Three wheel sets (3.7", 5.0", and 10.5" diameter) for small, intermediate, and large diameter pipes; optional high-traction wheels for slippery pipe
- Rear tip-up bulkhead connector minimizes strain on the cable connection during the inspection and retrieval
- Compact camera/transporter length with optical zoom pan & tilt camera (OZ II) facilitates entry into small inverts, small manholes, dead end lines, and traversal of sweeps
- Optional full proportional steering control to traverse meandering pipe with 45° and 90° turns; minimizes transporter turnover in small diameter pipe
- Inspection speed can be optimized to match pipe conditions and pipe size in 8" through 60" pipe



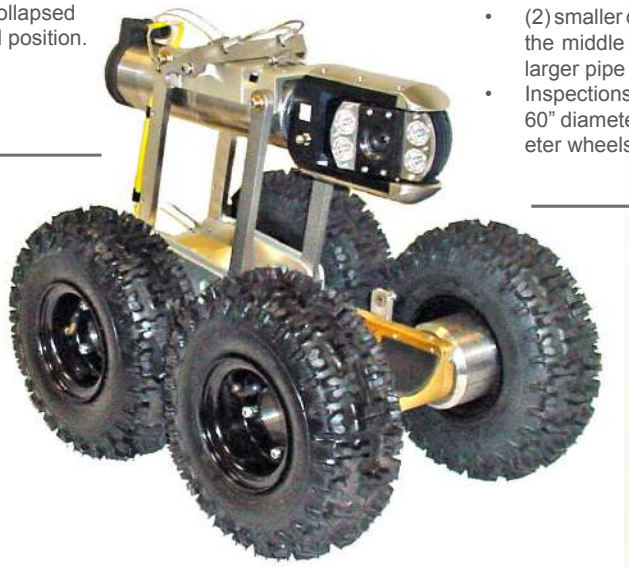
Pipe Ranger

Multi and Single Conductor III Wheeled Transporters

TV Systems

Camera Lift (optional)

- An optional manual or electric camera lift is provided for pipeline inspections ranging from 18" – 60" in diameter to prevent the need for an operator to enter the manhole during inspection and retrieval.
- Camera height varies from the collapsed position to 10.5" in the extended position.

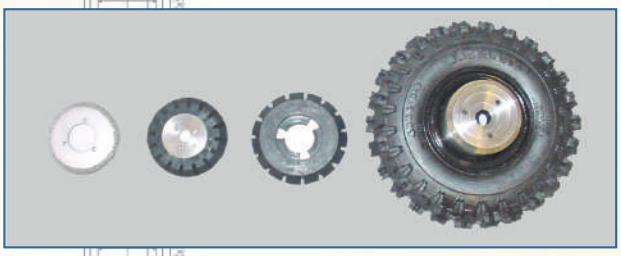


Tires

- (6) wheels are available in various sizes to maximize traction in each pipe size
- (2) smaller diameter wheels remain affixed to the middle axle to help negotiate offsets in larger pipe configurations
- Inspections can be performed in pipes up to 60" diameter with the addition of large diameter wheels

CUES

"The Standard of the Industry"



Multiple wheel sets are available to maximize bottom-clearance, traction, and optimum camera position!

Transporter

- Base unit includes (6) driven wheels for 8"-15" pipe; (4) driven wheels via multiple sets for 18"- 60" pipe
- Operates on 1500+ feet of multi-conductor video cable in suitable pipe conditions
- Includes a ***two-speed*** transmission to optimize traction by doubling the torque in difficult pipe conditions or in larger diameter pipe
- Comes equipped with self-propelled power forward, power reverse, and free wheel capabilities
- Constructed of brass, stainless steel, and aluminum alloy
- Unit is retrieved in the free wheel mode by the video cable reel to reduce the normal wear on the drive motor by 50%
- Compatible with pan and tilt, fixed view, straight line, and optical zoom pan and tilt cameras

Optional Equipment

Rear-viewing Camera

- Optional full-proportional steering to traverse curved pipe, turn at 90 degree elbows withi arger pipeline, turns at tees within larger pipeline, and conduct a complete 360 degree tur within its own radius
- Panel-mounted or stand-alone controller
- Manual or adjustable camera lift to optically center the camera in larger pipe
- Chevron tread or knobby tread for large diameter tires
- Rear-viewing camera to avoid obstacles when pulling back or driving in reverse (for use only with the multi-conductor version and must be used in conjunction with the manual or power lift assemblies)
- Lite Ranger (Pipe Ranger with an aluminum body) for customers that require a light-weight transporter
- High-traction tires for slippery pipe

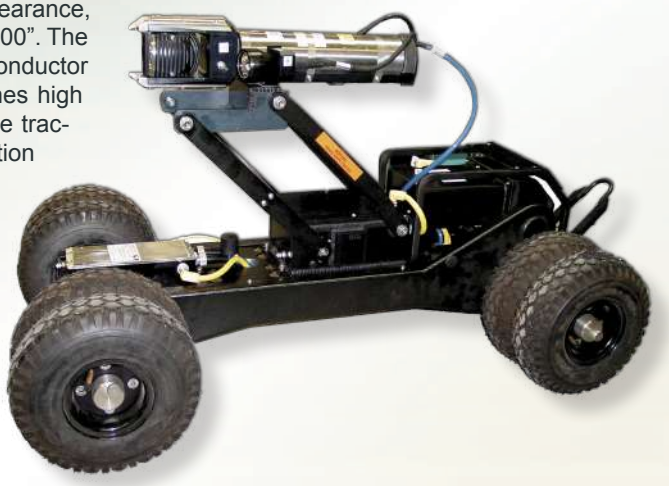
WECO INDUSTRIES

Mudmaster

Multi and Single Conductor III Wheeled Transporters

TV Systems

The Mudmaster is a camera transporter that's specifically designed with the necessary weight, power, high clearance, and all wheel drive for pipelines ranging from 24" to 200". The unit is designed to operate with 2000' of single-conductor cable or 1500' of multi-conductor cable and combines high ground clearance with pneumatic tires to provide the traction and camera stability that's required for operation under the most adverse pipeline conditions including high flow, deep mud, sand and large amounts of debris. Optional tandem wheels are available. The waterproof remote-operated camera lift can be inserted through a 19" diameter manhole with the camera in the lowest position to preclude the operator from confined space entry. This rugged all wheel drive robot can operate all CUES cameras, including OZ (Optical Zoom Pan and Tilt series) and Night Lite Pan and Tilt. Optional steerable units with remote or manual camera lifts are also available.



Operates with multi & single conductor systems!

Features & Benefits:

- Operates with CUES multi or single conductor systems
- Can operate on all truck-mounted and portable systems
- Operates with all CUES cameras
- Four or eight (tandem) wheels provide greater traction in all types of pipe, under all conditions
- Matched weight and power to maximize efficiency and capability
- Simple dual-wheel installation and captured hardware
- Remote-operated adjustable camera lift (optional) to position the camera for best available picture; stable center of gravity when the camera lift is extended
- Inspects 24" through 200" lines
- Rugged, durable and sealed to eliminate water intrusion
- 255 watt light system, variable, adjustable, 3 lamps (2-lamps for single-conductor III units- 170 watts total)
- The unit has variable speed drive, power forward, power reverse, and freewheel capabilities
- Operates on 2000' (maximum) of single conductor cable; 1500' of multi conductor cable
- Fits through a manhole with an inside diameter of 19"
- Provide maximum traction on wet or dry surfaces through all types of sediment
- Optional full proportional steering control to traverse meandering pipe with 45° and 90° turns; minimizes transporter turnover in small diameter pipe
- Utilizes all-wheel drive in conjunction with a low center of gravity to traverse and steer through pipelines
- Longer wheel base to prevent accidental roll-over
- Dual motors to ensure adequate power for longer inspections
- High-clearance for operation in debris-filled pipes

ETL LISTED US

Mudmaster

Multi and Single Conductor III Wheeled Transporters

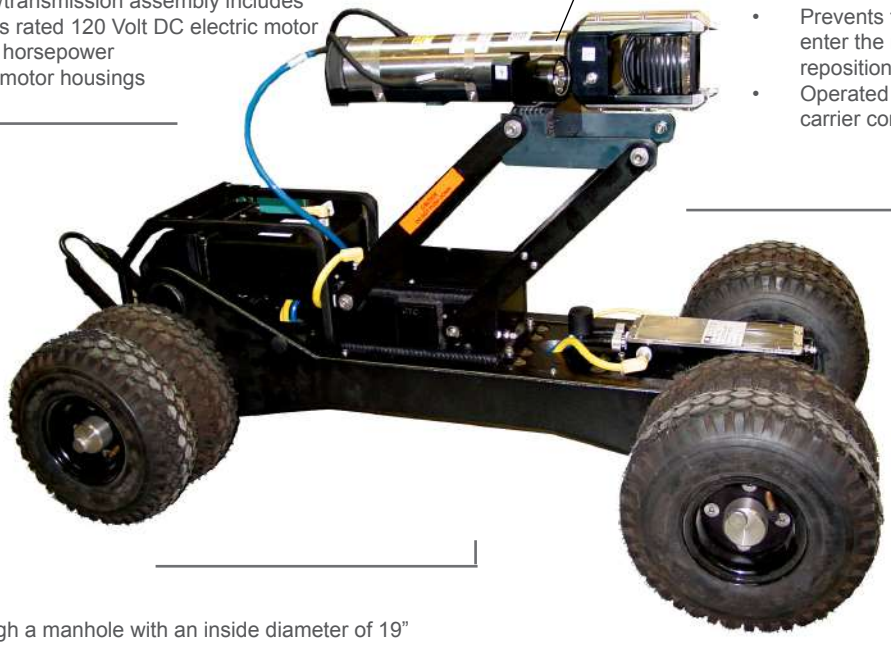
TV Systems

Drive System

- Permanent drive self-cleaning drive sprockets with "Perfect Coat" steel chains and fiberglass chain guards
- Flush drains for easy cleaning
- (2) independent, electric, motor/transmission assemblies
- Each motor/transmission assembly includes a continuous rated 120 Volt DC electric motor rated at 1/8 horsepower
- Waterproof motor housings

Light Assembly (shown below with a SCIII single conductor unit)

- 2 each independent 85 watt long life light assemblies (170watts)
- Waterproof black anodized aluminum housing, replaceable plug-in bulb, defused lens and locking mount
- Wired to operate independently (in parallel) to preclude total light failure



Camera Lift (optional)

- Electronic, remote controlled, infinitely variable camera lift
- Provides a center-of-pipe view
- Prevents the need for an operator to enter the manhole to position and/or reposition the camera height
- Operated from the remote camera carrier controller

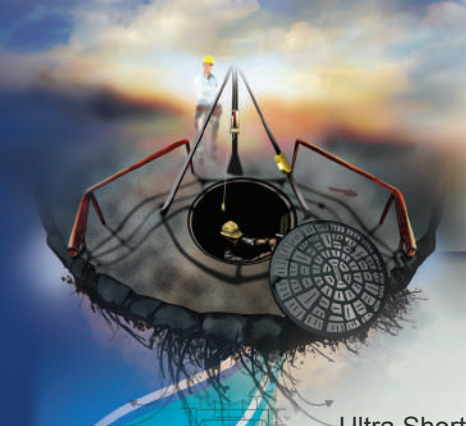
Transporter

- Fits through a manhole with an inside diameter of 19"
- Can complete 360 degree turns on open ground
- Retrieve the camera carrier in the free wheel mode by the video cable reel
- Includes one set of (8) 10.5" knobby tires with optional 12"chevron tread tires
- Incorporates dual four wheel drive for max traction on wet/dry surfaces through all types of sediment
- Wheelbase of 16" W x 41.5" L when using 10.5" diameter semi-pneumatic tires
- Includes variable speed drive, power forward, power reverse, and freewheel capabilities

Optional Equipment

"The Standard of the Industry"

- 425 watt light system, variable, adjustable with 5 lamps (multi-conductor only)
- Remote or manual camera lift to optically center the camera up to 60" diameter pipe
- Multiple wheel sizes to fit various pipe conditions; 12" diameter Chevron tires for maximum traction and ground clearance; optional liquid filled tires
- Optional full proportional steering control to traverse meandering pipe with 45 and 90 degree turns; minimizes transporter turnover in small diameter pipe

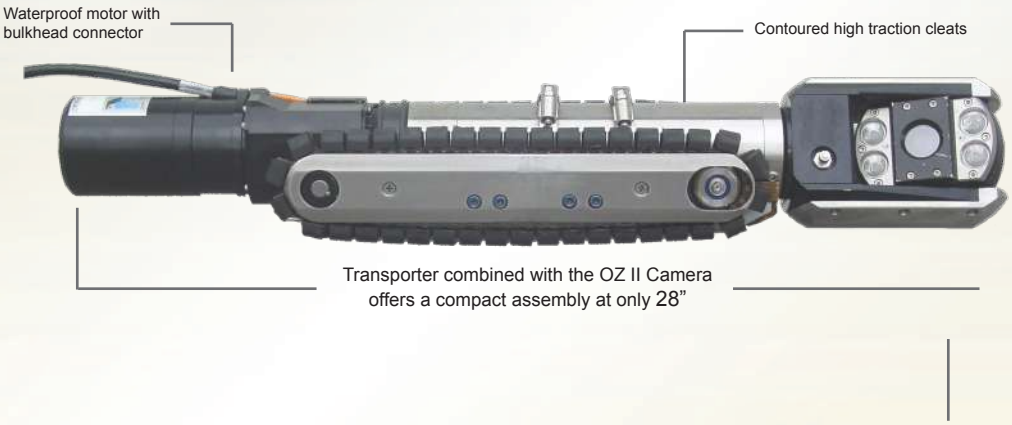


WECO INDUSTRIES

CUES TV Systems

Variable Weight Tracked Transporter

Ultra Shorty 21 offers the same quality and proven performance as the Ultra Shorty transporter but also provides a reduced length measuring under 21". This transporter can inspect 6" to 36" lines with major offsets and protruding laterals. Adapter blocks are available to optically center the camera in 30" to 36" lines. The Ultra Shorty 21 transporter combined with the CUES OZ II optical zoom camera offers you one of the most compact assemblies in the industry at only 28" achieving maximum clearance in 6" or 6" relined pipe. For added versatility, the Ultra Shorty 21 can be used with your Inspector General mini-system. A retro kit is available to convert the Ultra Shorty to an Ultra Shorty 21.



One of the most compact assemblies in the industry!

Features & Benefits:

- Reduced camera/tractor length to 28" with optical zoom pan & tilt camera [OZ II]; allows line entry through inverts with limited space and traverses 22, 45, and 90 degree sweeps in smaller diameter lines
- Proven transmission with power forward, freewheel and power reverse; high speed retract without running over cable and easy to back out of a dropped manhole
- Weighted track extenders that lift to optically center camera; greater weight for increased traction
- Waterproof motor with bulkhead connector; protection against leaks and motor damage
- Self-cleaning drive sprockets; maximum performance in mud and sand
- Contoured high traction cleats; maximum pipe wall contact for greater traction
- Greater than 1" top clearance and 1" bottom clearance in 6" lines; navigates through offsets and protruding laterals
- Operates in 6" to 36" lines; maximum versatility and applications
- Dual track fasteners; increases track and cleat life
- Inspection speed can be optimized to match pipe size and conditions

CUES
"The Standard of the Industry"

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WECO INDUSTRIES

NEW! Ultra Shorty III
Variable Weight Tracked Transporter

Ultra Shorty III offers the most compact track transporter in the industry today!

When used with the CUES OZ III optical zoom camera, the total length of the camera / transporter assembly is only 23.5” long, with a width of 4.25” when set up to inspect 6” pipe. Maximum clearance is provided for 6” and 6” relined pipe. The Ultra Shorty III can inspect 6” relined to 24” lines with major offsets and protruding

laterals. The Ultra Shorty III is provided with a built in protective housing and bulkhead connector to accommodate the mounting and direct connection of the CUES OZ III Zoom Pan and Tilt Camera. Weighted adapter blocks are available to optically center the camera, and increase traction and bottom clearance in 8” through 24” lines. For added versatility, the Ultra Shorty III with OZ III can be used with any multi-conductor system.

Maximize your advantage in 6” relined pipe!

Features & Benefits:

- Reduced camera/tractor length to 23.5” with optical zoom pan & tilt camera [OZ III]; allows line entry through inverts with limited space and traverses 22, 45, and 90 degree sweeps in smaller diameter lines
- Built in connector and protective housing for direct insertion of the OZIII camera. No camera inteface cables are required.
- Reduced width (4.25”) enables full pan and tilt / zoom capabilities in 6” relined pipe
- Proven transmission with power forward, freewheel and power reverse; high speed retract without running over the cable and easy to back out of a dropped manhole
- Weighted track extenders to optically center the camera; greater weight for increased traction, increase bottom clearance as pipe diameter increases
- Waterproof motor with bulkhead connector; protection against leaks and motor damage
- Self-cleaning drive sprockets; maximum performance in mud and sand
- Contoured high traction cleats; maximum pipe wall contact for greater traction
- Inspection speed can be optimized to match pipe size and conditions
- Operates in 6” relined to 24” lines; maximum versatility and applications
- Dual track fasteners; increases track and cleat life

CUES
“The Standard of the Industry”

WECO INDUSTRIES

TV Systems

LAMP II

Lateral & Mainline Probe II

ACCOMPLISH A ONE-PASS MAINLINE INSPECTION
WITH A SIMULTANEOUS ADJACENT LATERAL INSPECTION!

- Inspect Mainlines and Adjacent Lateral Services with One Inspection Run
- Lightweight / Compact Wheeled Unit! Pulls 1000 ft.
- Single Point Removal of Wheels
- Easily Fits Into a 6″ Line

"The Standard of the Industry"

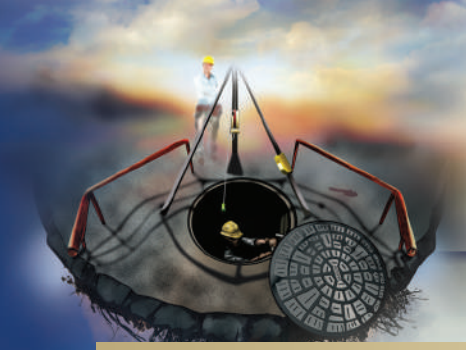
CUES

NEW Fiberglass Cable Option

Features and Benefits:

- Inspect 6”-30” mainlines and 3”-8” lateral services
- Front-mounted pan and tilt / zoom camera (40:1 Optical / Digital Zoom):
  - Completes mainline inspection and monitors lateral camera
  - Articulates to facilitate invert entry
  - Automatic centering
- Lateral camera Includes built-in auto upright feature keeps the image stabilized at all times:
  - Can be quickly removed to use the unit as a mainline transporter with the front-mounted pan and tilt / zoom camera
- Built-in Sonde in the lateral camera for locating
- Maximum clearance in a 6” diameter line
- Supplied with 4 sets of Wheels for 6”-30” lines
- Optional wheel sets are available - steel based for high traction
- Optional chutes are available to increase pipe size range to 36”
- Traverses 45 and 90 degree bends in lateral services
- Quick removal and insertion of wheel sets
- NEW Fiberglass Cable Option: up to 120 ft. push cable
- Stainless Steel Cable Option: up to 100 ft. push cable
- Rear tip-up connector
- Compact length

Maximum clearance in a 6” mainline!



LAMP II

Rear Viewing Camera

The unique, illuminated & rear-viewing color camera can be used with steel and fiberglass systems.

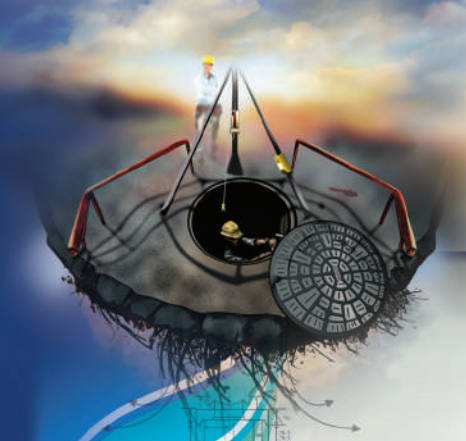
TV Systems

The LAMP II rear-viewing, color camera is designed for use with the steel or fiberglass push systems for 6” and larger configurations. The rear view camera is mounted to the LAMP II to enable cable management and help avoid obstacles or potential turnovers when retrieving the unit or driving in reverse. The rear view camera can be retrofit to existing LAMP II units.

Includes the following:

- a 12-pin to LAMP II rear-view adapter cable with locking connector is included with the assembly
- modular design uses two captive screws for quick installation
- LED light ring
- recommended for 6” and larger diameter pipe
- front/rear/lateral camera image is switched from the game pad or hand-held controller, truck panel, or power control unit, depending on the system configuration

*__IMPORTANT__: The LAMP II Rear-View Camera requires K2 firmware version R021 or later.



WECO INDUSTRIES

GRANITE XP
Pipeline Inspection and Integration Software

The Software Solution for Managing Your Asset Infrastructure

TV Systems

For over 40 years, CUES has provided innovative pipeline infrastructure inspection technology and equipment to the global Water/Wastewater industry.

From its 70,000 sq ft facility in Orlando, Florida, CUES combines highly refined electro-mechanical engineering disciplines with proven software engineering processes to produce nearly indestructible robotic equipment that is tightly integrated to a versatile software foundation, providing unrivaled solutions to the Water/Wastewater industry globally.

With the advent of various US regulatory compliance mandates such as GASB 34, CUES is committed to enabling its customers to conform to these requirements through the use of a comprehensive infrastructure inspection software solution called Granite XP.

Granite XP is architected using contemporary Microsoft technologies and offers unmatched flexibility, customization, and ease-of-use to meet the growing needs of the industry. Granite XP has many advantages which are critical to deploying a comprehensive Capacity Assurance, Management, Operation, and Maintenance program (CMOM) that is simultaneously aligned with Federal regulations.

What's unique about Granite XP and why should I care?

The Federal Government's *Governmental Accounting Standards Board* Statement No. 34 (GASB 34), has mandated that municipal utilities report current values for their infrastructure in their annual financial reports. In the past, municipalities did not have to report on the value of all capital assets which created unacceptable levels of risk to bond underwriters who are critical to ensuring that municipal infrastructure rehabilitation projects get funded sufficiently to support EPA guidelines. Failing to comply can carry an enormous financial penalty to a municipality, and in certain conditions, criminal liability to senior managers. For these reasons, CUES proactively innovated a solution which assists municipalities with these mandates to create computerized asset inventories which allow asset values to be documented and calculated more accurately.

Deploy a Comprehensive CMOM program that conforms to GASB 34 regulations!

....the difference between **asset-based** and **inspection-based** software.

How is Granite XP different than the other available packages to meet these mandates?

Because Granite XP is designed with an asset-based architecture, the ability to view infrastructure at an asset level is possible. Unlike any of its competitors in the space, Granite XP offers 2 ways to organize and view pipeline inspections: the classic "project-based" method and the "asset-based" view of pipeline infrastructure. We think the differences are critical for a regulated entity to meet or exceed the asset-management requirements for GASB 34, CMOM and the EPA.

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WECO INDUSTRIES

GRANITE XP
Pipeline Inspection and Integration Software

...Continued from Previous Page

There are two significant limitations associated with project-based software packages that Granite XP overcomes. The first limitation occurs when a new inspection is being performed on an existing physical location, or asset. An operator in the field can create a new inspection without any visibility to previously performed inspections done on the same location. Thus, there is a chance that the operator could be entering in the wrong data associated with that asset and the project-based software would offer him no help in alerting him to this fact. Consequently, the operator could record the asset as being eight inch pipe when the previous inspections correctly recorded that the pipe was actually six inch pipe. Project-based inspection systems have no ability to link the past to the present and are unable to remind people that, for example, they are about to change an attribute of the asset which conflicts with previously completed inspections. When bad data is entered into the system it is very expensive and time consuming to fix. Granite XP tracks all the history and can alert an operator to the fact that they are about to change something which was recorded differently during a previous inspection, and this reduces costly errors.

The second significant limitation associated with project-based software packages is that inspections performed on physical locations or assets are stored in multiple separate projects. Each project becomes its own separate database composed of manholes, pipe segments, laterals, etc. Thus, when the time comes to review the entire infrastructure or a particular subset such as a sub-basin, all of the associated projects created in the target area must be painstakingly reviewed and stitched together to answer frequently asked questions such as “show me all the inspection history on pipe segment XYZ or manhole ABC”. Viewing historical data at the asset level becomes very difficult to accomplish with project-based inspection packages when this information is grouped into multiple separate projects. Some utilities with large systems even hire costly database administrators to merge this information on a full time basis due to this limitation. Managing infrastructure data in individual project databases complicates the process of proving to regulators that an effective CMOM program is in place. An asset-based system like Granite XP on the other hand is able to track everything at the asset level and seamlessly integrate this information to enterprise asset management and GIS systems. This feature successfully provides the granularity that decision makers, and sometimes regulators, require for an effective CMOM program.

Granite XP Editions

Which one is right for you?

Whether you’re a truck operator, an IT professional, an Engineering firm, a municipality, or a GIS administrator, the CUES Granite XP Infrastructure Management Software is a solution designed to integrate all aspects of the TV inspection process. In order to meet the needs of different users, Granite XP offers 4 different Editions to meet your infrastructure assessment needs:

Inspection Edition - allows users to perform pipeline inspections out in the field often connected to camera systems to capture, assess and store inspection data.

Office Edition - allows users to manage inspection information and create customized inspection analysis in the form of reports, videos, still pictures, and database files to meet a wide array of data requirements. Capable of running on Enterprise databases such as Oracle 9i and SQL Server, the Granite XP Office Edition offers unmatched data synchronization power to enable multi-truck environments to manage disparate data within one master database. Additionally the Office Edition can import, export and manipulate data to meet virtually any requirement from GIS to PACP.

Engineering Edition - allows users to modify inspections and observations gathered in the field, to review existing data, synchronize inspections, capture images from playback and generate reports.

Viewer Edition - allows users to review and share information gathered during inspections and generate reports.

WECO INDUSTRIES

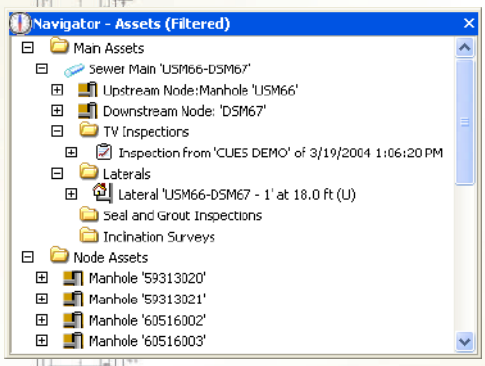
GRANITE XP
Pipeline Inspection and Integration Software

Key Advantages Unique to Granite XP!

Granite XP offers built-in flexibility and extensibility for continuous innovation and easy upgrading!

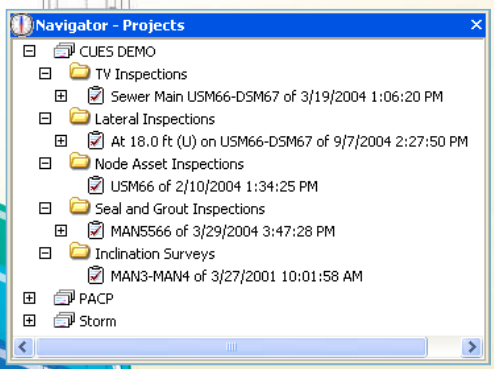
Precise Asset Data Enables Effective Regulatory Compliance!

How can you tell if a pipeline inspection package is Asset-based?



Assets

Browse/display by Assets



Projects

Browse/display by Projects

Can your software import an entire asset database? In Granite XP, separate database tables are created and maintained which allow an entire GIS asset database to be imported into the software and enable the information to be constantly updated (synchronized) with 'official' asset information from the municipality or City's master GIS database. We know of no other package which can do this.

This means that people are all able to look at the same master data and able to eliminate costly manual data entry errors and avoid asset naming discrepancies often found in inspection-based systems. Imperfect information often originates out in the field in trucks which creates cascading errors and inefficiencies throughout the entire municipality to correct and translate inspection information into precise *asset* information. With Granite XP, what used to take hours of manual data entry can now be performed more efficiently and exactly, with the click of a mouse allowing enormous productivity gains by your most important assets....your employees!

Precise Asset data enables effective regulatory compliance as well as creating the foundation for a proactive maintenance program. But Granite XP can still collect data the old fashioned way using the inspection-based method, should you prefer this, while simultaneously allowing for an Asset-based approach. You decide how you'd like to view the data - and that's one of the many powerful features that Granite XP provides.

Granite XP offers two ways to organize and display pipeline inspections: the classic "project-based" method and the "asset-based" view of pipeline infrastructure. A project is defined as a set of inspections. The "Project Navigator" will display the set of inspections defined by the user, where as the "Asset Navigator" will display all of the historical inspections of a particular asset.

WECO INDUSTRIES

GRANITE XP
Pipeline Inspection and Integration Software

Extensibility - Granite XP is "future-proof"!

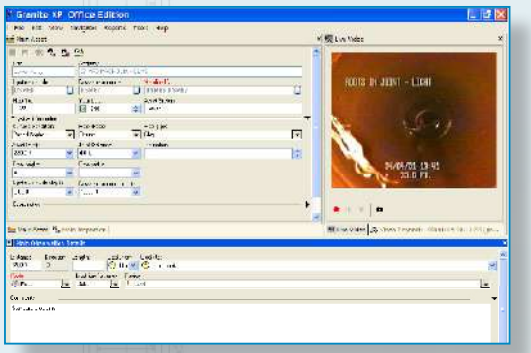
The revolutionary flexibility of Granite XP comes from the use of software plug-ins. Plug-ins provide the ability to add new features to Granite XP so that the core application can continually grow and accept new technologies from the vast spectrum of robotic devices that will enter the industry . With the use of plug-ins, third-party software, custom-designed modules, and asset infrastructure management systems can be easily integrated without rebuilding the program! What this means to our customers is that they can purchase various technology "modules" that they require on an "as needed" basis. When new equipment is purchased, a specific software module can be purchased as well when the time is right for your organization.

Multiple Compatibility Modes!

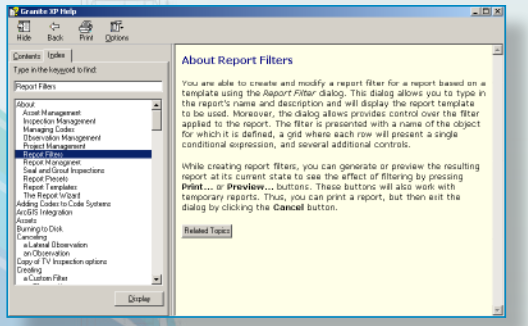
Compatibility Modes ensure that files and reports are fully compatible with other soft ware products and standards. Compatibility Modes that are currently available with Granite XP include Standard, Hansen, Azteca Cityworks, PACP, WRc, and WinCan. Each compatibility mode displays the correct fields and logic required for the selected system. You can activate multiple compatibility modes at the same time or change the mode without having to load different software! Contractors and Engineering firms who serve multiple customers can leverage Granite XP to accommodate the varying data format needs of their customers.

Flexible, Customizable Code Systems!

Granite XP includes a Code Editor that's equipped with several standard code systems, including PACP, WRc, and supports user-defined code systems. Each project can have it's own code system and measurement units based on individual inspection requirements! A code system not only includes observation codes, but also pipe types, surface condition, operators, etc. Code "hotkeys" can also be implemented per your preferences and can be linked to actions, such as "Start Lateral Inspection". Granite XP also provides a quick and easy way to customize the fields and labels based on your specific requirements!



GRANITE XP'S SIMPLE USER INTERFACE



GRANITE XP'S INTEGRATED ONLINE HELP

Microsoft Windows™ Technology!

Granite XP uses familiar Microsoft Windows™ layout standards to provide simple, intuitive layout screens that are customizable to meet your needs depending on your preferences, including:

- Use of tool bars for operation
- Drop-down menus and auto-complete feature for quick and accurate selection and data entry
- Detailed HELP files available within the program
- Ability to create custom layouts with movable "panes" to create and save your favorite layout
- Easy navigation provided by Windows™ user-friendly tree-structure

ESRI Technology AUTHORIZED BUSINESS PARTNER

Video Access By PENINSULAR TECHNOLOGIES

PACP PIPELINE ASSESSMENT & CERTIFICATION PROGRAM Certified Software

WECO INDUSTRIES

GRANITE XP
Pipeline Inspection and Integration Software

Key Advantages Unique to Granite XP!

Granite XP makes the inspection process faster and easier with less manual error!

Robust Data Management Capabilities- Synchronization & Export

Granite XP has been designed from the ground up to facilitate the management of data and can support, synchronize, **and run on** multiple enterprise databases such as **Oracle** and **SQL Server** in addition to Microsoft Access.

Viewing and sharing data among disparate locations is very complex. Two extremely important capabilities in any data management system are Synchronization and Export:

- Synchronization is the process of bringing together two separate databases comprised of data, video, and pictures to make them each identical. Users with multiple trucks or separate offices can synchronize data between one another and/or with a master database from the GIS department, to ensure local and remote databases are identical. Synchronization assures that records are not duplicated and that changes made to an inspection are transferred identically to another location. If similar but conflicting information is found during synchronization, Granite XP allows the user to determine whether to update or skip a particular record.

- Export is the process of selecting portions of the original data, video, and pictures, and creating a complete and independent copy of this information which can then be used by any Granite XP Edition. This is especially useful for the initial creation of truck databases. Office users can select the Assets and Projects to transfer to a particular database. All or part of a database can be replicated from Granite XP, with or without videos and pictures. This new file can be burned to a CD/DVD and brought into the office from the truck, or vice versa.

Optional software modules available in Granite XP:

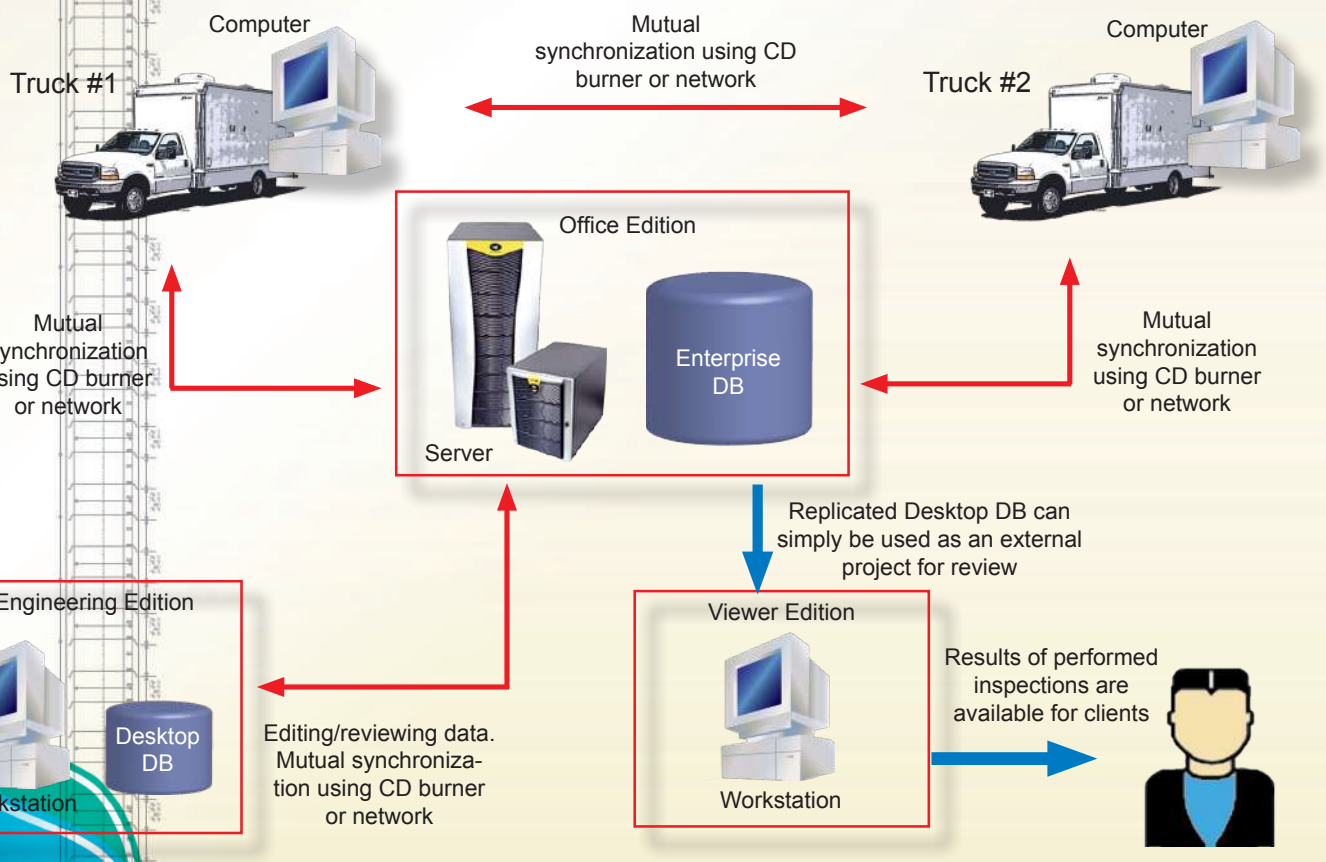
- ESRI Module - bi-directional synchronization with ArcView
- GPS Plug-in Module - supports GPS devices (NMEA-0183 compatible), display and obtain current GPS coordinates
- Manhole, Structure, and Nodes Module - capture inspection and observation details, which are all linked to the structure, node or manhole
- PACP Export Module (NAASCO certified)
- Inclination Module - accurately capture and graph the slope of the pipe and evaluate pipe conditions as the inspection is performed
- Lateral Assets Module - capture inspection data, observation details, video, and pictures, which are all linked to the lateral structure
- WRc Compatibility and Export Module (Sewer.dat & Sewer1.dat)
- Hansen Formula-Based Sewer Module - certified bi-directional interface to all Hansen v7x
- Hansen Storm Module - certified bi-directional interface to all Hansen v7x
- Azteca Cityworks Module - bi-directional interface to Azteca Cityworks
- WinCan Export Module - allows data to be collected and exported to WinCan v7
- Seal & Grout Module - record pressure changes during air tests and graph pressure tests that show repair integrity and track grout usage
- Scheduler Module - allows you to schedule reoccurring tasks for transferring data, media files, and synchronizing databases. Plan daily, weekly or monthly schedules for automatically transfer or archive data.

WECO INDUSTRIES

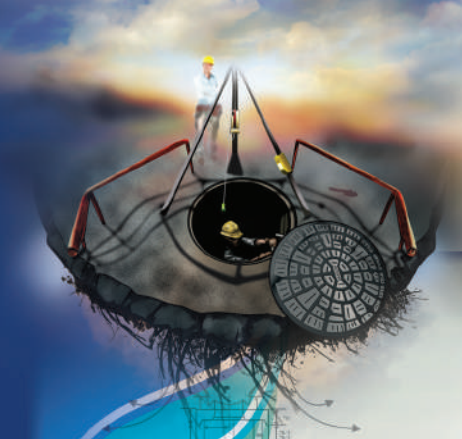
GRANITE XP
Pipeline Inspection and Integration Software

Generate a positive ROI!

An investment in Granite XP will generate a significant return on your investment because the software has been architected on Microsoft technology which can be leveraged for many years to come. The CUES Software Division will continue to broaden and enhance Granite XP to meet the needs of the changing Water/Wastewater industry. If you need help evaluating technology, have questions, or need solutions to maximize process efficiency gains for your organization, contact the CUES Software Division for more information at 800-327-7791 or email GXPinfo@cuesinc.com. The CUES Software Division can provide industry-specific consulting and offers a team of certified experts to help identify solutions to your specific Water/Wastewater needs. Make the investment in Granite XP today – your assets depend on it!



Granite XP is enterprise-enabled and has the ability to support and synchronize with multiple data sources, such as Microsoft Access, Oracle, or SQL Server.



WECO INDUSTRIES

GRANITE XP
Pipeline Inspection and Integration Software

TV Systems

Key Features of Granite XP!

Granite XP includes special features that allow you to get the most from your infrastructure management system!

List of Key Features:

- Ability to import ESRI Asset Data into Granite XP from a Master GIS database
- “Single click” CD/DVD burning makes it simple
- “Single click” report creation and picture printing
- Create standard and custom Reports with built-in templates which include your logo and can be saved in PDF, HTML, or ASCII file format and can be emailed from Granite XP
- Export data in multiple formats including Oracle, SQL, Access, PACP, WRc Sewer.dat, Sewer1.dat, Hansen, Azteca City- works, WinCan and ASCII
- Powerful Search using keywords and Filtering capabilities by projects, assets, inspections, and observations
- Perform reverse setups in a single inspection, “upstream against the flow” or “downstream with the flow” to display upstream and downstream observations on the same inspection
- View live video and images simultaneously or select an observation on the Pipe Graph to access that precise point in a MPEG I, II & IV video instantly
- Software-based titling for post processing in the office
- Customize Granite XP with components of its source code to leverage your internal IT resources who maintain your existing systems
- Two Optional Annual Support Plans to choose from

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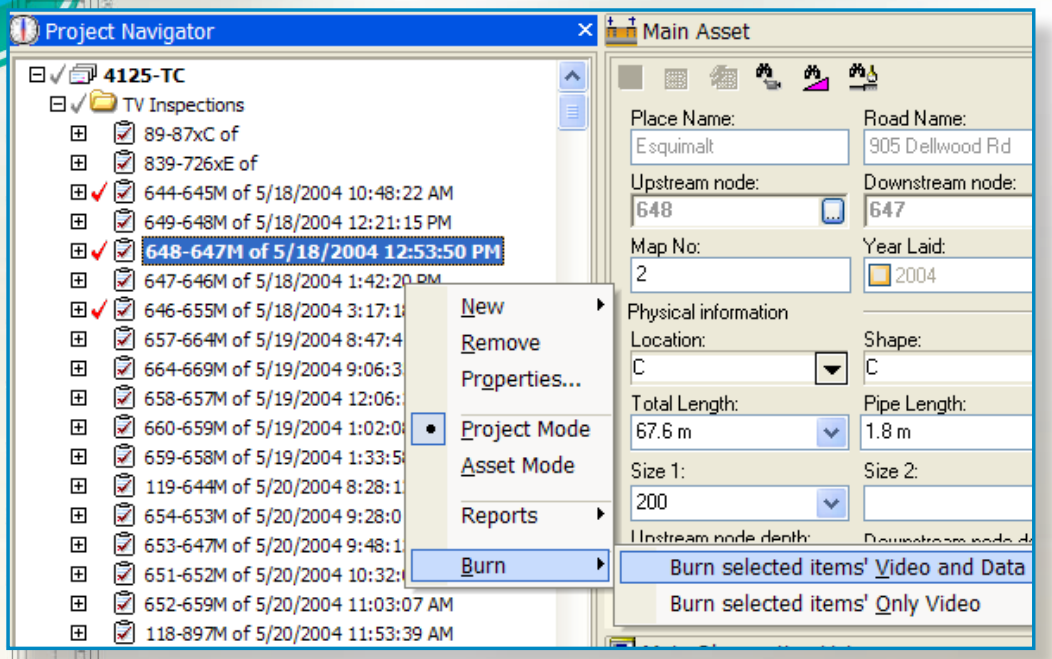
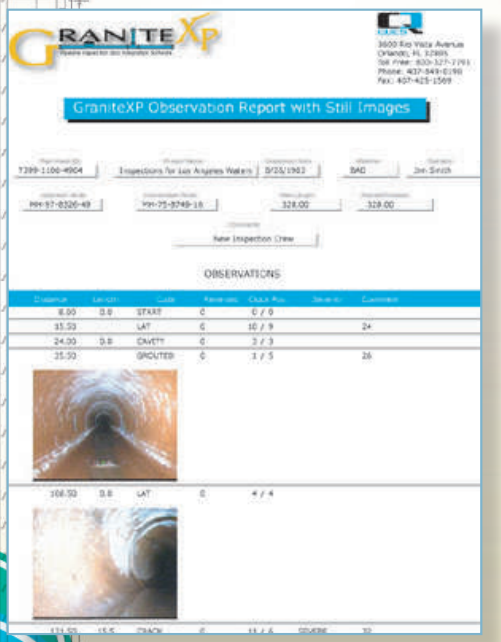
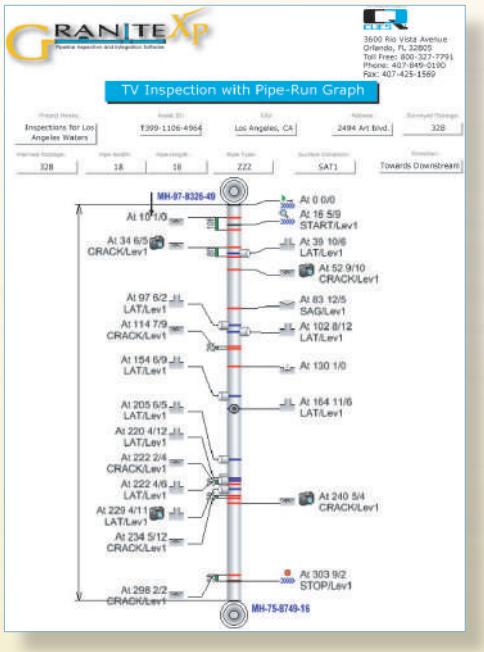
GRANITE XP
Pipeline Inspection and Integration Software



GRANITE XP'S PROJECT NAVIGATOR WITH ONE-CLICK BURN





GRANITE XP'S REPORT CREATION AND PICTURE PRINTING

WECO INDUSTRIES

"The Standard of the Industry"

CUES

K2 Series

Versatility, durability, and reliable performance!
The K2 portable Base Station can be mounted in a wide range of vehicles, trailers, or used as a stand-alone system. The compact K2 Base Station is supplied with a choice of an ergonomic wireless hand-held control or game pad control that operates all CUES transporters and pan and tilt / zoom cameras.

- Portable platform
- Auto payout reel
- Light, field-packable
- Runs all CUES transporters and pan/tilt/zoom cameras
- Optional transporter wheel sets for all pipe conditions
- Wireless ergonomic hand control for complete system management
- Increased cable capacity/compact reel
- K2 can be stand-alone, trailer, or vehicle-mounted
- Collapsible heavy-duty handle/plus grab handles to facilitate portability
- Optional semi-pneumatic wheels for portable cable reel - single point removal

Compact Pipe Ranger (CPR)

Pipe Ranger

Use with your CUES multi-conductor mainline steerable and non-steerable transporters!

Various wheel sets are available to maximize bottom clearance, traction, and optimum camera position!

PROUDLY MADE IN THE USA

WECO INDUSTRIES

TV Systems

CLIMB TO NEW HEIGHTS

Wireless Control of Cameras, Transporters, & Reels

K2 offers various mounting options to meet your needs!

K2 Base Station features built-in diagnostics for the entire system, including the camera, transporter, and video cable. The portable K-2 video cable reel features automatic payout to minimize cable drag on the self-propelled transporter / camera to maximize pull distance in the pipe and can operate the full line of CUES transporters.

The K2 reel control console includes variable speed control, automatic levelwind, and an emergency shutoff. Increased video cable reel capacity for 1200 ft. of high strength video cable is provided to maximize distance for each inspection run. Transport handles are built into the K-2 with an option for a collapsible heavy-duty handle and semi-pneumatic wheels to facilitate portability.

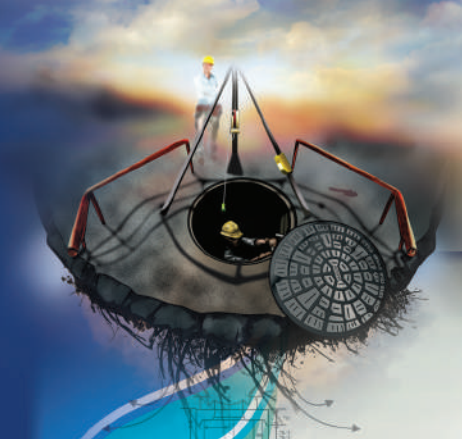
The K2 Base Station can be mounted on the built-in docking port of the video cable reel or staged independent from the reel. It includes a built in video overlay unit with programmable observation codes, alpha-numeric titling, and an on-screen footage display. K2 series options include Granite XP asset inspection / decision support software and DVD or digital recorders.

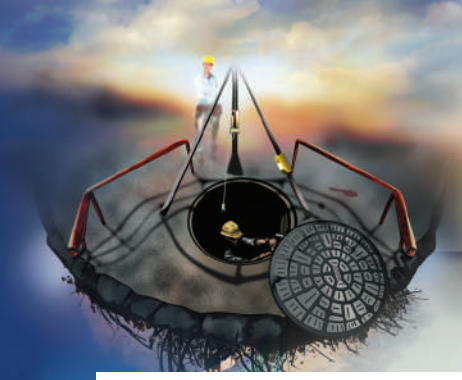
RUGGED, DURABLE, VERSATILE!

K2 Dolly-Mounted with DVR-SD Digital Video Recorder

K2 Truck/Trailer-Mounted

Optional Heavy-Duty Handles





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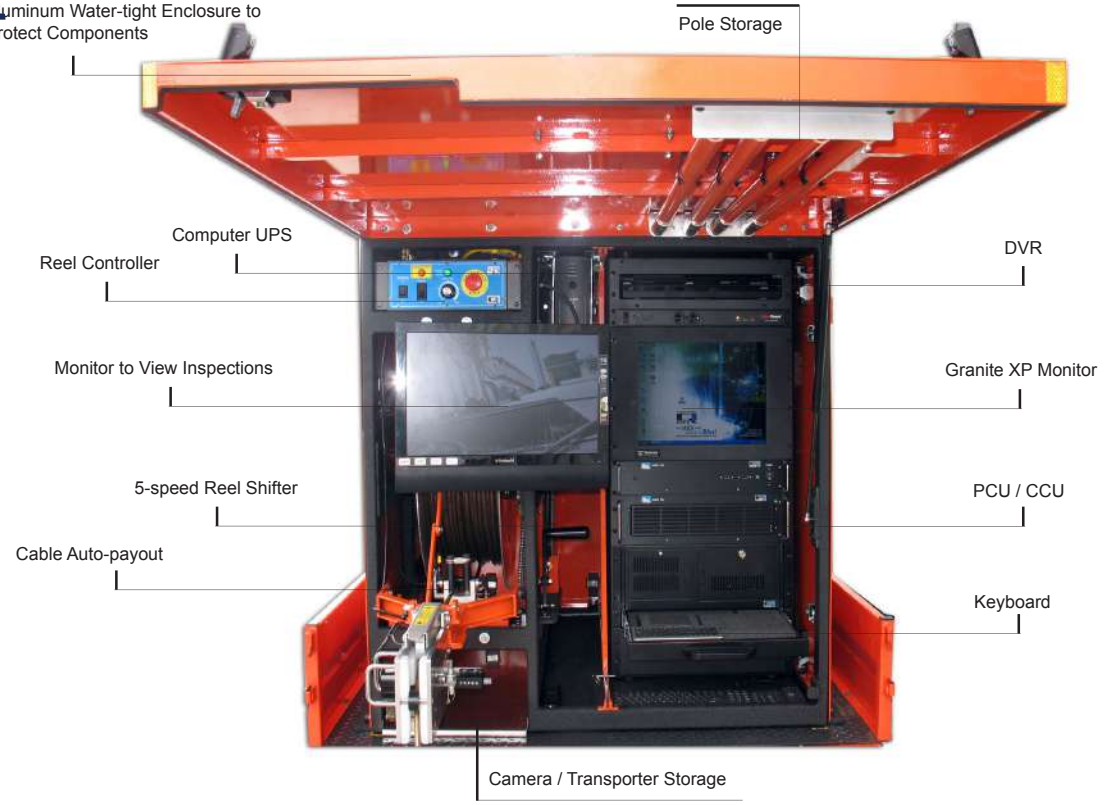
CUES

K2 Summit Wireless Base Station

Portable Video Inspection System

CTV Systems



The system equipment can be configured based on your needs!

Made in USA

"The Standard of the Industry"

Mini-Push 20/20

Portable Mini-mainline System

The CUES Mini-Push 20/20 is an all-inclusive, ready-to-use, portable, color video inspection system with a built-in battery power supply and battery charger. The Mini-Push 20/20 uses proven video technology to view and record pipelines from 2" in diameter and larger and can operate with existing CUES PS2, PS3 and self-upright cameras. The 6.4" color LCD monitor is adjustable with a fold down position for protection during transport and includes a sun shield for optimal viewing in sunlight. This lightweight system includes wheels for easy portability and a balanced footprint for stability. Manufactured for rugged reliability and designed to handle rigorous field use, the Mini-Push 20/20 is a versatile tool for any portable system user.

Lightweight system for easy portability!

Features & Benefits:

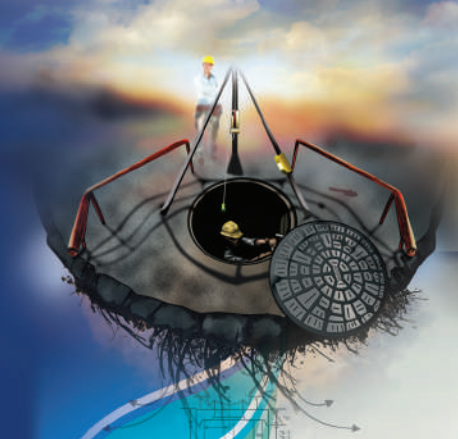
- Alphanumeric video titling for on-screen footage display and comments
- 6.4" color LCD monitor with adjustable 3-axis display angle
- Universal AC power input of 85-264 VAC at 50/60 Hz
- The system operates using an internal 12-volt battery with battery charger
- Weather/water resistant aluminum electronics enclosure
- Operating instructions included on front of electronics enclosure
- Built-in connections for optional VCR
- Over voltage protection for built in camera lightring
- Reel assembly includes a footage counter on the basket hub and cable contact is not required
- 100' push cable (standard)
- PS3 standard 1.5" diameter color camera for 2" - 8" pipe
  - High resolution - 450+ lines ; high sensitivity - 0.3 lux
  - Long life LED light head with light intensity control
- Operates with a PS3, PS2, and self-upright camera
- Operates with PS2 mini/mainline camera for 3" - 15" pipes
- Operates with any constant tone, 512 Hz locator/receiver

Optional MP 20/20 Equipment:

- An optional configuration with a larger basket size is available to accommodate up to 500' of .517" push cable
- An optional DVR-SD Digital Video Recorder, mounted on the MP 2020 in a protective case, is available to digitally record the video inspection and audio.
- High-brightness, 700 nit sunlight-readable, LCD display
- Keyboard to create defect and commentary entry
- 200' push cable
- Mainline translator module and interface cable for operation with a standard multi-conductor truck
- VCR housed in a transport case, AC or DC option
- Built-in locator/receiver for accurate camera location in metallic and non-metallic pipes
- PS2 or self-upright camera
- Pneumatic tires are available to transport the MP2020 across rough terrain

An optional DVR-SD is available to record and play back your manhole and pipeline inspections.

A distance counter and titler, built into the PCU, displays distance and comments on the video monitor.



WECO INDUSTRIES

MPLUS+

PORTABLE LATERAL & MINI-MAINLINE PUSH SYSTEM

"The Standard of the Industry"

CUES

MPLUS+

PORTABLE LATERAL & MINI-MAINLINE PUSH SYSTEM

The CUES MPlus+ offers the most flexible and feature packed lateral and mini-mainline push system on the market. The MPlus+ modular design enables easy operation with its refined All-In-One set up, but additionally offers flexibility by facilitating quick removal of the control unit to be used separately for off road or remote jobsites or to accommodate compact storage. The advanced MPlus+ system stands out by integrating all of the most sought after features including video titling, video observation coding, digital recording and portability into an easy to use and intuitive package. This lightweight system includes large and durable wheels for easy portability and a balanced footprint for stability. Manufactured for rugged reliability and designed to handle rigorous field use, the MPlus+ is the most versatile Push system available in the market today.

FEATURES & BENEFITS

- Full featured control unit offers Advanced Text Writing, Observation Coding, Digital Recording and more in a weather/water resistant enclosure.
- The large 8.4" industrial grade Optically Bonded monitor offers maximum viewing in adverse conditions.
- Advanced Operator Interface simplifies functions with an easy to understand and intuitive interface.
- Multiple camera heads are available for 2" through 12" pipelines. Advanced camera head design and technology gives you the best picture in any pipe condition. Available with self- leveling and built-in sonde.
- Extensive Video Titling includes multiple predefined and customizable screens for job documentation. Customized screens and operator data are retained in memory for efficient operation.
- The Advanced Digital Recorder features video recording and playback and additionally captures screenshot picture images. The operation is fully integrated with easy to understand intuitive controls.
- Operate the MPlus+ anywhere with either 110 AC mains power, 12VDC power or the advanced internal Li-Ion built-in battery delivering hours of use on a single charge.
- The durable coiler will deliver years of service with its heavy gauge and corrosion resistant Stainless Steel construction.
- Push Cable features a durable Hytrel jacket and an advanced fiberglass rod designed for longer pushes and extended life.
- Optional adapters are available for the MPlus+ to work with truck mounted and portable mainline systems.
- Optional built in line tracing feature

MPLUS+

CONTROLLER

- 8.4" optically bonded sunlight readable LCD monitor with LED backlighting.
  - Advanced technology increases readability in bright conditions by dramatically improving contrast.
  - The durability and ruggedness is dramatically improved by using an optically bonded glass shield to resist scratches, impacts, and moisture intrusion.
  - The advanced MPlus+ monitor design eliminates condensation and fogging on the display surface.
  - The Control Unit features a quick connect mount for attaching to the coiler. The advanced Quick-Connect "click-lock" feature is a no-handed locking mechanism for simple and secure mounting. Adjustable in 3 axes for optimal viewing.
- Digital video and still image recording with an on-screen menu. The integrated controls feature intuitive buttons for all recording and playback functions.
  - Record directly to SD memory cards which are recognized to withstand the toughest conditions and are waterproof, shockproof, and x-ray proof and can operate in temperatures ranging from -13 to 185 deg F.
  - A USB port is included for transferring digital video and still images directly from your MPlus+ to your computer.
  - On-Screen recording indicators and intuitive menus reduces costly errors and rework.
- System Interface connection offers flexibility for unique applications and includes Video, Audio, and 12VDC outputs and a Video input.
- Quadrature Footage interface to external asset management software and Granite XP
- Universal AC power input of 85-264 VAC at 50/60 Hz and 12VDC input
- Internal Li-Ion Battery with Intellicharge technology offers 4+ hours of continuous use on one charge.
- Heavy duty weather/water resistant injection molded control unit.

MPLUS+

COILER & CAMERA

- 100, 200, 300 and 350 push cable lengths available
  - Industry leading durable Hytrel jacket.
  - Fiberglass push rod optimized for longer pushes.
- On-screen distance counter
  - Configurable for any installed push rod length.
  - Customizable on-screen position and unit settings.
- SR3 1 ½" diameter Self-Leveling Color Camera for 2"-12" pipelines.
  - High Resolution 450+ lines, .3lux high sensitivity
  - High intensity LED lighting with variable intensity and alignment.
- Powerful 512Hz sonde for locating in metallic and non-metallic pipelines.
  - Line Trace post for use with optional line transmitters and inductive signal clamp.
    - Compatible with multiple frequencies including 128 Hz, 1kHz, 8 Hz, 33kHz – Maximum 10 Watts.

OPTIONAL EQUIPMENT

- An optional configuration with a larger basket size is available to accommodate up to 500ft of .517" push cable.
- Wireless digital video for operation with a mainline truck or any other remote location with receiver.
- Compatible with PS2 and PS3 camera heads
- Optional Locator/Receiver for accurate camera location in metallic and non-metallic pipelines
- Mainline interface cable for operation with a standard CUES multi-conductor TV truck.

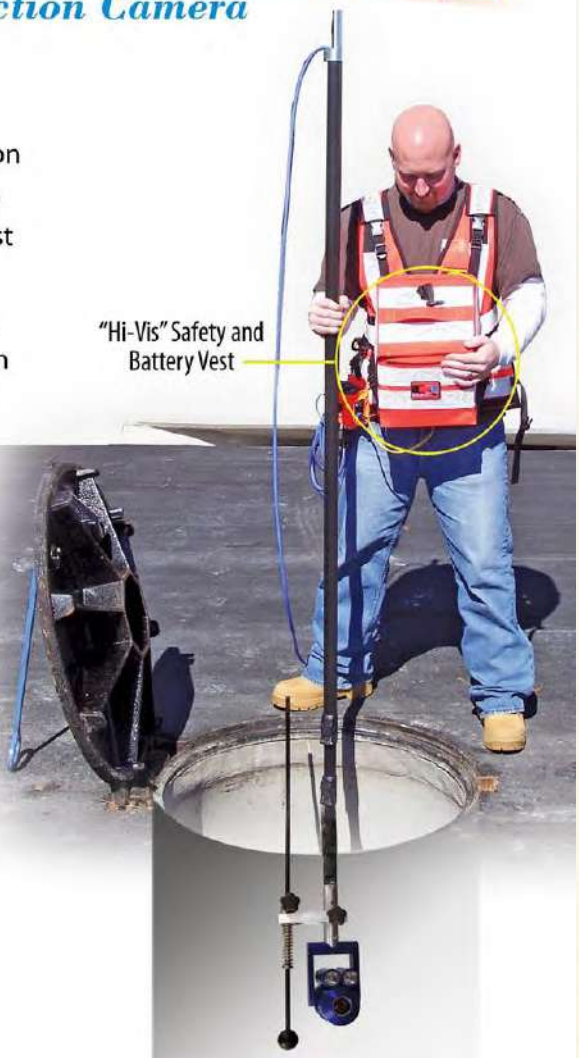
"The Standard of the Industry"

WECO INDUSTRIES

CUES QZ2

Portable Video Inspection Camera

- Zoom
- Video Image Stabilization
- Digital Video and Audio
- ANSI Class 2 "Hi-Vis" Vest
- Light Weight
- Calibrated HID Lighting
- Single-Person Operation
- Meets or Exceeds IP68



Dual HID Lights

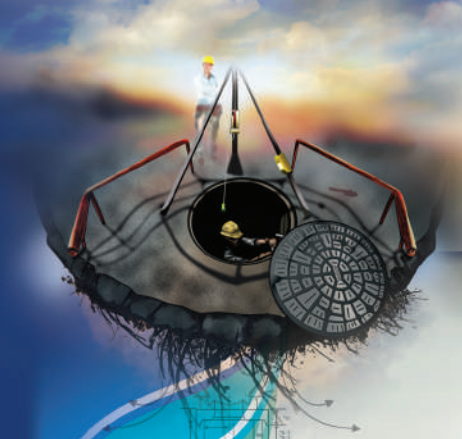
The QZ2 is a lightweight, portable, video inspection system that can be operated by one person! Perform swift inspections and surveys of pipelines, wet wells, manholes, sewer treatment plants, steam generators, tanks, vessels, and other areas that are difficult to reach. Accomplish safe-viewing in industrial or environmental areas with no man entry! The QZ2 is mounted on a lightweight carbon fiber adjustable telescopic pole that can extend up to 24' (an optional 34' pole is available). It features a 420:1 (35 optical/12 digital) zoom with automatic focus and self-contained waterproof lighting for enhanced detailed viewing of cracks, breaks, pipe separations, scale, and various defect conditions from hundreds of feet away! QZ2 can be used to locate lateral services or to identify a blockage at a manhole, access port, or other entry point without entering the line or structure. NEW! The QZ2 now includes (2) dual wattage (9.5w and 14w), high-intensity discharge lights to provide maximum lighting capabilities in all pipe conditions. The HID brightness has (2) user-selectable settings. The HID lights generate less heat, require lower power consumption, and provide brighter, more intense light!

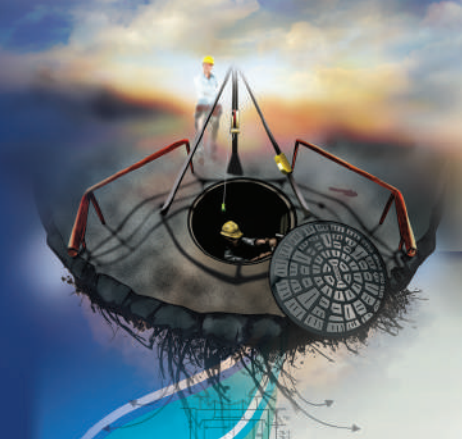
Fast...Zoom...Focus

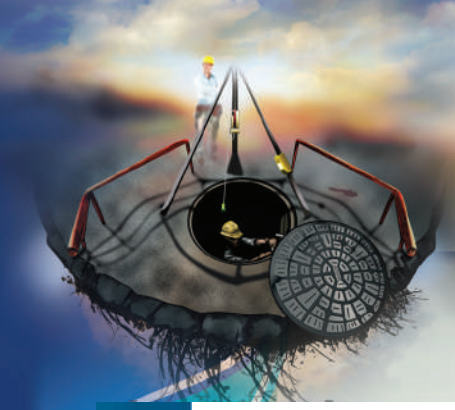
Fast & Accurate Pipeline Inspection & Condition Assessment

"The Standard of the Industry"

CUES







"The Standard of the Industry"

Lite Stick

Customer Choice Package Options

The CUES Lite-Stick easily connects to any existing TV system. The stand-alone capability and wireless video options allow the customers to choose the packages that are best suited for them. Start with the base unit and configure your system the way you want it.

Lite Stick Base Unit

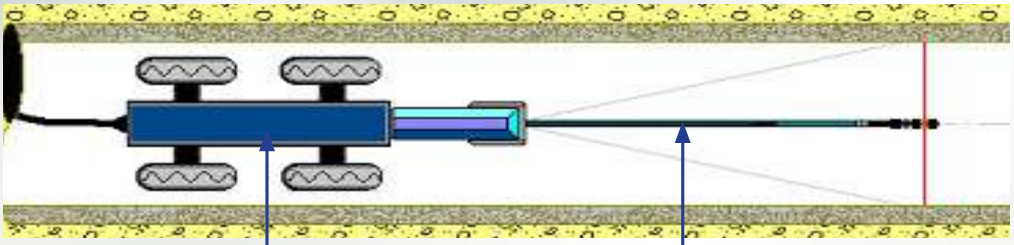
The Lite-Stick base package includes a built-in wireless video transmitter and battery assembly, a color/IR camera, built-in LED lightring with IR lamps, a lightweight telescopic inspection pole for 6.5' to 18.5' and a camera head tilting assembly that allows the operator to adjust the head to any angle for variable inspection requirements.

Customer Choice Packages

The base Lite-Stick unit must be used in conjunction with at least one of the Customer Choice packages listed below for operation.

- 6.4" Color LCD screen, Class 2 ANSI Safety Vest, Battery package with 10AH IMH battery and charger.
- Sony DVR with 4" LCD Screen - Includes the high quality Sony DVR (Digital Video Recorder) with a 4" LCD screen, a custom LCD sun screen with neck strap, battery belt and wireless video receiver for a great stand-alone system
- Wireless Video to new or existing TV unit - Includes 2.4 Ghz wireless video receiver, all cabling, A/B video switch to interface with your existing digital video capture system
- 6.4" LCD Screen with Padded Media Case with adjustable Sunshade Audio microphone with ON/OFF Switch including DV-1 Touch unit with MPEG 4 recording, 3 recording modes Good, Better, Best
- USB video capture to laptop - Adds the USB interface with video capture and editing software to allow the camera's video to be captured to a laptop computer.

Laser Profiler System



The concept - simple and easy:

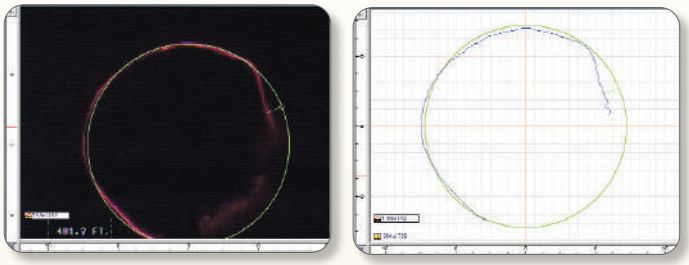
- A ring of laser light is projected onto the internal pipe surface
- Laser image is in the field of view of the camera while the camera moves through the pipe
- Analysis is performed on the ring of light using the Laser Profiler software to build a digital pipe profile
- For use with live or pre-recorded to video (tape, CD, or DVD)

The Laser Profiler is designed to provide the contractor, municipality, or consulting engineer with the ability to determine internal pipeline conditions prior to and/or after rehabilitation. The Laser Profiler is a stand-alone, snap-on tool for use with a CUES CCTV survey system and CUES camera to collect survey data and create pipeline reports containing the measurement of faults and other features inside the pipeline. This includes measurements of pipe size, laterals, water levels and other features, as well as automatic analysis of pipe ovality and capacity up to 30 times per second. The Laser Profiler simply attaches to your existing CCTV Camera and the resulting CCTV images are analyzed using innovative machine vision software.

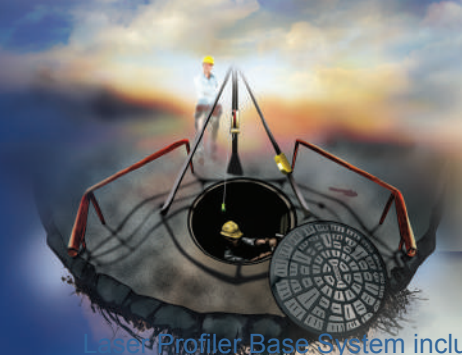
Features & Benefits:

- Can operate in pipe sizes ranging from 6” through 72”
- High-strength carbon fiber and aluminum construction
- Internally battery powered (rechargeable); no electrical connections are required; no moving parts
- Software can be used on a TV inspection vehicle or on a remote computer
- Can capture a single frame of video from videotape, previously stored file, CD, DVD, etc, when utilized on a remote computer
- Designed to project a laser light in a radial plane perpendicular to the CCTV camera’s line of sight and create a red line on the inside wall of the pipe; laser is designed to provide sufficient intensity to view the video image with normal CCTV camera lighting
- Easily attaches to your existing CUES CCTV Camera or Transporter
- Designed to capture and display a single frame on the data monitor for measurement and analysis in industry standard formats to include JPEG, BMP, or TIFF formats
- Text can be placed anywhere within the captured video image
- A line graph displays the cross-sectional amplitude over the entire length of the pipe run from entry to exit access
- Designed to obtain the actual degradation of the pipe by utilizing the laser profiling and measurement tools
- Certified by WRc

Examples of quantifying lift in liner using both the manual and the automated digital measurement methods. The 3-D model can be seen below.



Manual Automated



Laser Profiler System

Laser Profiler Base System includes the following:
For 6”-15” pipe: Camera mounting assembly, single laser head, battery charger, 3-D measuring software, rod extension for 10”, 12”, 15”, barrel distortion target, calibrator target, AC adapter, and hardware case

For 8”- 42” pipe: Laser wand, triple laser head, battery charger, 3-D measurement software, barrel distortion target, calibrator target, AC adapter, camera skid assembly 8”-30”, skid plate assemblies for 36” and 42”, skid adapter plate, and hardware case

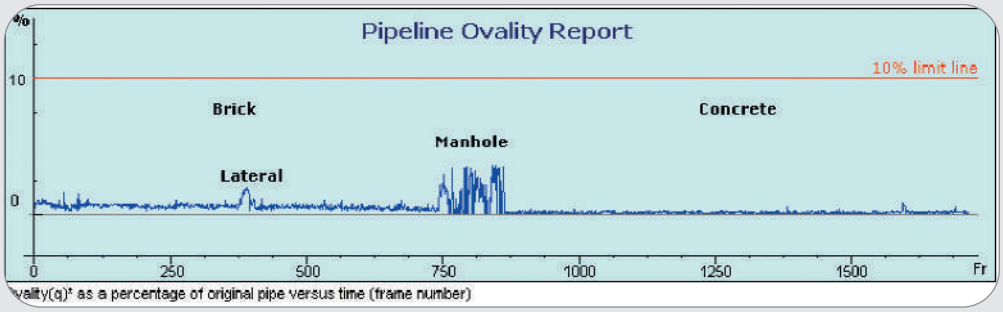
TV Systems

The Software -

Manual Measurements - Precise measurements can be taken from a single frame captured from the prerecorded or live video. This includes pipe size verification, size of laterals, water levels, holes, and off-set joints. The 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*.

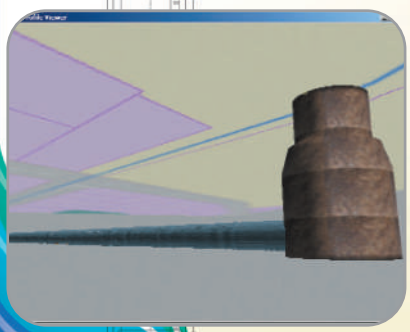
Automated Analysis- The software uses machine vision. Machine vision is used to find the video image of the laser profile (red laser line). Each frame of the inspection video is analyzed to build a digital profile of the pipe. From this profile, the Laser Profiler built-in functions display the following:

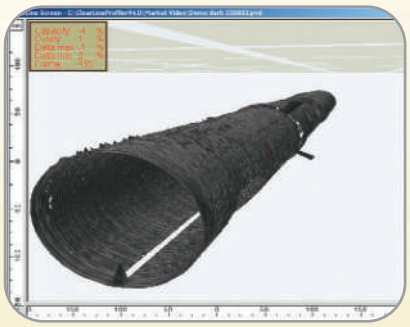
Ovality analysis in a 30” brick and concrete pipe

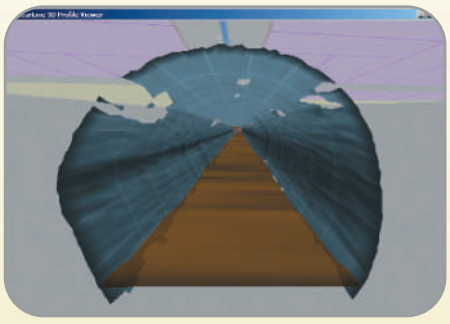


- Ovality - The Ovality function calculates the “q” (as per ASTM F 1216, the internationally recognized standard for CIPP rehabilitation).
- Capacity - The Capacity (X-sectional Area) function calculates the cross-sectional area for each profile and normalizes the results against the expected internal pipe area.
- Interfaces with CUES software
- Delta - The Delta calculation finds the maximum and minimum pipe radius for each profile.

The Laser Profiler 3D Developments







3D Modeling- Using the digital profile, the Laser Profiler creates a fully interactive 3D model of the pipe. This allows the user to navigate through the selected pipe within its local environment, thereby providing a new perspective to traditional CCTV inspections.

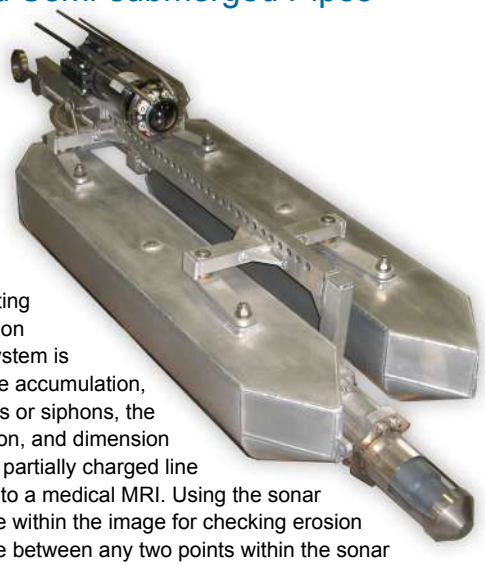
"The Standard of the Industry"

CUES

Sonar Profiler System

for Submerged and Semi-submerged Pipes

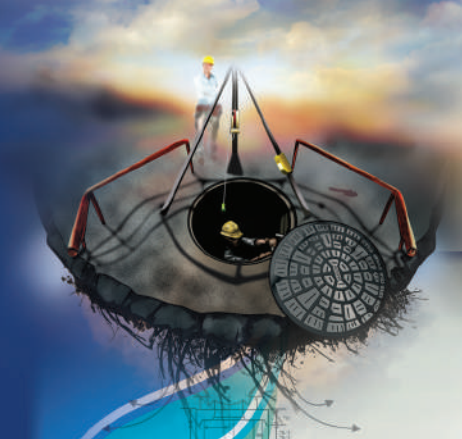
...provides a two-dimensional profile of the interior pipe wall similar to a medical MRI!



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.

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



CUES AMP™

CUES AMP™, the worlds most versatile and unique autonomous multi-purpose pipeline mapping system delivers exact 3D positional data. The gyroscopic based pipeline mapping system is designed for rapid and accurate XYZ location of your wastewater system.

The Accurate Mapping Probe (AMP™) provides precise and efficient 3D location of any underground pipeline asset quickly and easily, including wastewater, utilities and directional drilled lines. AMP's accurate data can be used for as-built drawing verification and defect locating including pipe sags, mis-aligned joints, horizontal and vertical design problems and hydraulic modeling. The system includes interchangeable wheel sets allowing AMP™ a wide operational range from 3" in diameter to 58" in any and all pipe materials including VCP, iron, plastic and concrete.

- Use AMP™ for precise location of your underground pipeline assets for proactive sewer repair and replacement
- Identify the critical problems, such as inclination, sags, bends, etc. in your wastewater system
- The CUES AMP™ data can be used with your centralized system of record keeping and be accessible to all decision makers to assure proper defensible spending
- Identify short and long term concerns to be considered in future CIP and O&M budgets
- Integration of exact positional location with CCTV-identified anomalies and CUES asset-based Granite XP decision support software allowing for accurate and cost-effective spot repairs
- Use data for as-built drawings and confirm that installations meet location specifications
- Project specific custom carriers available upon request