



▶ Video Pipeline Inspection Equipment and Vehicles

▶ Manhole Inspection Equipment and Vehicles



CUES equipment is designed to be easy to use during day to day operation. However, it is powered electrically and thus must be operated with care and safety. PLEASE READ THE INFORMATION ON SAFETY AND MAINTENANCE EVEN IF THE SYSTEM IS SET UP BY SOMEONE ELSE.

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We would be pleased to hear from you. If you see any errors or desirable extensions or improvements, please write us at the following address, C/O Operator's Manuals: CUES Corporate Office, 3600 Rio Vista Avenue, Orlando, Florida, 32805

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Printed in the United States of America.

The background of the top half of the page is a blue-tinted photograph looking down a large, circular pipe. The pipe's interior is dark, and the light from the opening at the far end creates a bright, circular glow, illuminating the rough, textured walls of the pipe.

CUES provides innovative pipeline inspection technology and solutions for the Water/Wastewater/Stormwater industries.

WELCOME TO CUES

CUES is the world's leading manufacturer of closed circuit television video (CCTV) inspection systems, joint sealing, pipe profiling equipment and asset inspection/decision support software for sanitary and storm sewers, industrial process lines, and water lines. For over 50 years, CUES has provided innovative pipeline inspection technology and solutions 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 inspection, profiling, rehabilitation, and data acquisition with bi-directional interfaces to ESRI ArcGIS and asset management software such as Hansen, Maximo, Azteca Cityworks, and others.

In addition to inspection equipment, CUES also designs and manufactures chemical grouting systems for mainline and lateral pipe joints capable of using a wide variety of grouting products. CUES also manufactures lateral reinstatement cutting systems for laterals in mainline sewers after they have been relined. Pipe profiling is accomplished via Laser or Sonar based systems.

CUES after-sales support is a foundation of our business model. We ship 98% of our spare part orders within 24 hours of receipt of an order. 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 60,000 ft² (5,576 m²) of facilities in Orlando, FL. We maintain facilities for sales, service and repair in California, Wisconsin, Georgia, Oregon, Delaware, and Canada. We appreciate the opportunity to serve you and look forward to hearing from you at your earliest convenience.



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*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.



DIGITAL PROCESSING MODULE

DUC Camera Features & Benefits

- 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.

OZIII

Pan Tilt & Optical View Camera



*OZIII Camera shown on the optional CUES CPR transporter.



THE OZIII CAMERA PROVIDES UP TO 40:1 OPTICAL/DIGITAL ZOOM, AUTOMATIC FOCUS, AS WELL AS REMOTE FOCUS AND IRIS CONTROL, TO ASSURE THE BEST QUALITY VIDEO WITHIN VARYING PIPE CONDITIONS.

The OZIII optical zoom pan-and-tilt camera offers built-in directional field-replaceable lighting for 6"-72" (152 -1829 mm) pipe to produce the highest quality image details of your CCTV pipeline inspection. Use the OZIII camera with the CUES steerable Compact Pipe Ranger (CPR) to inspect 6" (152 mm) relined through 48" (1219 mm) sanitary and storm sewers. OZIII connects directly to the CPR transporter with no exterior wires or cables.



OZIII Camera Features & Benefits

- 10X optical zoom and 4X digital zoom; total 40:1 zoom capability enhances image details from faraway distances.
- 0.4 MP; higher image resolution means sharper pictures with maximum detail.
- 360 x 285 degree pan and rotate viewing capability; pan and tilt simultaneously while the transporter moves!
- Field-replaceable white LED lighting for 6"-72" (152-1829 mm) lines with optional external lighthead; internal lights are directional with the moving camera head for optimum illumination in various pipeline conditions.
- Gamepad control of focus, iris, and shutter allows the operator to compensate for pipe conditions.
- Pan, rotate, zoom, and focus homing feature; quick and easy to reorient to the current location.
- Optical-grade sapphire camera window helps prevent image distortion.
- Includes an internal diagnostic system.
- Options: 512 Hz sonde for locating and inclinometer for inclination surveys.
- Can be used in pipelines as small as 5" (127 mm) in diameter.



10X optical zoom and 4X digital zoom; total 40:1 zoom capability



360 x 285 degree pan and rotate viewing capability.



Auto-focus to quickly focus on an area of interest.



Can be used in pipelines as small as 5" (127 mm) in diameter.



The OZIII camera include an optional sonde to accurately locate the camera in metallic and non-metallic pipes! An optional inclinometer is also available for inclination surveys.



THE OZII OPTICAL ZOOM PAN-AND-TILT CAMERA OFFERS UNPARALLELED IMAGING TECHNOLOGY AND BUILT-IN LIGHTING FOR 6"- 72" (152 -1829 mm) PIPE TO PRODUCE CLARITY OF PICTURE WITH ENHANCED DETAIL.

The OZII camera provides up to 40:1 optical/digital zoom, automatic iris and focus, as well as remote focus and iris control to assure the highest quality picture within varying pipe conditions. CUES "Light Enhancement Technology" eliminates the need for an external lighthouse! Easy operation at the controller allows the operator to change the sensitivity of the camera at their fingertips - - no need to install an external lighthouse if the pipe material or pipe diameter changes!



OZII Camera Features & Benefits

- 10X optical zoom and 4X digital zoom; total 40:1 zoom capability enhances image details from faraway distances.
- 0.4 MP camera; higher image resolution means sharper pictures with maximum detail.
- Four field-replaceable lights (available with white LEDs or halogen lamps); internal lights are directional with the moving camera head for optimum illumination in 6"-72" (152 -1829 mm) pipe.
- Gamepad control of all camera functions: focus, iris, and shutter allows operator to compensate for pipe conditions.
- Pan, rotate, zoom, and focus homing feature; quick and easy to reorient to the current location.
- 400 degree rotational 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' (1220 m) multi-conductor cable and up to 2000' (610 m) single-conductor cable.
- Options: 512 Hz sonde for locating and inclinometer for inclination surveys.
- Includes an internal diagnostic system.



10X optical zoom and 4X digital zoom; total 40:1 zoom capability.



Pan, rotate, zoom, and focus homing feature.



4 field-replaceable lights (available with white LEDs or halogen lamps).



Auto-focus to quickly focus on an area of interest.



The OZII camera include an optional sonde to accurately locate the camera in metallic and non-metallic pipes! An optional inclinometer is also available for inclination surveys.

STEERABLE PIPE RANGER II

Multi & Single Conductor
Wheeled Transporters

The Steerable Pipe Ranger II is a rugged and versatile robotic camera transporter designed to traverse silt, mud and debris commonly found in storm and sanitary sewers. The SPR II is designed with single-point wheel removal to facilitate speedy configuration changes for various pipe diameters and conditions. The unique built in two (2) speed transmission doubles the torque of the unit to produce maximum pulling power in large diameter pipe when the 10.5" (267 mm) diameter tires are installed.



Operates with up to 2000' (610 m) of single or multi-conductor cable to inspect 7" (178 mm) relined through 72" (1829 mm) pipe.



Single-point wheel removal for speedy configuration changes in various pipe diameters and conditions.



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



The SPRII can operate with the CUES Digital Side Scanning Camera (DUC).



8" Rubber (203 mm)



10"- 15" Rubber
(254-381 mm)



12" (305 mm)
Pneumatic

* SPRII transporters are shown with the optional OZII camera.

SPR II Transporter

Features & Benefits



8" Steel (203 mm)



10" - 15" Steel
(254-381 mm)



18" - 72" Knobby
(457-1829 mm)

THE SPR II CAMERA TRANSPORTER IS DESIGNED TO TRAVERSE SILT, MUD AND DEBRIS COMMONLY FOUND IN STORM AND SANITARY SEWERS.

- Single point removal of wheels; multiple wheel sets are available to maximize bottom clearance, traction, and optimum camera position.
- Optional remote operated electronic camera lift or manual camera lift.
- Operates with all CUES cameras: pan-and-tilt and optical zoom.
- Freewheel, powered reverse, forward variable speed control.
- Operates with the CUES Digital Side Scanning Camera (DUC).
- Designed to provide clearance in 7" (178 mm) diameter pipe; can inspect 8" (203 mm) relined pipe.
- Two-speed transmission doubles the torque and maximizes traction in larger diameter pipe or in difficult pipe conditions.
- Rear tip-up bulkhead connector minimizes strain on the cable connection during the inspection and retrieval.
- Wheels and spacers designed for the CUES Compact Steerable Pipe Ranger, LAMP II Lateral Launcher, and wheeled / tracked transporter can be used on the Steerable Pipe Ranger II without the need for modification.
- The SPR II can be used with the wireless gamepad controller for all camera and transporter functions.
- An aluminum version is available for those that require a lightweight transporter for their inspection needs.

COMPACT PIPE RANGER

Multi-Conductor Wheeled Transporter



*CPR transporter shown with the optional OZIII camera.



THE COMPACT PIPE RANGER (CPR) IS A LIGHTWEIGHT, COMPACT, AND RUGGED STEERABLE TV CAMERA TRANSPORTER USED TO INSPECT SANITARY AND STORM SEWERS.

The Compact Pipe Ranger (CPR) is designed to operate on a minimum of 1000' (305 m) of multi-conductor TV cable to inspect 6" (152 mm) relined through 48" (1219 mm) diameter pipe. The Compact Pipe Ranger (CPR) includes full-proportional steering to traverse meandering pipe and 45 and 90 degree turns. The superior pulling power of the CPR, combined with the optics and directional lighting of the compact OZIII zoom pan and tilt camera (with the ability to rotate in a 4" (102 mm) circle), creates video inspection quality that's unsurpassed in the industry.



CPR in the 6" (152 mm)
Rubber Configuration



CPR in the 8" (203 mm)
Configuration



CPR in the 6" (152 mm)
Steel Configuration



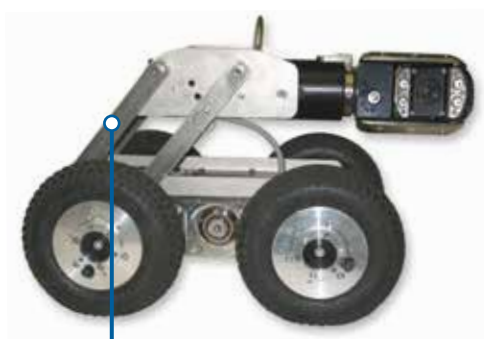
Multiple wheel sets are available to maximize bottom-clearance, traction, and optimize camera position; High-traction wheels are available for slippery PVC pipe; Wheels can be installed or removed from a single point of contact.

CPR Transporter

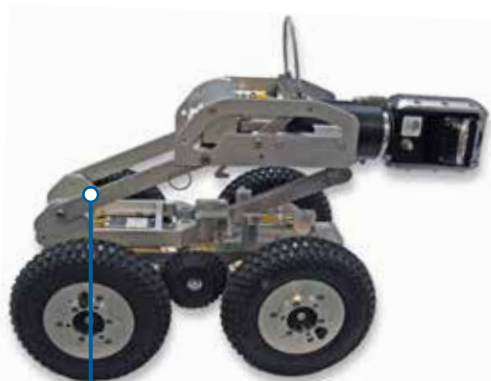
Features & Benefits



An optional mechanical or power camera lift is available to prevent the need for an operator to enter the manhole to position and reposition the camera height and to optically center the camera in varying pipe diameters.



Optional Mechanical Camera Lift



Optional Power Camera Lift



An 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.



Optional Rear-Viewing Camera



THE CPR IS DESIGNED TO TRAVERSE LONG DISTANCES AND TOUGH PIPE CONDITIONS, AND TO FACILITATE EASE OF HANDLING DURING INSERTION AND RETRIEVAL.

- Operates in 6" (152 mm) relined through 48" (1219 mm) diameter pipe and larger.
- Operates with CUES OZIII zoom pan and tilt camera & CUES multi-conductor systems.
- 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!
- Designed to traverse sanitary sewers, storm drains and pipe with debris and silt.
- Freewheel, powered reverse, forward variable speed control, all wheel drive.
- Locking bayonet-style rear bulkhead connector - durable/stable.
- Two-speed transmission doubles the torque and maximizes traction in varying pipe conditions.
- Rear swivel bulkhead connector minimizes strain on the cable connection during insertion and retrieval of the unit.
- Compact camera/transporter length with the CUES OZIII camera 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.

WTRIII Transporter

Wheeled/Tracked Transformer Transporter



WTRIII transporter shown with the optional OZIII camera.



THE CUES WTRIII OFFERS THE BEST OF BOTH WORLDS. THE CUES WTRIII IS AN AFFORDABLE AND VERSATILE TRANSFORMER TRANSPORTER THAT CAN OPERATE WITH WHEELS OR TRACKS. YOU CAN TRANSFORM YOUR TRANSPORTER TO ACCOMMODATE VARYING PIPE CONDITIONS!

Distinguished as the first modular transporter in the CCTV pipeline inspection industry, the WTRIII can be adapted to operate in varying, difficult, and hazardous pipelines ranging from 6" (152 mm) relined pipe up to 30" (762 mm) diameter pipes. Save time with the quick installation of wheels or tracks with single point removal. Save money since existing CUES wheel sets can be used on the transporter. Various wheel sets and tracks are available to maximize performance.

WTRIII Transporter

Features & Benefits



Various wheel sets and tracks are available to maximize performance.



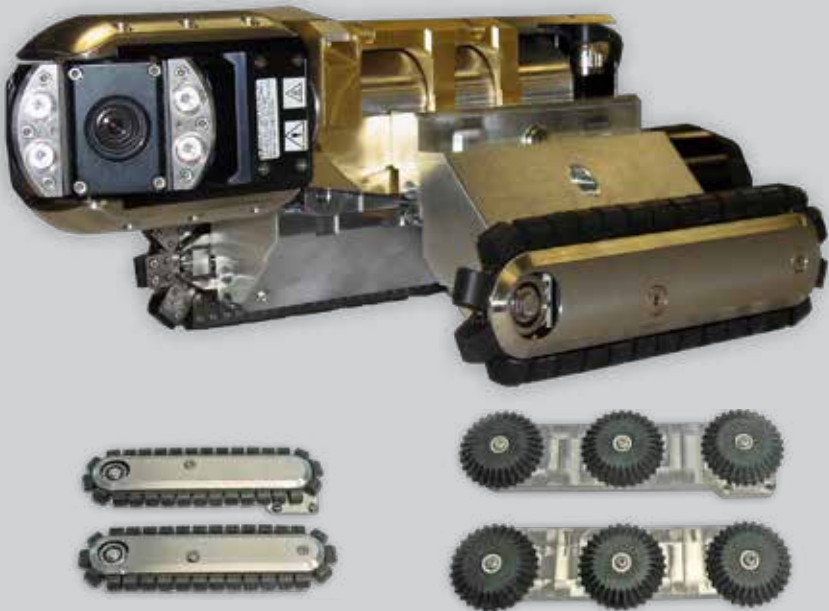
Affordable/versatile transformer transporter that can operate with wheels or tracks.



Save time with the quick installation of wheels or tracks with single point removal.



Inspects 6" (152 mm) relined pipe up to 30" (762 mm) diameter pipes.



The CUES WTRIII is an affordable & versatile transformer transporter that can operate with wheels or tracks. You can transform your transporter to accommodate varying pipe conditions!

- Traverse varying pipe conditions with quick install of wheels or tracks.
- Inspects 6" (152 mm) relined pipe up to 30" (762 mm) diameter pipes.
- Optional high-traction tracks are available, easy to install.
- Weighted adapters optically center the camera in each pipe size and increase bottom clearance.
- Single point removal of wheels.
- Various wheel sets available to maximize performance in various pipe conditions.
- Camera connects directly into transporter with protective carriage assembly.
- Works with CUES OZIII pan and tilt zoom camera or CUES OZIII Nite Lite Pan and Tilt Camera.

STEERABLE MUDMASTER

Multi & Single Conductor Wheeled Transporter



SMM transporter shown with the optional OZII camera.



THE STEERABLE MUDMASTER IS A CAMERA TRANSPORTER SPECIFICALLY DESIGNED WITH THE NECESSARY WEIGHT, POWER, HIGH CLEARANCE, AND ALL-WHEEL DRIVE FOR PIPELINES RANGING FROM 24"- 200" (610 mm - 5080 mm).

The unit is designed to operate with 2000' (610 m) of single-conductor cable or 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.



- Inspects 24"- 200" (610-5080 mm) pipelines.
- Can operate on all truck-mounted and portable systems (excluding CUES Mark3).
- Operates with all CUES cameras.
- Four or eight (tandem) wheels provide greater traction in all types of pipe, under all conditions.
- Remote-operated adjustable camera lift to position the camera for best available picture; stable center of gravity when the camera lift is extended.
- 255 watt light system, variable, adjustable, 3 lamps (2-lamps for single-conductor III units-170 watts total).
- Fits through a manhole with an inside diameter of 19" (483 mm).
- 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.

**THE CUES STEERABLE
MUDMASTER OPERATES
WITH CUES MULTI OR
SINGLE CONDUCTOR
SYSTEMS.**



ULTRA SHORTY 21

Variable Weight Tracked Transporter



*US21 transporter shown with the optional OZII camera.



The CUES Ultra Shorty 21 is a tracked-transporter designed to inspect 6"- 36" (152 mm - 914 mm) lines with major offsets and protruding laterals. Adapter blocks are available to optically center the camera in 30"- 36" (762 mm - 914 mm) lines. The transporter, when combined with the OZII pan, tilt, optical zoom camera, offers a compact assembly at only 28" (711 mm).

Ultra Shorty 21

Features & Benefits



Operates in 6" to 36" (152 mm - 914 mm) lines; maximum versatility and applications.



Adapter blocks are available to optically center the camera in 30" to 36" (762 mm - 914 mm) lines.



The transporter, when combined with the OZII camera, offers a compact assembly at only 28" (711 mm).



Contoured high traction cleats; maximum pipe wall contact for greater traction.



- 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.
- Operates in 6" to 36" (152 mm - 914 mm) lines; maximum versatility and applications.
- Waterproof motor with bulkhead connector.
- Contoured high traction cleats; maximum pipe wall contact for greater traction.
- Weighted track extenders that lift to optically center camera; greater weight for increased traction.
- Self-cleaning drive sprockets; maximum performance in mud and sand.
- The Ultra Shorty 21 tracked transporter, when combined with the OZII pan, tilt, optical zoom camera, offers a compact assembly at only 28" (711 mm).

Waterproof motor with bulkhead connector

Contoured high traction cleats



Transporter combined with the OZ II Camera offers a compact assembly at only 28" (711 mm)

ULTRA SHORTY III

Variable Weight Tracked Transporter



*USIII transporter shown with the optional OZIII camera.



MAXIMIZE YOUR ADVANTAGE IN 6" (152 mm) RELINED PIPE! THE CUES ULTRA SHORTY III OFFERS THE MOST COMPACT TRACKED TRANSPORTER IN THE INDUSTRY TODAY!

The CUES Ultra Shorty III can be used with any multi-conductor system to inspect 6" (152 mm) relined to 24" (610 mm) lines with major offsets and protruding laterals. Ultra Shorty III features a reduced camera/tractor length with the CUES OZIII Camera to facilitate line entry through inverts with limited space and traverses 22, 45, and 90 degree sweeps in smaller diameter lines. The transporter includes weighted adapter blocks to optically center the camera and a built in connector and protective housing for direct insertion of the OZIII camera; no camera interface cables are required.



Inspect 6" (152 mm) relined to 24" (610 mm) lines with major offsets and protruding laterals.



Reduced OZIII camera/tractor length eases line entry through inverts with limited space.



Maximum clearance is provided for 6" (152 mm) and 6" relined pipe.



The transporter includes weighted adapter blocks to optically center the camera.



- 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.
- Inspection speed can be optimized to match pipe size & conditions.
- Contoured high traction cleats are provided to maximize pipe wall contact for greater traction.
- Includes dual track fasteners to increase track/cleat life and self-cleaning drive sprockets when operating in mud and sand.
- The reduced USIII transporter width enables full pan and tilt / zoom capabilities in 6" (152 mm) relined pipe.
- Provided with a built-in protective housing and bulkhead connector to accommodate the mounting and direct connection of the CUES OZIII Zoom Pan and Tilt Camera.
- Weighted adapter blocks are available to optically center the camera, and increase traction and bottom clearance in 6"- 24" (152 mm -610 mm) lines.





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



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 Ionplate industrial-rated vinyl throughout.
WALLS	Kemlite, scratch, dent and chemical resistant; grey finish makes the interior brighter.
GROUT TANK MOTOR & HEATER	Variable-speed, electric, with small stainless steel propellers located near the bottom of tank to eliminate air from entering the grout hoses.
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	Variable speed, stainless steel, chemical resistant, motor.
FLUSH LINES	Automatic, simply move a shut off/bypass valve to divert the chemicals/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 7.5Kv 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.



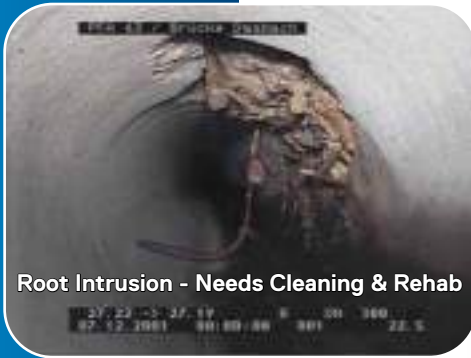
Test & seal
operation can be
recorded for a
permanent record
of the exact pipeline
condition.

- Plenty of room for packers & grout material.
- Climate-controlled office.
- Contractor-grade.**

- Retrofits available.
- Combo trucks are available for TV, Cutter & Easy Grout.
- Do not need an office using wireless Easy Grout.



Spot Repair - Needs Rehab



Root Intrusion - Needs Cleaning & Rehab



Offset Pipe - Needs Further Inspection



Infiltration Problems- Needs Rehab



Satisfactory

CUES LOCK™

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



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

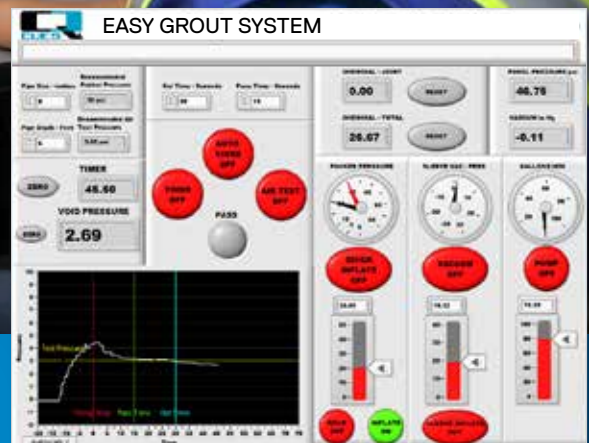
CUES LOCK End Sealers are used to seal the annular space between the cured-in-place liner and the host pipe at the pipe ends. They prevent the ends of the cured-in-place liner from delaminating or sagging from the host pipe.

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.

EASY GROUT

Computerized Grout Control System



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.

NO MORE mechanical, analog, dials, switches, or buttons!





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.



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.





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.



Low Void Packers Features & Benefits

- 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.

CHEMICAL SEALING

Compact Collapsible Packers



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.



Compact Collapsible Packers Features & Benefits

- 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.



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.

CUES CUSTOM

Truck-Mounted Inspection Systems



CUES PROUDLY OFFERS CUSTOM TRUCK, VAN, ATV, OR TRAILER-MOUNTED SYSTEMS FOR ALL OF YOUR TV INSPECTION, CONDITION ASSESSMENT, AND REHABILITATION NEEDS!

Made to withstand the most severe conditions and ergonomically designed for comfort and efficiency, CUES vehicle-mounted systems can include TV inspection equipment for sanitary and storm water lines, laser and sonar pipe profiling systems, mainline joint and lateral sealing, and lateral reinstatement cutters for the relining industry. Equipment can be ergonomically mounted to inspect 6"- 200" (152 mm - 5080 mm) mainlines and 3"- 8" (76 mm - 203 mm) lateral services. Customize your truck interior, cabinets, equipment, and mounting configuration to fit your unique requirements! Truck and trailer mounted grout rehabilitation systems are available for mainline, manhole, and lateral joint sealing and can be equipped with the latest CCTV equipment and decision support software for television inspection with documented condition assessment!



TRUCK-MOUNTED Systems

Features & Benefits

TV MAINLINE/LATERAL INSPECTION TRUCKS

Equipment can be ergonomically mounted to inspect 6"- 200" (152 mm - 5080 mm) mainlines with optional equipment to inspect 3"- 8" (76 mm - 203 mm) lateral services with access from the mainline or a clean-out.

TV/INSPECTION TRUCKS

CUES offers a wide variety of chassis choices with custom interiors. Equipment can be ergonomically mounted to inspect 6"- 200" (152 mm - 5080 mm) mainlines. User friendly GraniteNet data acquisition software can interface with various asset management and ESRI ArcGIS systems.

SPRINTER/TRANSIT TV INSPECTION VANS

Custom Sprinter/Transit TV inspection vans are available for pipeline inspection operations.

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.

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/GROUT INSPECTION TRUCKS

This production unit can complete TV Inspection of mainlines, laterals (optional), and joint sealing of mainlines or laterals. Pipe inspection operations and the resultant rehabilitation action are facilitated by one integrated system.



CUES IS A LICENSED TRUCK DEALERSHIP/TRUCK-BODY CONVERTER AND STOCKS VARIOUS FORD, GMC, CHEVROLET, WORKHORSE, INTERNATIONAL, AND FREIGHTLINER CHASSIS, RANGING FROM 5,280 GVWR (2395 KG) TO 33,000 GVWR (14966 KG).

With our in-house, state-of-the-art Vehicle Assembly Center, 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.



EVOLUTION

Series 3.0 Interior



THE EVOLUTION 3.0 SERIES INTERIOR PROVIDES A MODERN 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 3.0 Series Interior includes many standard features, such as insulated walls and ceilings for interior comfort, the best interior materials and finishes available to provide a long lasting quality work environment for the operator, a large tinted safety glass viewing window to maximize the viewing area when operating the equipment, and high-bright long life interior LED lighting to maximize operator safety and efficiency.



EVOLUTION SERIES 3.0

Features & Benefits

OPTIONAL EQUIPMENT

- Sliding drawer storage in rear kick plate for tools and accessories.
- Lockable storage drawer in rear kick plate with cable notch for camera/transporter setup.
- Three step rear bumper with folding step and safety grab handle.
- Side entry door with fold out steps and safety grab handle.
- Hazard strobe warning light system.
- Front and rear directional traffic advisors.
- Custom exterior safety lighting/strobes/LED flasher systems (customer to specify).
- Rear awning for protection from the sun and rain.
- Intercom system for communication between the Viewing and Equipment rooms.
- 20 gallon (75.7 L) washdown system for equipment cleanup.
- Retractable water hose reel for equipment cleanup.
- Sink/faucet for operator cleanup.
- Full restroom.
- Compressor system.
- Wireless keyboard and mouse.
- Custom cabinetry (customer to specify).
- Custom laminate colors (customer to specify).
- Equipment room mounted LED flat-screen monitor for rear operator viewing.
- 12V crane system to aid in equipment deployment and retrieval.
- Optional EVO II interior.



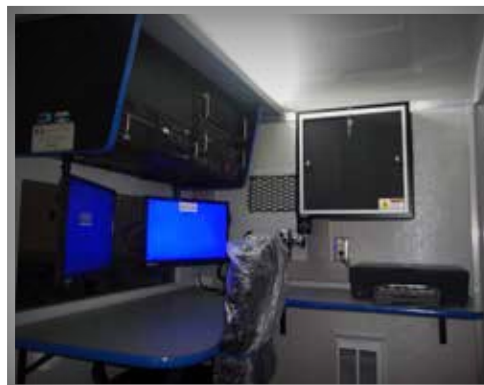
THE CUES EVOLUTION 3.0 SERIES IS DESIGNED TO MAXIMIZE OPERATOR COMFORT, SAFETY AND CONVENIENCE. CONTACT CUES TO LEARN HOW A CCTV INSPECTION VEHICLE CAN BE CUSTOMIZED PER YOUR SPECIFICATIONS.

- Interiors designed to maximize operator comfort and convenience.
- Seamless FRP finished walls and ceilings for easy cleaning.
- Cabinets/walls/ceiling constructed with high quality plywood - no particle board or MDF material used.
- Vehicle layout is specifically designed for even weight distribution from side to side to ensure a quality ride.
- Rear floodlights are installed inside of the rear doors for quick, simple adjustments.
- Indirect high-bright LED lighting - produces even lighting, which eliminates glare on viewing monitors.
- Electronic components mounted above the desktop to increase countertop space.
- Flat screen LED video and computer monitors mounted above desktop (attached to electronics console) to maximize valuable countertop space in the Viewing Room.



CUES PROUDLY OFFERS CUSTOM TRAILER-MOUNTED SYSTEMS AS ANOTHER EFFECTIVE ALTERNATIVE TO TRUCK-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!



TRAILER-MOUNTED SYSTEMS

Features & Benefits



CUSTOMIZE YOUR TRAILER INTERIOR, CABINETS, EQUIPMENT, AND MOUNTING CONFIGURATION TO FIT YOUR UNIQUE REQUIREMENTS!

- The interior of the trailer is divided into two areas of operation: a TV trailer Control Room (operator's station and viewing Room) and an Equipment Room (equipment mounting and storage area).
- The trailer is equipped with (1) roof-mounted amber warning beacon and (2) adjustable halogen floodlights as shown on the component list.
- An ergonomic control console is used for mounting all electronic components.
- The Control Room is located at the front of the trailer. A roof mounted 13,500 BTU air conditioner with built in heat strip is supplied.
- 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.

LAMP II

Lateral & Mainline Probe



THE SELF-PROPELLED, ROBUST LAMP II IS A CCTV PIPELINE INSPECTION TOOL FOR IDENTIFYING INFILTRATION AND INFLOW, POTENTIAL CROSSBORES, PIPE DEFECTS, AND STRUCTURAL CONDITIONS IN LATERAL SERVICES AND MAINLINES.

The LAMP II 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 LAMP II with the optional Mini Pan & Tilt Camera will inspect laterals services and traverse multiple bends and wyes when deployed with or against the flow.



LAMP II Features & Benefits

- 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.



True one-pass mainline and lateral inspection; inspect more in less time.



Self-leveling lateral camera with built in sonde.



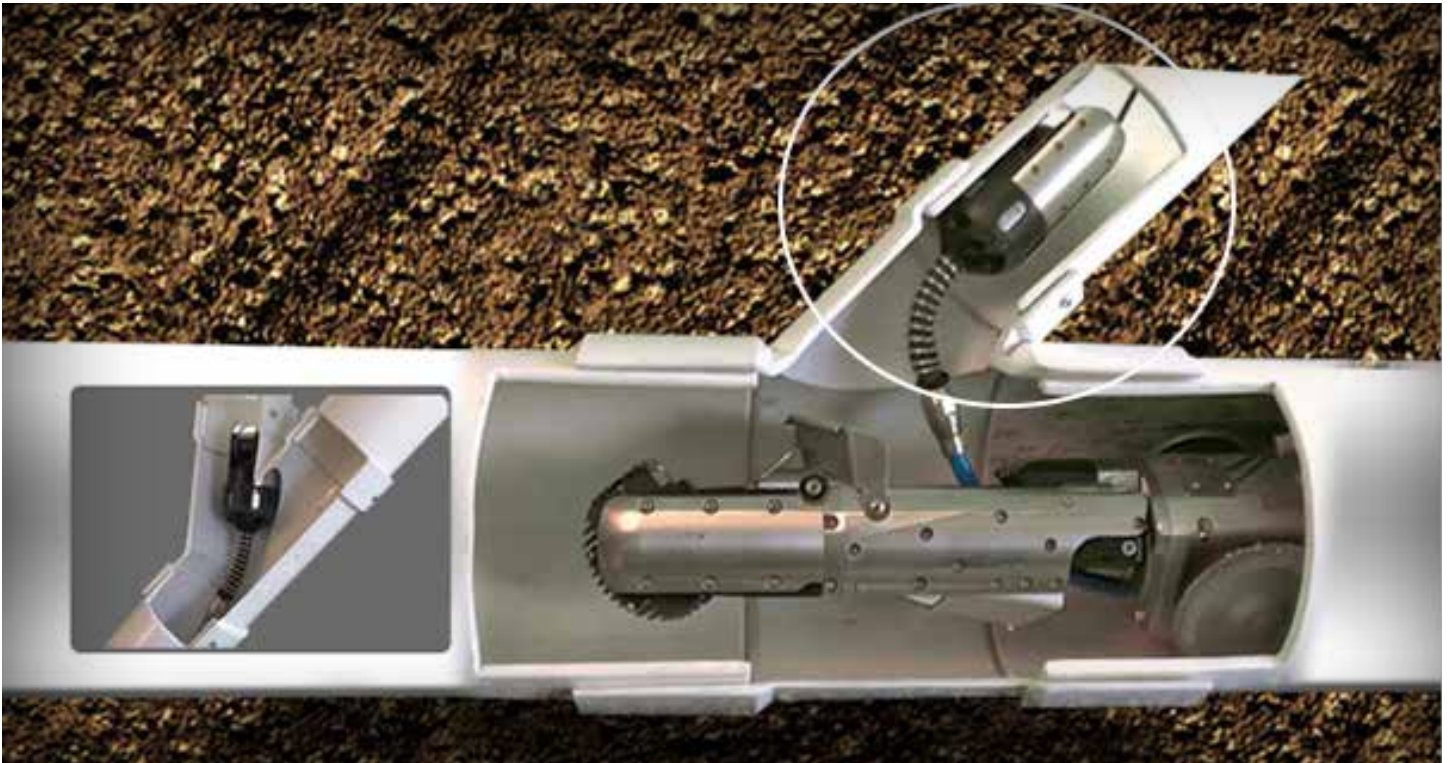
Traverse multiple bends and wyes with or against the flow.



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!



THE CUES MINI PAN & TILT CAMERA IS DESIGNED TO WORK WITH THE LAMP II 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

- 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 LAMP II 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.

MICRO

Pan & Tilt Camera



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

- 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.



KANGAROO

Lateral Reinstatement Cutters



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.



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 onboard 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.



CURRAHEE

Lateral Reinstatement Cutters



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.

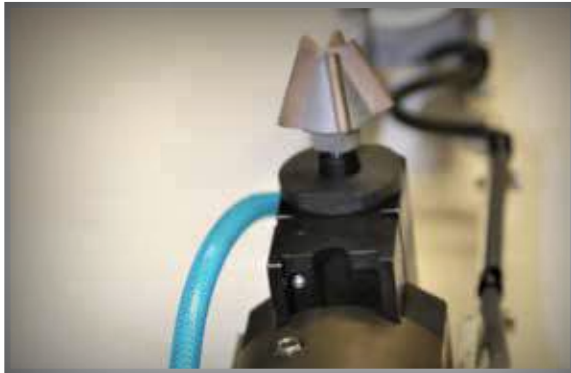
These cutters are specifically designed to reinstate wastewater service laterals, remove protruding taps, and brush-finish existing cuts. The cutters function in a range of 5.25" - 12" (133 mm - 305 mm) pipe, are equally effective in CIPP or fold and form liners, and can be installed on a CUES K2 truck-mounted 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



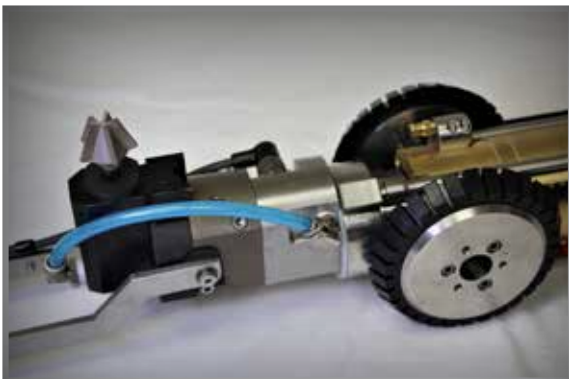
> VARIETY OF BITS AVAILABLE



> OPTIONAL PARTS AVAILABLE



> CURRAHEE CUTTER CAMERA



> WATER BLOW-OFF & WIPER



CUES 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 onboard or tow-behind



Crane-Mast Deployment



Boom Arm-Out Position



Deployed Position



Stowed Position

CUES MAST SYSTEMS

- The truck-mounted mast can position the camera 35' (11 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.

NOTE: The tripod can reach depths of 75 ft at 5 ft per min down speeds.

Manhole Deployment

Features & Benefits



Tripod Deployment





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

Features & Benefits



DUC



QZ3 Advanced



SPiDER

CUES MANHOLE INSPECTION VEHICLES CAN OPERATE ANY CUES MANHOLE CAMERA



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 75' (23 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 75' (23 m) deep.
- The SPiDER, DUC, or QZ3 camera unit can be electronically raised and lowered with a wireless remote control.
- Prescreen pipeline condition during manhole inspection - REDUCE costs and save time.
- Motorized pan and tilt manhole camera for optimum video.
- Camera is remote controlled from ground level – no heavy lifting.
- 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.



3D Wireless Manhole Scanning

SPiDER is a revolutionary portable manhole scanning technology

ACCURACY

1 to 5 mm

SPEED

5' (1.5 m) /
min

WEIGHT

35 lbs (16 kg)

CABLE

none



> Tablet Controlled



> Measurable Color Point Cloud



> Wireless Connection

SPiDER Manhole Scanner

Features & Benefits



- **Measurable 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 35 pounds (16 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 35 pounds (16 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.



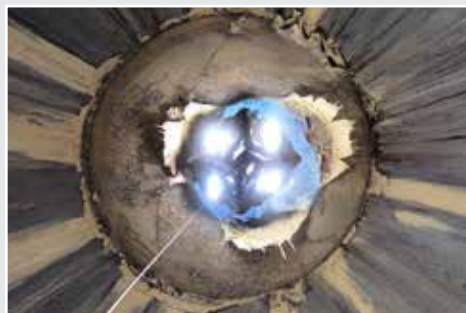
SPiDER provides a 190 degree field-of-view live video stream making it an ideal tool for I&I studies.



> Live Video



> Portability



> Virtual Tether

DUC MANHOLE

Inspection Camera



INSPECT MORE THAN 50 MANHOLES PER DAY! THE CUES DIGITAL UNIVERSAL MANHOLE INSPECTION 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 Net decision support software, you can inspect and assess 50 manholes 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 manhole conditions. The Digital Universal Camera operates at a constant speed without the need to stop or pan and tilt.



Improve the operational, environmental, and financial performance of your wastewater system! The Digital Universal Camera System will outperform traditional manhole inspection review. Call your CUES representative today!

DUC Manhole Camera

Features & Benefits



- 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 400ft pipe segment, in under 15 minutes!
- High output strobe lighting system illuminates the manhole 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.



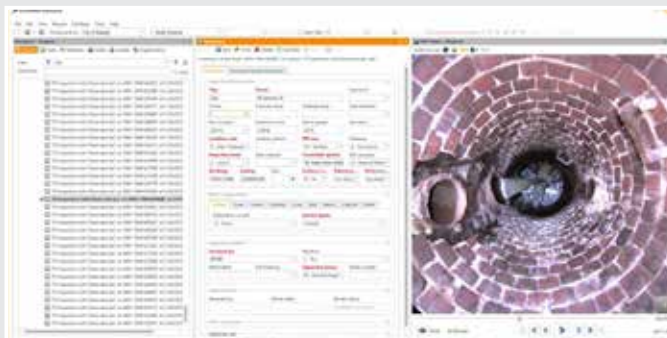
Offers 2x to 3x production over traditional analog systems.



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



Inspect 50 manholes or more per day, increasing your revenue, while reducing your expenses.



Video is stitched via the decision support software digital processing module and is available at the end of the inspection run. Virtual pan, tilt, and zoom of the entire surveyed manhole enables rapid condition assessment review -- significantly faster than traditional video inspection review.



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!

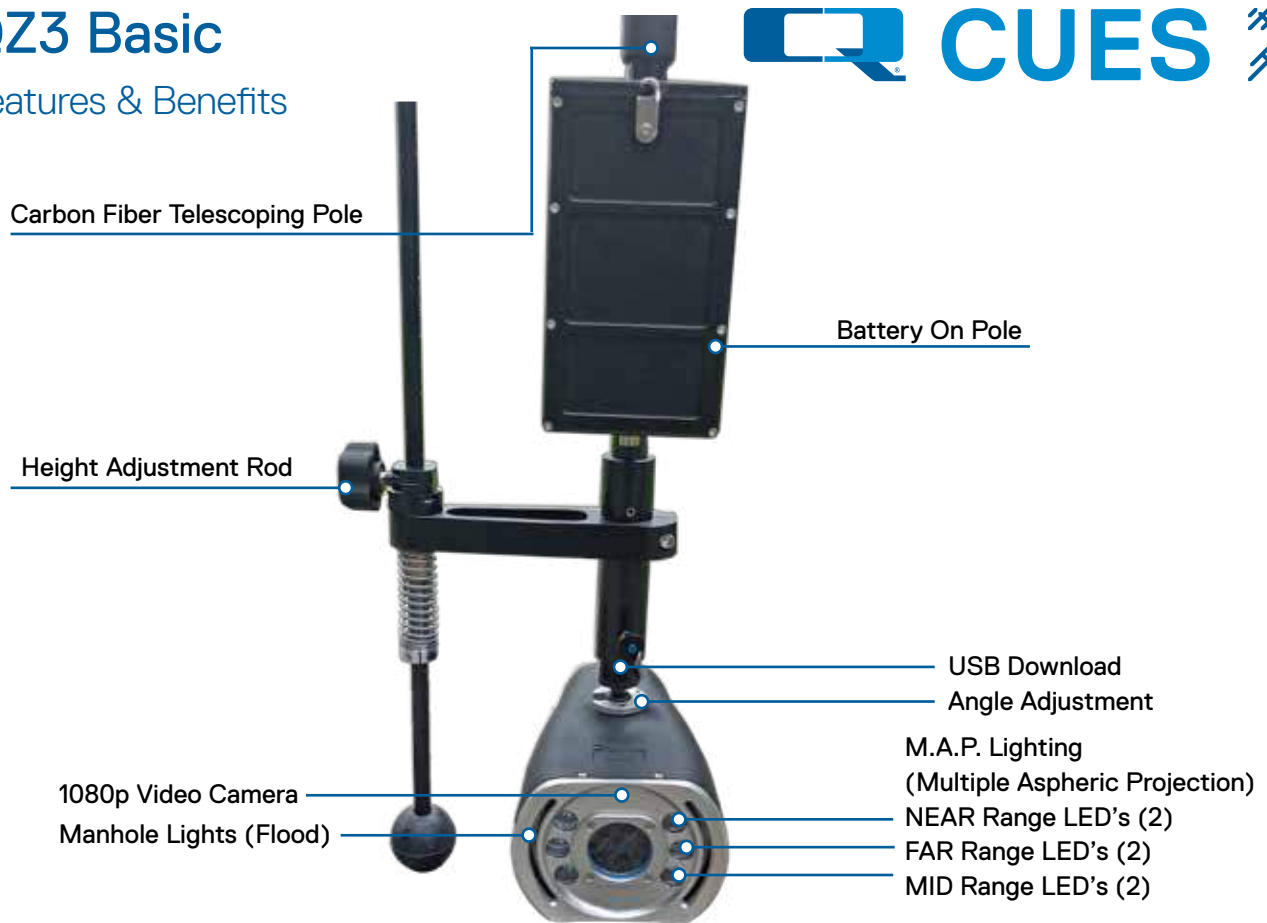


OPTIONAL TRIPOD AVAILABLE



QZ3 Basic

Features & Benefits



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

QZ3 ADVANCED

Portable Inspection System



AVAILABLE MAY 2022

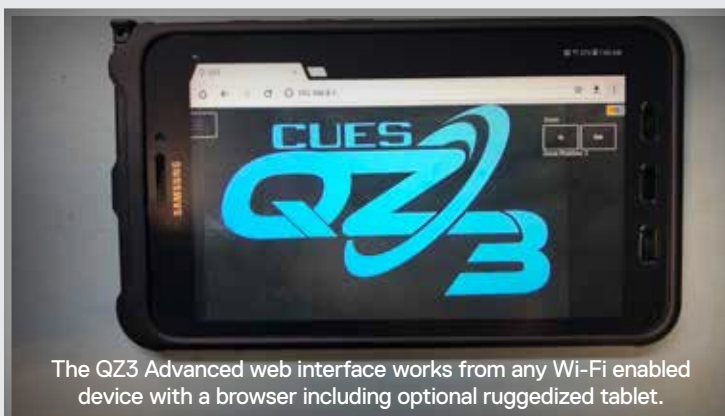
WIRELESS & WATERPROOF



THE QZ3 ADVANCED 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 Advanced features motorized height and tilt adjustments to allow for smooth and precise positioning of the camera head 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 Advanced is mounted on a lightweight carbon fiber adjustable telescopic pole that can extend up to 24' (7m) (optional 34' (10m) pole is available). The QZ3 Advanced on-board laser distance finder allow measurements to within an inch of accuracy (appx. 25mm). Get full HD views of cracks, breaks, pipe separations, scale, and various defect conditions from hundreds of feet away!



The QZ3 Advanced web interface works from any Wi-Fi enabled device with a browser including optional ruggedized tablet.



Tablet can be charged using spare battery in the field with optional DeWalt® USB adapter

QZ3 Advanced

Features & Benefits



Simple to use and light weight for single-person use!



Establish condition assessment priorities.



Electric Tilt and Height Adjustments for Quick, Easy, and Precise Positioning



Integrated Laser Distance Measurements

- 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)
- Camera Head Ingress Protection: IP67 (*Submersible to 1m for <30 min)
- Signal System: 1080p
- Video Output: Digital
- Laser Distance Measurement Range: Up to 200 ft accurate within an inch (Apprx. 60m accurate to +/- 20mm)
- Motorized Height Adjustment for 6"- 72" (152 mm -1829 mm) Pipe
- Motorized Tilt: +/- 30 degrees from horizontal
- Viewing Angle: 63.7° to 2.3°
- Pixels: 2.38 Megapixels
- Battery: Lithium-Ion 4 hrs operation
- Optional panning accessory will be available in 2021 for use with SPiDER Tripod or Truck Mast Deployment system



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



**Increase the Efficiency and
Quality of Your Cleaning &
CCTV Operations**



“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.

REDI KIT

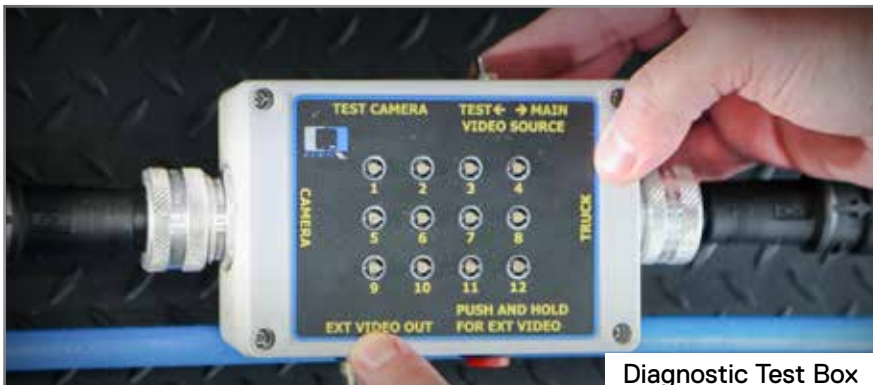
Troubleshooting Kit



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!



Diagnostic Test Box



Footage Test Box



Hi-resolution web camera allows 2-way video conferencing



Safer & easier voltage readings with the diagnostic test box



Includes a USB diagnostic tool to help troubleshoot the computer



Includes a user-friendly multi-meter as well as video cables and adapters



- 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.

ACCUPOINT

Precision Locating System



The CUES Accupoint precision locator and transmitter feature industry leading technologies such as depth measurement, guidance mode, and compass orientation to make sonde and line locates easier and safer.

Locating and tracing CCTV inspection systems can present major difficulties. This can be made even worse in cases where a pipe has rubber seals, insulators or gaps between sections. These problems, if not overcome, can result in costly repairs, delays and in some instances personal injury.



Guidance Mode – The Target Position Indicator, proportional arrows and audio signals guide you towards the target pipe or cable.



Compass – A visual indication of the target pipe or cable's orientation, simplifying the task of following the correct target line.



TruDepth™ – Depth readings are given only when the Accupoint is correctly oriented above the target.



Audio tones – In Guidance Mode a continuous tone to the left of the target and an intermittent one to the right helps guide you towards the target.



Dynamic Overload Protection – Reduces the effect of interference that can swamp other locators' detection circuitry, enabling use in electrically noisy environments.



Depth and Current – A simultaneous read-out on active lines for confidence you are following the correct target.



Sewer and storm industry sonde and line locator kits

The Accupoint series has been designed to address these issues. Ease of use is at the heart of the products, coupled with the accuracy, repeatability and reliability you have come to expect from CUES locator products.



Accupoint MS611 locator



Built for on-site use
IP65 Shock resistant,
ingress protected
casing protects against
knocks, drops, water
and dust



Alkaline battery pack (2 x LR20 D-cells)

Accupoint MS620 transmitter

90V signal output and
automatic impedance
matching



Base tray for accessories

THE CUES ACCUPOINT LOCATOR ADDRESSES THE CONCERNS AND CHALLENGES OF USERS IN THE SEWER AND STORMWATER INDUSTRY.

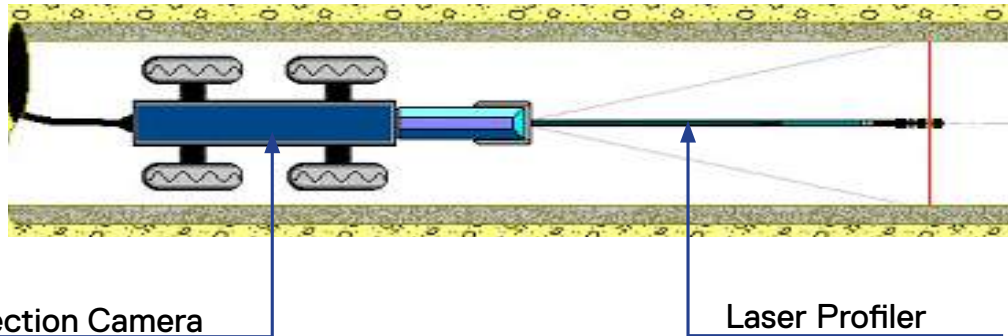
Accupoint MS611 locator

A precision locator of 3 different sonde frequencies, for tracing all types of non-metallic pipe, and 4 active line locating frequencies. Guidance mode helps you trace your target with user-friendly visual and audio guides, while Peak + mode with Guidance Arrows specifically target the needs of CCTV inspection system users.

Accupoint MS620 transmitter

A 5W transmitter with 90V output capabilities to push higher locate signal on high impedance target lines, to detect deeper and further.





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.

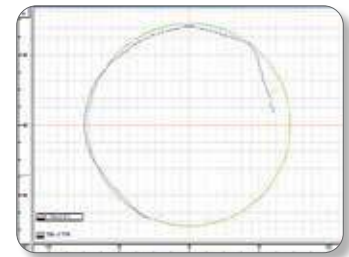
THE SOFTWARE

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:

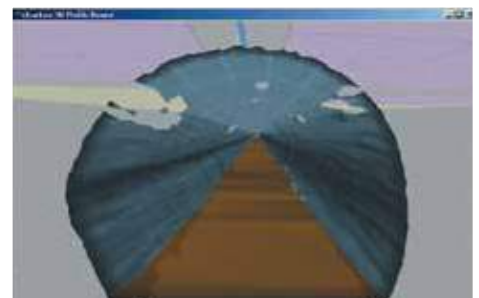
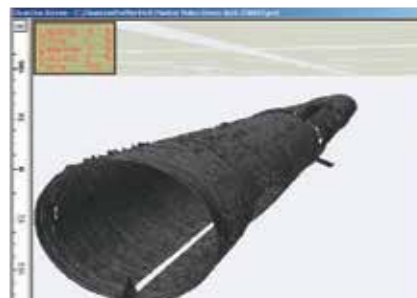
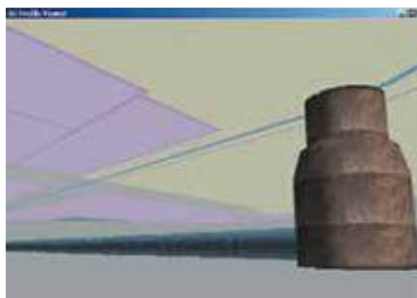
- For 6" - 15" pipe (152 mm - 381 mm): Camera mounting assembly, single laser head, battery charger, 3D measuring software, rod extension for 10" (254 mm), 12" (305 mm), 15" (381 mm), barrel distortion target, calibrator target, AC adapter, and hardware case.
- For 8" - 42" (203 mm - 1067 mm) pipe: Laser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



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.

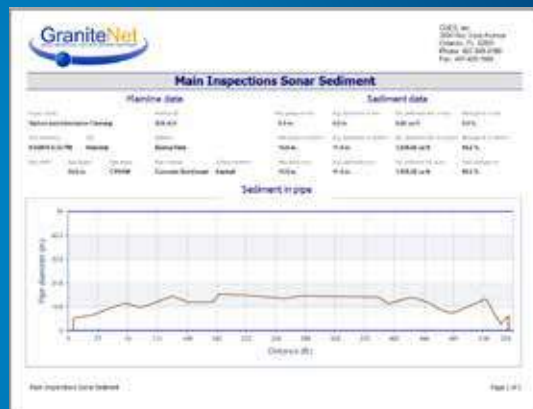
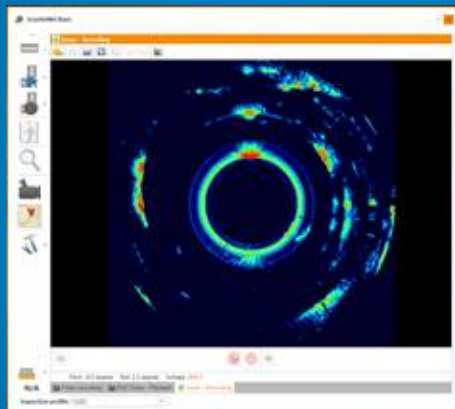
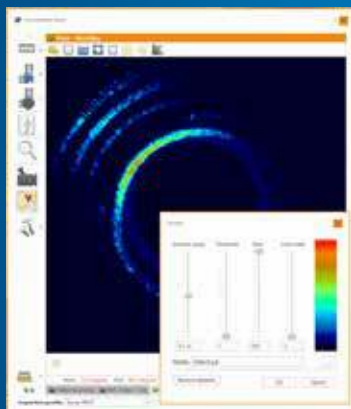


GRANITENET SOFTWARE - SONAR MODULE

Use the GraniteNet Software Sonar Module with the CUES Sonar System to provide dimensional data on silt level, grease accumulation, pipe deformation, offsets, etc., below the waterline during a mainline inspection. Save sonar information digitally to perform measurements, reports, or capture still images in the truck or in the office.

The Sonar Module allows the user to display data in real-time and record it simultaneously with the live video to identify and measure structural and maintenance issues in sewer or storm pipes. Create observations using industry-standard code systems like PACP and automatically link to the right frame of both sonar and video recordings.

Calculate pipe capacity loss as a percentage of the total pipe flow capacity. The thickness of sediment or debris graphically displays the level of sediment along the pipe and estimates the total volume of sediment for removal purposes.

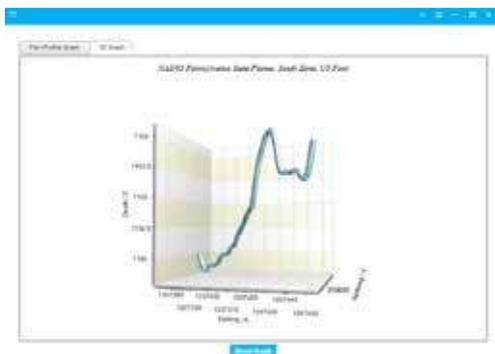


- Perform up to 5000' (1524 m) inspection distances, depending on the equipment configuration.
- Diameter Range: 3' - 20' (1 - 6 m)
- Double your productivity by performing both Sonar and TV inspections in one run.
- A full-size truck is no longer required to perform simultaneous TV/Sonar inspections - only one reel is required.
- Configurable with the CUES Base Station.
- 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.



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

Project Name	Test Trajectory
rack 1.5 Inch Pipeline	TestTra
rack 6 Inch Pipeline	TestTra

• AMPVUE™ Data Transfer Download Screen

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 AMP IS THE WORLD'S MOST VERSATILE AND UNIQUE AUTONOMOUS MULTIPURPOSE 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.

SoLID FX

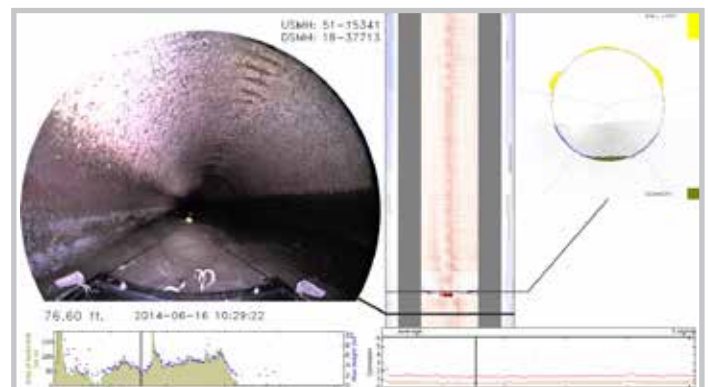
SONAR/LIDAR Profiling System



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

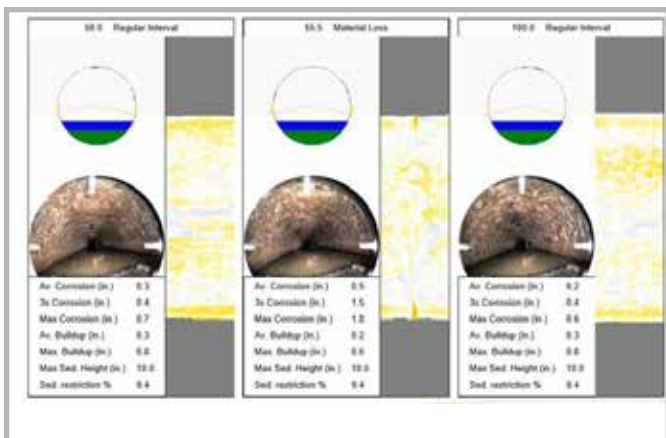
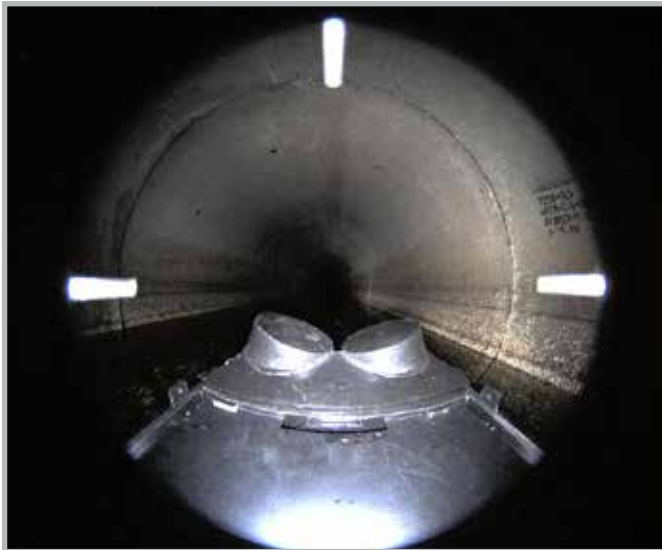
The CUES SoLID FX (SFX) is the preferred multi-sensor inspection (MSI) system for large diameter pipes. Whether the need is for condition assessment [2D] to determine the 'remaining-useful-life' or rehab planning [3D] to obtain accurate dimensions of bends and underground structures, SFX is the tool 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



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.



MARK 3

Portable Inspection System



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.



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.

MPlus+ & MPlus+ XL

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 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 Representative 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 coils 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

flexiprobe C540c

Portable Video Inspection System



The flexiprobe C540c system simplifies your operations by automatically creating a survey report, allowing you to concentrate on your inspection tasks.

Share your reports quickly and easily via email or the Dropbox file sharing service.*

Use GraniteNet software to integrate the CUES flexiprobe C540c to your asset inspection, decision support, and work management program.

- ✓ Email directly to client / manager or share to DropBox using wireless hotspot connection to phone.
- ✓ Powerful controller provides a comprehensive and intuitive user interface, simple menus and dedicated function buttons.
- ✓ Built-in rechargeable batteries provide up to 7.5 hours usage. Charge on the move for longer use time.
- ✓ Integrate with CUES GraniteNet software† to create NASSCO standard compliant reports including PACP, LACP, and MACP.
- ✓ Ruggedized case and IP55 rating provide reliability and usability most challenging environments.
- ✓ A quick boot-up, an intuitive user interface and a high definition 10.1" TFT display, the C540c lets you concentrate on the job in hand.



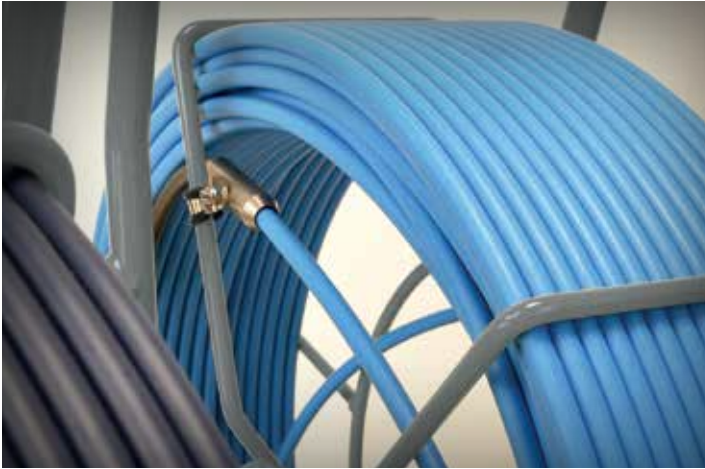
Controller

The flexiprobe C540c system is managed by the most powerful and intuitive Controller ever designed by CUES. A quick boot-up, an intuitive user interface and a high definition 10.1" TFT display, the C540c lets you concentrate on the job in hand.



*WiFi access point required, such as mobile phone, tablet or dongle.

†May require a separate GraniteNet licence from CUES.



A range of rods to suit your application

From 100' (30m) for residential and small commercial plumbing use, right up to 500' (150m) for specialist applications.



Ultra-tough high resolution cameras

Stainless steel construction in a compact design. 2 choices: 1" (25mm) for small pipes, and self-levelling 2" (32mm and 50mm) for larger diameter applications. High resolution sensors and ultra bright white LEDs ensure a clear picture, even when submerged in water up to 330' (100m) deep.

Simpler. Faster. Smarter.

THE FLEXIPROBE C540C SYSTEM IS MANAGED BY THE MOST POWERFUL AND INTUITIVE CONTROLLER EVER DESIGNED BY CUES.

flexiprobe C540c systems include as standard:

- flexiprobe C540c controller
- Choice of color camera and 512/640Hz flexisonde:
 - 1" (25mm) camera, skid ball, universal brush and skid kit and sonde.
 - 2" (50mm) self-levelling camera, skid ball, universal brush and skid kit and 1.4" (35mm) sonde.
- Choice of pushrod reels:
 - 100' (30m) or 200' (60m) C541c Plumbers reel
 - 115' (35m) C541c reel
 - 200' (60m) or 400' (120m) P542 reels
 - 500' (150m) C543c reel
- Controller swivel mount (optional or the C541c plumbers reel).
- Mains power supply / charger, IP55 keyboard and CUES tool bag



flexitrax C550c

Portable Video Inspection System



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 controller 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 6" / 152mm 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.



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.



C550c HUNTER

Base Station



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".



EASY-TO-USE



PORTABLE



COMPACT

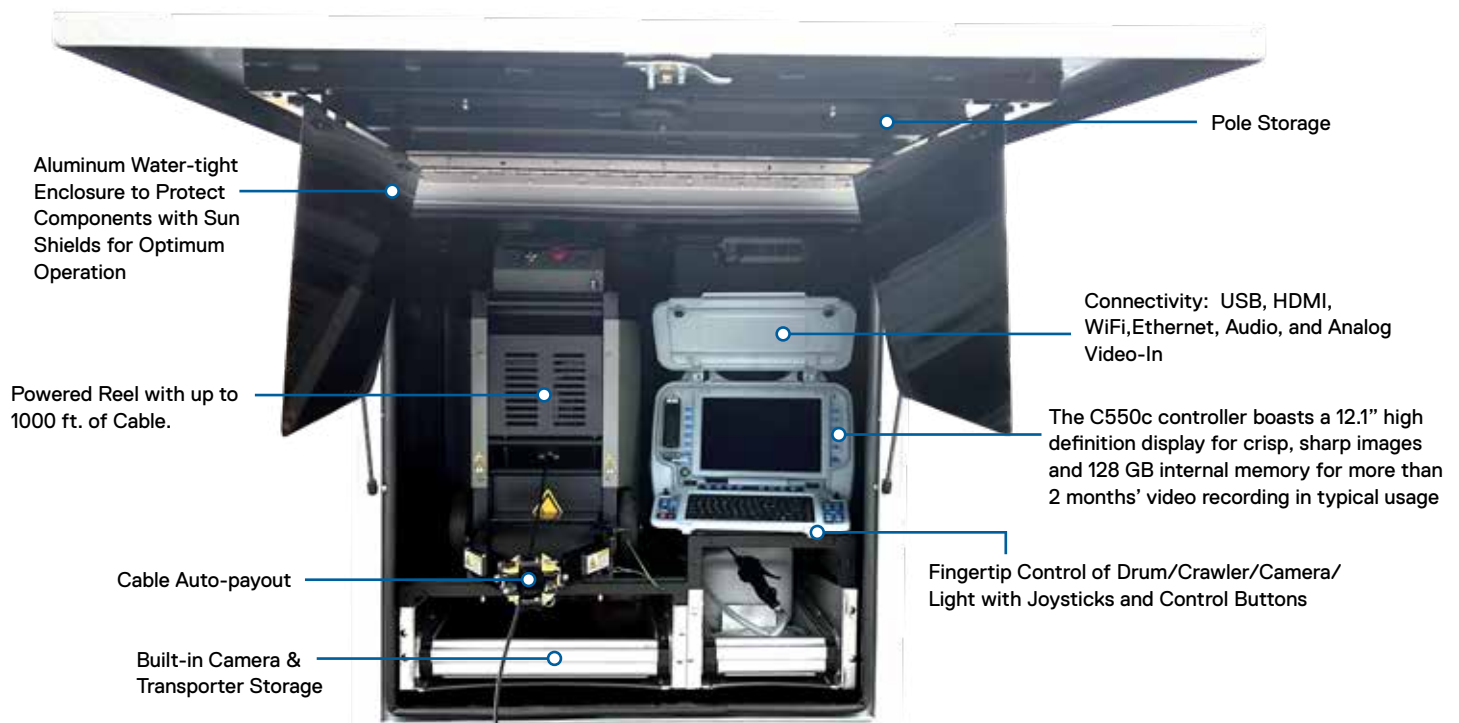
C550c HUNTER BASE STATION



CUES



Features & Benefits



Select either a cost-effective manual cable drum or an advanced powered drum - each with up to 1000ft cable.



Three interchangeable 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.

K2 WIRELESS

Base Station



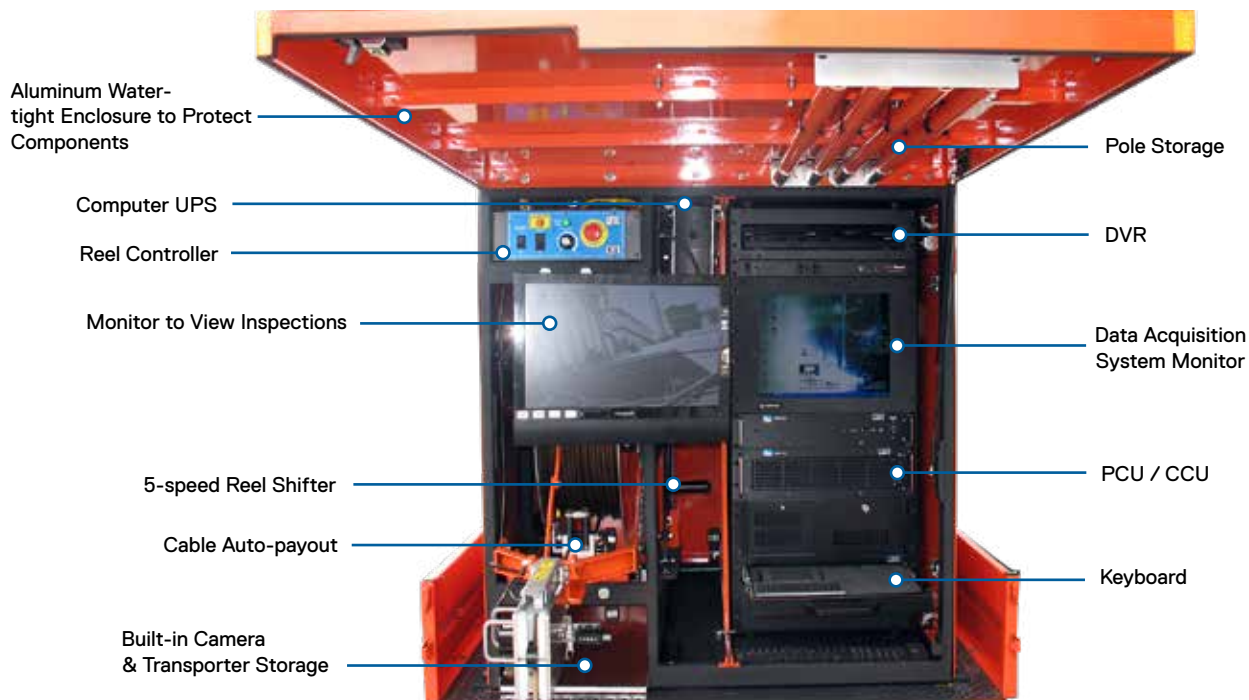
THE CUES K2 BASE STATION IS MOUNTED IN A COMPACT, RUGGED, WEATHER-PROOF ENCLOSURE AND CAN FIT INTO AN ATV, VAN, OR PICK-UP TRUCK TO ACCESS EASEMENTS AND HARD-TO-REACH AREAS.

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



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.

K2 WHEELED DOLLY

Mini-Mainline Inspection System



The K2 Wheeled Dolly is a portable, rugged, durable mini-mainline system for 6"- 200" (152 mm - 5080 mm) pipeline inspections.



Cost-effective pipeline inspection solution in lieu of a dedicated truck-mounted system.



Wireless control of all camera and transporter functions.



Portable, durable, rugged mini-mainline inspection system for use in 6"- 200" (152 mm - 5080 mm) pipelines.



Can access easements and difficult to reach areas since the system can be wheeled off-road.

The K2 Wheeled Dolly includes the same functions found in truck mounted systems while providing easement access as the entire system is self-contained and can be wheeled off-road. Priced at about ½ the cost of vehicle-mounted systems, the K2 Wheeled Dolly provides all of the operational capabilities normally found only in dedicated vehicle systems.

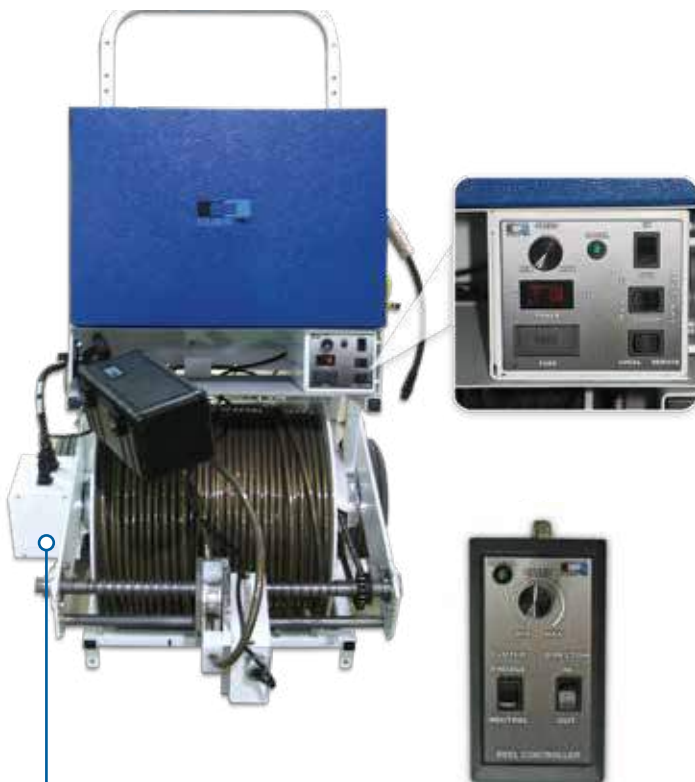


K2 Wheeled Dolly

Features & Benefits



An optional DVR-SD Digital Video Recorder (DVR) is available to digitally record and playback manhole and pipeline inspections. The recordings are saved on a SD card.



An optional electric clutch with remote reel control pendant is available (shown above).



THE K2 WHEELED DOLLY PORTABLE PIPELINE INSPECTION SYSTEM PROVIDES ALL OF THE OPERATIONAL CAPABILITIES NORMALLY FOUND ONLY IN DEDICATED VEHICLE SYSTEMS.

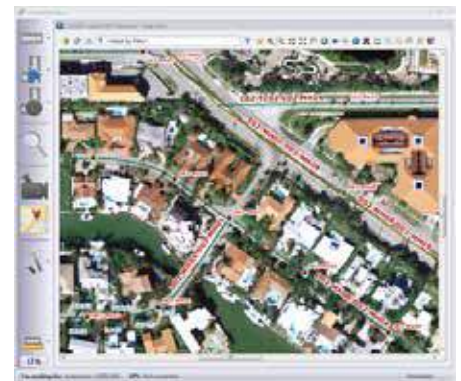
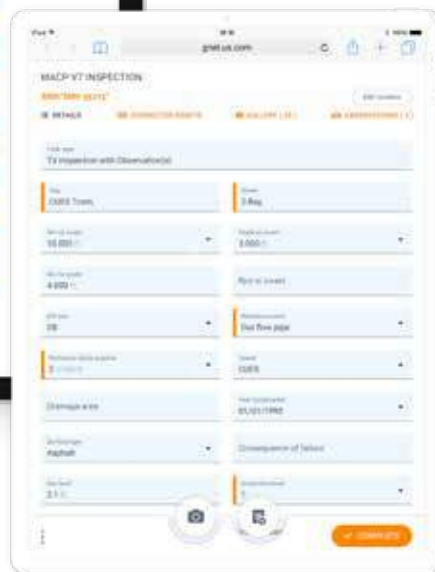
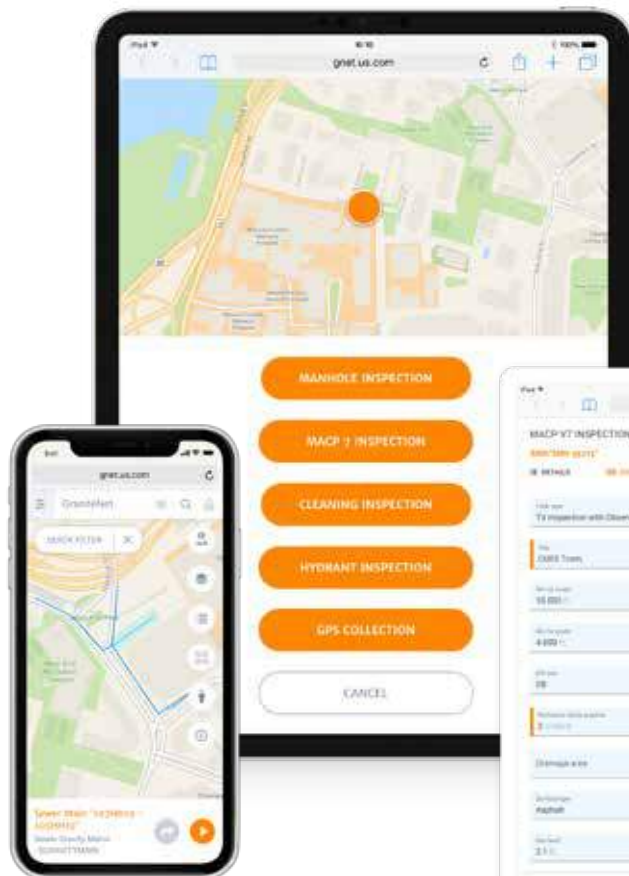
- Wireless control of all camera and transporter functions.
- Integrated hand-held controller for all CUES transporters and pan and tilt cameras.
- Optional electric clutch with remote, reel control pendant is available.
- Built in video overlay unit and system diagnostics.
- Portable and compact; easy to move for easement inspection.
- 10" (254 mm) LCD high resolution flat screen monitor.
- Lightweight / compact unit.
- Rugged video cable; minimum 1000 lbs (454 kg) break strength; 1000' (305 m) video cable capacity.
- Works with GraniteNet Asset Inspection/ Decision Support Software.
- Optional DVR-SD Digital Video Recorder is available to digitally record and playback manhole and pipeline inspections. The recordings are saved on a SD card.



Affordable. Secure. On-Site or Hosted.

The GraniteNet Software Platform leads the industry for all your condition assessment applications and data.

Simple-to-use software for mobile workers with browser-based devices or PC users on Microsoft Windows.



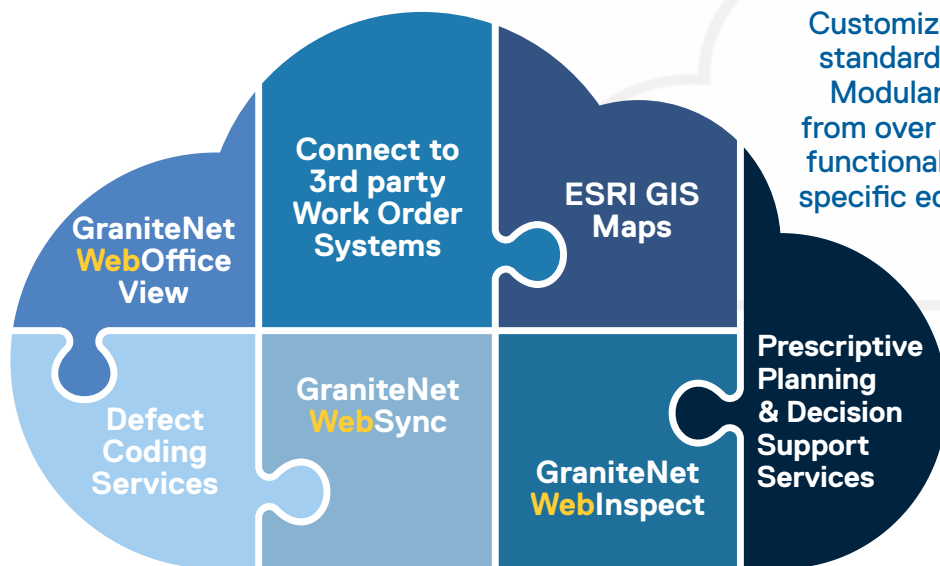
NASSCO Assessment Standard Support

Public Works, Utility Asset Management, Contractors, GIS Mapping, GPS surveys, CCTV Data Collection, and much more. Manage people, activities and equipment to support virtually all kinds of work flows.



GraniteNet

Features & Benefits



Customize forms, reports, data entry standards and user interface views. Modular software lets you choose from over 40 Optional Modules to add functionality based on your needs for specific equipment, data requirements and budget.

Sync data through the Internet to the Cloud



MANGE OFFICE TASKS & EDIT INSPECTIONS



PERFORM & VIEW INSPECTIONS / REVIEW TASKS



FIELD INSPECTIONS



MOBILE INSPECTIONS



Learn More @ <http://gnet.us.com>

*GraniteNet Cloud Hosting powered by AWS





▶ Asset Inspection Software

▶ Grouting Equipment & Vehicles

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