ProductCatalog

Video Pipeline Inspection Equipment and Vehicles

Manhole Inspection Equipment and Vehicles

Condition Assessment & Asset Inspection Software

Grouting Equipment & Vehicles

Learn more at **cuesinc.com**

CUES

GoTheDistance.

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.

Care was taken in the design of this product and in the production of this document and related materials. However, CUES makes no warranty for the use of its products and assumes no responsibility for any errors or omissions in this document or for incidental or consequential damages resulting from the use of the products or the information contained in this document. Specifications may change without notice.

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

More locations to serve you!

CUES ® Corporate Office
3600 Rio Vista Avenue
Orlando, Florida 32805
800-327-7791
407-425-1569 FAX
8am - 6pm EST M-Fri

CUES ® Atlanta
2390 Satellite Blvd NE
Suite G
Buford, GA, 30518
770-945-8674
770-945-9604 FAX
8am - 5pm EST M-Fri

CUES West
1943 S. Augusta Ct.
Ontario, CA 91761
909-923-2001
909-923-2091 FAX
7AM - 6PM PST M-Fri

CUES Mid-Atlantic
50 McCullough Drive
New Castle, DE 19720
Main Office: 302-322-4800
Cell: 941-900-9905
8am – 5pm EST M-Fri

CUES ® MidWest
2325 Parklawn Drive,
Suite K
Waukesha, WI 53186
Phone:: 262-717-3165
Fax: 262-717-3167
7AM – 4PM CST M-Fri

CUES ® Canada
1675 Sismet Rd., #2
Mississauga, Ontario
Canada L4W 1P9
905-238-9178
905-238-5018 FAX
8AM - 5PM EST M-Fri

CUES Northwest
1000 NW Commerce Ct.,
Suite B
Estacada, OR 97023
Phone: 1-800-432-1549, x403
Fax: 909-923-2051

CUES toll free hot line for Customer Service and ordering parts: 800-854-CUES (800-854-2837)

Styles and specifications are subject to change without notice. First version published in 2000.
Printed in the United States of America.

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.

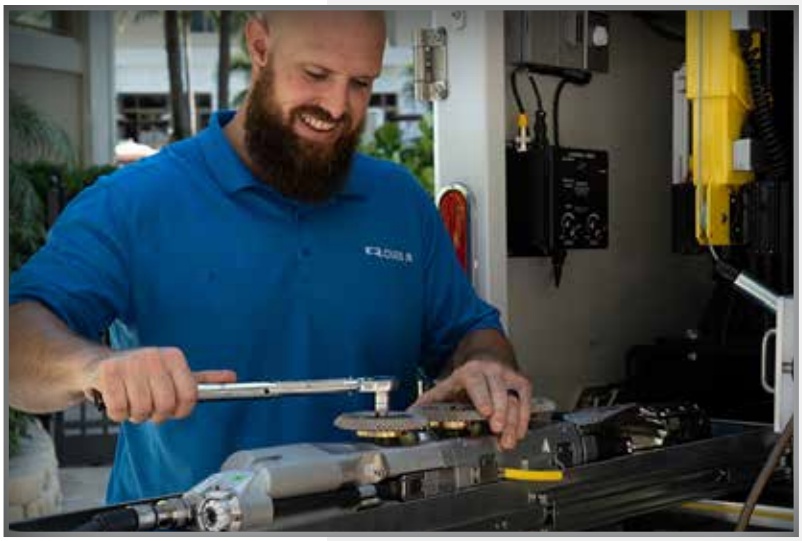
CUES continues to be the industry leader by designing and manufacturing a full-circle solution of products for pipe inspection, profiling, rehabilitation, and data acquisition with bi-directional interfaces to ESRI ArcGIS and asset management software such as Hansen, Maximo, Azteca Cityworks, and others.

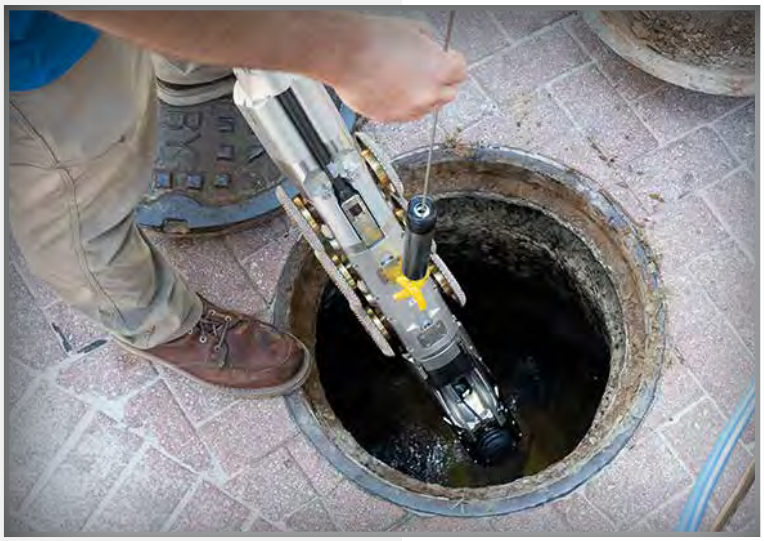
In addition to inspection equipment, CUES also designs and manufactures chemical grouting systems for mainline and lateral pipe joints capable of using a wide variety of grouting products. CUES also manufactures lateral reinstatement cutting systems for laterals in mainline sewers after they have been 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 ft^2 (5,576 m^2) 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.

Table of Contents



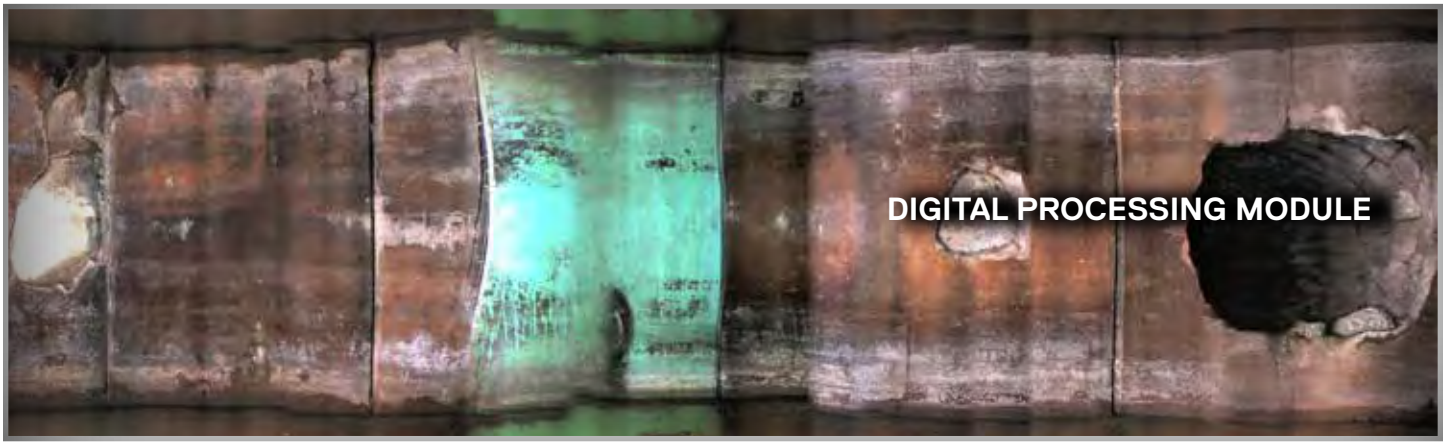


CUES
GoTheDistance.

DUC
DIGITAL UNIVERSAL CAMERA

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.



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.

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.
- 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).

OZIII-S

PAN TILT & OPTICAL ZOOM CAMERA WITH SONDE

The OZIII-S camera provides up to 120:1 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-S 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.

**The photos shown below and on page 2 include the OZIII Camera.

Use the OZIII-S camera with the CUES steerable Compact Pipe Ranger (CPR) to inspect 6” (152 mm) relined through 48” (1219 mm) sanitary and storm sewers. OZIII-S connects directly to the CPR transporter with no exterior wires or cables. The OZIII-S camera includes a sonde to accurately locate the camera in metallic and non-metallic pipes! An optional inclinometer is also available for inclination surveys.

OZIII-S Camera Features & Benefits

- 10X optical zoom and 12X digital zoom; total 120:1 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 cool white LED lighting for 6”-72” (152-1829 mm) lines with optional external lightheads; 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.
- Includes a 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 12X digital zoom; total 120:1 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.

OZII

PAN TILT & OPTICAL ZOOM CAMERA

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 320:1 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 lighthead! Easy operation at the controller allows the operator to change the sensitivity of the camera at their fingertips - - no need to install an external lighthead if the pipe material or pipe diameter changes!

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

OZII Camera Features & Benefits

- 10X optical zoom and 32X digital zoom; total 320:1 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 (cool white LEDs); 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 32X digital zoom; total 320:1 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.

PIPE RANGER II & **STEERABLE PIPE RANGER II**

MULTI & SINGLE CONDUCTOR WHEELED TRANSPORTERS

8” Rubber (203 mm)

8” Steel (203 mm)

10”- 15” Rubber (254-381 mm)

10” - 15” Steel (254-381 mm)

12”(305 mm) Pneumatic

18” - 72” Knobby (457-1829 mm)

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.

The SPRII 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.

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).

COMPACT PIPE RANGER

MULTI CONDUCTOR WHEELED TRANSPORTERS

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 CPR includes full-proportional steering to traverse meandering pipe and 45 and 90 degree turns.

CPR in the 6" (152 mm) Rubber Configuration

CPR in the 8" (203 mm) Configuration

CPR in the 6" (152 mm) Steel Configuration

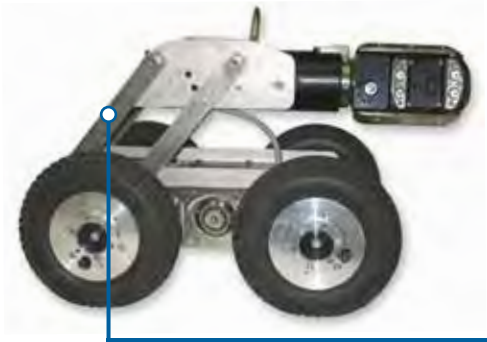
Multiple wheel sets are available to maximize bottom-clearance, traction, and optimize camera position; High-traction wheels are available for slippery PVC pipe; Wheels can be installed or removed from a single point of contact.

The superior pulling power of the CPR, combined with the optics and directional lighting of the compact OZIII-S 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.

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-S 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-S 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.

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

WTRIII TRANSPORTER

WHEELED/TRACKED TRANSFORMER TRANSPORTER

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.

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!

WTRIII Transporter Features & Benefits

- 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-S pan and tilt zoom camera.

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.

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

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

Various wheel sets and tracks are available to maximize performance.

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

MUDMASTER & **STEERABLE MUDMASTER**

MULTI & SINGLE CONDUCTOR WHEELED TRANSPORTERS

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.

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

SMM Transporter Features & Benefits

- Inspects 24”- 200” (610-5080 mm) pipelines.
- 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.

SMM is a self-propelled power forward, power reverse, and freewheel multiconductor transporter.

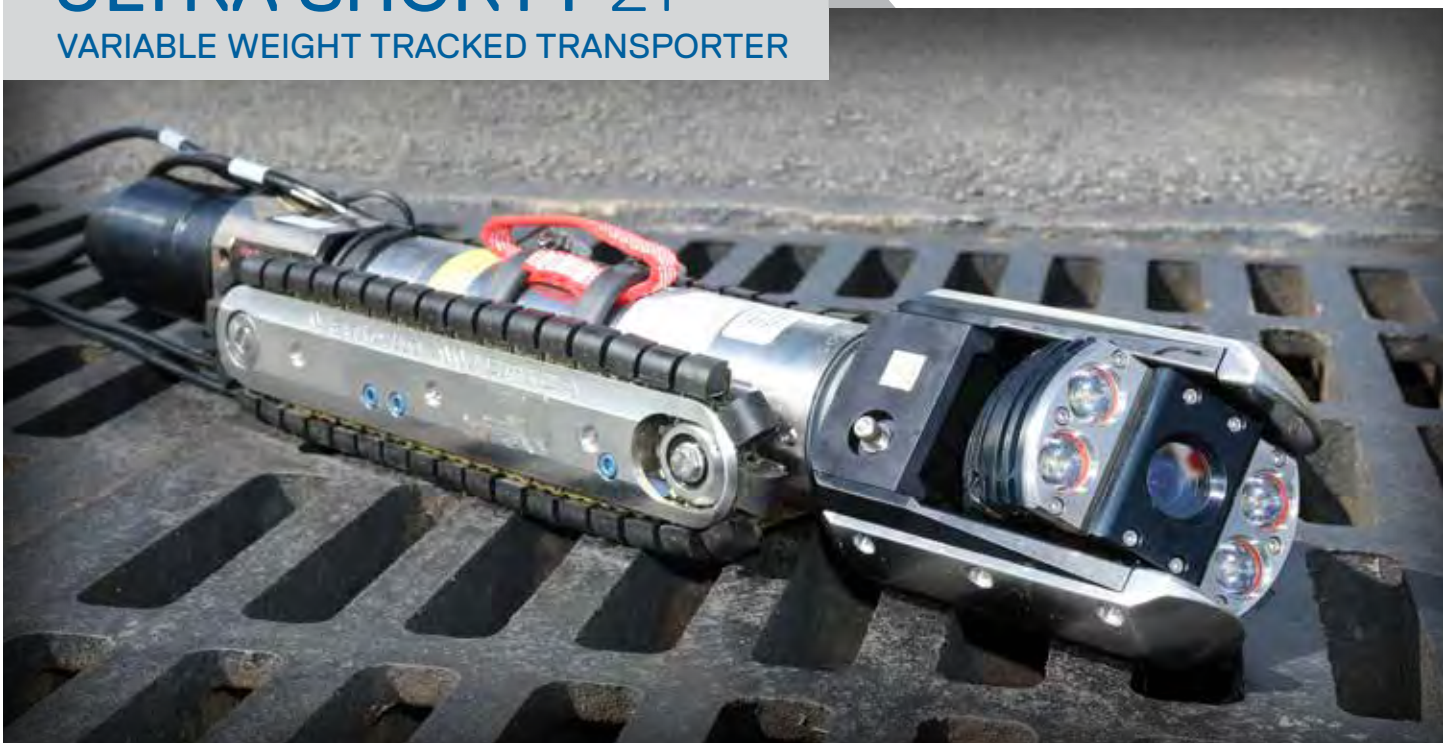
SMM has three mounted video lights that provides superior lighting, when needed.

SMM is capable of inspecting pipes up to 200” diameter and can turn in its own length.

SMM includes a remote-operated adjustable camera lift to position the camera for best available picture;

ULTRA SHORTY 21

VARIABLE WEIGHT TRACKED TRANSPORTER



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 Transporter Features & Benefits

- 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).

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

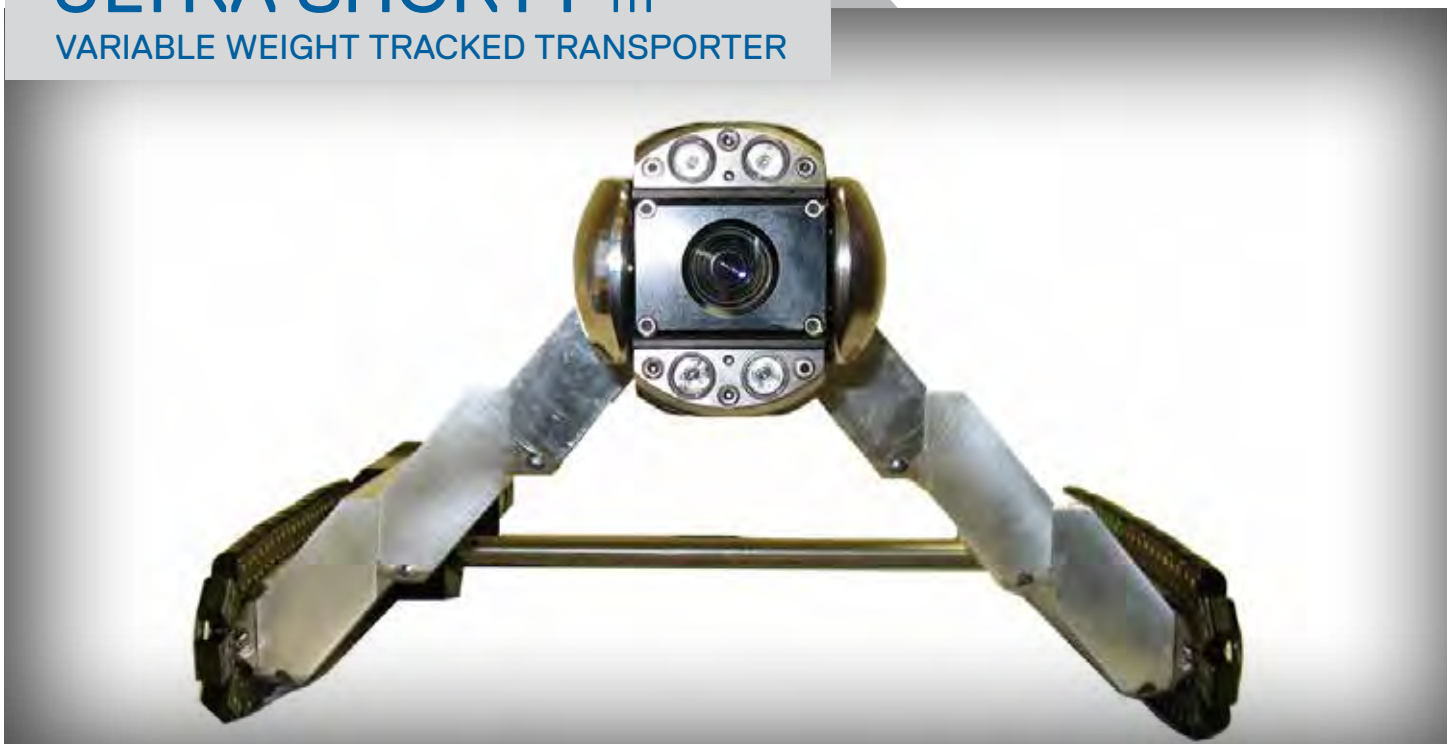
Adapter blocks are available to optically center the camera in 30” to 36” (762 mm - 914 mm) lines.

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.

ULTRA SHORTY III

VARIABLE WEIGHT TRACKED TRANSPORTER



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 transporter is designed 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-S 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-S camera; no camera interface cables are required.

ULTRA SHORTY III Transporter Features & Benefits

- 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-S 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.

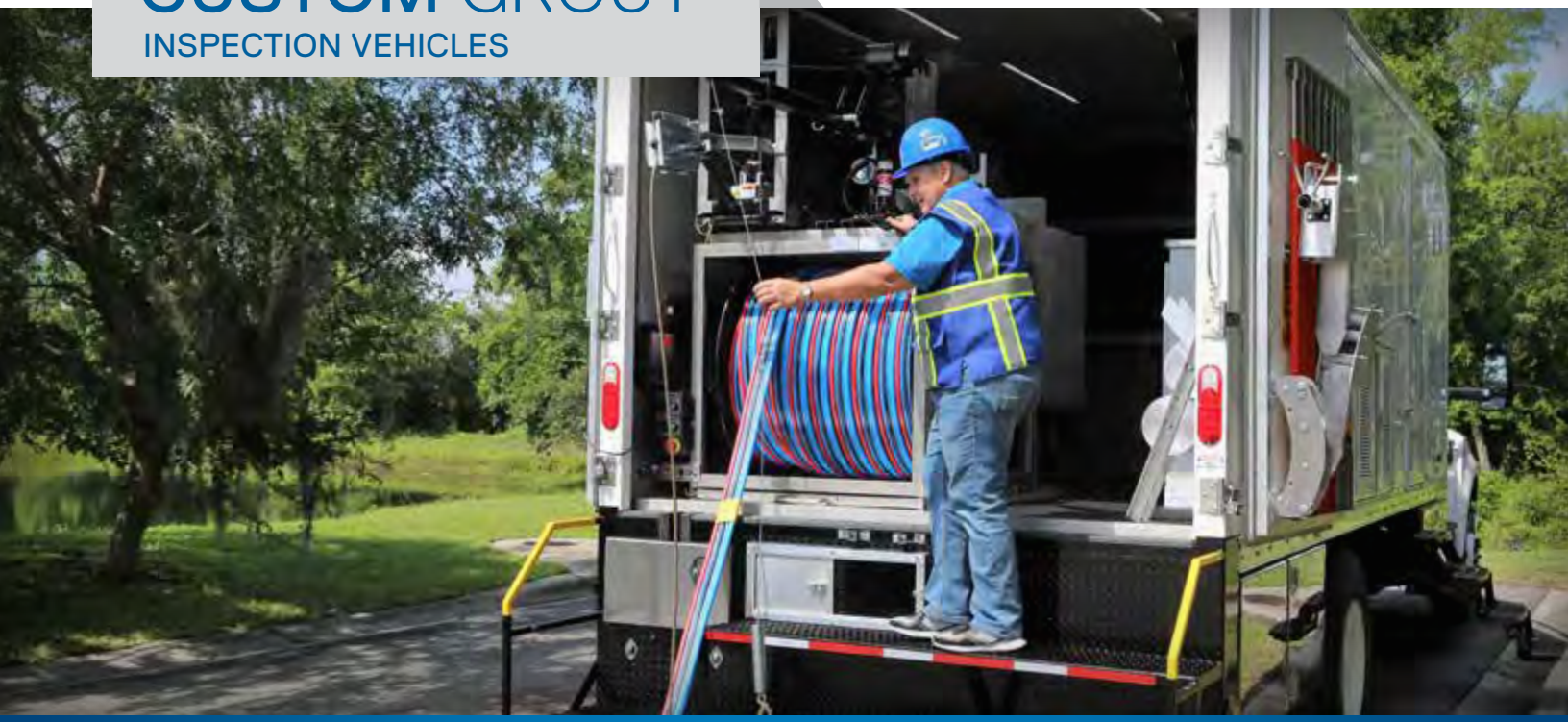
Inspect 6" (152 mm) relined to 24" (610 mm) lines with major offsets and protruding laterals.

Reduced OZIII-S 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.

CUSTOM GROUT
INSPECTION VEHICLES

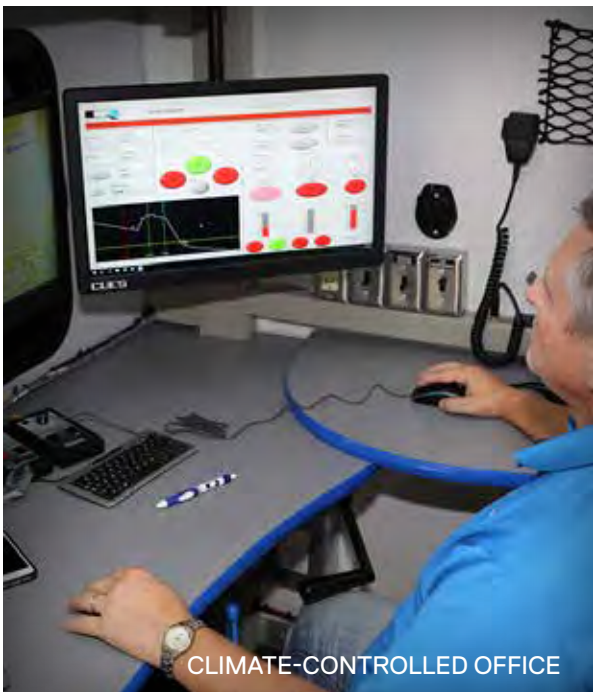


CUES offers a full line of CONTRACTOR-GRADE portable and truck-mounted chemical grout rehabilitation systems. Grout packers are available for mainline and lateral sealing.

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. The system offers plenty of room for packers and grout materials.

Applications include pipe stabilization and support, 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),trailer-mounted systems, and retrofits are also available. Combo trucks are available for TV, Cutter, & Easy Grout.

CONTROL PANEL	Easy Grout computer program, graphic user interface, intuitive, easy to train, lower operational cost; an office is not needed using wireless Easy Grout.
CHEMICAL TANKS	Chemical resistant, polypropylene, clearly labeled, can order 30 gallon (114 L) or 60 (227 L) gallon capacity with heaters.
FLOORING	Lonseal lonplate industrial-rated vinyl throughout.
WALLS	Kemlite, scratch, dent and chemical resistant; grey finish makes the interior brighter.
GROUT TANK MOTOR & HEATER	Variable-speed, electric, with small stainless steel propellers located near the bottom of the tank to aid mixing and prevent air from entering the grout hoses.
REEL FRAME	Stainless steel construction on all grout-related equipment and components.
CAT OR GRACO 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	Eliminates premature chemical set-up.
BOX 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 7.5kW 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) or 100 gal (379 L) capacity.
CONTROLS	Computer program and K2, wireless for camera and packer, can control lateral packer using our wireless handheld controller.



CLIMATE-CONTROLLED OFFICE

Stop Leaks in sewers, manholes, tanks, vaults, tunnels, and many other applications.

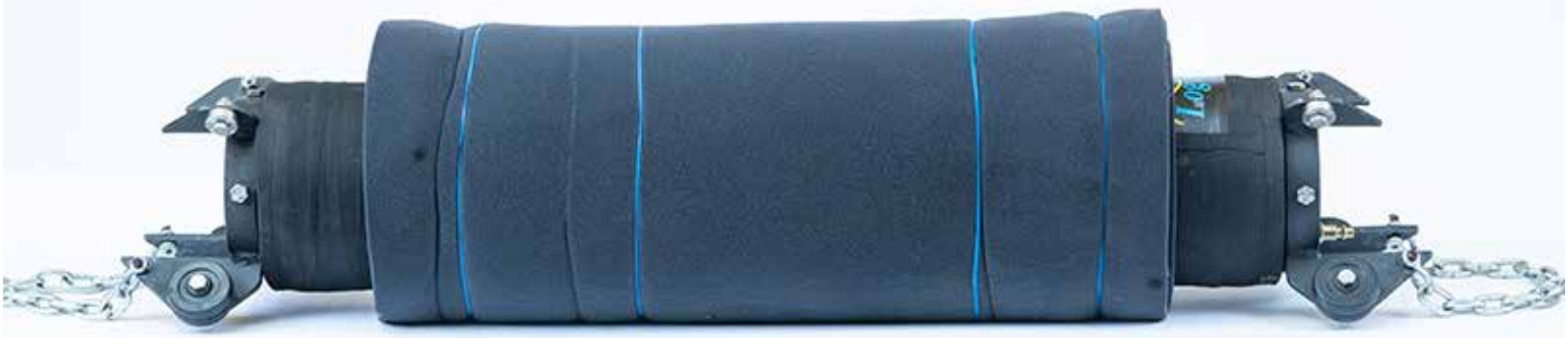
Chemical grouting is the least expensive rehabilitation method available and also the least disruptive.

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.

CUES LOCK™

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



How CUES LOCK can help you GO THE DISTANCE

CUES offers innovative no-dig solutions for efficient and reliable repair of sewer lines. CUES LOCK products are designed to be used as stand-alone spot repairs and/or to enhance the quality and reliability of cured-in-place lining. CUES LOCK products are easy to install, require very little equipment, and most repairs can be completed in live sewer operating conditions. CUES LOCK uses proven technologies and does not require digging or external point repair.

Infiltration? We've got you covered!

INNOVATIVE NO-DIG SOLUTIONS! ENHANCE THE QUALITY AND RELIABILITY OF CURED-IN-PLACE LINING WITH CUES LOCK PRODUCTS

CUES LOCK structural point repair sleeves provide a quick and easy way to repair holes, voids, cracks and weakened/broken sections in pipes.

BENEFITS:

- Sleeves can be used as a stand-alone structural point repair solution.
- Sleeves can be used in conjunction with CIPP to provide a complete rehab solution.
- Sleeves can be used to lock sagging or delaminating cured-in-place pipe back into place.

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.

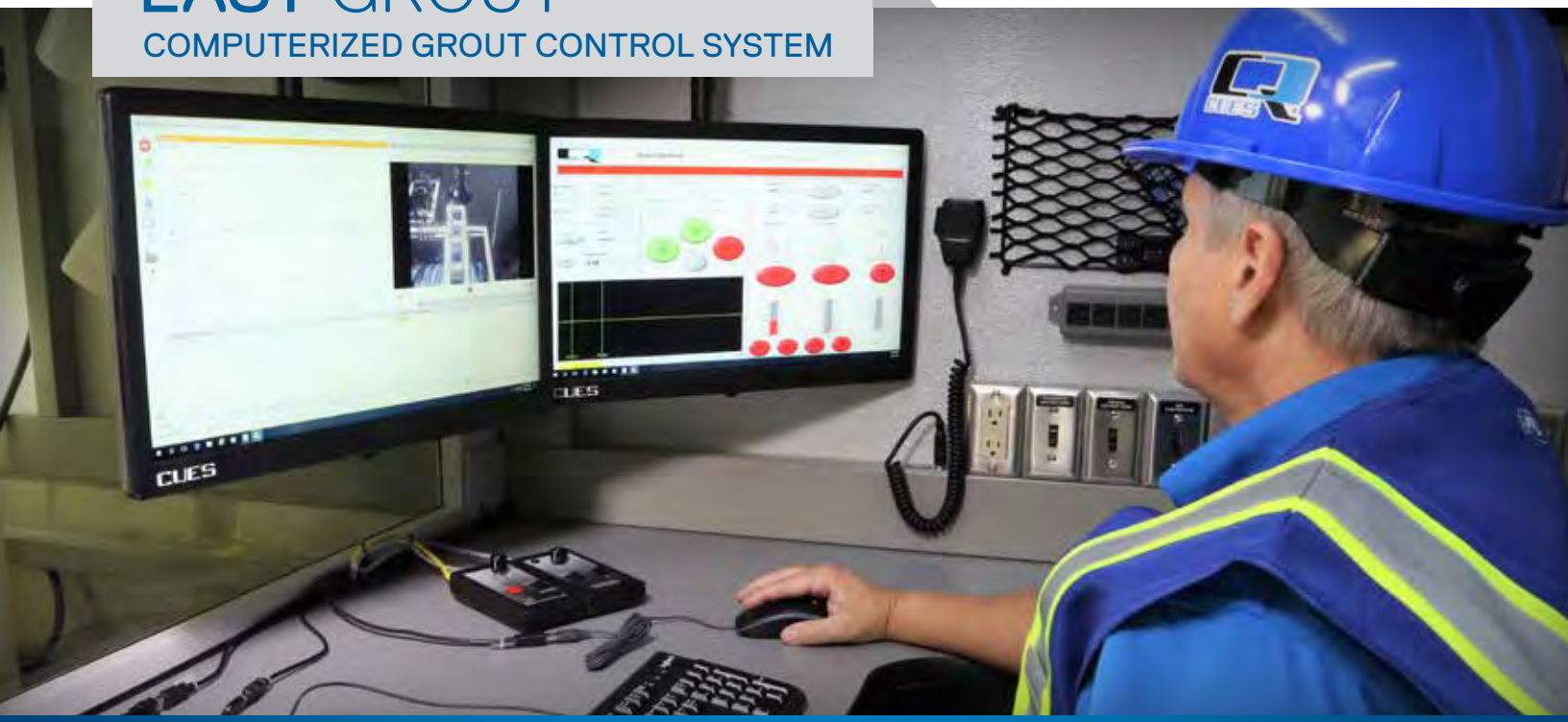
BENEFITS:

- 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 liner installation or after, depending on the application.

NOTE: F1 sleeves are used in conjunction with an F2 sleeve when installed in series to repair longitudinal defects.

EASY GROUT

COMPUTERIZED GROUT CONTROL SYSTEM

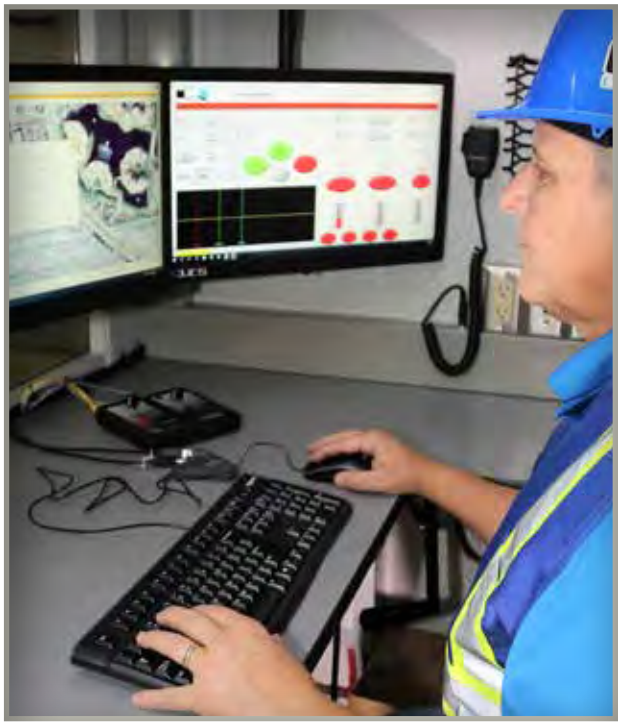


NO MORE mechanical, analog, dials, switches, or buttons! The CUES Easy Grout system is a computerized grout control system is designed to consolidate all the valves, electrical controls, etc., into an instrumentation cabinet that can be mounted in any location.

The Easy Grout graphical user interface (GUI) leads you intuitively through the grouting process. The Easy Grout system and user interface 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. Call us for a discussion and demonstration.

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.

CHEMICAL SEALING

LOW VOID PACKERS

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 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

- 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.

CUES is the industry leader of portable, truck, and trailer mounted grout rehabilitation systems for mainline, manhole, and lateral joint sealing.

Low void packers are available for 8”- 20” (203 mm - 1067 mm) diameter pipe sizes. *Larger sizes are available upon request.

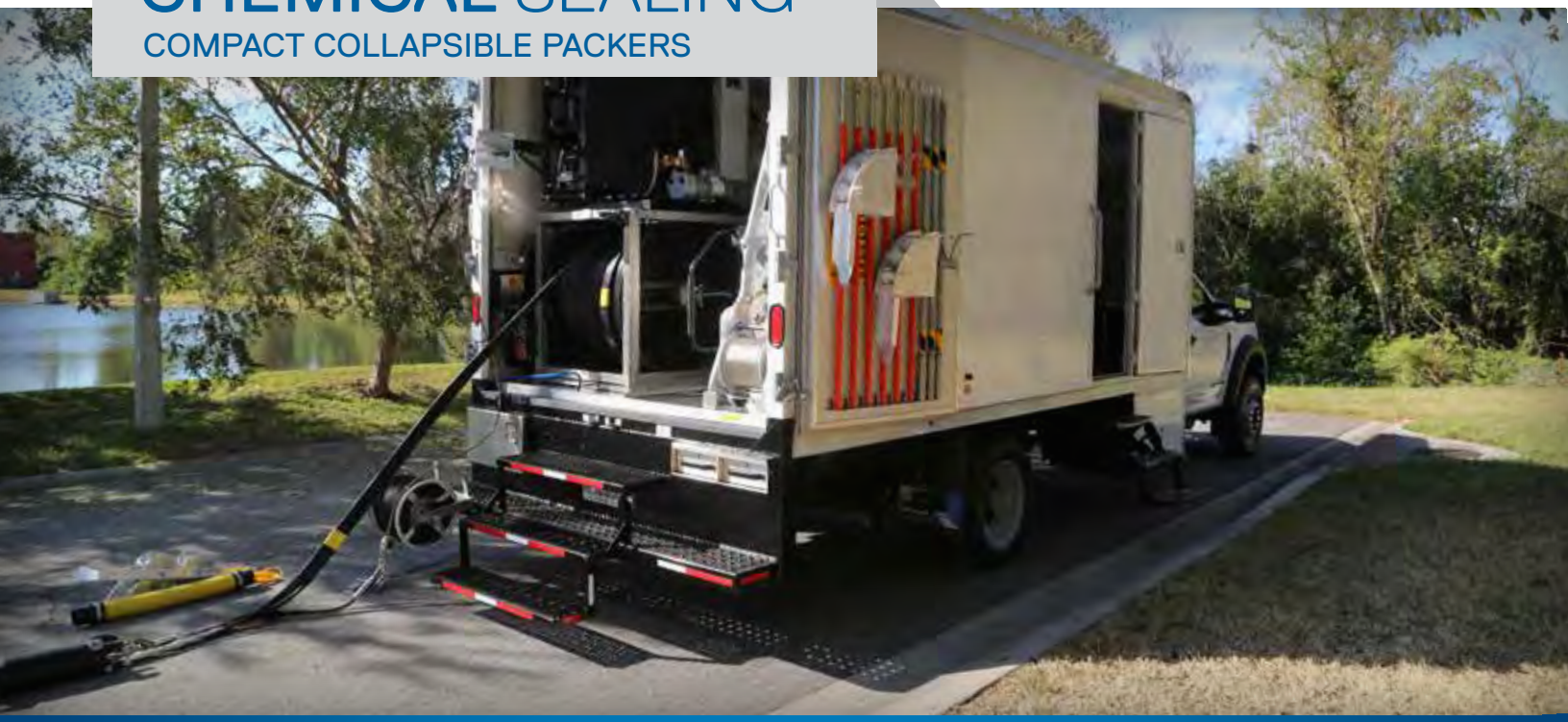
Field-replaceable sleeves reduce overall repair and downtime.

Packers can be operated and used with existing CUES Grout Systems.

Low volume operation provides a cost effective use of grout.

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.

CUES grout rehabilitation vehicles are available for mainline joint sealing/lateral sealing and can be equipped with the latest CCTV equipment for pipeline inspections.

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 PRE-BUILT PIPELINE INSPECTION VEHICLES AVAILABLE FOR QUICK DELIVERY

Does this sound like you?

- ☑ Did your current contract expand, requiring you to expand your resources quickly?
- ☑ Were you awarded a contract that starts in short order and you need an inspection vehicle now?
- ☑ Do you have additional funds at the end of the calendar year and want to reinvest in your CCTV fleet?
- ☑ Does the City want to start a new inspection program or increase inspection capability now?
- ☑ Does the City have budget money available and need a new pipeline inspection vehicle before the end of the fiscal year?
- ☑ With this new urgent job prospect, we need another inspection vehicle now!

Piqued your interest?
Scan here to learn more!

CUES

CUES has pre-built vehicles (Mainline & Lateral inspection, Mainline Only, Grout, & Cutter), and Demos/Trade-Ins available for quick delivery!

Unlike our competitors' trucks, pre-built trucks from CUES are always in stock, on the lot, and ready to hit the road. They're pre-configured with all the essential CUES inspection equipment needed for most jobs—the same equipment found in most custom trucks, yet they can be delivered in a fraction of the time. Most pre-built vehicles can be delivered within 4 weeks after receiveing a purchase order.

Check out five great reasons why CUES pre-built trucks are driving the future of sewer inspection quality, cost, and efficiency:

1. **Always in Stock -** Because we maintain a continuous stock of trucks on our lots, CUES can deliver your truck(s) 3-4 weeks from purchase—often sooner, if we have the accessories in stock, which we almost always do. Compared to the average 120 days to build a custom truck, it's a win/win when you want to start the job fast and save money at the same time.

2. **Choice of Functionality -** CUES pre-built trucks come with both lateral and mainline capabilities, all in one truck. Don't need lateral equipment? We can deliver a mainline-only truck. So if you need a truck with a mainline transporter or a lateral transporter or both, we have you covered. Our proprietary software, GraniteNet, is also an option for all our trucks, and the license can be transferred to your next pre-built truck. We're all about making it easy.

3. **One-Year Warranty -** Our pre-built trucks are warrantied from 1 year from purchase and you always have the option to expand the warranty. We fully stand behind our trucks because we know they'll stand up to the toughest jobs.

4. **Made in America -** Our line of Ford F550 diesel and Ford E450 gas chassis pre-built trucks are outfitted with the latest rugged and reliable CUES equipment, also made in the USA. We are a proud company headquartered in Orlando, FL.

5. **Affordability with No Sacrifice -** Compared to the cost of a custom truck (which allows for added design options but typically few changes to equipment), a CUES pre-built truck can make all the difference to your bottom line. We occasionally have discounted demo/used pre-built trucks in stock as well. For buyers looking for an affordable payment plan, CUES works with a financing partner to help you arrange the terms that work for you.

CUES' line of pre-built trucks is second to none for quick delivery, reliable performance, and state-of-the-art equipment for even the toughest sewer inspection project. Visit our website to see the full range of available pre-built trucks in stock right now, or contact us for more information.

We'll get your show on the road in no time ... so you can GO THE DISTANCE, every time.

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!

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).

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, 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.

*Lateral inspection can be added to any of the aforementioned configurations.

**The CUES DUC Camera, SoLID FX, and CATVS can be added to an inspection vehicle, based on equipment configuration.

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.

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.

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.

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.

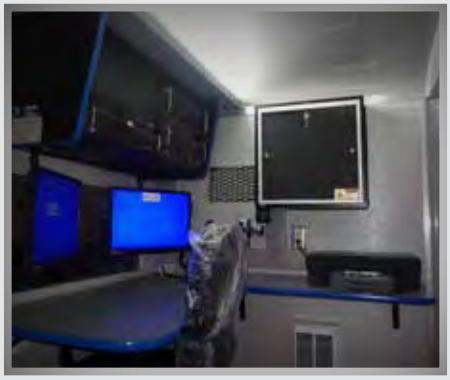
OPTIONAL EQUIPMENT

- 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.

CUSTOM
TRAILER-MOUNTED SYSTEMS

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!

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.

Pan & tilt inspection of ALL lateral connections, with or against the flow! Simultaneous pan, tilt & zoom inspection of mainlines!

To remedy potential crossbore risks and to protect / locate buried assets and the surrounding environment, use the CUES LAMP II

- 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.
- An optional, removable rear-viewing camera is available to allow for cable management and help avoid obstacles/potential tip-overs in the pipeline by providing visibility when retrieving the unit or driving in reverse.

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.

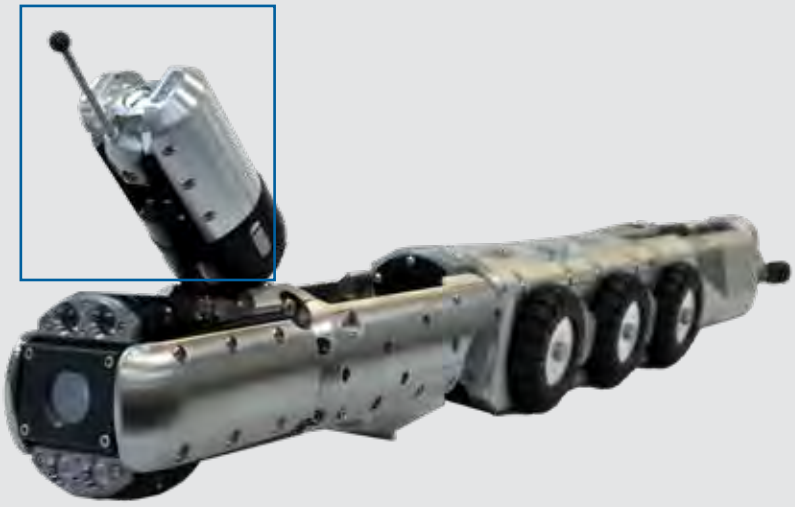
> OPTIONAL REAR-VIEWING CAMERA

MINI

PAN & TILT CAMERA

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.



Use the optional CUES Mini Pan & Tilt Camera with the CUES LAMP II or MPlus+ XL system for mainline pipe inspections.

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.

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.

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.

MICRO

PAN & TILT CAMERA

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.

Use the optional CUES Micro Pan & Tilt Camera with the CUES LAMP II for pipe inspections.

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.

Both small and 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.

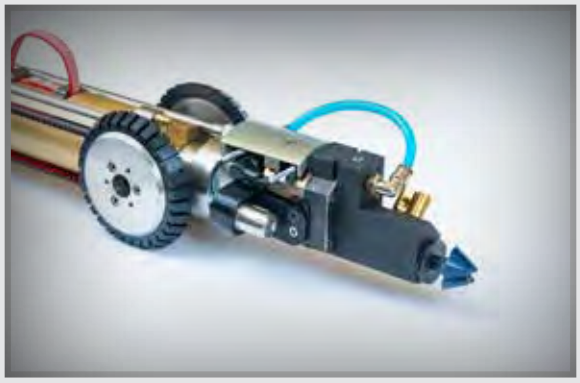
CURRAHEE
Lateral Reinstatement Cutters

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!

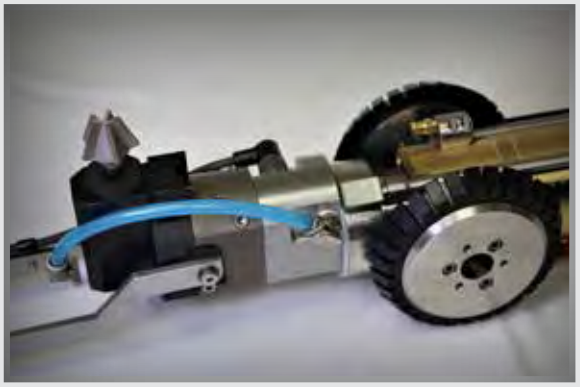
ONE CONTROLLER FOR ALL SYSTEMS!
The Currahee Cutters operate off the same gamepad controller that operates CUES mainline, digital side-scanning, lateral-launch, and grout equipment.



> VARIETY OF BITS AVAILABLE

> OPTIONAL PARTS AVAILABLE

> CURRAHEE CUTTER CAMERA

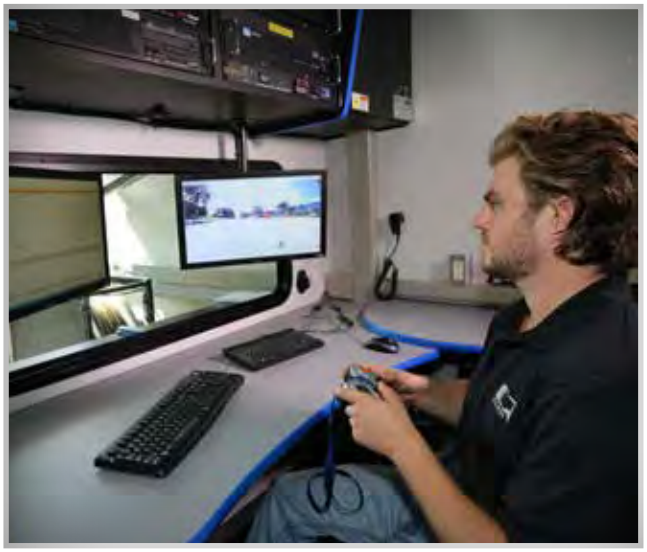


> WATER BLOW-OFF & WIPER

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



MANHOLE
Deployment Systems

Boom Arm-Out Position

Deployed Position

Stowed Position

Crane-Mast Deployment

CUES MAST SYSTEMS

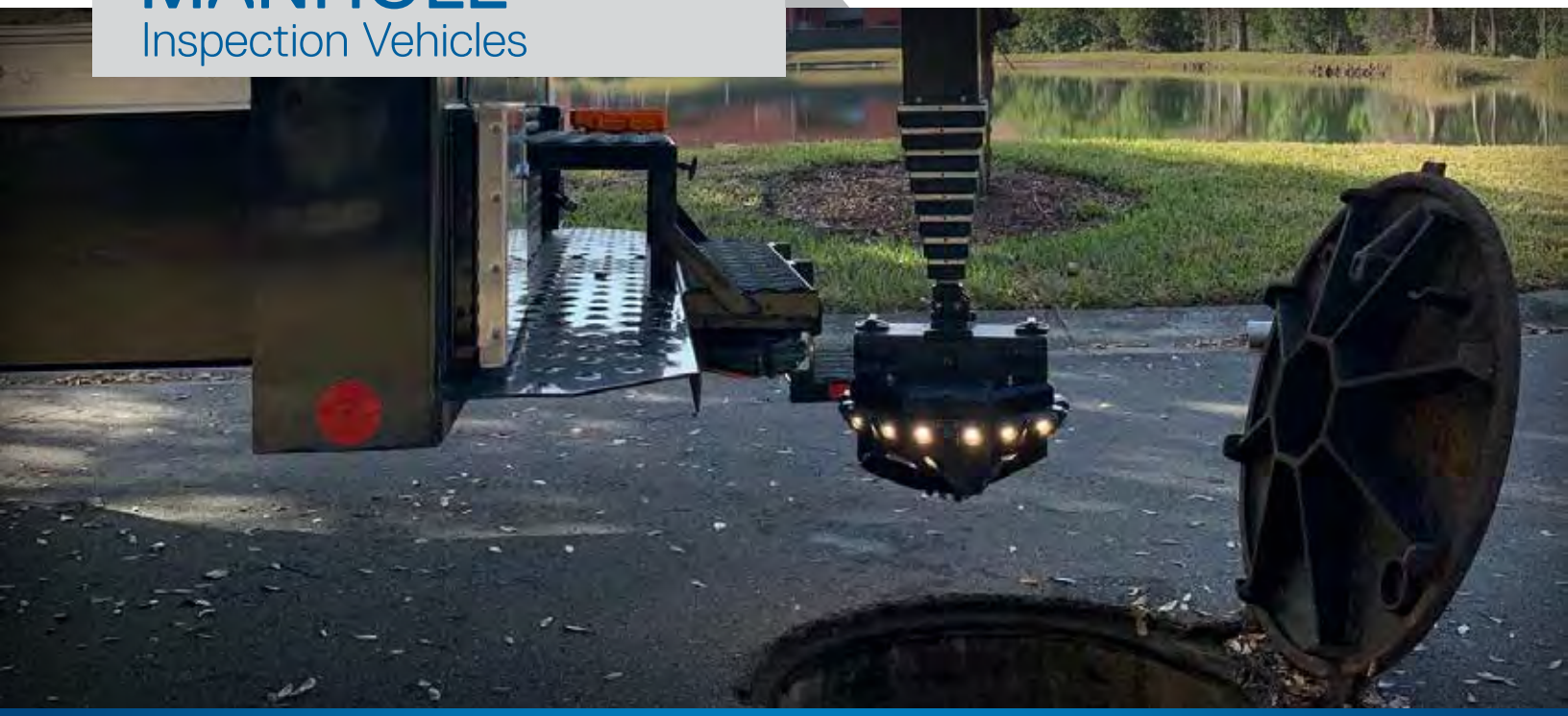
- The truck-mounted mast can position the camera 35' (11 m) below the surface of the road and is designed to achieve optimum picture stability throughout the optical zoom range of the camera.
- The camera unit can be electronically raised and lowered.
- Prevents the need for an operator to enter the 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.

Perform manhole & mainline inspections and gauge the manhole depth without the need for a camera transporter!

Tripod Deployment

MANHOLE
Inspection Vehicles



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.

CUES Manhole Inspection Vehicles can operate any CUES manhole camera.

DUC

QZ3

SPiDER

- 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.

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.

SPiDER
Manhole Scanner

3D Wireless Manhole Scanning

SPiDER is a revolutionary portable manhole scanning technology

ACCURACY	SPEED	WEIGHT	CABLE
1 to 5 mm	5' (1.5 m) / min	35 lbs (16 kg)	none

>Tablet Controlled

> Measurable Color Point Cloud

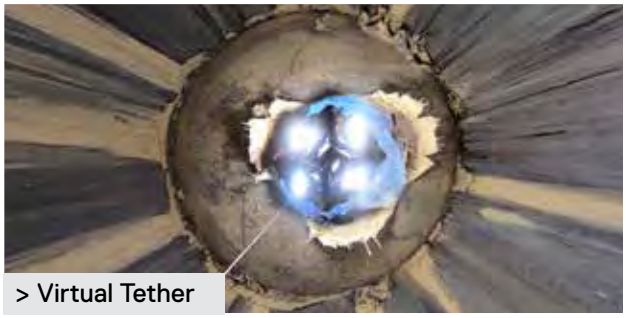
> Wireless Connection

A new outlook on how manhole data is collected and applied! The SPiDER Scanner is the first wireless and color manhole inspection technology in a lightweight and compact form factor.

- 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.

> Live Video

> Portability



> Virtual Tether

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.

DUC MANHOLE
Inspection Cameras

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!

Inspect more than 50 manholes per day with the CUES Digital Universal Manhole Inspection Camera.

- 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.

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.

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.

QZ3
Portable Inspection System

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!

QZ3 Basic

QZ3 is a lightweight, portable, video inspection system that can be operated by one person!

- 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

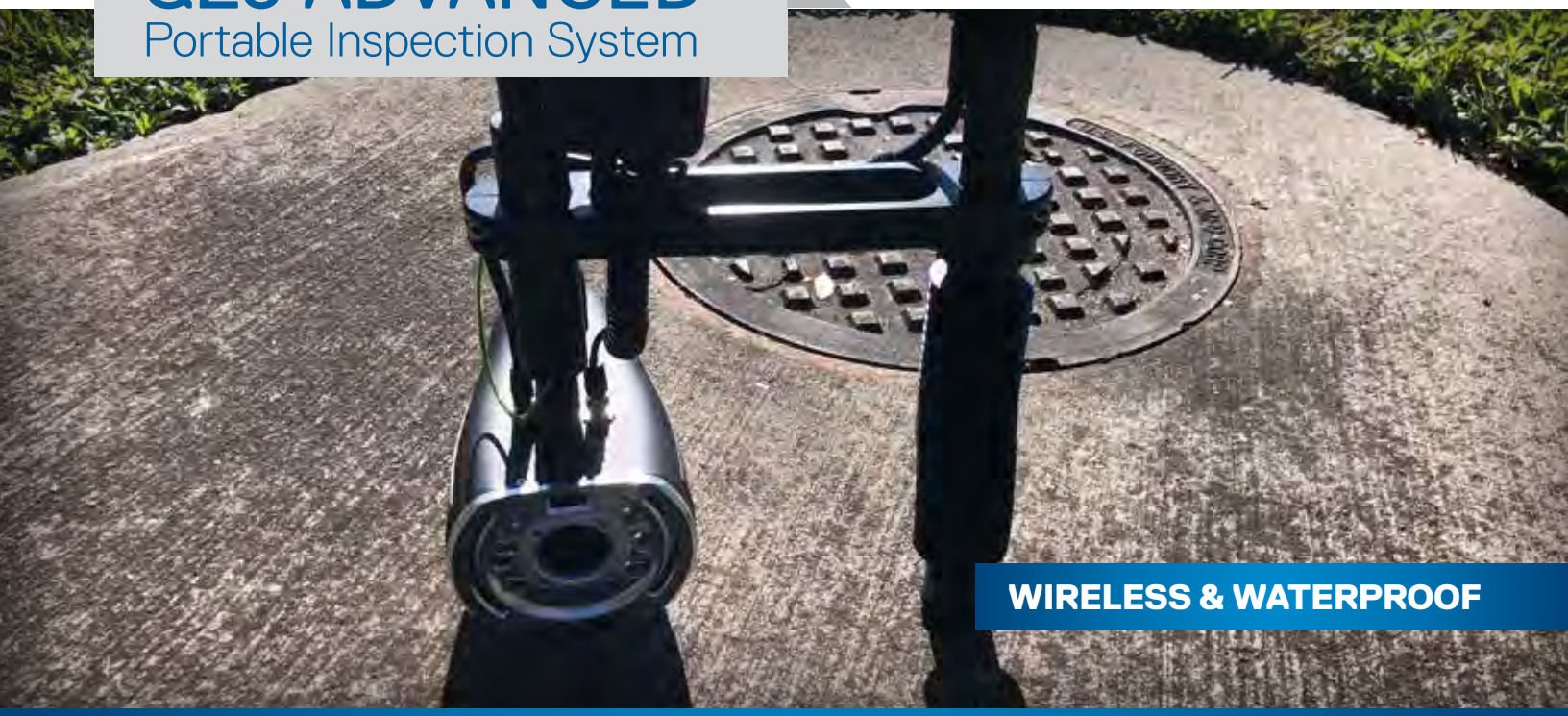
Simple to use and light weight!

Establish condition assessment priorities.

FAST-look, single-person inspections!

On-screen menu for easy set-ups.

QZ3 ADVANCED
Portable Inspection System

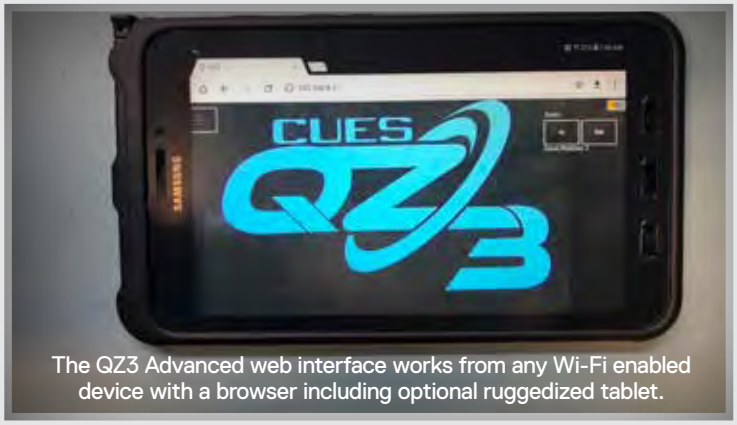


WIRELESS & WATERPROOF

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

Accomplish safe-viewing in industrial or environmental areas with no man entry.

- 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

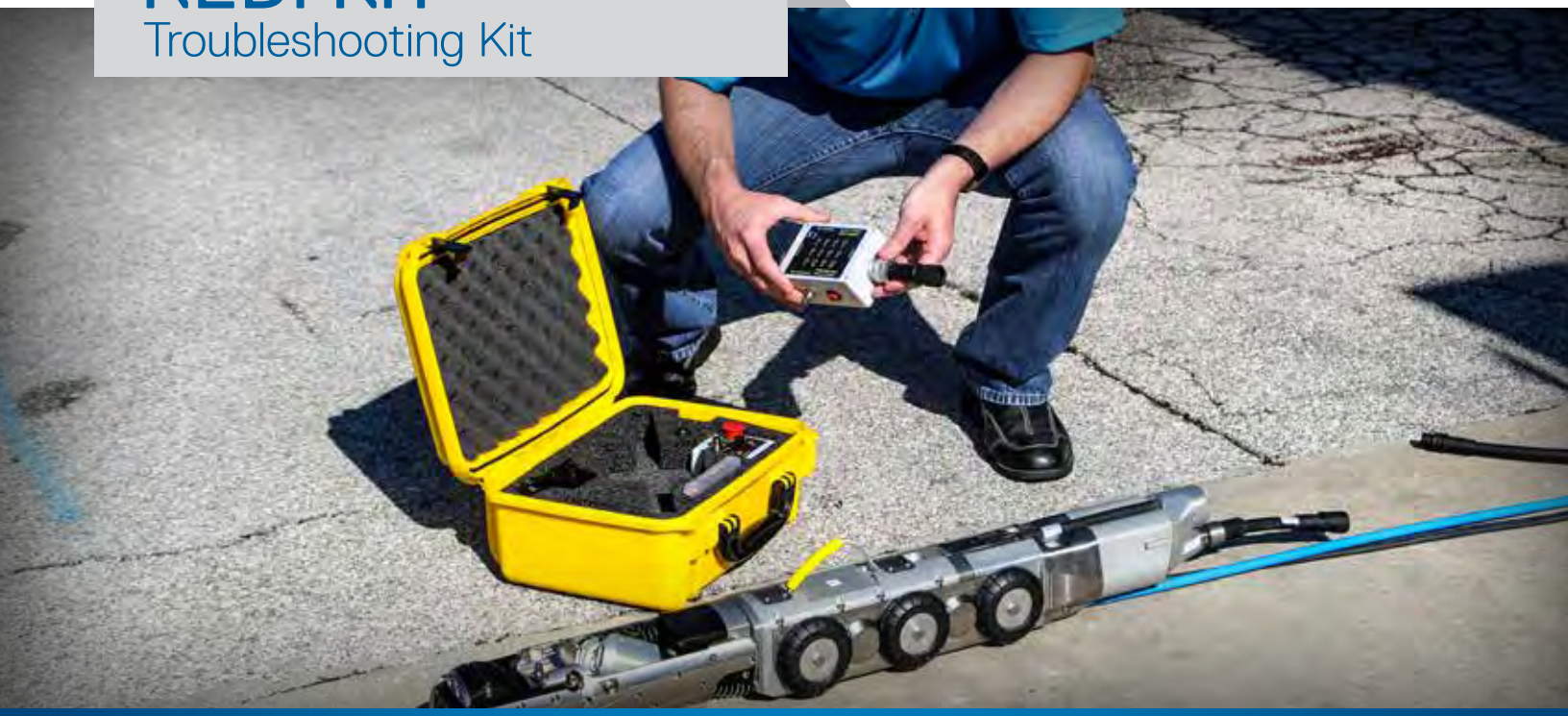
Simple to use and light weight!

Establish condition assessment priorities.

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

Integrated Laser Distance Measurements

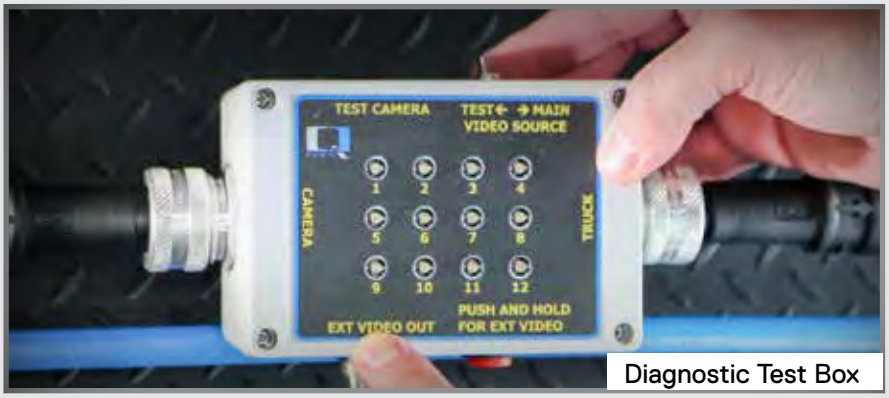
REDI KIT
Troubleshooting Kit



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

Take the TROUBLE out of TROUBLESHOOTING with the REDI KIT!

- 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.

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

ACCUPOINT
Precision Locating System

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.

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.

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.

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.

Accupoint MS611 Locator

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

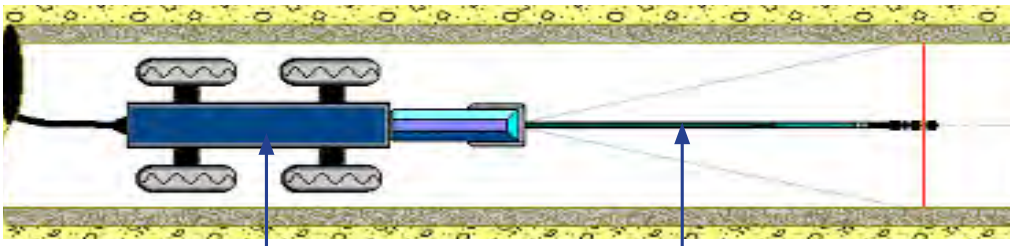
Alkaline battery pack (2 x LR20 D-cells)

Accupoint MS620 Transmitter

90V signal output and automatic impedance matching

Base tray for accessories

LASER PROFILER
System



THE CONCEPT - SIMPLE AND EASY:

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

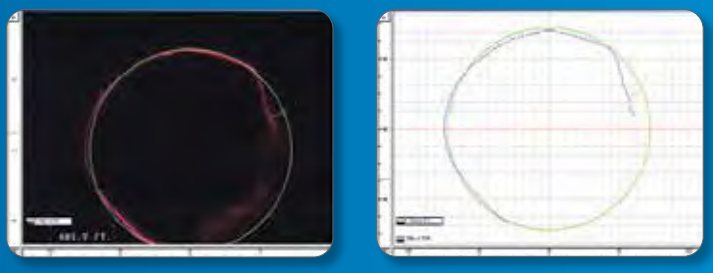
The software uses machine vision. Machine vision is used to find the video image of the laser profile (red laser line). Each frame of the inspection video is analyzed to build a digital profile of the pipe. From this profile, the Laser Profiler built-in functions display the following:

- 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 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 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.

CATVS
Combined Analog TV & Sonar

TV & SONAR TOGETHER ON A SINGLE CABLE

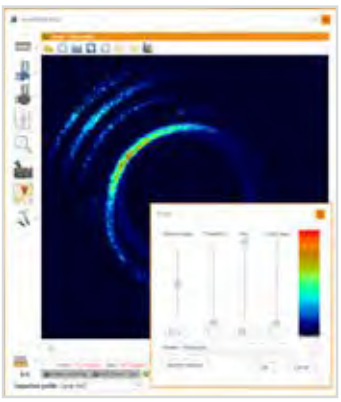
The CUES CATVS system is a single cable TV & sonar system that transmits both video and sonar on a single multi-conductor cable. This system is designed to work with the OZII camera and the Marine Electronics Sonar using a standard CUES gold cable. CATVS is ideal for partially and fully-charged pipelines, including difficult-to-inspect siphons and can be adapted to multiple platforms including: TV/Sonar Float, Sonar-only Float, steerable/non-steerable CUES Pipe Ranger transporters, and the CUES Mudmaster transporter.

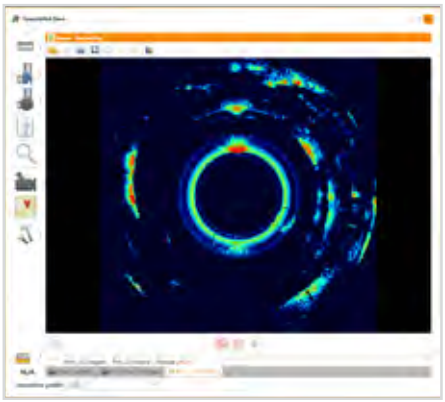
GRANITENET SOFTWARE - SONAR MODULE

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.



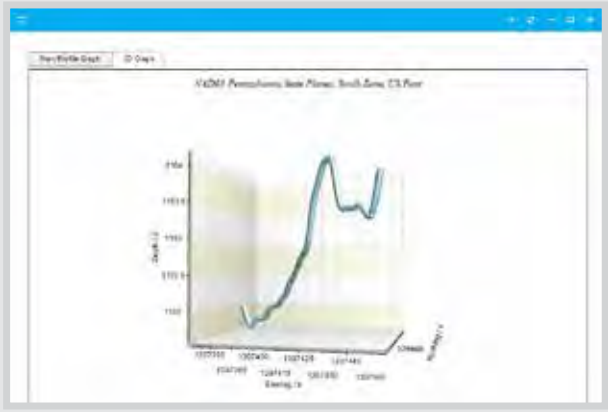


- Perform up to 5000’ (1524 m) inspection distances, depending on the equipment configuration.
- Diameter Range: 3’ - 20’ (1 - 6 m)
- Double your productivity by performing both Sonar and TV inspections in one run.
- A full-size truck is no longer required to perform simultaneous TV/Sonar inspections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

AMP
Pipeline Mapping System

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

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



- AMPVUE™ 3D Graph

- AMPVUE™ Data Transfer Download Screen

CUES AMP is the world's most versatile and unique autonomous multi-purpose pipeline mapping system that delivers exact 3D positional data.

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).

- 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.

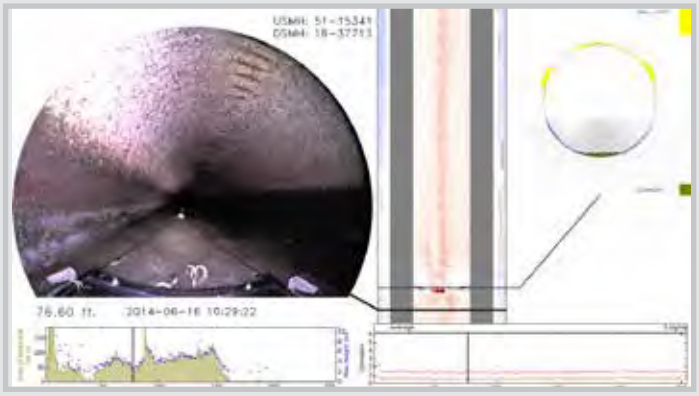
SoLID FX

SONAR/LIDAR Profiling System

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

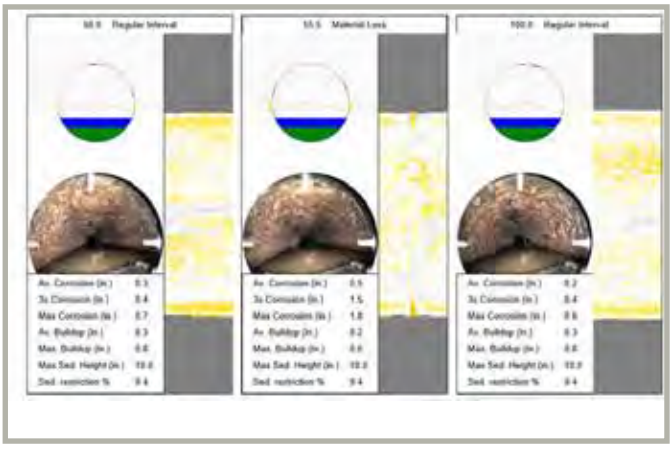
The CUES SoLID FX (SFX) is the preferred multi-sensor inspection (MSI) system for large diameter pipes. Whether the need is for condition assessment [2D] to determine the 'remaining-useful-life' or rehab planning [3D] to obtain accurate dimensions of bends and underground structures, SFX is the tool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

As a complement to our time-tested mainline equipment, the MARK3 fills the void between portable and traditional vehicle-mounted system. 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 allows operators 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.

- 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).

MARK3 features built-in diagnostics for the entire system--including the video cable. The MARK3 operating system can be mounted on the MARK3 reel, as a self-contained system, or remotely mounted in a truck or trailer. The reel-control console includes variable-speed control, automatic payout, and an emergency shutoff. The Power Control Unit is mounted on the rear of the video cable reel and can be removed for truck mounted systems, if required.

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

- 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.
- Additional features include a built-in SD Card, video playback and digital image capture, a connector for adding a remote DVR, LCD display case with built-in keypad that can be quickly removed and remotely mounted up to 20 ft. away from the MARK3 system, and much more! MARK3 comes standard with the capability to run our DUC camera and option to add Granite Asset Inspection / Decision Support Software.

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) longer 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+ offers the most flexible and feature packed lateral and mini-mainline push system on the market.

- 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 MPEG. recording and playback of video and screenshot picture images. The operation is fully integrated with easy to understand intuitive controls. 16GB external and 128GB internal memory is included.
- Operate the MPlus+ anywhere with 110/220 AC mains power, 12VDC power or the advanced internal Li-Ion battery delivering 4+ hours of use on a single charge.
- The standard and XL coilers will deliver years of service with their heavy gauge and corrosion resistant stainless steel construction.

OPTIONAL EQUIPMENT

- Optional adapters for the MPlus+ to work with truck-mounted/portable mainline systems and asset management software.
- 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.

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. Ruggedized case and IP55 rating provide reliability and usability most challenging environments.

*WiFi access point required, such as mobile phone, tablet or dongle.
†May require a separate GraniteNet licence from CUES.

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 on the C541c plumbers reel).
- Mains power supply/charger, IP55 keyboard and CUES tool bag

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.

flexiprobe 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. A built-in high capacity internal lithium-ion battery provides 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.

Integrate with CUES GraniteNet software† to create NASSCO standard compliant reports including PACP, LACP, and MACP.

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.

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.

Modular by design, the flexitrax C550c system can be paired with a range of products and accessories.

Software

Expand your client base by offering a variety of tailored surveys through the integration with CUES GraniteNet software.

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

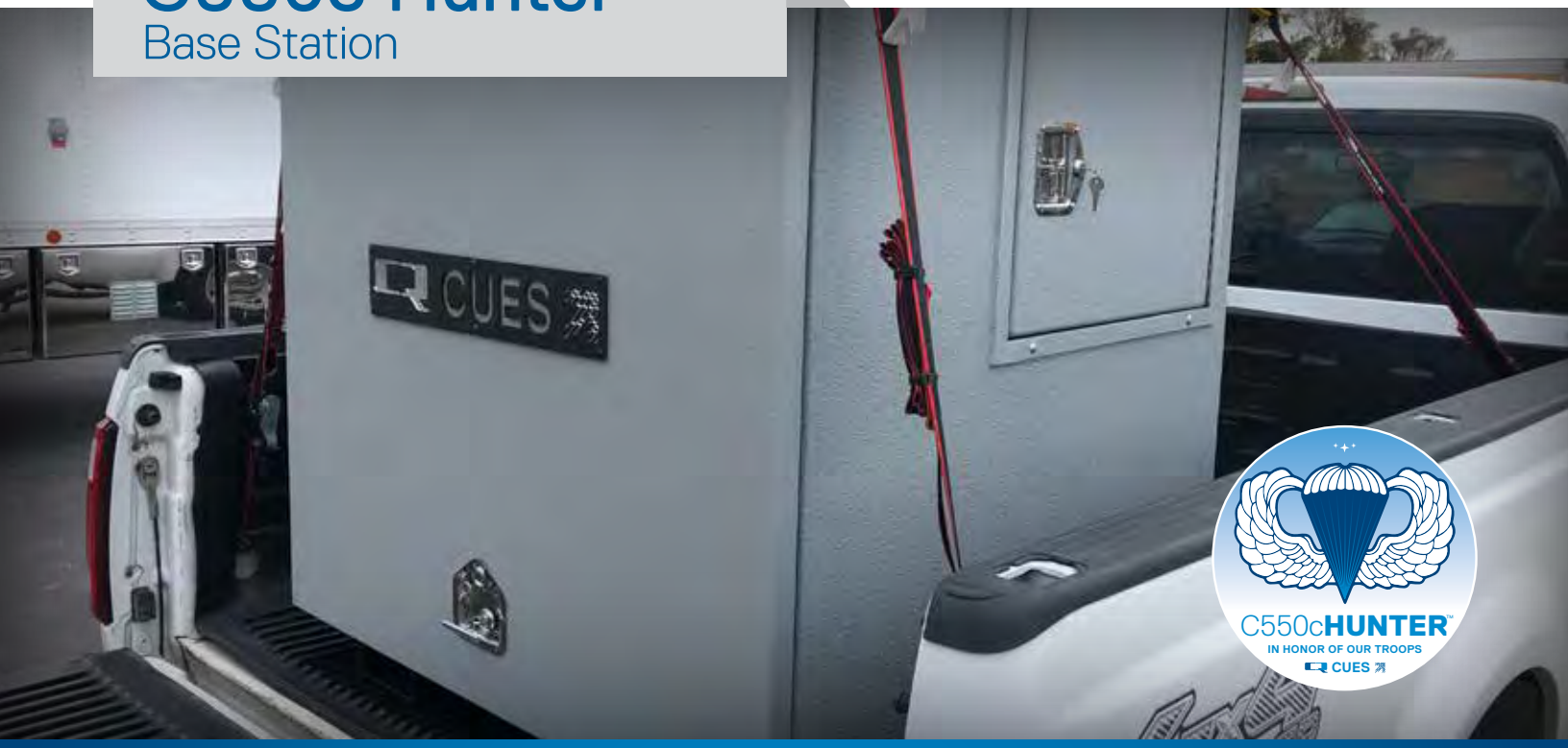
Both manual and powered elevators are available, for centered inspection up to 36”/900mm.

Cradle

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

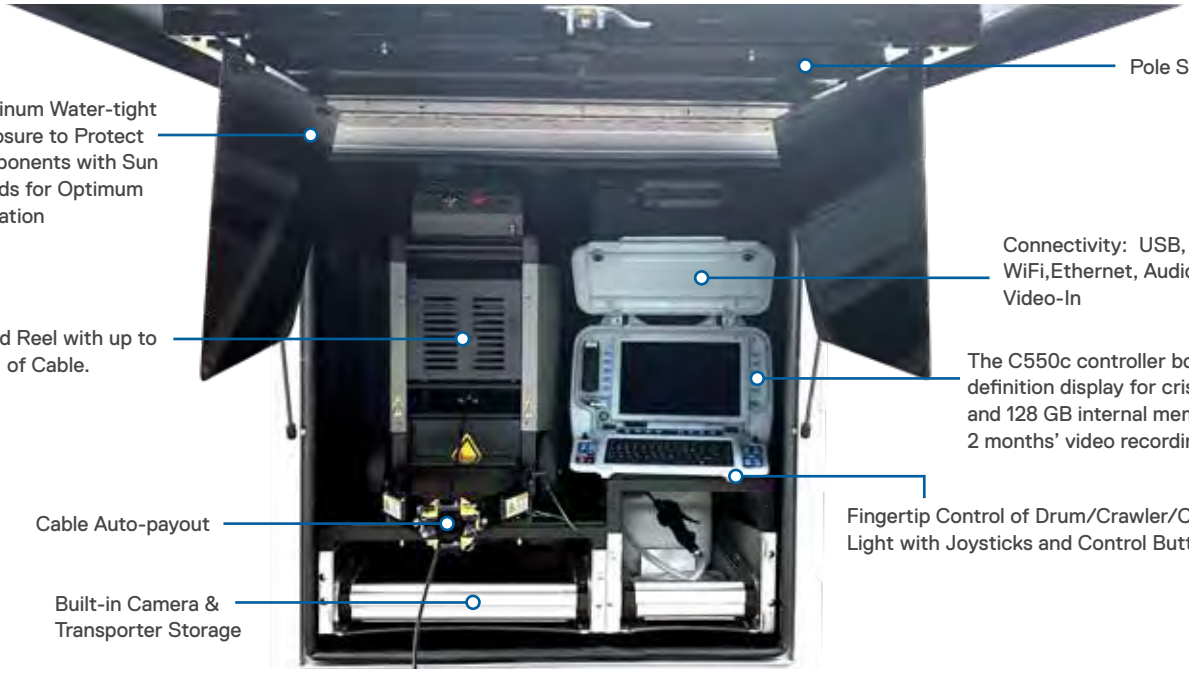
Other accessories are available.

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".



On the HUNT for a portable inspection system for hard-to-reach areas?

- 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.

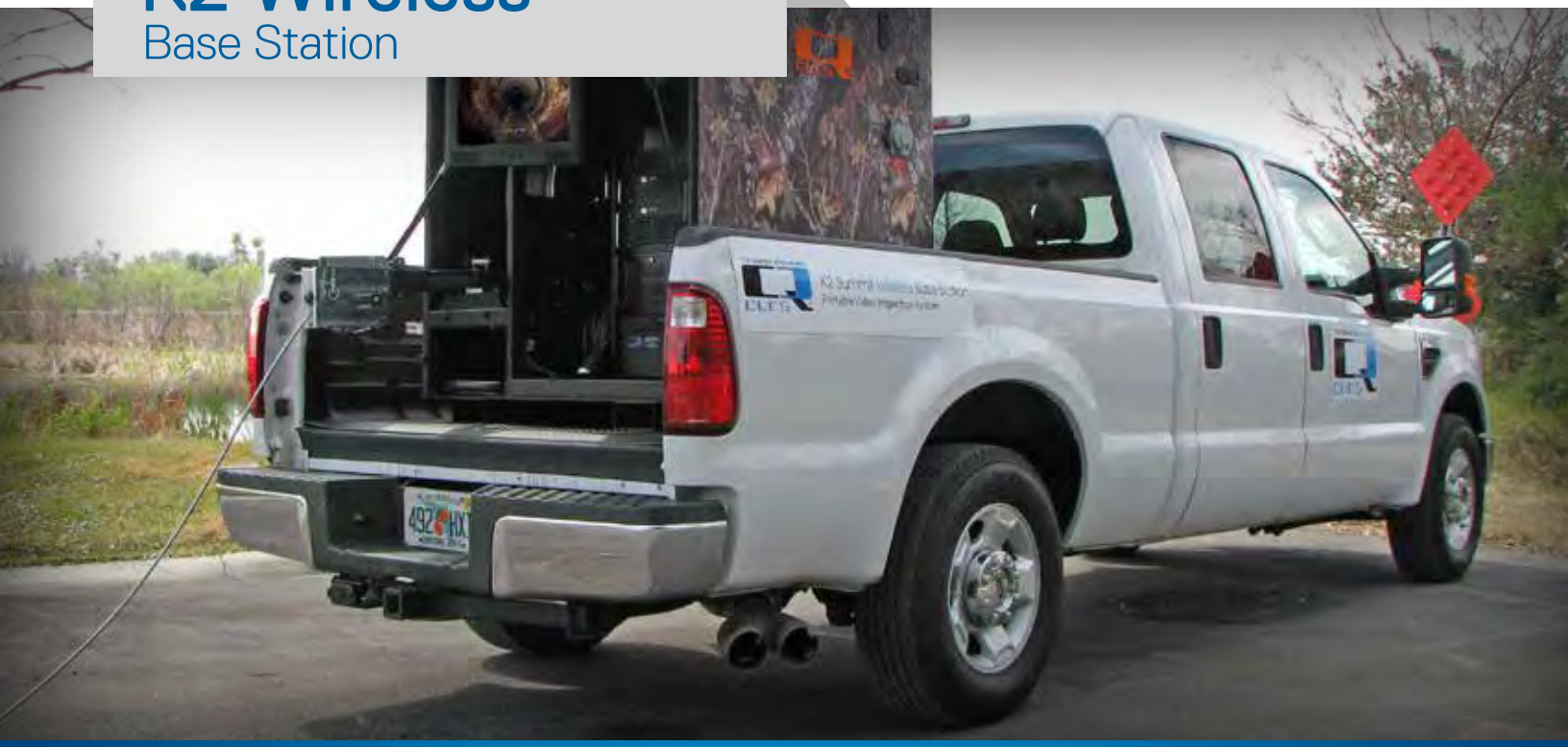
Select either a cost-effective manual cable drum or an advanced powered drum - each with up to 1000ft cable.

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".

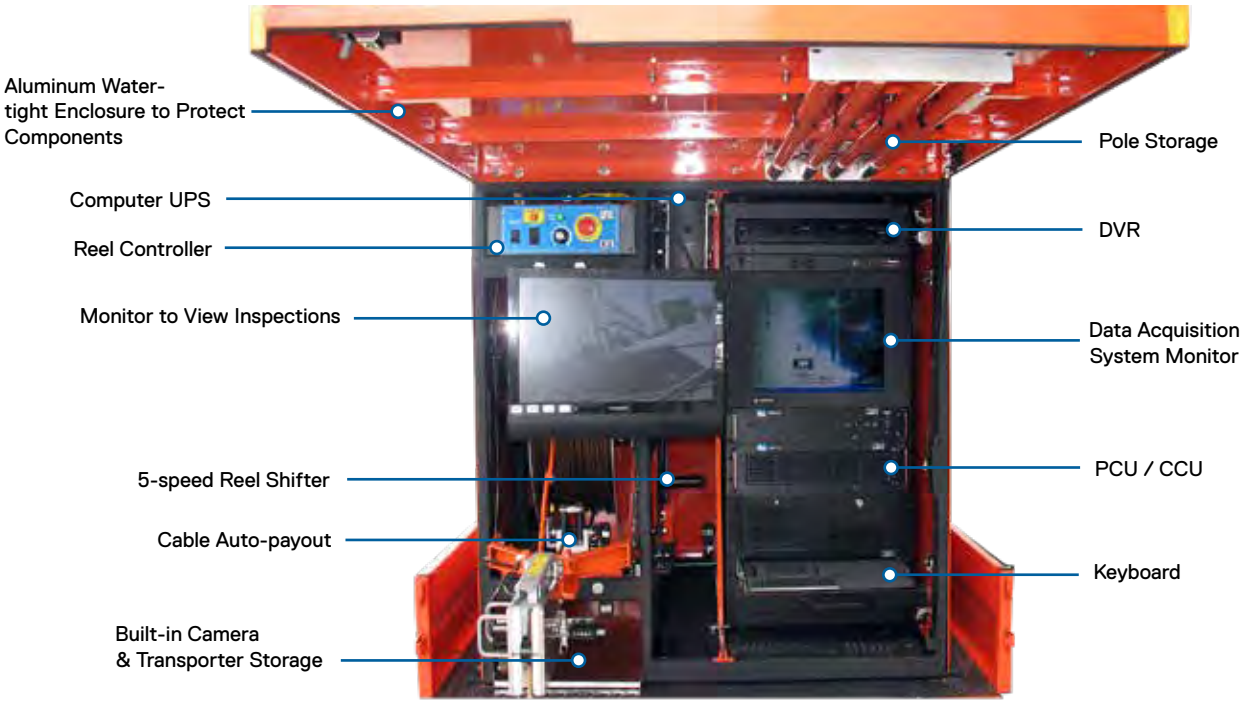
CUES C550c is also compatible with range of pushrod cameras, adding pipes as small as 1 1/2" to your capabilities.

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 - a portable inspection system for hard-to-reach areas.

- 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.

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.

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. 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.

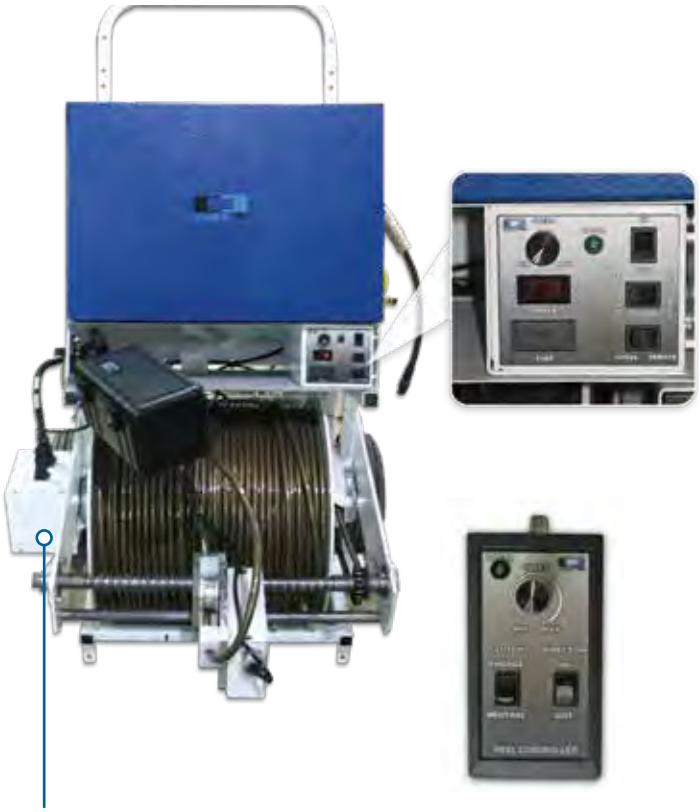
- Cost-effective pipeline inspection solution in lieu of a dedicated truck-mounted system.
- Wireless control of all camera and transporter functions.
- Portable, durable, rugged mini-mainline inspection system for use in 6”- 200” (152 mm - 5080 mm) pipelines.
- Can access easements and difficult to 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.

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.

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).

CUES GraniteNet
ASSET INSPECTION / DECISION SUPPORT SOFTWARE

Affordable. Secure. On-Site or Hosted.

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

CUES CLOUD

GIS

ESRI Technology
AUTHORIZED BUSINESS PARTNER

ASSET MANAGEMENT

Cityworks Partner Network
IBM maximo
infor

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

GraniteNet SAAS works on browser-based devices with no software to install!

Sync data through the Internet to the Cloud

MANAGE OFFICE TASKS & EDIT INSPECTIONS

PERFORM & VIEW INSPECTIONS / REVIEW TASKS

FIELD INSPECTIONS

MOBILE INSPECTIONS

powered by aws

CUES Cloud....fusing AI and Cloud Computing for superior Asset Management!

CUES DEFECT CODING SERVICES

Let machines help you process and determine critical infrastructure

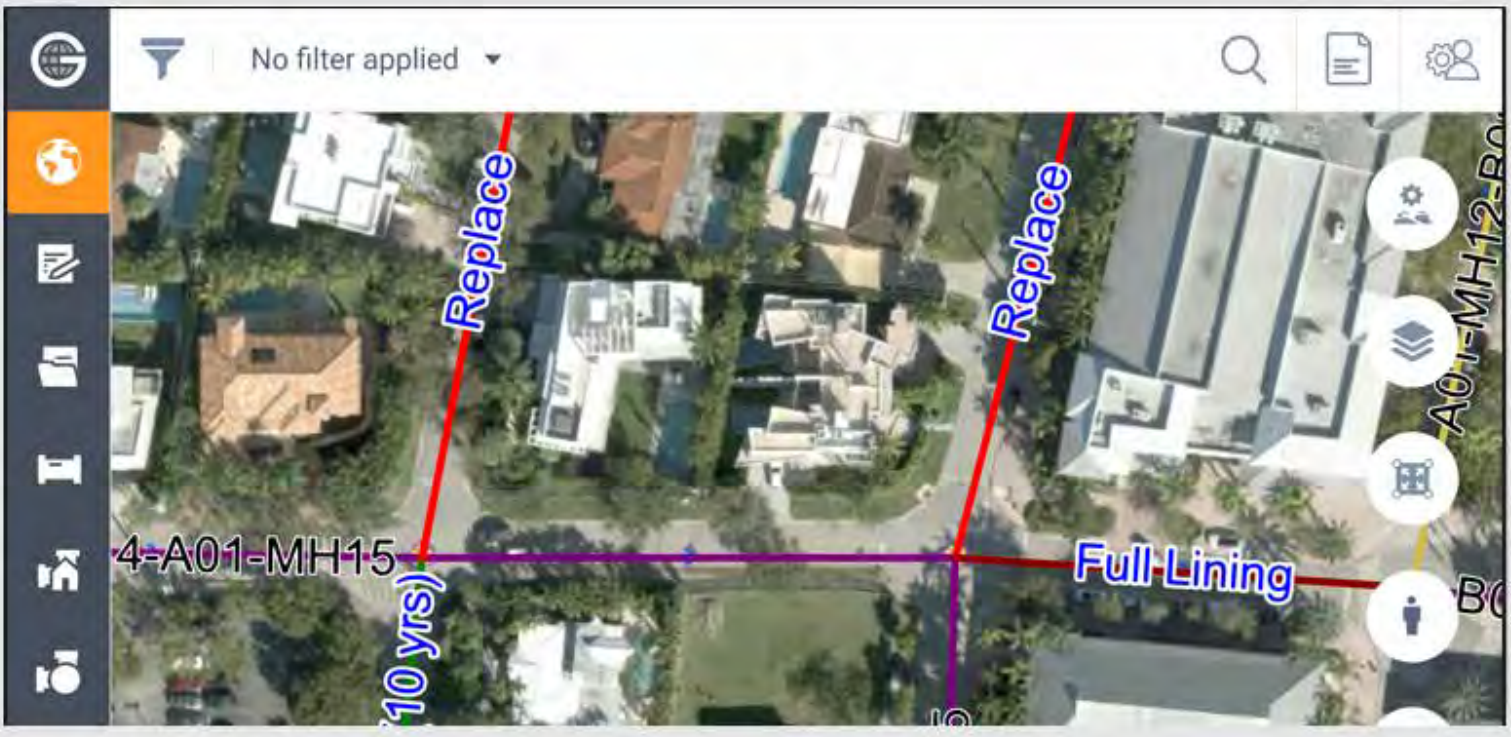
GraniteNet Software is the turn-key Cloud-based platform for public works condition assessment and proactive decision making!

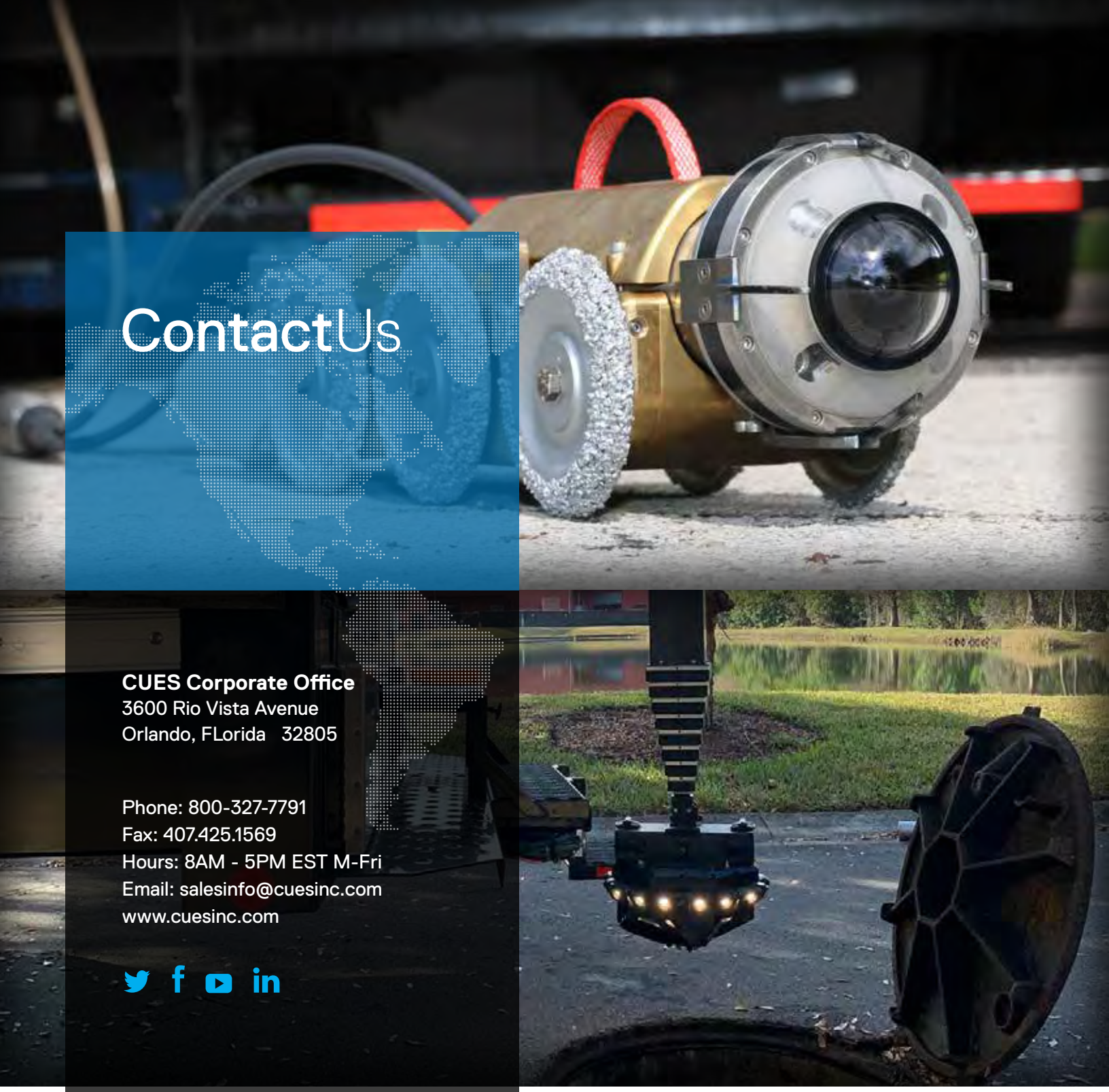
CUES GraniteNet
ASSET INSPECTION / DECISION SUPPORT SOFTWARE

Easy-to-use data collection increases productivity. All of your inspection data is available at your fingertips:

Automated decision support services that can prescribe rehabilitation/replacement actions to take against pipeline assets based on the types of defects and the preferred methods

- Full Lining
- Heavy Clean+CIPP
- Initial Inspection
- Point Repair+Full Lining
- Point Repair-Severe
- Principal review
- Reinspect (10 yrs)





ContactUs

CUES Corporate Office
3600 Rio Vista Avenue
Orlando, FLorida 32805

Phone: 800-327-7791
Fax: 407.425.1569
Hours: 8AM - 5PM EST M-Fri
Email: salesinfo@cuesinc.com
www.cuesinc.com

CUES

GoTheDistance.