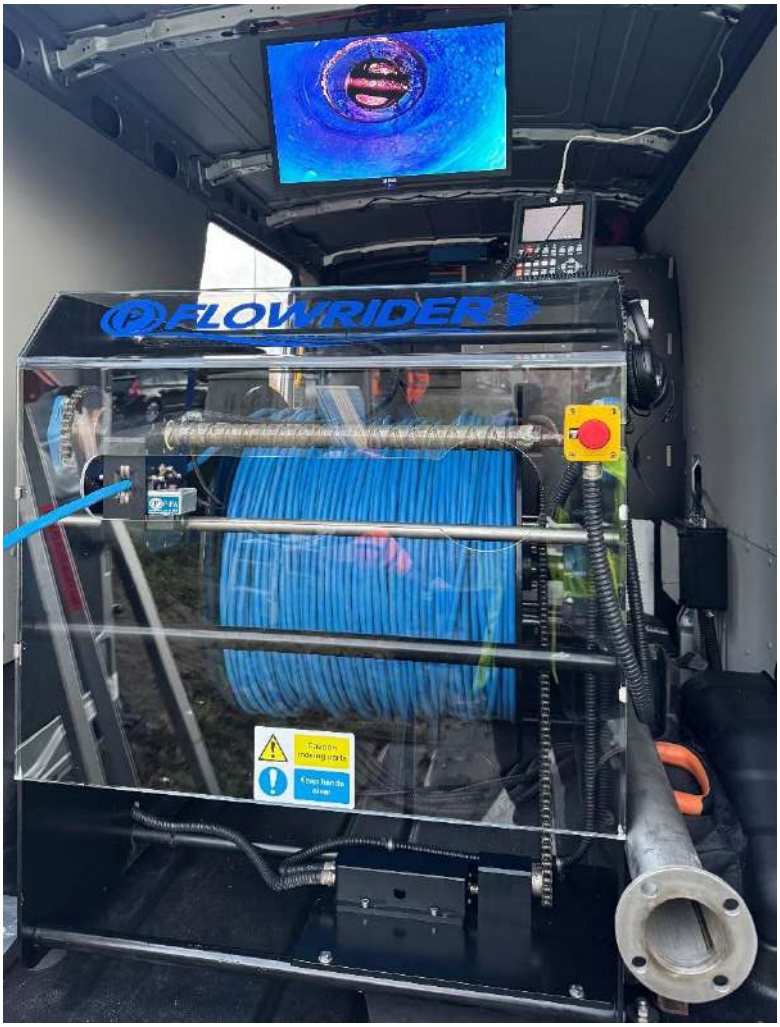
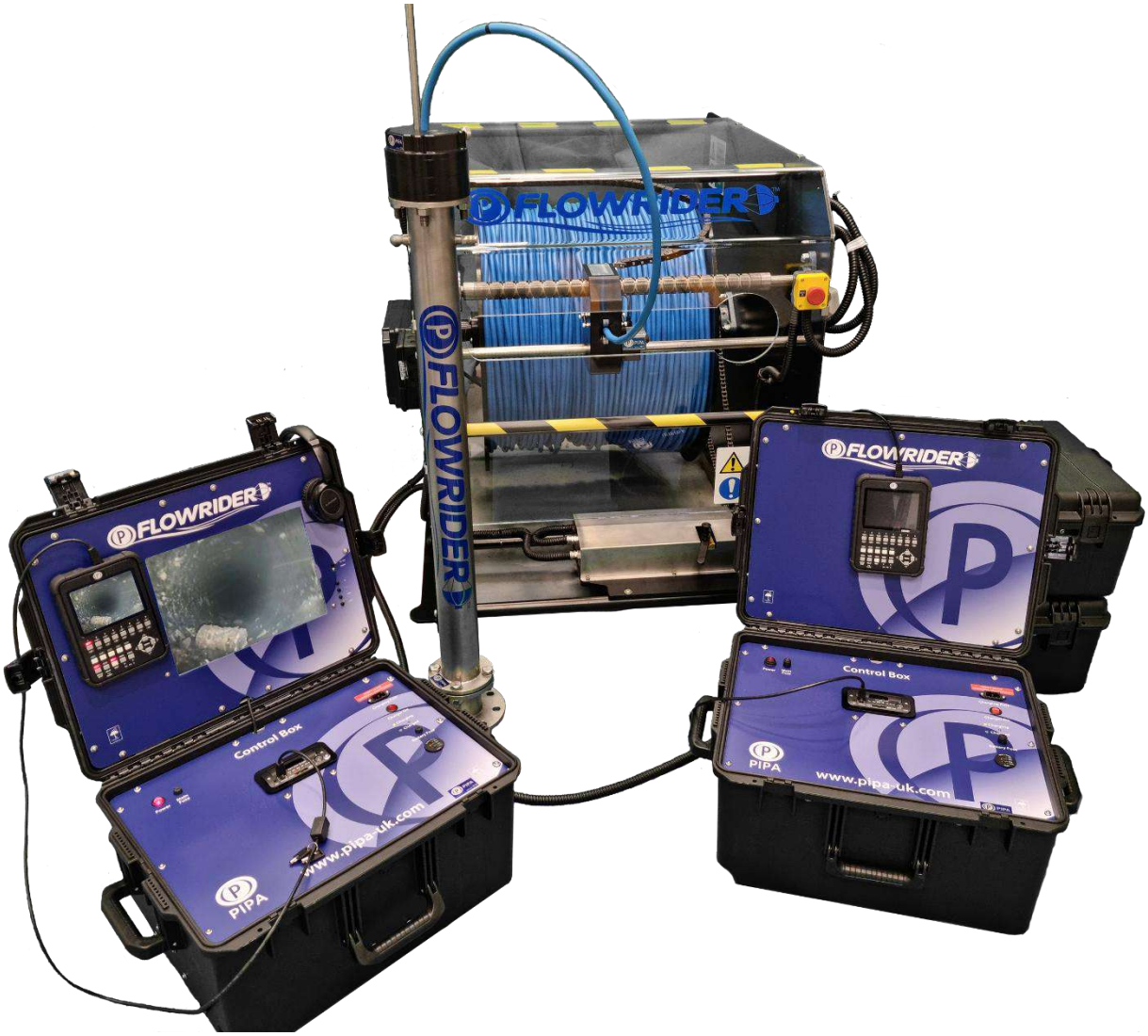
The Flowrider™ Long Distance Leak Detection and Inspection System for Large Diameter Water Pipes 12 inch and above

The PIPA Flowrider™ is the next generation pipe inspection tool that offers high quality CCTV footage, coupled with a highly sensitive hydrophone module. The long range inspection unit uses the water flow within a pipeline to travel up to a distance of 1000 metres with the water flow direction.



Flowrider™ system mounted in a vehicle



Technical data

- Lightweight camera sensor
- Low lux video sensor with ultra-bright tri-COB lighting
- Highly responsive hydrophone
- Sensors pressure rated to 16 Bar
- Self-fix camera modules
- 1050 metres of neutrally buoyant cable
- Hard drive double screen recording via control box
- Clutch with twin motor high torque retrieval system
- Variable speed motors
- CHS – Registered design collapsible Hydrochute system

Control unit

The Flowrider™ includes a rugged military spec box that has an integrated 2 flat screen monitors, and records directly on to high memory hard drive.
An additional external monitor screen can also be added using CCTV video out port.
The system comes complete with on-screen meterage overlay, and will operate at 12 volt with integrated rechargeable batteries for use where no mains power is available.

PIPA Hydrochutes and carrier collapse system

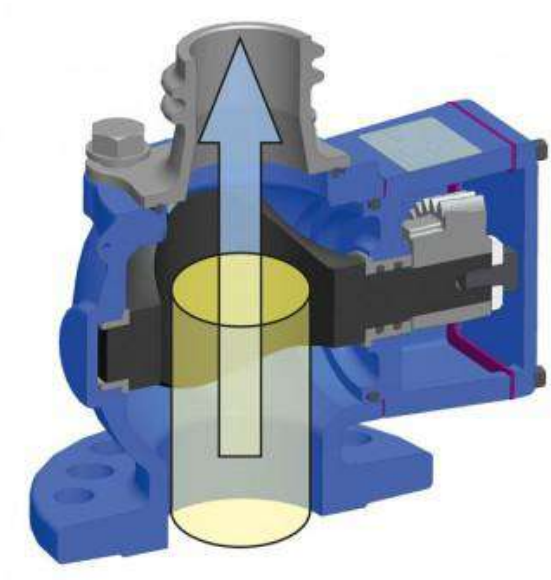
PIPA Has registered designs for numerous sized hydrochutes developed for a more central survey image, when being used in conjunction with a floating camera system. Another design feature is a central failure joint in the event of getting a camera stuck whilst surveying a pressurised pipeline; the joint is designed to break open the hydrochute to enable easy system retrieval.

Flowrider™ has an integrated Hydrochute collapse system; this enables long range pipe inspections to be undertaken at lower flow rates, and reduced pressure during sensor retrieval to collapse Hydrochutes at the end of the required survey distance. Another benefit is to obtain a better view of the pipe during the pullback procedure.

Lightweight CCTV/Acoustic sensor with hydrochute

System insertion points

The Flowrider™ can enter pressurised pipelines through any type of access fitting that has an opening of 3 inches (72mm cut out) and above. The fitting must be directly on top of the main, without any bends in configuration. These examples could be a through bore fire hydrant, removed air release valve or direct tapping.



Through bore hydrant

Gate valve entry point

Lightweight launch tube shown with launching rod system

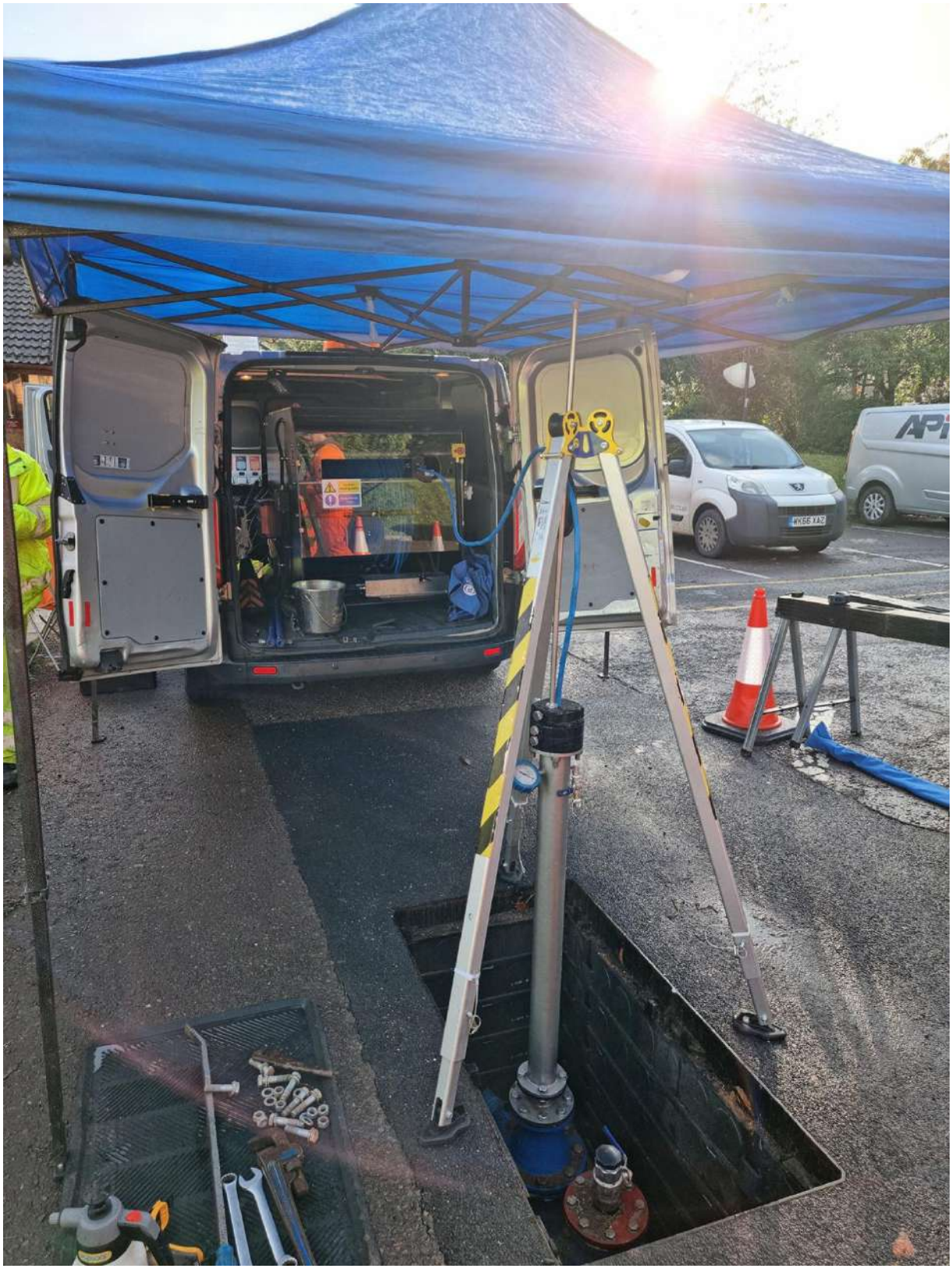
The unique system can enter pipelines through specially designed sanitization housing at ground level, or directly on top of the pipe within an excavation or chamber, and can successfully survey pipelines buried at any depth using locking insertion rods as required. The system is especially useful when using through bore style hydrants.

System propulsion

The system requires a flowrate of 0.3 M/S this can be created by the flushing of hydrants or washouts along the pipeline, or alternatively surveys are planned during peak flow periods. Once the correct survey distance has been achieved, these are then isolated and a full leakage sweep is undertaken during the pullback.

Flushing hydrant with flow gauge attached

System site set up



System site set up on a Chamber-Tripod used for safe cable management

System site set up on a temporary excavation working platform required

The system is fully portable, low voltage and battery powered. It can be either vehicle or trailer mounted for ease of use.

The self-stacking motorised cable drum hygienically delivers the desired length of cable required up to 1KM (positive flow) system comes with 1050 metre cable as standard.

The control-box unit records distance data during a survey, and accurately measures the cable. Once a survey is completed the CCTV data is overwritten to distance data, to accurately identify any leaks or interesting pipe features identified during a survey. Acoustic data can also be listened to on a live basis during a survey.

The Flowrider™ system also includes a cable trace feature or an add on Hydrosonde to map the entire cable deployed within a pipe during a pipe inspection survey.

Water hygiene

When using the Flowrider™ system on a potable water network strict hygiene procedures apply by adhering to:

- Safe use verification and traceability using the PIPA potable passport scheme
- Following approved RAMS and best operations practice
- Cable passes through a sanitisation housing & internal cable protection puck
- All fittings in direct contact with water are chlorinated prior to & during survey
- Tripod system for cable management
- System is made of water safe components

PIPA Potable passport

XYZ Feature using additional sensor

Flowrider™ pressurised sensor housing

3D Gyroscopic Underground Mapping Technology Creates the Digital Geospatial representations of the Location, Geometry and Bend Radius of Duct and Conduit Systems.

- Easy Field Operation
- High Frequency Data
- Autonomous Logging
- No Electromagnetic Interferences
- Faster 3D Results
- Accurate Maps & GIS

ASSETS

High-Precision mapping of your underground water pipelines will protect the risk of strikes

ACCURACY

Locate the unlocatable Pipelines to higher accuracy

UTILITY MANAGEMENT

Accurately identify existing old utilities will minimise relocations, avoid damages and overcome expensive project delays

QA/QC PIPELINE AUDITS

Critical step in process for contractors to submit utility plan and profile information to network owners

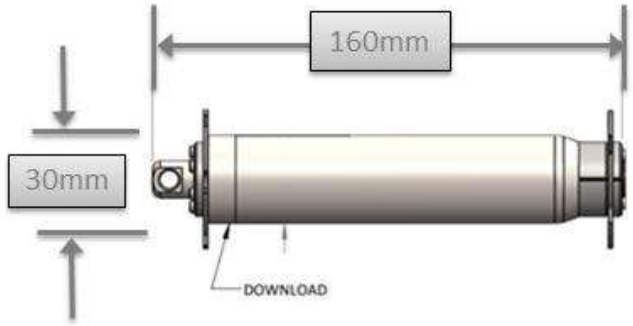
- High Accurate XYZ Pressurized Water Pipe
- SMART Pipeline Auditing Surveys
- Conjunction with Flowrider Inspection s
- Survey Grade GIS Data

Technical Specifications

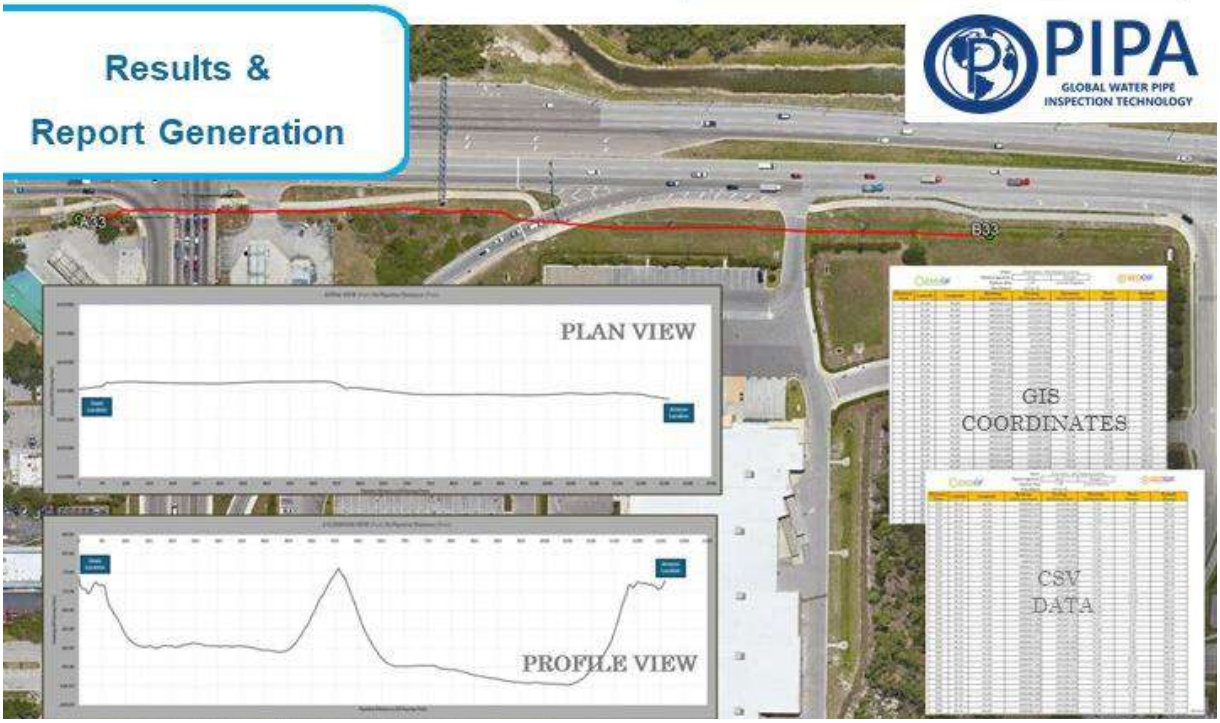
Operational Specifications		
Temperature	32° to 120°	Fahrenheit
Velocity	1 – 5	Miles/Hour
Run Time	5	Hours
Weight	1	Lbs

IPRating	IP66

IMU Specifications		
Recording Frequency	1092	Samples /Second
Rate Range	2,000	°/s (max)
Gyro Bias Instability	0.3	°/hr.
Gyro Bias Repeatability	4	°/hr
Angle Random Walk	0.15	°/√hr
Scale Factor Error	500	ppm



Results & Report Generation



PIPA
GLOBAL WATER PIPE INSPECTION TECHNOLOGY

Analysing the data

Once a survey has been completed, the data is processed away from site in a controlled environment. The sound of a leak is clearly understood by a trained leakage technician, and most leaks can be heard from several metres away, with a clear acoustic peak on fluid exit (actual leakage point).

2 Leaks identified and validated using PIPA software

Benefits of using the Flowrider™ platform system:

Inspecting water pipes under pressure, is far more beneficial as the data obtained will include leak detection, air pocket identification, sediment and build up grading, also pipe tracing. This data would not be obtained when surveying a pipe depressurised.

Another benefit is not wasting valuable water resources, damaging the pipe asset through entry point cut ins, and the high cost of large and often deep excavations.

All materials used with the Flowrider product are MIC (materials in contact) compliant for safe use in potable water networks.

System supplied with a PIPA product potable passport, training and all associated spares.

System Results

- Accurate leak detection tool for all pressurised water pipe materials
- Accurate CCTV Inspection tool for condition & configuration assessments
- Can navigate several bends/butterfly valves due to compact sensor design
- Accurate XYZ mapping of assets when used in conjunction with the XYZ sensor

The Flowrider system is supplied with a 1050 metre cable drum as standard