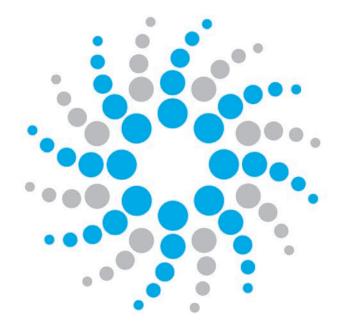
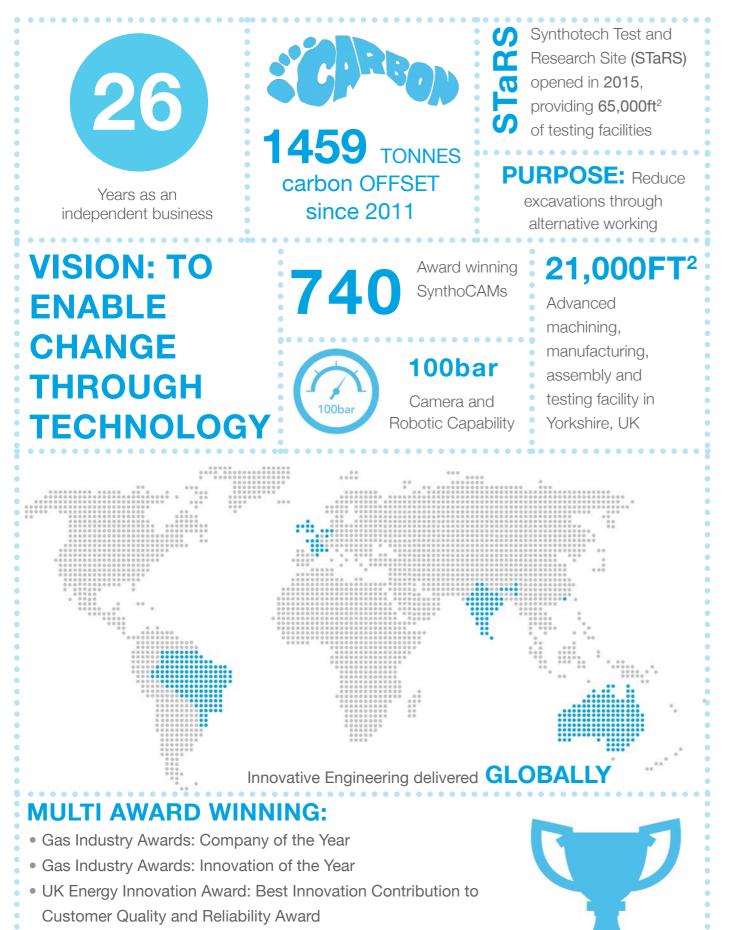
PRODUCT GUIDE



SYNTHOTECH innovative engineering

info@synthotech.co.uk www.synthotech.com September 2022

WHO IS SYNTHOTECH?



- Pipeline Industry Guild: Land Based Technology Award
- UKSTT: Environmental Award

Synthotech is an innovative engineering company that supplies the latest in-pipe maintenance, replacement, construction, location, survey and testing equipment.

WE INNOVATE

Synthotech is a leader in the research and development of pipe renovation technology for the UK Gas Distribution and Transmission industry. An Award-Winning Innovation company that has developed world firsts in robotics, vision and pipe systems that are used globally.

WE ENGINEER

Synthotech is a British based Engineering Company, designing and developing new products and processes from our headquarters in Harrogate, North Yorkshire. A local company with global support, Synthotech has a multi-disciplined engineering team that doesn't just think outside the box, they 'think inside the pipe'™. This allows for innovative elegant solutions to be engineered to the highest standards by Synthotech's precision engineering team.

WE DELIVER

Synthotech consistently delivers high quality products and services, working tirelessly with customers to ensure that new ways of working become 'business as usual'. This is underpinned by SynthoCARE, an exceptional product support service that not only provides workplace support, but also provides loan equipment to ensure customers remain operational 24 hours a day, 365 days a year.



WHO IS SYNTHOTECH?

SURVEY

Synthotech is the leading supplier of live access CCTV systems for locating and surveying live and dead gas services and mains. With a range of systems designed from 1/2" services up to 48" metallic gas mains, with access through small bore valves to keyhole entry, SynthoCAM has a vision survey system for everyone.

ServiceCAM™

Is a live access CCTV system for surveying PE and metallic services up to 40mm/2", 75mbar (2 and 4bar options available) use with access through valves, ECVs, House Entry Tees, Horizontal Insertion and wrap around clamps. There are 3 options within the **ServiceCAM™** range:

ServiceCAM LTE

- ServiceCAM LTE provides the reliable service that you have come to know and love from the ServiceCAM brand. It easily and efficiently locates causes of pressure issues.
- For use in PE services and up to the first bend in Metallic services.
- Battery powered 5 hours from a full charge. •
- The Synthotech Display Unit (SDU) can either be charged with a mains charger or a 12v in-car charger.

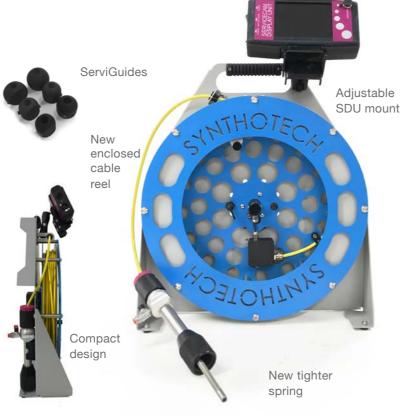


ServiceCAM PE+M

- Contains the NEW ServiGuides. After a recent customer survey we found that customers wanted to be able to survey further in metallic service pipes. Therefore we have designed ServiGuides which will allow the user to navigate around up to 3 bends in metallic service pipes.
- This system also features a new tighter spring which, combined with the ServiGuides will push even further.

ServiceCAM PRO

- Features a new tighter spring.
- Contains the new ServiGuides. •
- Can navigate around up to 3 bends in metallic service pipes.
- The new enclosed reel with a lock and reel function on the frame makes deployment, use and tidying up simpler and quicker.
- The SDU now shows meterage to help to pinpoint the exact location of issues.
- New adjustable mount for the SDU makes it easier to see in tight spaces.
- A more compact design makes it easier to store and transport.



SynthoCAM 4[™] is a modular live access camera system for use on Metallic, PE and PVC gas networks. The system has a range of visual display screens, insertion coilers, cameras and access system to provide the permutation required. Any combination can be built depending on workload and requirements.



SURVEY





SURVEY

SynthoCAM S195[™] is a 19mm Camera System on a 4.5mm insertion coiler for use on 2" and 3" Metallic mains, and 50mm to 63mm PE Pipe with an access hole requirement of ³/₄" BSP or a Top Tee Cutter of 34mm.



SynthoCAM Titan™ is a Pan and Tilt non-glass domed camera and has been designed for insertion in 8" to 24" metallic and 250-630mm PE live gas mains. It can use a 2" BSP drilling, removing the requirement for a Non-Routine Operation The system is connected onto either a 9mm or 15mm diameter insertion cobra (coiler) for maximum push distance.



The SynthoCAM[™] Titan[™] is compatible with ALH System-1 base unit for use on metallic and PE pipe and with the ALH Bonded Saddle for large diameter surveys using the patented Push To Angle insertion. It is also compatible with the WASK base using the Rotate to Angle patented insertion on Metallic pipe and on PE pipes over 200mm diameter through a PE purge saddle. The SynthoCAM™ Titan[™] can push up to 70m in each direction.

Synthotech is known for developing robotic systems that can be used in pressurised environments.

SynthoTRAX[™] is a unique robotic crawler designed to be inserted vertically through a 161.5mm diameter hole into large diameter gas mains, approved for use up to 2 bar operating pressure.

SynthoTRAX[™] will survey up to 400meters from a single excavation (200m in either direction) and survey PE mains up to 630mm diameter and metallic mains up to 48" diameter.

SynthoTRAX[™] is compatible with an ALH System 3 valve, and all AVK/Donkin (or similar) large diameter valves.

SynthoTRAX[™] is compatible with full encirclement clamps for vertical insertion into mains less than 24" diameter, NB. Minimum diameter for vertical launch is 14".





SURVEY

SURVEY

After years of providing the gas industry with safe and reliable camera products, Synthotech have now released a camera systems for potable water services and Mains.

After 6 years of supplying under pressure ServiceCAMs into the live gas distribution market operating at pressures up to 6 barg, Synthotech is now able to offer its ServiceCAM H2O. There are two variants of the ServiceCam H2O, the PRO and the ITF.





ServiceCAM H2O-PRO is a 14mm diameter camera on the end of 50m of 4.5mm diameter rigid fibreglass rod. The CCTV head has an in-built FAST PipeMic[™] that allows the system to not only see inside the pipe, but to locate leaks as well. The ServiceCAM H2O-PRO has been designed for end on insertion in service pipes from 25mm in diameter, insertion vertically through a standpipe from an Elster (hockey stick type) meterbox, and vertically into small diameter mains from a saddle fitting or through bore hydrant.

The ServiceCAM H2O-LTE is a 14mm diameter camera on the end of 20meters of 6mm diameter flexible nylon rod. The system has line location and provides clear in-pipe vision for multiple short radius bends. The ServiceCAM H2O-LTE has been designed for insertion end on from 25mm diameter PE pipe (or similar copper, lead, steel) or vertically through several meter boxes using the Synthotech Live Launch tube for standpipes.





- 14mm diameter camera.
- 20m to 50m push rod capability.
- 5.4" or 8" screen or a full recording 8" screen (12" option available).
- 8" recording screen includes text overlay and wifi.
- WRAS approved material and chlorination tank included.
- 10bar operational use.



SynthoCAM H2O has been designed for live access into potable water pipes through full bore hydrants or under pressure drillings from a vertical insertion system.





Available cameras -30mm, 35mm S/L, 49mm

Can be supplied with or without Mic Insertion Spring

- Interchangeable High resolution cameras.
- 12mm Ø basalt filled Ultralife push rod reduces breakages.
- Choice of display with up to 5 hour battery life and a selection of data storage systems options.
- Can be supplied/used with Mic Insertion Spring which has an integrated hydrophone.
- WRAS approved and Chlorination tank included.
- Quick release screen display stand.
- 10bar operational use.
- Optional GPS tracker available.
- Choice of displays with option recording and battery.

SURVEY

The SynthoCam H2O system is made with existing WRAS approved materials and parts, allowing us to confirm that all wetted parts are WRAS approved.

The system uses an integrated hydrophone that relays the sound of a leak back to bluetooth speakers and or headphones.







MAINTAIN

When you need to exchange an Emergency Control Valve under live conditions without isolating the supply, or replace a plug or cap with an Emergency Control Valve, M-CEX[™] and CaPEX[®] are the product range for you.



M-CEX[™] is for use on all ECV from ½" to 2", 19mm to 32mm Copper and 16mm to 32mm PE. There are a variety of stoppers both ridged, flexible, Hard (black) and Soft (blue) for ease of access in confined space. The main stoppers can be used up to 75mbar on straight line entry and semi-concealed meter boxes. The M-CEX[™] kits have a range of adaptors for use with BSP and BS746 screw threads.

M-CEX-SC[™] has been designed to allow the Synthotech stoppers to be inserted around a 90-degree ECV used in semi-concealed boxes. The kit can be supplied as an add on to existing M-CEX kits or as a combination kit. Supplied for use with 20mm, 25mm and 32mm services.

Our latest M-CEX FULL kit is for 16-32mm PE and 34" -2" metallic, domestic and commercial ECVs including semi-concealed meter boxes. The system is for single person operation on all ECV exchanges.

M-CEX 4BAR™

The M-CEX system has been expanding with the launch of the M-CEX 4BAR System. Designed for use on 25mm and 32mm PE services for pressures from 100mbar up to and including 4Bar. There are two types of stopper the mechanical plug and the expanding stopper. Both systems can be used, but have their own unique attributes for ECV exchange, Meter Box Adaptor Exchange, and for additional use on Copper and or Steel.







CaPEX[®] (the Cap and plug Exchange system) is a versatile, safe and efficient method of removing caps and plugs from gas pipework systems and replacing them with emergency control valves (ECV). Designed for 3/4" and 1" services, CaPEX® allows the exchange under gas controlled conditions either using the CaPEX® Tool or the CaPEX® Bag.

Water Extraction Technology, WExTech[™], by Synthotech, is a range of systems designed to locate water in live gas pipes, remove the water, and recycle the gas back into the network. There is a **WExTech™** system for every type/size of pipe: WExTech[™] Services Designed for removing both pools of water and water droplets from PE and metallic services. For use in live gas 17.5mm -32mm PE and for 3/4" - 2" metallic pipe. ServiceCAM[™] locates the water, then uses either the rechargeable battery powered pump or the hand pump to remove the WExTech water. The gas is then pumped back into the Services 2.0 service.



a two man lift.

WExTech M-V1

WExTech[™] Mains LTE

This lightweight version of the WExTech M-V1 does not have an integrated pump system, but can be attached to a bowser unit or similar to pump out the water; significantly reducing investment.

WExTech[™] Mains Tier Two

The Tier Two System is based on the Tier One System, however designed for 12" (300mm) to 18" (450mm) mains.

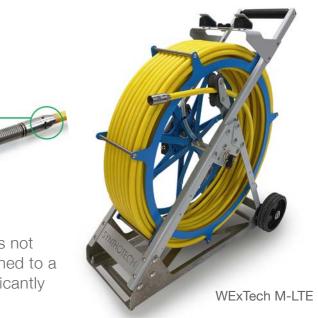
SynthoTRAX[™] WExTech[™] Mains Tier Three

For Tier Three pipe, a robotic SynthoTRAX[™] unit is connected to the WExTech[™] units to remove water from up to 400m from a single excavation point.

MAINTAIN

WExTech[™] Mains Tier One

For use in 90mm - 250mm PE and 4"-10" metallic and can survey 50m in each direction. Compatible with the SynthoCAM 3 /SynthoCAM 4 cameras, the water is located then the integrated pump can remove it whilst recycling the gas back into the main. This system is designed to fit between the racking on a standard van and can be split into two parts which can be carried with

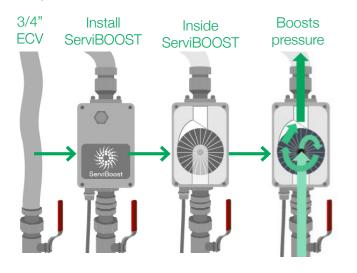


MAINTAIN

ServiBOOST

The ServiBOOST unit is designed to increase the gas pressure to domestic properties whilst the Gas Networks programme in the necessary remedial work to permanently resolve a low pressure problem.

The automated device provides a pressure uplift to 21.5mbar at a flow rate up to 3scmh (6scmh possible). When the pressure uplift device is not operating the maximum allowable pressure drop across the device is 1mbar.







START™

Stands for Short Term Alteration Replacement Termination, which is the collective brand for a range of products used to stop the flow of gas in services and mains for emergency use or where alteration is required. The START™ Service Isolator is a full circumferential clamp for 3/4" to 2" pipes where an under-pressure drill can provide access for an M-CEX[™] Stopper to stop the flow of gas.

- START Service Isolator ¾" to 2" Low Pressure (75mBar)
- START Service Isolator ¾" Medium Pressure (2Bar)

I-Seal™

This kit delivers a fast semi-permanent repair of a leaking threaded joint on pressurised pipework systems including gas. This solution is ideal for emergency response on riser systems as it avoids the need to isolate the gas supply. Available for pipes from $\frac{1}{2}$ " to 6".



ServiBAG Range

These systems mean that the gas supply does not have to be interrupted whilst alterations to pipework are carried out. Through the encapsulation device, a gas engineer is able to carry out a range of procedures including adding a bypass, service transfer or replacing an ECV.

Equipment is supplied in kit format which can be built by Gas Workshop operatives. Most of the parts can be reused; the parts that are consumable are inexpensive, reducing operational costs.

ServiBAG M-CEX

The ServiBAG M-CEX system allows an Emergency Control Valve to be replaced without the need to cut off supply to a house.



Equipment is supplied in kit format, allowing many parts to be reused, the parts that are consumable are inexpensive, reducing operational costs.

ServiBAG Transfer

Is a process for adding a transfer tee onto an existing PE Service pipe in a garden excavation. With ServiBAG Transfer this can be done under live gas conditions without interruption to the customer's gas supply by using a consumable enclosure that is fitted around the service pipework.

Upon installation of the tee, the domestic gas supply is fed through a temporary secondary supply whilst the primary service pipe is reworked. This enables a newly laid PE service pipe to be transferred from an old metallic to a new PE main.

Supply pressure is monitored at the meter outlet throughout the process to ensure that there is no interruption throughout the operation.

MAINTAIN



ServiBAG Bypass

ServiBAG Bypass is a process for adding a bypass tee to an external meter location without interruption to the customer supply. This is achieved with a consumable enclosure that is fitted around the meter pipework.

The enclosure is sealed to the pipework, allowing for the continued supply of gas whilst service pipework is reconfigured. Supply pressure is monitored throughout the process to ensure that there is no interruption during the operation.





MAINTAIN

Synthotech supplies a range of test heads for pressure testing pipework. The test equipment has been designed to be reliable, reusable and durable.

Synthotech Test Tee Heads

Tee piece test head for 16mm, 17.5mm, 20mm, 25mm and 32mm PE pipe, low pressure

- 20mm Test Tee Head
- 20x25mm Test Tee Head
- 25x32mm Test Tee Head
- 16x20x25x32mm Test Tee Head



Synthotech Service Test Heads

A test head for assembly onto the Emergency Control Valve (ECV) to test the full service.

- ¾" BS746 Service Test Head Low Pressure (75mbar)
- ¾" BS746 Service Test Head Medium Pressure (2bar)

Stargland[™] Services is a modular live access tool to enable a tracing wire to be inserted into live PE service operating up to 2bar pressure. The system is a modular kit that allows access into PE mains via, Emergency Control Valves, House Entry Tees, or Horizontal Access. Stargland[™] Services not only allows access for a range of tracing wires, but it also provides access for the ServiceCAM[™] system, and in addition into equal tees when used as above ground through wall entry for a metal service.

Stargland[™] Services can also be updated to allow access into a 32mm top tee for tracing small diameter PE mains.





A range of test heads for use with PE pipe up to 16bar, from 20mm to 500mm. No need for additional fusion joints, just reusable test heads.



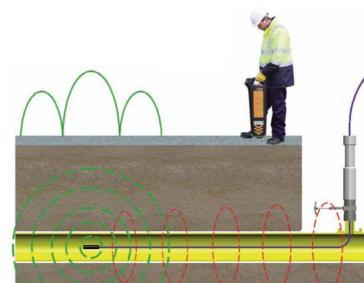


Synthotech Top Tee Test Heads

A range of top tee test heads for use with PE top tees, 32mm and 63mm. Options for Radius Systems, GPS and Kimplas Top Tees.

Synthotech CaPEX® Live Dead Service Pipe Tester Using the CaPEX® kit a service can be safely and quickly confirmed as to whether it is 'on' gas or not. The CaPEX® kit can then be used to connect an ECV if live and 'on' gas or can be re-capped if it is a dead pipe.





Cable Avoidance Tools, Signal Generators and Tracing Wires.; Working with the **SynthoCAM™** and **Stargland™** systems **Synthotech** are able to provide a wide range of Cable Avoidance Tools, Signal Generators and Tracing Wires. The range of C-Scope Tools provides accurate location when surveying.



LOCATE





Stargland[™] Mains is a modular live access tool to enable a tracing wire to be inserted into a live PE main from 63mm in diameter at pressures operating up to 4bar.

Stargland[™] DuctProbe is a survey device for identifying LEL inside telecom ducts when a gas escape has occurred. The device sucks the atmosphere from the duct, and allows a gas detector to be connected to confirm the readings. Where the highest reading is located, is where the location of the gas leak is.



CONSTRUCT







SIT-3 can be used to quickly and easily reline 1" metallic services with Serviflex[®]. It can be inserted up to 12 meters (network dependant) and can navigate up to 2 short radius



Dead Insertion Trumpets

A range of Dead Insertion Trumpets specially developed to eliminate the possibility of damage to PE pipes caused by the cutting edge of the existing metal pipe during a dead insertion or slip lining operation. Available from 16mm / ¾" to 280mm / 12".

Towing Heads

A range of **Towing Heads** for PE pipe from 20mm to 500mm diameter. Standard, Pressure Tight and Mud Tight are available for a range of SDR's.





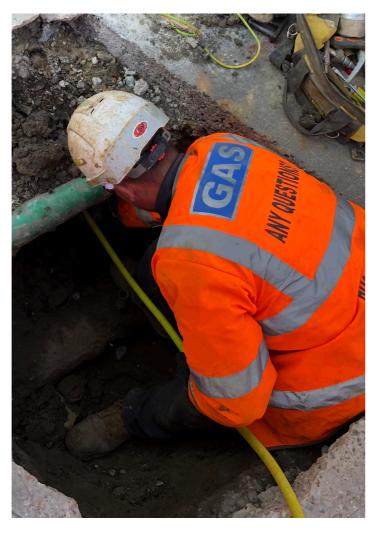


Pipe Cleaning Brushes A range of Pipe Cleaning Brushes and Scrapers for metallic services and mains from ³/₄" to 24".

• Takes half the time of previous systems.

- Splits into two parts the garden kit and the house kit - meaning the right person has the right tools.
- Avoids the costs associated with gas meter re-runs (typically £150-£300).
- Significantly reduces excavation reinstatement and associated activities.
- Stream lined process reduces the risk of mistakes.
- Reduces the time consumers are without gas.
- Reduces operational cost.





CONSTRUCT

Dead Insertion Nose Cones

A range of quick fit Dead Insertion Nose Cones specially developed to provide a cone shape on to the leading end of a new PE pipe which is to be inserted into an existing pipe or duct. Available from 16mm to 32mm.





Applicator Guns

12" and 18" welded steel construction Applicator Guns, powder coated ridged framed applicator guns for use with cartridge polyurethane, anaerobic or thixotropic sealants.



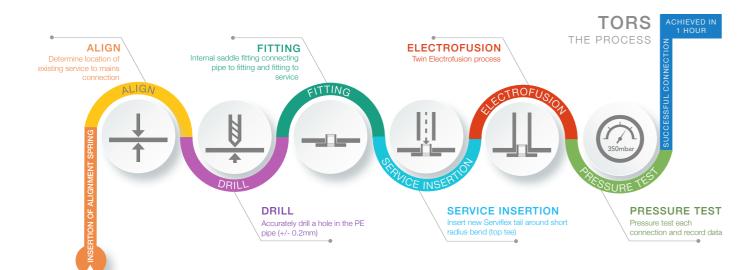
CONSTRUCT

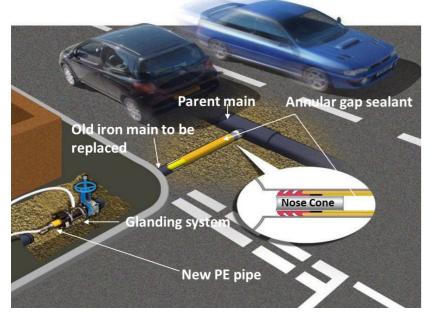
Synthotech is the developer and manufacturer and patent holder of numerous worlds firsts in robotics. TORS[™] system is one of these, it is the first robotic system that can remotely connect services to mains without excavation.



TORS[™] system is a total in-pipe remote process that replaces the gas service pipe to mains connection without the need to excavate in the highway, or physically break out the old iron main. It is currently designed for replacement of 4"-6" diameter mains using either 75mm or 90mm polyethylene (PE) pipe.







Towing Heads

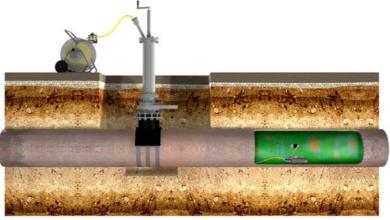
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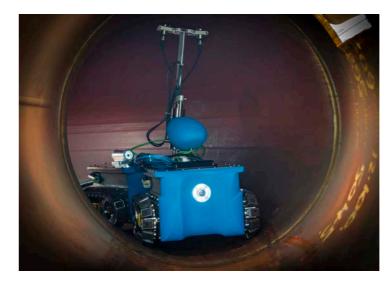
LeakVISION is a patented in-pipe leakage detection sensor, mounted to a robot base or push-rod camera system. This innovative system is used for the inspection of in-pipe features to indicate the presence of leakage from pipeline features, such as joints, connections and defects.

The system was developed during a collaborative project alongside Northern Gas Networks and Synovate, whilst also working with the EIC and a consortium of innovators, including ROSEN, The Technology Partnership (TTP) and the University of Leeds.



The LeakVISION solution can increase productivity by locating underground leakage both reactively and pro-actively. The complex underground gas network creates a challenging environment to find the exact location of underground leakage.

LeakVISION's technology makes use of thermography to analyse and highlight leakage by directly scanning the pipeline and pinpointing the area. This provides improved decision making and very precise targeted remediation, reducing the impact to the environment and road users by preventing and minimising excavation.



DETECT



LeakVISION aims to address the challenge of the traditional method of "above ground bar holing". This technique can often produce inaccurate results, causing unnecessary excavation and reinstatement works to be carried out. The application of the technique can also be physically demanding and can cause unwanted strains or injury to operatives performing the work.







GRAID (Gas Robotic Agile Inspection Device) was developed with National Grid Transmission and three UK SME's (Synthotech Ltd, Premtech Ltd and Pipeline Integrity Engineers Ltd). It is designed to analyse the condition of high pressure gas transmission pipelines. It is able to navigate the complex geometries of these pipelines and withstand pressures of up to 100Barg in order to allow it to take measurements and provide a visual assessment of theses critical assets.

SYNTHOCARE™

Equipment operating in the Utilities sectors are often subject to hostile environments, extreme weather and a tough operating life. SynthoCARE™ supports the equipment through its operational life ensuring that it continues to operate in a safe, secure and efficient manner maximising its return on investment and minimising its operational cost.



+44 (0) 1423 816079 SynthoCARE (Direct) support@synthotech.co.uk Synthotech.com/SynthoCARE

All Synthotech products are covered under SynthoCARE[™].





SynthoCARE[™] has a dedicated customer service desk open Monday to Friday with a range of supportive Mechanical, Electronic and Electrical Engineers on hand to refurbish, pressure test, portable appliance test and service the entire Synthotech product range.



All **Synthotech** products come with a standard 12 month manufacturer's warranty, with certain SynthoCAM™ products covered under UK Gas Distribution Contracts under 24 or 36 month extended warranties.

Most **SynthoCAM** survey systems are subject to free next working day loan equipment (terms and conditions apply).

SynthoHire is available on a wide range of existing Synthotech equipment.



Synthotech's Technical Support Engineers offer a wide range of services including product training, on site technical support and specialist services.

Product training

Our trainers have a wealth of experience in engineering and utilities with up to 30 years of operational experience. We are able to carry out training at our Milner Court campus in Harrogate, North Yorkshire, at our STaRs test and research site in Melmerby, North Yorkshire, or at our customer's offices or operational sites. Our training packages blend the academic must have knowledge of the equipment with the hands-on practical experience of using the equipment in real-life situations.

Our success can be seen through the implementation and use of our equipment. And the success of use is down to the quality of the training from our experts.

"The success of our training, is when our customers become our experts"





Specialist Services

Our TSEs work with contract and utility teams (who provide the pipe access) to complete surveys or maintenance operations using Synthotech's kit. This can be useful if a customer has to complete an operation they usually do not do or if they want to try a product before they buy it. We can also arrange a repeat service contract for customers who do not wish to invest in some of the more involved products such as our robots or maintenance systems.

SYNTHOPRO



On-Site Technical Support

For us, supplying innovative utility engineering solutions is just the beginning of the story. We believe it's essential to provide you with open and reactive technical support whenever you need it and for as long as you need it.

It's only by doing this that we can help your teams to use our products to their full extent, support you in driving organisational improvements and continue to expand our own understanding of your challenges to ensure we become instrumental in your future growth.



WAYS TO SHOP

Synthotech are committed to work in partnership with you, our customers. We want you to enjoy working with Synthotech, enjoy our products our services and the benefits that they can bring to the operational world.

We would be delighted to see you at our offices and to give you a tour of our manufacturing and test facilities, or we are as happy to visit you. Delighted to provide free demonstrations, Synthotech will work with you to provide the best, and most cost-effective solution for all your business needs.

Our products are available to buy or hire. CONTACT OUR SALES TEAM ON +44 (0) 1423 816060 OPTION 1

OR EMAIL INFO@SYNTHOTECH.CO.UK

FURTHER DETAILS ON OUR PRODUCTS ARE AT SYNTHOTECH.COM

We can offer 30-day credit accounts (terms and conditions apply), take credit cards or bank transfers or arrange finance (terms and conditions apply).

SYNTHOTECH HOLD APPROVALS FOR ITS GAS PRODUCT RANGE WITH ALL THE UK GAS DISTRIBUTION NETWORKS.









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