



NJUG CASE STUDY

CASE STUDY 44: Vertical Valve Injection Kit and Live Camera Inspection

The National Joint Utilities Group (NJUG) is the UK industry association representing utilities on street works issues. The 37 companies¹ we represent work to deliver gas, electricity, water and telecommunications to both individual consumers and UK plc.

NJUG members need to continue to drive forward further improvements. We have therefore developed the NJUG Vision for Street Works, which revolves around six main principles:

1. Safety is the number one priority
2. Damage to underground assets is avoided
3. Utilities work together and in partnership with local authorities to minimise disruption
4. Utilities deliver consistent high quality
5. Utilities maximise use of sustainable methods and materials
6. Street works in the UK are regarded as world class

This case study is an example of NJUG delivering on these principles and turning the vision into reality.

Overview:

Balfour Beatty Utility Solutions (BBUS) is dedicated to generating new, innovative ways of working, which will allow the company to work with the most advanced and least disruptive techniques. The BBUS Innovation and Development (I&D) team work closely with its clients and operations teams to deliver three core objectives:

- Improve safety and productivity
- Reduce disruption
- Minimise its environmental impact

The I&D team develop all its solutions in-house, analysing and refining ideas to deliver completely bespoke and unique ways of working across all areas. The team aims to develop practical solutions and implement them to become business as usual.

During 2006/07 a number of think tanks were set up via BBUS with its partners and clients, to discuss current operational activities and what would deliver the three objectives noted above. One issue at the top of the list was the complexity and disruption caused by excavation and reinstatement. With this in mind a range of projects were set up to find the latest technology to inspect mains without the need for excavation and without risking further damage to underground assets. This project's aim was to provide less disruption to the travelling public. Here are two examples of the projects undertaken:

Case study:

Vertical Valve Injection Kit (VVI)

To solve the common problem of a leaking water sluice valve, without excavation and risking further damage, the I&D team were challenged by BBUS operations teams to provide an alternative to the

¹ NJUG's current members are Energy Networks Association (representing electricity and gas), Water UK (representing all water and wastewater companies), National Grid, Openreach, and Virgin Media. Our associate members are Clancy Docwra, Skanska Utilities, Balfour Beatty, Morrison Utility Services, Morgan Est, NACAP, PJ Keary, First Intervention, Carillion, Enterprise, Laing O'Rourke and AMEC. Including members through trade associations, NJUG represents thirty-seven utility companies, and twelve utility contractors.

current horizontal repair solution. No 'vertical' repair kits were available off the shelf and therefore the I&D team undertook a design study.

The BBUS VVI repair kit uses a combination of existing pressurised injection technology along with an innovative step change in application, by designing an extended drilling and jig system which allows trained operatives to drill vertically through the valve chamber and access the valve gland. Once the drilling and tapping is completed, a gland repair material is injected into the void to repair the valve.

This technique means no excavation is required, and the operation takes no longer than 45 minutes. The unique Vertical Valve Injection kit, launched in 2008, offers the following benefits to its clients:

- No damage to valve body;
- No excavation or reinstatement required;
- No need to operate the valve;
- No turning off water mains;
- No interruption to supply to customers;
- No risk of discoloration;
- Low cost equipment and consumables;
- One team, one visit; and
- Increased productivity.

Live Camera Inspection

Following extensive research, BBUS worked with a partner to develop a camera system for one of its clients, Yorkshire Water, which provided a unique solution to internal pipe inspection, utilising advances in camera technology. The system can now carry out visual inspection of small-bore pipework in live water mains up to 150 metres from the access point, removing any risk of further damage to assets.

The camera inspection system is specifically designed to enable quick inspection of live water mains through entry of existing water network hydrants, which eliminates the need for excavation. The use of existing fire hydrants for which supply can be maintained also removes disruption to both traffic and customers.

To date, over 1000 Live Camera Inspections have been carried out by BBUS across the UK, thus reducing excavations by 1000 in the last 12 months and this trend continues. This also allowed the teams to accurately and quickly diagnose the problem within the water mains, to prevent any unnecessary disruptions to customers. The major measure of success is that internal inspection can be quickly undertaken 'Live' without the need of an excavation, and under pressure. This process also removes the need to risk further damage to water pipes until the best repair solution is determined.



Live Camera Inspection



Vertical Valve Injection Kit

Balfour Beatty Utility Solutions