

'Site safety and maximum performance are key.'



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Targeting emissions worldwide



SAFETY ENVIRONMENT HEALTH HEALTH SAFETY ENVIRONMENT HEALTH SAFETY ENVIRONMENT



LDAR Envolve have Engineers with many years of on site problem solving experience. All problems are dealt with in an in depth analytic way to help provide solutions for future re-occurrence.

As an example, the E-552 exchanger (pictured top right), prior to decommissioning can be seen with a very visible leak at the 7 o'clock position from the bonnet end.

The picture (above left) shows the tube sheet gasket face after it has been rebuilt.

The picture (above centre) shows the corresponding gasket face of the shell flange found to be in good working order.

Raised indentations were found on the Shell-to-Tubesheet gasket (pictured above).

The average thickness of the gasket that was removed is shown in the picture above (far right).

All detailed analysis and findings are then reported to the client and centrally logged in our applications and solutions database and history archive.

International Site Services. Guaranteed leak free start up packages for problem applications. Our Site Engineers have unrivalled global experience in sealing problem applications.



'Implementing a properly run LDAR program can reduce emissions from equipment leaks by more than 63%.'

NEICC

The most effective method of controlling fugitive emissions is by the implementation of a structured leak detection and repair program.



HEALTH

SAFETY

ENVIRONMENT

FLIR Technology. Infrared cameras have revolutionized maintenance in many industries, proving to be the most superior technology in finding electrical and mechanical hidden faults - even before they occur.



SAFETY

ENVIRONMENT

HEALTH

LDAR Envolve are the UK Leader in leak detection and repair programs with over 10 years of experience in emission monitoring offering a wealth of experience tailoring LDAR programs to individual site needs.

'Good fugitive emissions monitoring program (13.06)!'

SHEMS

ENVIRONMENT

SAFETY

HEALTH

LDAR Envolve.

The emission control company of choice for many of the UK's major petrochemical and chemical sites. Providing many years of on site experience.

LDAR Envolve environmental solutions are designed to ensure that our clients reduce their environmental impact by minimizing the release of airborne pollution and contaminants.

As the legislation for controlling fugitive volatile organic compound (VOC) emissions from process facilities tightens, Plant operators have a requirement for strict control in all areas of their process.

Through a structured program of identifying the source of emissions and then taking action to eliminate or minimize it, major client gains can be made. Excellent financial payback will initially be seen by a reduction in lost product that would have been otherwise lost to the environment. A safer, more healthier working environment for workers and a business shown to be taking proactive community decisions. Corporately clean and caring.

- **Cost effective method for major emission reduction**
- **Plant emissions screened in accordance to Method 21**
- **Compliance with environmental legislation**
- **Improvements in process efficiency**
- **Increased levels of plant safety**
- **Major savings in the reduction of product loss**
- **Application of Best Available Technology (BAT)**
- **Independent reporting for environmental compliance**

In a complex petrochemical facility there may be many thousand potential leak paths. A gas detection camera allows the user to examine many potential leak sources in a short time and from a distance.

CUI - CORROSION UNDER INSULATION

Leaks are occasionally found in unexpected locations. Equipment that is thermally insulated is susceptible to water penetration into the insulation if the sealing of the outer cladding is poor. If the equipment temperature is suitable, the water heats up and can create a region of very high corrosion out of sight under the insulation. The shell of the equipment can rapidly corrode to such an extent that it starts to leak and this leakage can be detected by the camera at considerable distance.

IMPROVING PLANT START UP SAFETY

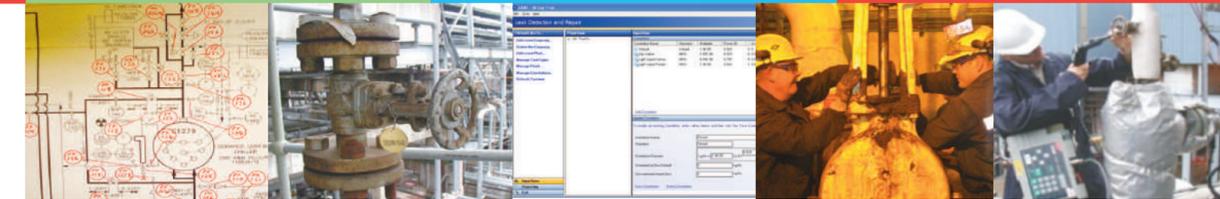
The camera has proven success in leak detection surveys during the start up of process plants following both planned and unplanned shut-downs. The thermal cycles associated with shut-down and start-up can initiate leaks in equipment that was previously leak free and components that have been disturbed due to maintenance activity may also leak.

LEAK LOCATION - LOST PRODUCT OPPORTUNITY

Leaks from process equipment, no matter how small, not only constitute a potential damage to the environment, they also represent the lost product that could be sold to customers.

The camera can survey the common industry leak paths such as:

- **Flanges**
- **Plugs and Caps**
- **Couplings**
- **Holes**
- **Drain Covers**
- **Valve Stems**
- **Pump Seals**
- **Machinery**
- **Passing Valves**
- **Instrument Connectors**



IDENTIFY PROCESS LINES, VALVES AND COMPONENTS

Initial screening utilising the infrared camera may highlight immediate areas of concern. Traditionally each area is split into sections and the process line diagrams are studied to compile a list of parts and components that need screening. Each component is logged and recorded onto a work list for screening. Utilisation of the line drawings allows a safe flow of business during screening.

TAG VALVES IN LINE WITH THE P&ID NUMBERS, MODIFY THE LINE DRAWINGS IF NECESSARY

From the information taken from the process drawings an identification tag is placed on the valve to correspond to the necessary plant identification. Notes are taken as to the safety requirements and position of each piece of equipment and any necessary changes are made to the process drawings. A monitoring route is then devised to provide a continuous trial. Equipment located in difficult locations is identified any the necessary safety requirements such as scaffolding or ladders are requested.

RECORD EMISSIONS IN THE DATABASE, CORRELATE VALUES TO PLANT LEAKAGE, REPORT FINDINGS

Following a work trial devised from the P&ID drawings the emission readings are taken utilizing the latest in TVA measuring equipment. These readings are then recorded in the specially devised LDAR Envolve database that can be adapted to suit differing client requirements. These readings are then correlated to provide a plant leakage level and a comprehensive report raised to provide the client with the findings.

REPAIR, REPLACE, OVERHAUL

An initial process is drawn up to try and repair certain valves or flanges while the plant is still on line, this can be done by 'nipping' up or retightening. Depending on the work load during a shutdown, a program of equipment overhaul, replacement or repair can be drawn up for areas of concern.

RE-SCREEN AND AUDIT. RE-MEASURE THE EMISSION READINGS

The infrared camera can provide useful help in plant re-start following the shut down period by highlighting any initial problems. It is then normal procedure to periodically re-screen and re-measure the emissions.

Where customers have their own in house monitoring teams it is prudent practice to have their readings Independently Audited.

'Green business is good business'