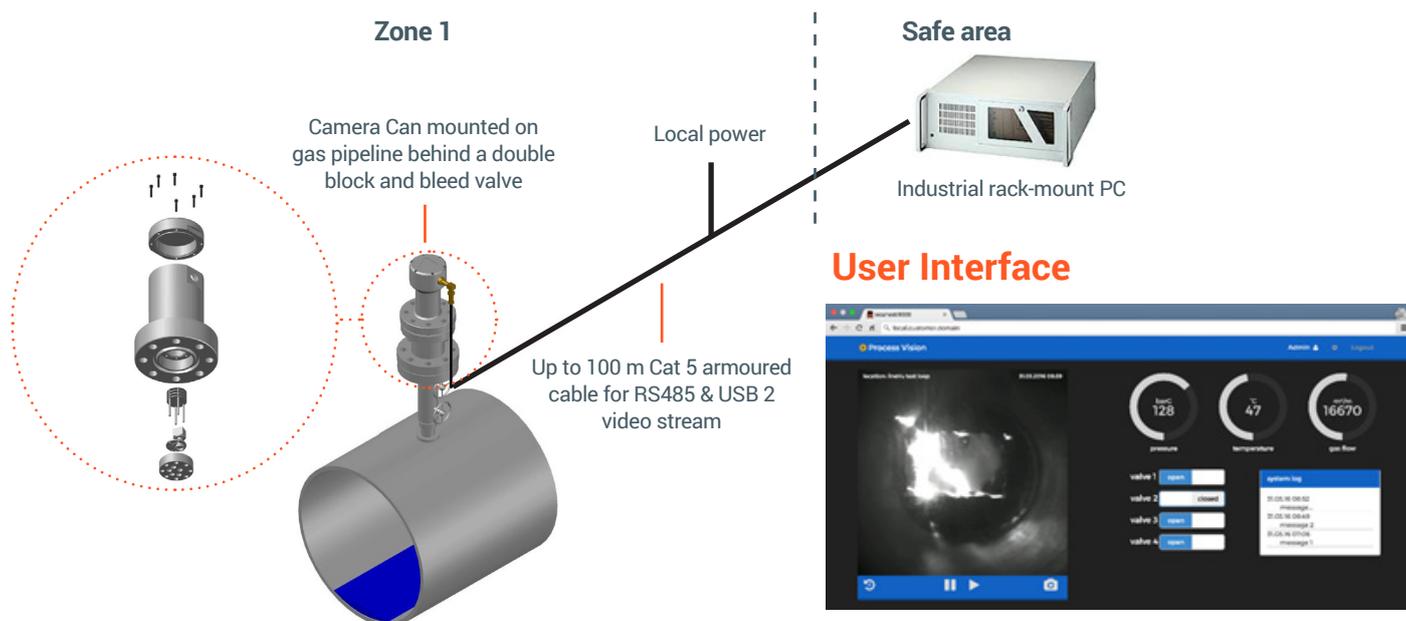


LineVu Increasing Efficiency of Gas Processing Plants

A first: an instrument that sees potentially harmful liquids

Higher Availability, Greater Efficiency, Higher Revenues

Overview



Before natural gas can be transported, acid gases (CO₂ and H₂S) have to be removed, as well as any liquids that could condense in the pipeline.

Operators also have to meet water and hydrocarbon dew point specifications before the gas can be sold.

Separators are not 100% efficient, 100% of the time, in fact, their performance is one of the most common causes of problems and capacity constraints.

Foaming, flow surges, start-up, shutdown, and flow ramping are all common causes of liquid carry-over. Liquids in a gas network collect at low points where they cause corrosion, or are swept out as a slug of liquid that can damage sensitive equipment downstream. Undetected liquids cost the industry £millions every year in damage, lost revenue and labour costs.

Within a plant, poor separator performance can be a real problem. When a dew pointing system is fitted to remove condensate, glycol carry-over can freeze and cause blockages.

Molecular sieves and mercury absorber beds can be destroyed by liquid carry-over. More importantly their life is insidiously reduced by small, constant, undetectable liquid carry-over.

Amine and glycol units have a tendency to foam, which can be very hard to detect until high losses are noticed.

If amines, glycols & lube oils are not removed, conventional instrumentation is not able to detect them; *LineVu* can.

LineVu improves process assurance by providing a continuous video of the inside of a pipeline, and, using image processing, activates an alarm when the following contamination is detected:

- Liquids
- Hydrates
- Foam

Enabling operators to see a live video stream allows them to make quick and correct decisions to reduce the impact of a process failure, so reducing downtime, preventing plant damage, or contamination of sales gas.

Safety

Safety is a key feature. LineVu is mounted behind a double block and bleed valve, and has a maximum operating pressure of 2,940 psi (200 Bar). All windows and internal seals are designed to withstand up to 14,503 psi (1000 Bar).

A patented secondary containment system ensures no loss of containment in the event of a window failure, and provides the high levels of safety necessary for pipeline network installation. LOPA and FMECA reports calculate a level of safety of 6^{-7} per year, significantly better than most pipeline and plant standards.

LineVu is compliant with ASME B31.3.

Indisputable Evidence

Greater process confidence is gained when operators can see events in high pressure systems. With LineVu, the live video feed of pipe-line activity is available at any time via a standard web browser, that can be integrated into a SCADA or DCS system. When the alarm (voltage-free relay) is raised, LineVu automatically starts recording data. It continues to record until no further contamination is detected. Time, date, and location are burnt onto the video image. The user interface allows process data, such as gas flow-rate, line pressure, position of critical valves, and other relevant details to be displayed and recorded alongside the video so that, during event play-back, all data is available, providing a complete picture of the event to aid fault diagnosis.



Contamination in a gas network system.

Installation

LineVu is designed for easy installation. It does not require sections of pipe to be removed, or pits to be dug. It is mounted on top of a pipeline using standard 2" or 3" tapping points.

The double block and bleed valve provides a stand-off from the main pipeline, which avoids contamination of the optical windows.

Data may be stored in the rack-mount PC, or on the client's network. Still shots may be taken for entry into reports or sent via SMS text to interested parties. Uploading to the cloud allows remote access for service engineers or customers to view, and improves response time to an event.

Providing there is a suitable tapping point, LineVu can be used to monitor the performance of any separator or column. It can be fitted permanently, or be used as part of performance testing, commissioning, trouble shooting, or in studies to extend the plant operating envelope.

Benefits

Suppliers

At gas export points, suppliers can reduce downtime. With better information, they can:

- quickly determine the severity of the process failure
- improve operational decisions
- lower the risk of financial penalties
- provide proof of dry gas
- use LineVu as a diagnostic tool to help with de-bottlenecking and extend operational envelopes

Buyers

At custody transfer points, buyers can make better decisions. With firm evidence, they can:

- decide the acceptability of the supply
- correct differential pressure flow meter readings for wet gas
- make the supplier accountable
- re-negotiate costs
- lower legal costs

Asset Integrity Managers

With LineVu in place, asset integrity managers can:

- lower the risk of hydrate blockages
- decrease the requirement for pigging