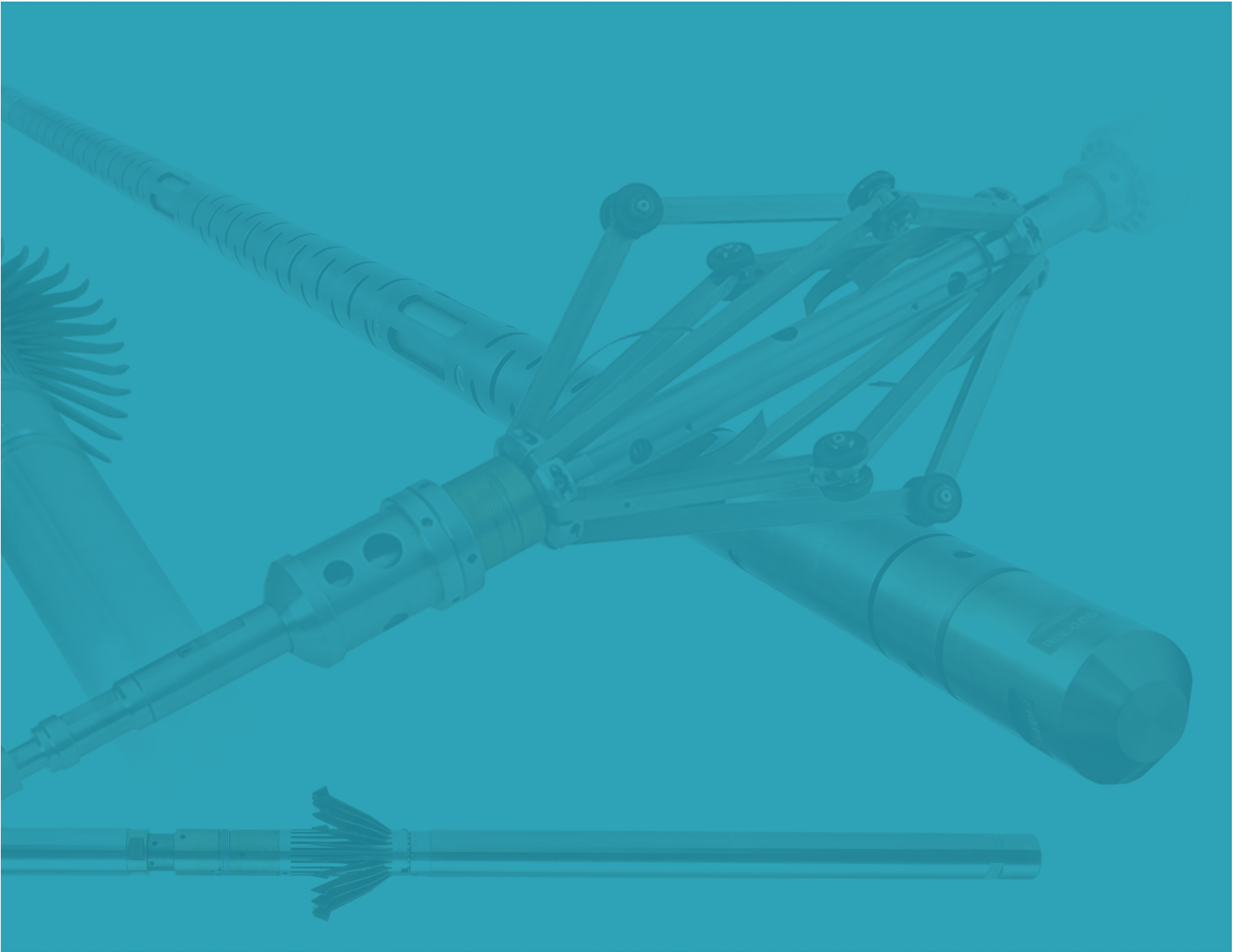




EXPRO



WELL INTEGRITY MONITORING

Through a combination of smarter well integrity management and a comprehensive range of cased hole services, Expro supports its customers to safely deliver hydrocarbons through the life of their wells.

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WELL INTEGRITY MONITORING

Failure in the integrity of any well can be expensive – resulting in lost production, environmental pollution, repair costs, or accidents. Geological movement, corrosion and erosion can all contribute to damage.

Our well integrity tools provide accurate evaluations, allowing appropriate remedial action to extend the life of your well, including:

- facilitating precise measurement of the inner radius of casing and tubing
- survey of pipe thickness
- evaluation of cement thickness

With the capability to provide services over a wide-range of wells, both on land and offshore, Expro can provide rigless intervention with our core mechanical or e-line methods, as well as coiled tubing, to optimise well integrity monitoring.

Expro provides cost-effective cased hole services throughout the lifecycle of your well, from initial design through to eventual abandonment:

- Downhole video monitoring
- Well integrity monitoring
- Production monitoring
- Production optimisation
- Well abandonment



Calipers

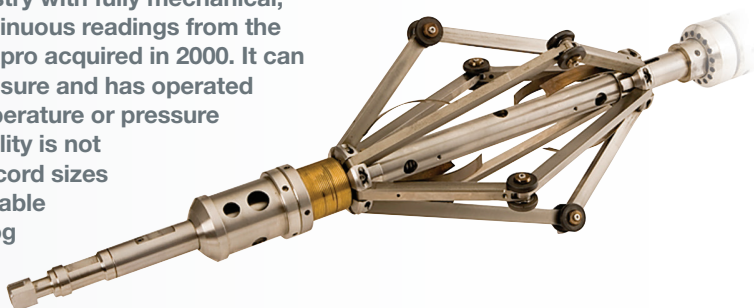
Electronic multi-finger imaging tool

The **multi-finger imaging tool** is available in a range of diameters, with 24, 40 or 60 fingers, to suit varying casing/tubing sizes, and can be run in combination with other instruments in memory or surface read out mode. They have an inclinometer to indicate the finger positions relative to the high side of the pipe, and operate in a wide-range of sizes without making multiple runs.



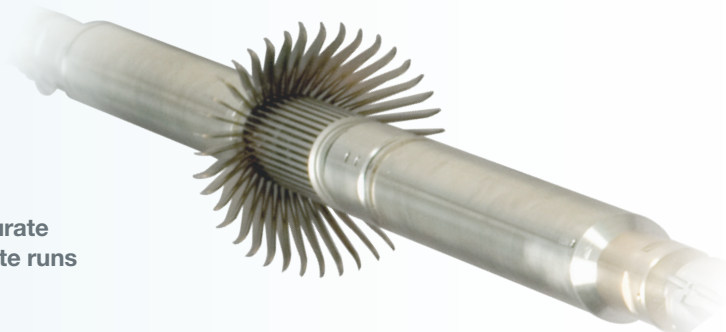
Mechanical calipers (Kinley calipers)

The only caliper available in the industry with fully mechanical, simultaneous, independent, and continuous readings from the fingers is the **Kinley caliper**, which Expro acquired in 2000. It can record data in virtually unlimited pressure and has operated at temperatures up to 800°F. No temperature or pressure corrections are required, so data quality is not compromised. Kinley calipers can record sizes between 1.5" and 17.5", and are available with 15 or 30 fingers – the ability to log in tandem can double the amount of fingers in the casing/tubing.



Combination services (Calvid)

The Expro **Calvid** system combines the accuracy of an electronic multi-finger caliper with the visual images of a downhole video camera, resulting in a more accurate representation of wellbore conditions. Critical decisions regarding well and production integrity can then be made based on a complete accurate assessment of the entire wellbore, minimising separate runs and associated rig time.



Metal thickness tool/magnetic barrier corrosion logging

The **metal thickness tool** is designed to investigate variations in metal thickness within the well. Used in conjunction with the multi-finger imaging tool, calipers enable metal loss to be monitored on the inside, as well as the outside wall of the casing/tubing.

Expro works in partnership with TGT Oilfield Services to provide a complete well integrity platform. EmPulse* is a multi-barrier corrosion logging tool designed to investigate corrosion and metal thickness of well completions, with assessment of up to three strings in the well. For example, the thickness of tubing plus two casings behind can be assessed independently from each other in a single trip without the need to pull the tubing. Furthermore, when it is combined with Expro's multi finger caliper, an internal and external corrosion image can be provided.



Leak detection

Pinpointing the **location of a leak** requires the correct technology and expertise to ensure that accurate information supports remedial action to be planned and implemented.

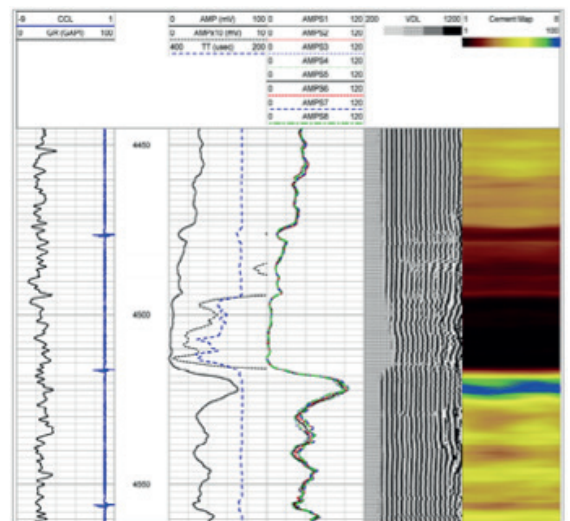
Leaks in the tubing or casing of a well can have a dramatic impact on economic viability and ultimately, cause serious issues with the safety, integrity, productivity, and long-term profitability of the well.

If the leak is in a casing collar, packer, or other external seal, Expro can add temperature and flow meter sensors to identify the leak. Expro offers the SPEC-LD*, which is a high definition spectral noise service able to identify leaks through multiple completion strings and its elements. This technology, combined with our temperature and flow meter tools enables determines the precise location of leaks in casing collars, packers and other completion elements. The same set of technology is used to investigate the source of annular pressure and the path of the flow behind casings.



Cement evaluation

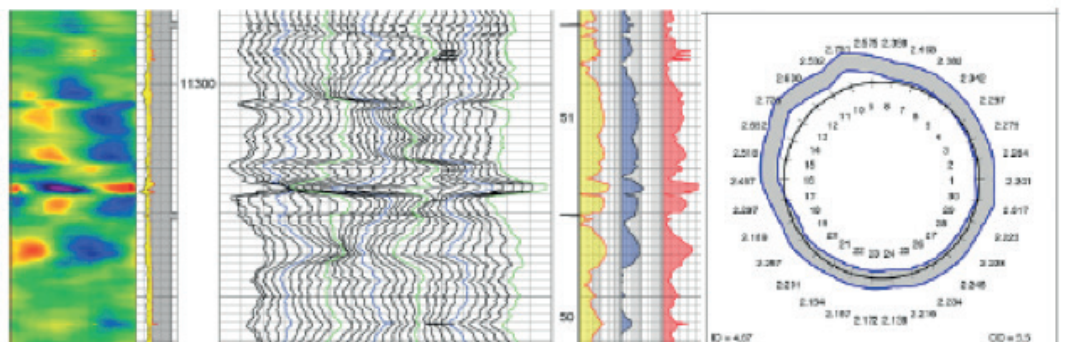
Efficient production of hydrocarbon zones, with minimal water entry, is dependent on good zonal isolation. Expro's **cement bond tools** provide an accurate and economic method of inspecting bond quality, with the ability to identify areas of poorly bonded cement and channels around the circumference of the well.



Log data analysis

Expro has extensive experience in interpreting caliper measurements with our analysis centres, processing over four million feet of caliper data per year. Our advanced software package uses both statistical analysis and 3D viewer packages for visualisation of caliper data. Every report includes client versions of the software packages, enabling engineers to review on their own computers.

- Corrosion monitoring
- CO₂ and H₂S profiles
- Deformation
- Pinhole location
- Perforation analysis
- Progressive penetration profiles
- ID-OD thickness
- Drillstring and rod wear



Located around the globe, we can provide express analysis, quick look reports and follow up interpretation from both Expro operations as well as third-party run tools.

