



**EXPRO**

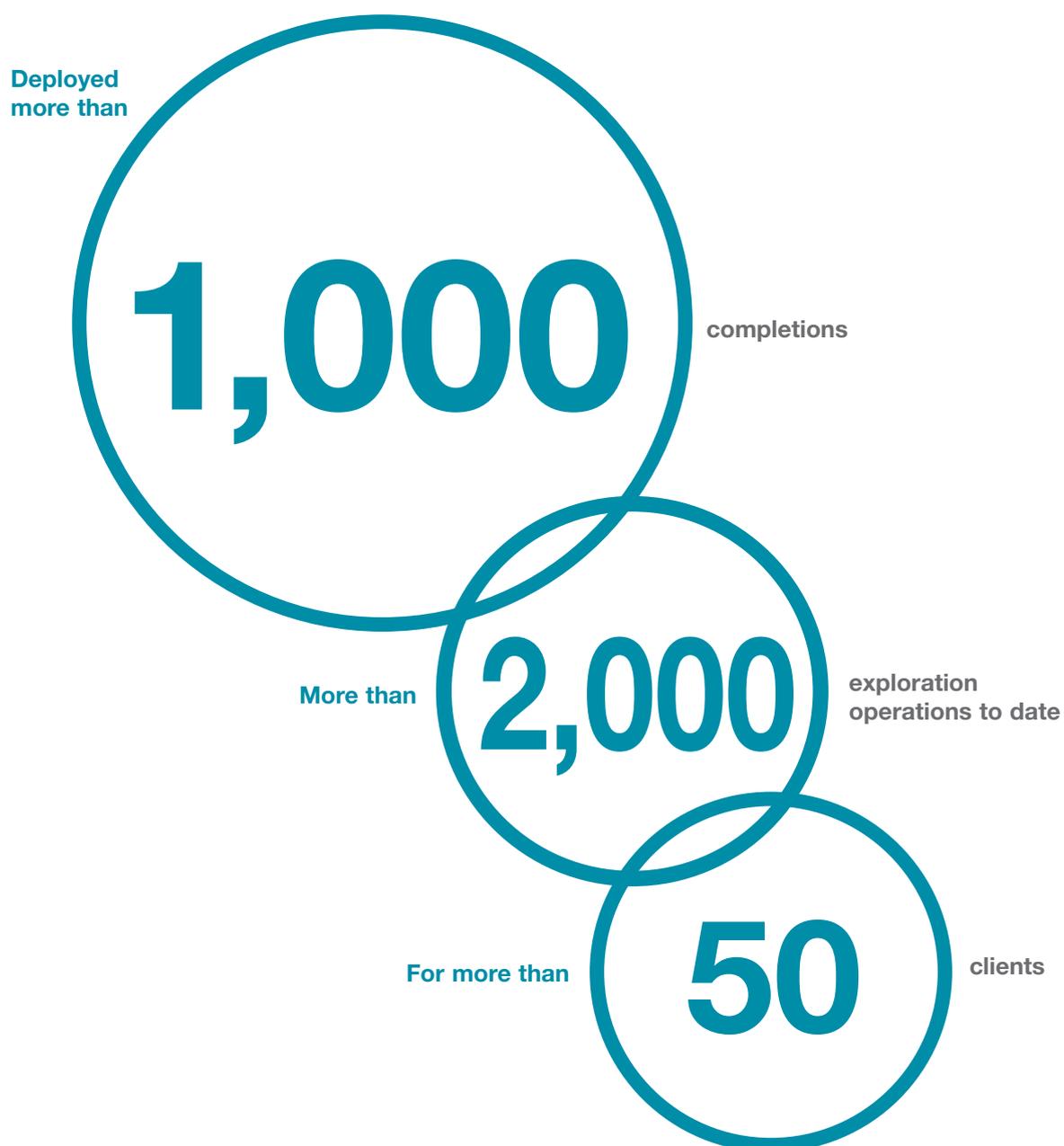
WELL FLOW MANAGEMENT™

## / Drilling & Completion

Niche technologies and services for  
the drilling and completion phase



Niche technologies and services for the **drilling** and **completion** phase.





## What we offer

Expro provides industry-leading choke systems, designed to withstand the most rugged of drilling environments, and wellsite open hole sample transfer and validation services, using the most rigorous of verification procedures. Our perforating systems, subsea landing strings and wireline services, complete a range of bespoke completion installation services and products.

We offer a range of capabilities, including:

- Hydraulic or manually-operated Expro PowerChokes® packages and control systems
- Wellsite open hole sample transfer services
- Wellsite TurboPVT™ analysis and chemistry
- Tubing and wireline conveyed perforating systems
- Wireless CaTS™ downhole pressure and temperature monitoring
- Subsea completion and intervention services
- Wireline intervention services

## Our product lines

- Well Intervention
- TCP
- Fluids
- Wireless Well Solutions
- Subsea Safety Systems
- Expro PowerChokes®

# Hydraulic or manually-operated Expro PowerChokes® packages and control systems

Expro PowerChokes products are designed and manufactured to provide the world's most advanced chokes and related equipment for the most rugged oilfield applications. Based on state-of-the-art materials, design, and engineering technology, Expro PowerChokes has become the industry leader for reliable severe service choke applications.

From coiled tubing to snubbing, frac flowbacks, well clean-up, and production applications, Underbalanced Operations (UBO) and Managed Pressure Drilling (MPD), our products have been developed to provide superior toughness, operability, maintenance ease and cost-effectiveness. Expro PowerChokes equipment is utilised in all oil and gas producing regions of the world.

Underbalanced drilling and MPD require continuous choke use to control the drilling operation. In extreme use and highly-abrasive applications such as this, long life and rugged chokes improve operations, minimise downtime and reduce costly equipment damages. Our ability to install large orifice trim for high flow rate requirements minimises plugging requirements and allows drilling under a wider range of conditions.

Precise automatic choke control is required for managed pressure drilling as well as for well control operations, such as kick control. The PowerChoke ABP (automatic back pressure) control system is specifically designed to provide this precision in well operations.

Expro PowerChokes come in various sizes for different applications and pressure requirements. All chokes are designed and seat-tested to achieve drop tight dealing per API 16C requirements. This exceeds ANSI B16.104 Class V (FCI 70-2) leakage requirements, without the use of O-rings or other soft sealing elements in the gate-to-seat seal design. Additional engineering services are provided for specific choke applications.

Expro PowerChokes provides both rental and services for choke products/manifolds throughout the world and can provide custom solutions to drilling and flow related problems encountered during operations.

## **Our products:**

- Chokes
- PRV Power Relief Valve (PRV)
- Control consoles
- Drilling manifolds
- Rental fleets

## **Our services:**

- Pressure control / well control
- Solids management
- Flowback
- Well clean-up / well testing



Over 700  
hydraulic  
severe service  
chokes

Over 170  
different size and  
pressure rating  
configurations

Almost  
25 years of  
severe service  
choke  
experience

# Wellsite open hole sample transfer services

In order to address the challenges faced in reservoir engineering and Pressure Volume Temperature (PVT) analysis techniques, the industry demands that downhole fluid samples are truly representative. Expro can fulfil this requirement through its complete range of sampling services.

These include tubing conveyed bottomhole sampling, wireline services, wellhead services, separator sampling and sample transfer systems to our shipping containers and pressurised bottles. Our sampling tools and sample bottles are designed to cope with the extremes of pressure, temperature and the corrosive fluids encountered in deep, sour wells.

Our single-phase bottomhole non-reactive samplers, sample carriers and surface sampling equipment is state-of-the-art and designed to ensure that representative reservoir fluid samples are obtained. The Pressure Compensated Sampler (PCS) bottomhole sample transfer unit enables preparation of sampling tools and sample transfer once they are recovered to surface. Transfer into either single or dual phase positive displacement cylinders is achieved rapidly and without sample recombination, therefore eliminating the possibility of compromising the samples.

Our PVT experts liaise with the sampling teams to ensure that optimum samples are obtained.

## Features:

- The sampling tools and bottles are designed to cope with the extremes of pressure, temperature and the corrosive fluids in deep, sour wells

## Benefits:

- The single-phase sampling bottles maintain the samples above reservoir pressure during transport to the laboratory, providing samples for more detailed analysis such as asphaltene, bacteria and corrosion (pH) studies
- Reduced risk of sample deterioration due to time and transportation



# Wellsite TurboPVT™ analysis and chemistry

Wireline fluid samples collected during logging operations can offer early characterisation of reservoir fluid and yield invaluable information to help plan the next stage of the testing or appraisal process.

Expro has designed and constructed mobile laboratory systems to provide objective, high quality data which can be used as an independent verification of sample quality, whichever logging vendor is used.

## TurboPVT™

PVT onsite well fluid analysis service results can be obtained in as little as eight hours with our TurboPVT service. This is an onsite reservoir fluid analysis service which delivers speedy and accurate PVT data based on a combination of measurements and tuned Equation of State (EOS) predictions. This equipment is compact and is especially cost-effective for operations in remote locations where logistics are challenging.

## SmartLab™

SmartLab™ is designed to determine the quality and contamination level of samples retrieved. The system can be tailored to measure as many parameters as possible, detailing hydrocarbons, water and trace elements. We offer our technical knowledge and experience onsite to assist the tool operator in securing the best possible fluid sample. SmartLab provides onsite PVT sample validation and detailed compositional analysis for oil, water and gas.

### Features:

- Onsite well fluid analysis within eight hours
- Customised analytical services, which includes hydrocarbon analysis, GC C<sub>36+</sub>, micro GC and oil/gas/water analysis
- Automated agitation for reconditioning of dual-phase samples

### Benefits:

- Tailor-made solutions for your needs
- Rapid confirmation of retrieved sample quality
- Decrease decision time for any reruns or rigdown
- Decrease rig time
- Elimination of DST for water and oil tests
- Economic savings due to reduced need for onshore analysis

Expro is a market leader in mineral scaling simulation software and uses acknowledged PVT packages and equation of states. Programme parameters are updated with the latest available data from reliable sources and pH predictions, which have been verified by Expro, with actual measurements at high temperature and high pressure.

The MultiScale™ software consists of one basic package with three optional add-ons. The basic package is for single point or multiple stream calculations, a module for systems with the addition of triazine scavengers, a second for Mono-Ethylene Glycol (MEG) systems and a third for process simulation.

## MultiScale add-ons:

### ■ MultiScale process simulation

A simplified and sophisticated way to see what happens in your process system when you change inlet streams, rates, temperatures and pressures. This module makes it easy to simulate various scenarios, simply add all units from your process setup and let the software do the rest.

### ■ MultiScale MEG

A tool for the prediction of scaling potential for water/glycol mixtures in wet gas condensate pipelines, MEG regeneration plants etc. You can get reliable scale predictions for water co-solvent systems up to 90 wt% co-solvent.

### ■ MultiScale H<sub>2</sub>S

This new module allows you to see what happens to the mineral scaling potential when introducing a triazine based scavenger into your process system. The calculated pH data can be used for corrosion calculations.

## Features:

- Excel format on report data
- Loading/storing of ongoing projects
- Direct access to windows, faster calculations
- Working range: 300°C and 1000 bar
- PVT model, similar to standard PVT packages
- Automatic tuning of water; alkalinity, CO<sub>2</sub> and correction for water evaporation

# Tubing and wireline conveyed perforating systems

## Tubing Conveyed Perforating (TCP) Systems

Expro has been a full service TCP provider to the industry for over 30 years, servicing the exploration and appraisal well testing and well completions markets. We have an outstanding track record in North America, including deepwater operations in the Gulf of Mexico.

In recent years we have strategically expanded our capabilities globally, with successful operations in Sub-Saharan Africa. We have licences set up and in-process in other regions in line with delivering fully integrated well testing services.

We use industry-leading gun products underpinned by API RP 19B test data. We make our selection based on the best solution for our client's project; considering the gun performance specific to well conditions, logistics and any special requirements.

We provide gun sizes from 2 1/2" up to 7" OD with full phasing and shot densities in RDX, HMX and HNS explosives packages and charge types, such as using deep penetrating, super-deep penetrating, big hole (for gravel packing), good hole and reactive liners. We can also offer the metered sleeve for frac applications and stimulation products such as the StimGun.

All Expro's mechanical, hydraulic and pyrotechnic firing heads, gun releases and associated accessories are designed in-house.

### Features:

- Firing head success rate at over 99%
- Specialists in bespoke perforating solutions
- Full TCP job design capability for optimised results

### Benefits:

- Over 30 years of in-house design and operations expertise and track record
- Access to industry-leading gun systems to provide the best solution
- Highly trained and experienced field personnel

## Wireline conveyed perforating systems

Expro's wireline perforating has the ability to use perforating guns from all the leading suppliers in the oil industry. Our detailed perforating well planning service incorporates specific performance modeling with regards to well conditions, completion details, guns used and required perforating performance.

Enhancements to the perforating service include development of a high temperature trigger enabling HP/HT wells to be accurately perforated utilising slickline and the associated cost savings of this conveyance method.

# Wireless CaTS™ downhole pressure and temperature monitoring

Expro's Cableless Telemetry System (CaTS) is a field-proven, battery powered, wireless data transmission system that offers operators immense advantages in the monitoring and control of both new and existing wells.

Based on electromagnetic (EM) data transmission technology, the CaTS system transmits low frequency EM waves from downhole to surface, or surface to downhole, using the well's tubing or casing as the transmission medium. CaTS transmits high-quality pressure and temperature information and is rapidly gaining industry acceptance as a cost-effective solution to many of the long-standing problems of acquiring downhole data. Having a flexible sensor interface, there is the option to integrate alternative sensor types in the future.

The addition of duplex functionality to CaTS means that it can receive as well as transmit data. This means that the telemetry can then be used for downhole control applications. The ability to communicate with and control downhole hardware without the need for a cable or control line is a significant enabling component of retrofit flow control.

## Features:

- Uses standard completion hardware
- Extended periods of in-well operation up to 36 months are achievable
- Provides real-time Bottomhole Pressure / Bottomhole Temperature (BHP/BHT) 'data to desk'
- Signal transmission is unaffected by the presence of cement or bridge plugs

## Benefits:

- Real-time data enables proactive reservoir management
- Technology applications to directly add value to the well safety and operations
- Retrofit technology

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The CaTS data has already proven its value on one of the newly commissioned wells

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# Subsea completion and intervention services

These landing string assemblies are designed for Direct Hydraulic (DH) and Electro Hydraulic (EH) completion and intervention applications and interface with all mono-bore completions when used in conjunction with horizontal and conventional subsea production trees.

The large bore product line has been operated offshore for over ten years and Expro has established an extensive track record with more than 500 interventions successfully completed. Operating a fleet of more than 30 systems, we are capable of providing subsea services around the world.

The design incorporates control ports enabling tubing hanger, tubing hanger running tool and other downhole functions such as Surface Controlled Subsurface Safety Valve (SCSSV) and chemical injection sleeves to be controlled or monitored. In addition electrical cabling can be run through the system to monitor downhole gauges or electrical submersible pumps during deployment.

Expro also provides umbilicals, reeler and surface control systems, allowing our clients to single source subsea safety systems and operating services.

## Features:

- Completion installation, workover and intervention operations on horizontal subsea xmas trees from Mobile Offshore Drilling Units (MODU) in water depths up to 10,000 ft (3048m)
- Drill stem testing, well clean-up and extended appraisal operations requiring a large flow bore
- Specifically designed to operate in batch completion campaigns where minimal redress operations between runs are critical

## Benefits:

- Provide pressure tight barrier between the well bore and Blowout Preventer (BOP) stack
- Provide a means to retain fluids from the well during a controlled or emergency disconnect
- Provide reliable well control in a wide range of water depths and from different vessel



10,000ft  
water  
depths

30 years of  
subsea  
experience

NOTICE

# Well intervention services

Expro is a leading global provider of wireline intervention services. We are the world's largest independent wireline service company, employing more than 1000 people in support of our operations globally.

Expro offers an extensive range of slickline services with innovative equipment, together with highly trained competent experts. We provide every slickline capability from basic completion intervention applications to advanced services. This includes recording accurate flow profiles or reservoir boundaries, perforating, and setting packers and other mechanical interventions typically performed on electric line.

The reliability of our wireline services – coupled with a quality driven desire to meet your expectations ensures Expro can meet all your well intervention needs through the drilling and completion phase.

## Features:

- Industry-leading wireline units capable of working in excess of 25,000ft, all wire types ranging from .108" to .160" slick-line and  $\frac{3}{16}$ " to  $\frac{5}{16}$ " braided cable
- Pressure control equipment capable of working on any well type, up to but not limited to wells such as gas lift, Electric Submersible Pump (ESP), highly deviated, HP/HT, and H<sub>2</sub>S Pressure Control Equipment (PCE) ranges from 3" ID through to 7 $\frac{3}{8}$ " ID and 5Kpsi to 15Kpsi
- One of the widest ranges of slickline tooling available globally in support of your operations
- Full deepwater semi-submersible, land and fixed platform, hot and cold climate working capability
- Completion contingency services including tubing punch, radial cutting torch and Kinley Power Jar

## Benefits:

- Expro is committed to delivering the success of your well, from pre-job planning phase through to mobilisation and during the operation
- Experienced personnel, both on the job and in support of your operation
- Tried and tested equipment keeps your schedule on track and ahead of the curve

Expro's mission is **well flow management**. We provide services and products that **measure, improve, control** and **process** flow from high-value oil and gas wells, from exploration and appraisal through to mature field production optimisation and enhancement.

With a specific focus on **offshore, deepwater** and other **technically challenging environments**, we provide a range of mission critical services across **three key areas**:

- Well Test & Appraisal Services
- Subsea, Completion & Intervention Services
- Production Services

Our vision is to be the **market leader** in well flow management, using the industry's best people, to deliver the highest standards of **safety, quality** and **personalised customer service**.

We provide a range of solutions including:

- Exploration & Appraisal Testing
- Subsea Safety Systems
- Drilling & Completion
- Flowback & Clean-up
- Production
- Well Integrity & Intervention

Expro's **40+ years** of experience and innovation empowers the company to offer **tailor-made solutions** for customers across the energy sector. With over 5,400 employees in over 50 countries, Expro offers a **truly global service solution**.



For further information on Drilling & Completion, please contact:

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