Fluid Sampling Solutions
Proserv specialises in the provision of sampling equipment, systems and bespoke solutions throughout the life of the reservoir from evaluation & appraisal through to decommissioning.

Our expertise is founded on our broad technical knowledge, extensive in-house engineering capability combined with a track record spanning 40 years.
To accurately evaluate and appraise a reservoir, high quality Pressure Volume Temperature (PVT) fluid samples have to be captured at the wellsite. These samples must be representative of the produced reservoir fluid as decisions on future field development will be made based on the analysis results obtained.

Once captured, the samples are transported to a laboratory where chemical composition and physical properties are measured.

This process needs careful management throughout to ensure sample integrity, operator safety and legal compliance.

We specialise in solutions for:

• Downhole Reservoir Sampling
• Wellhead Sampling
• Surface Sampling
Sample Handling Equipment & Transportation

Proserv’s sample heating and transfer equipment ensures that sample quality is not compromised during transfer.

Our shipping cylinders transport samples from the field to a laboratory of choice with the correct shipping certification for their destination countries.

We can offer a full range of sampling solutions from sample cylinders to transfer benches to heating jackets and all of our proprietary equipment can be purchased, rented or operated by our expert technicians.
**Case Study:**
Reservoir Evaluation & Appraisal

**Project Background**
As part of the client’s exploration and appraisal well test programme, Proserv collaborated with Metrol Technologies to provide a downhole reservoir sampling solution.

**Solution**
Proserv provided Single Phase Reservoir Samplers (SPS’s), which were run in Metrol’s Origin Drill Stem Test (DST) Sample Carrier. By working together, the client was able to monitor and independently trigger each individual sampler using Metrol’s wireless acoustic telemetry. This provides a huge benefit over more traditional annulus pressure operations where the client very quickly runs out of discrete rupture disc windows to operate individual DST tools.

**Scope**
Proserv mobilised equipment and personnel to West Africa and once the team were offshore they carried out a successful sampling campaign of the two planned zones. A total of four Single Phase Samples were collected and transferred into Proserv Type 6 Sample Cylinders maintaining single phase status from field to laboratory for PVT analysis.

**Conclusion**
Proserv worked successfully with Metrol Technology, providing the client with a superior solution for their DST sampling operations. The project provided the client with real-time information and control and also reduced the amount of days offshore.

**Client:** International E&P Company  
**Location:** West Africa  
**Equipment:** Single Phase Sampler's run in Metrol DST Sample Carrier

**Benefits:**
- Samplers run in DST Carrier instead of wireline
- Samplers individually fired, providing real-time data, using acoustic communication
- Days of rig time saved
PRODUCTION OPTIMISATION
Production Monitoring

To optimise field performance, produced fluids must be monitored to allow operators to make informed decisions on how best to manage their reservoirs.

The Proserv Solution
Proserv specialises in the provision of custom-made sampling systems, which are used to help monitor production and maximise hydrocarbon recoveries throughout the lifetime of the field.

In addition to our custom-made sampling systems, we also have an extensive range of sample conditioning systems such as the Proserv ProMix system which can be provided independently or custom built into a dedicated sampling system if required.

• Manual Production Sampling Systems
• Automated Production Sampling Systems
• Sample Conditioning Systems
Case Study: Production Monitoring

Project Background
Proserv was asked to provide a production sampling system for a development in the Middle East. The complete process package was awarded to the oil services company, who in turn contacted Proserv due to our knowledge, expertise and ability to deliver a local sampling solution.

Solution
Proserv proposed a bespoke manual sampling system using flow through gas sample cylinders, which were easy to change out as they were fitted with quick connect couplings.

Scope
In order to meet the challenging project budget, Proserv came up with a highly innovative low cost single manual sample system providing multi system functionality in a single ingeniously simple manual system.

Conclusion
By offering a customised single panel for collection of multiple samples, Proserv was able to demonstrate an “ingeniously simple” solution to the client that reduced capex requirement whilst still meeting the operational needs of monitoring produced gas.

Client: Oil Services Company
Location: Middle East
Equipment: Manual Sampling System

Benefits:
- Bespoke, low-cost solution
- Design included flushing and purging to ensure no sample cross contamination
- System designed, manufactured and supported locally
Multi-Phase Flow Meter Calibration

Production from subsea wells is often measured using multi-phase flow meters which need to be calibrated as a function of the produced fluid characteristics. These fluid characteristics will change over the life of the well which therefore necessitates the recalibration of the flow meter.

The Proserv Solution

Proserv works with clients to design, build, maintain and operate subsea sampling systems, capturing samples to allow the necessary fluid characteristics to be identified.

Subsea sampling systems are used throughout the producing life of a subsea well to monitor changes in produced fluids and ensure accurate meter calibration accordingly.
Case Study: Multi-Phase Flow Meter Calibration

Project Background
BP commissioned Proserv to design, manufacture and supply a Subsea Sampling system capable of capturing reservoir fluid samples from subsea manifolds located in water depths of up to 2,500m to support their operations on Block 31, offshore Angola. This award was based on the success of the previous Block 18 subsea sampling system delivered in 2007, which is still in use today.

Solution
A project delivery team was established involving design engineers, project managers, planners, buyers and technicians, who all worked closely to deliver this project to exact design specifications.

The system was manufactured and successfully tested at Proserv’s specialist subsea facility in Aberdeenshire before being shipped to Luanda within one year of the PO being placed.

Scope
The system was designed to meet the following parameters:
• Deployed via a crane from a vessel
• Manually operated via ROV
• Sample from 2 separate wells in one deployment
• Connected to manifold via client specified Unitec Connector

Benefits
• Samples two wells in one single deployment
• Easily deployable and retrievable system, which enhances reliability and reduces the need for maintenance and repair throughout field life
• Fully compliant with NACE
• Meets engineering standards set by the American Petroleum Institute
• 20 year design life
• Monitors water salinity and corrects multi-phase flow meter calibration

Client: BP
Location: Angola
Equipment: Subsea Sampling System

Production Optimisation
Flow Assurance

To optimise the efficient flow of fluids from the reservoir to the point of sale, Operators use a number of analytical techniques broadly referred to as “Flow Assurance”.

This involves the accurate characterisation of the fluid at discrete points in the production process. Fluid sampling is essential for such characterisation which then allows for fluid modelling and prediction of potential issues such as waxes, asphaltenes, hydrates or scale.

The Proserv Solution
Proserv works with clients to identify and deliver accurate fluid sampling programmes to allow production chemists to obtain the necessary fluid properties to manage flow assurance issues in a cost effective manner.

Proserv can also design, manufacture and install chemical injection solutions where appropriate to ensure that any identified issues can be controlled, maximising production and reducing costly intervention.
Case Study: Flow Assurance

Project Background
Proserv was contracted by a National Oil Company to provide downhole sampling services to help determine potential flow assurance issues associated with the production of asphaltenes.

Solution
Proserv suggested the use of our Single Phase Reservoir Samplers (SPS’s) and Type 6 single phase Sample Cylinders to capture and then transfer high quality downhole samples to the PVT laboratory for detailed analysis.

Scope
Proserv mobilised equipment and personnel directly to the rig site and carried out a single well intervention run on slickline, comprising of one string of three SPS’s. Samplers were triggered by pre-set clocks and once returned to the surface, the samples were heated and transferred into Proserv’s Type 6 single phase Sample Cylinders and handed directly to the client for transport to the laboratory for detailed analysis.

Conclusion
Proserv provided a cost effective and rapid solution to the clients sampling requirements which will allow them to make informed decisions on how they manage their production to minimise risk of flow assurance issues.

Client: National Oil Company
Location: Gulf of Mexico
Equipment: Proserv Single Phase Reservoir Samplers (SPS) and Type 6 Sample Cylinders

Benefits
- Three independent samples captured during a single intervention
- Three high quality PVT reservoir samples delivered to PVT Lab ready for detailed analysis
- The client can now investigate asphaltene onset pressure and based on results can make informed decisions on production to minimise flow assurance issues.
Sand Management

When hydrocarbons are produced from unconsolidated reservoirs, sand production can create erosion and blockages in flowlines and other production equipment.

Sand management techniques allow the operator to maximise and maintain production while managing sand at acceptable rates.

The Proserv Solution
Proserv can design, manufacture and supply a range of tools and equipment to monitor and quantify the level of sand being produced at given production conditions.

This allows the operator to enhance their production while maintaining the integrity of their assets.
Case Study
Sand Management

Project Background
In order to optimise platform production, Proserv was awarded a contract to supply a sampling solution to provide gas and liquid samples as well as having the ability to quantify sand production during various production stages.

Solution
Proserv provided the client with a customised solution by modifying an existing Sand Sampling System design. With the clients objectives being at the forefront, the system was designed to include:
- High Gas/Oil ratio (GOR) fluid
- Zero atmospheric venting
- Reduced foaming
- Reduced sampling times

Scope
Proserv designed a bespoke Sand Sampling System that could cope with production conditions whilst providing samples of gas and liquid and measuring the sand produced. The system was built, tested and proven to reduce foaming and offered considerable time savings during sampling operations.

Conclusion
Proserv worked closely with the client to find a simple, cost effective and rapid solution for their specific sampling requirements. The successful delivery of this project will help the client make informed decisions on how they move forward with the production optimisation of the field.

Client: Major Global Operator
Location: Caspian Sea
Equipment: Sand Sampling System

Benefits
- Overall project time reduced
- Safe sampling operation with no gas released into the atmosphere
- Both gas and liquid samples were collected from one skid
- Accurate measurement of sand production allowing optimisation of well flow rates
- Removes the need for full breathing apparatus during sampling operations
- Customised solution suitable for high GOR application based on proven technology
Reservoir Optimisation

In order to optimise reservoir production, other fluids can be injected to help maintain reservoir pressure and therefore increase hydrocarbon recovery. Over time these injected fluids can break through and begin to be produced which is something the operator wants to avoid at all costs. Sometimes tracer fluids are added to the injected fluid to allow the source of the produced tracer to be established. With this known, the system can be adjusted to maximise hydrocarbon recovery whilst minimising production of injected fluids.

The Proserv Solution

To support this process, Proserv can provide a wide range of sampling solutions ranging from rental of our proprietary downhole sampling tools through to the provision of a custom made subsea sampling system.
**Case Study:**
Reservoir Optimisation

**Project Background**
Proserv was invited to provide Production Sampling Systems for one of the world’s largest Operators as part of their field development project. Due to the high H2S levels in the well, the end-client wanted to use NACE compliant materials throughout.

**Solution**
Proserv built a customised Manual Sampling System utilising NACE compliant inconel material as required on all sample wetted components.

Proserv also designed and built bespoke large volume, high pressure flow through Sample Cylinders in inconel to allow sample collection and shipment for analysis.

**Conclusion**
Proserv’s close collaboration with the client (a global engineering contractor) helped to provide the end-user with a customised solution using tried and tested technology to meet their severe service requirements.

This project is a perfect example of international expertise being supplied locally in the region to meet exact client requirements.

**Client:** Oil & Natural Gas Company  
**Location:** Middle East  
**Equipment:** Manual Sampling System

**Benefits**
- Safe sampling of high H2S without risk to the Operator or the environment  
- Fully NACE compliant sampling system  
- Provision of large volume flow through Sample Cylinder with high pressure rating
DECOM-MISSIONING
Decommissioning

Many global assets are reaching the end of their life and retiring these assets can sometimes be challenging. Steel jackets, storage tanks and gravity based structures used to support topside production facilities all have the capacity to contain production fluids and therefore contaminants to the environment.

These structures need to be sampled to confirm fluid contents so a plan can be put in place for their safe disposal.

The Proserv Solution
We provide bespoke engineering solutions for:

- **Pre-decommissioning**
  - Survey and sampling services

- **Severance and recovery of:**
  - Topside & Jackets
  - Subsea Infrastructure
  - Wells

- **Renewables**
  - Full structure decommissioning
Case Study: Decommissioning

Project Background
As part of the client's decommissioning plans for its offshore platform, Proserv was engaged to provide a solution to allow them to sample their Gravity Based Structures (GBS's), which support the topside structure. This was required as the GBS's had been used to store attic oil and water during production and therefore the quantities and compositions of these fluids needed to be understood to aid environmentally friendly disposal.

Solution
In discussions with the client and their chosen contractors, it was clear that Proserv’s standard downhole sampling technology offerings were not suitable for this particular project due to limitations of the subsea deployment equipment being used and the sampling conditions likely to be encountered. Proserv therefore offered a customised solution by engineering, manufacturing, assembling and testing bespoke Proserv Positive Displacement Samplers (PDS's) to suit the client's specific needs.

Scope
Proserv completed a rapid response project to manufacture, build and test bespoke PDS sampling tools within six days, which were then immediately mobilised for offshore operations. Two offshore technicians were dispatched who successfully completed five sampling operations across three storage cells. Once recovered at surface, samples were transferred into Proserv ProLight sample cylinders ready for transportation to the analysis laboratory onshore.

Conclusion
Proserv worked closely with the client and their contractor to find an ingeniously simple, cost effective and rapid solution to their very specific sampling requirements. The successful delivery of this project will now help the client make informed decisions on how they move forward with the decommissioning of their GBS's.
OVERCOMING CHALLENGES
Industry leading portfolio of products with expert bespoke design capability

- Proserv offers a large range of standard products to meet our client’s needs
- We can also customise our standard products to meet particular project requirements

Innovative solutions to meet any budget

- Proserv can offer solutions for making the best use of the equipment clients already have or provide access to additional equipment without the need to procure additional capex

Ongoing R&D: Take the challenge of preserving low levels of H2S or Hg

- Proserv works with several different vendors to provide non-reactive coatings
- Coatings can be applied to our tools and cylinders to reduce any losses of H2S or Hg until accurate analysis can be performed

Fully knowledgeable of the complexities of shipping pressurised samples

- We have been in this business for over 40 years so we are very experienced in certification and recertification requirements
- We guide clients so they are using correctly certified equipment, depending on where samples are being collected and shipped to

Sampling experts ready and available

- Proserv can support clients with appropriately trained and certified personnel to complete sampling operations using our own or client owned equipment

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Innovative, robust and simple solutions
- Proserv provides ingenious technology solutions, delivered simply
- We use tried and tested technology when it will provide added value for the required application
- This approach allows us to be cost effective and quick to market with bespoke sampling solutions

Fully flexible commercial model to align with clients needs
- Proserv works with clients offering a flexible business model to meet specific needs to include sale, rental, operations or anything in between
- We are also interested in pursuing new and creative methods of working with our clients

Full after-sales-support for the life of the asset
- Proserv can offer complete after-sales service support for spares, servicing, re-certification and training
- We also have a global network of service centres to service or re-certify equipment
- We are developing mobile re-certification systems which can be deployed anywhere in the world and are happy to work with clients to provide this service as required

Standard and bespoke solutions for the most severe environments
- Proserv produces standard products using specialist materials which are NACE MR-0175 approved for use in severe service environments
- We work with different elastomer manufacturers to identify appropriate sealing solutions for different environments such as high pressure, high temperature and high H2S
THE PROSERV APPROACH
Access to our wider technology portfolio

We understand that no project is the same. Proserv partners with clients and through detailed discussion we explore the options and propose the most appropriate technical solutions.

As Proserv, we can leverage the capabilities from our wider offering by gaining access to expertise from other parts of the business such as subsea hardware, positioning systems, control systems and ROV tooling.

Create your own solution

In line with our flexible approach, our technical and training services can be carried out at any of our global facilities or at a client’s site. Similarly, should clients wish to purchase/rent equipment or have it repaired/refurbished, we can provide a solution best suited to their needs.
We are here to support our clients throughout all stages of the sampling process

- R&D and Manufacturing
- Equipment Sale and Rental
- Operation and Manpower Support
- Aftermarket Services
- Training (off or on site)
- Logistical Support
- Testing
- Recertification
- Quality Assurance
35,000 Sample cylinders manufactured, sold & supported worldwide, with a rental fleet of 2,400

40 Years expertise in the provision of sampling equipment, services and solutions

35,000 40

600 Downhole samplers manufactured, sold & supported worldwide

600

4 Subsea sampling systems engineered, manufactured & delivered

600 4

150 Bespoke fluid sampling solutions designed & manufactured globally

150
Global brand
Local partner

In all our major operating locations, we aim to build local businesses founded on local leadership, high-quality in-country personnel and support for regional supply chains.

Core to the Proserv offering is our ability to manufacture, deliver and support our fully accredited sampling solutions locally, by our highly experienced technicians.

5 Regions 22 Facilities 11 Countries 24/7 Local Support

United Kingdom & Europe  Middle East  Far East & Asia  Scandinavia  North & South America