



SUBSEA CONTROLS & COMMUNICATIONS SOLUTIONS

proserv

Proserv is the fresh alternative in global energy services. Combining technical ingenuity with design, engineering, manufacturing and field services expertise, we support clients throughout the lifecycle of their assets with a focus on maximising operational performance and efficiency.

In our ongoing pursuit for excellence, we are not afraid to challenge the conventional.

Ingenious Simplicity is at our core and we are committed to helping clients produce more for less. Partnering with progressive, like-minded companies, we cut out all the complexity to provide appropriate, yet ingenious technology solutions delivered simply.

Introduction

The Proserv Approach

Greenfield solutions

Subsea control systems

Subsea control modules

Subsea distribution

Subsea intervention

Subsea communications

Subsea monitoring and surveillance

Brownfield solutions

Proserv ACT

2

5

7

7

9

10

10

11

12

This philosophy very much applies to the delivery of our subsea production solutions for greenfield and brownfield developments.

Our reputation for best in class delivery is built on our track record. We offer 100% equipment reliability and provide the most cost effective and risk free technology solutions for sustainable and profitable production.

Our Expertise

Proserv has been in this business for over 40 years. As a solutions partner, we are continually striving to exceed our customers' expectations in areas of reliability, availability, cost and quality.

227



227 subsea control modules supplied to clients globally

16



16 Augmented Control Technology (ACT) projects delivered globally

50+



Over 50 open communications hubs delivered for subsea greenfield and brownfield projects

6000



Over 6000 surface and platform control panels designed, manufactured and supplied to clients globally

120+



Over 120 subsea controls projects completed for operators and service companies

GREENFIELD SOLUTIONS

Simplifying subsea controls.

Simplify and subsea are two terms that generally do not go together. Conventional wisdom would tell us that the subsea monitoring and operating of wells implies long lead times, expensive processes and very complex communication systems.

Proserv has once again challenged conventional wisdom by developing market leading subsea technologies that can be combined with incompatible systems, offer increased options in expanding fields and allow for the retrofitting of a large variety of designs into existing operations.

Subsea Control Systems

Proserv's direct hydraulic and multiplexed production control systems provide the control of subsea wells together with robust communications that enable topside management and subsea monitoring.

Our subsea control systems are designed to meet initial field requirements and provide expansion to suit full field development as required. Flexible and modular in design, our subsea control modules are compatible with trees from all major tree manufacturers and are effective in shallow or deepwater.

Subsea Control Modules

With the extraction of subsea oil and gas reserves becoming increasingly challenging in deeper and more isolated areas, greater data is required from subsea instrumentation to provide operators with the information necessary to make effective decisions and optimise production. Longer step-out distances





between subsea fields and host facilities also mean that improved communications and power technologies are needed to enable production in remote locations.

Proserv's award winning Artemis 2G (A2G) subsea electronics module is the next generation controls and communications tool that uniquely frees operators from the constraints of an existing brownfield umbilical by finding additional signal capacity to enable a cost effective field

upgrade or extension.

In addition, A2G offers high speed, copper based, multi drop networks as a viable alternative to fibre optic infrastructures within the subsea production system.

A2G maximises flexibility and optimises functionality providing more powerful communications and instrument support. Furthermore, it increases accessibility for remote usage through its webpage interface from subsea



to the desktop and provides advanced configuration and diagnostics to deliver unparalleled adaptable communications.

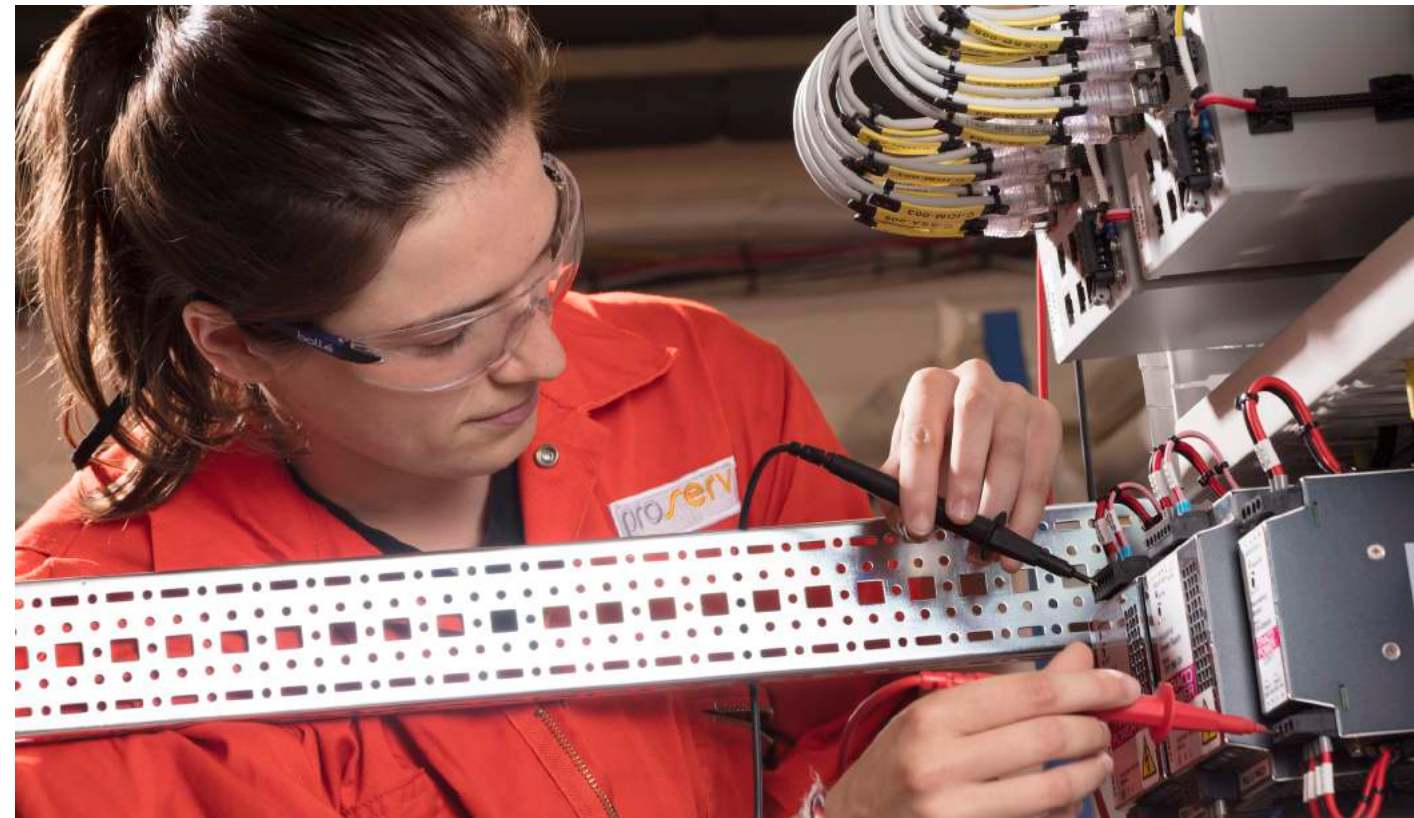
Subsea Distribution

For several decades, Proserv has been providing subsea distribution systems to clients globally for effective communications between subsea controls systems and topside.

Our technology solution, which is based on field proven technology, includes subsea termination heads, fiber optics, electrical distribution and hydraulic systems for safe

and reliable power and signal distribution.

We provide clients with a fully integrated service for the design and manufacture of subsea structures such as subsea distribution units (SDUs), subsea umbilical termination units (SUTUs) and umbilical termination assemblies (UTAs).





and provides high speed data monitoring from subsea multiphase flow meters and control modules.

The OCH is part of an entire system that reduces the complexity of connecting seemingly disparate systems and provides an interface for up to six instruments using only one pair of subsea umbilical power cables for data transmission.

The OCH works with all major trees and control systems to create a transparent communication system.

Subsea Monitoring and Surveillance

Proserv is committed to developing pioneering subsea technologies to solve complex market challenges. With minimal system impact, Proserv can enable flexible subsea monitoring and surveillance solutions for enhanced diagnostic and maintenance to

support operations personnel.

Proserv's Seahawk™ was developed for environmental monitoring, surveillance and retrofit on brownfields. The technology can be installed on a subsea christmas tree or manifold to provide visual monitoring of potential leakages.

High quality video is taken by the camera, which uses image analysis to verify and confirm existing warning signals to determine whether there is a real threat.

Subsea Intervention

Proserv's IWOCs is a fully integrated system that provides well control during subsea intervention and workovers.

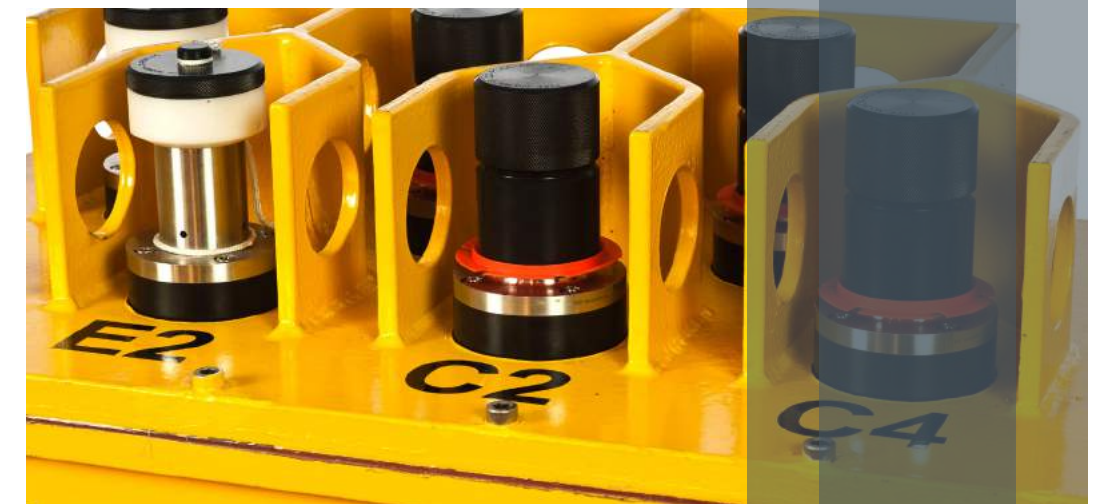
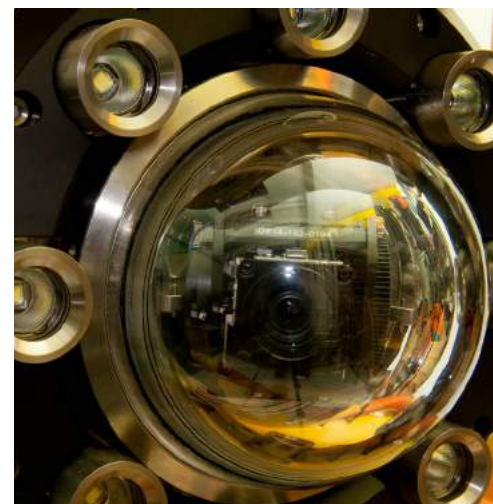
We deliver IWOCs solutions built to exact client specifications and requirements supported with highly competent offshore engineering personnel.

For client owned equipment, we offer long term storage, preservation and maintenance.

All our systems, which are certified for zone 1 and 2 surface applications, can be operated and integrated with a wide variety of subsea christmas trees, landing strings and subsea control systems.

Subsea Communications

The Proserv open communications hub (OCH) does something unique in subsea operations; it simplifies. The Proserv OCH enables fully transparent communications



BROWNFIELD SOLUTIONS

In these austere times, it is fundamental to change the way we act and respond to a challenge. We must think smarter about technology and how we can use what already exists in different, simpler ways to help deliver a more sustainable and profitable future.

Proserv ACT.

Proserv continues to challenge the original equipment manufacturers (OEM) and the industry to think smarter.

Proserv's Augmented Controls Technologies (ACT) is an approach we adopt that allows control technologies to be deployed to augment an existing control system. This opens up a range of opportunities that were previously not available for the client.

When faced with a challenge around equipment reliability, obsolescence or a subsea field upgrade, Operators are typically presented with a solution by the OEM to replace their systems, which is a very expensive exercise and can also affect production. Proserv is currently challenging the market to think differently here.

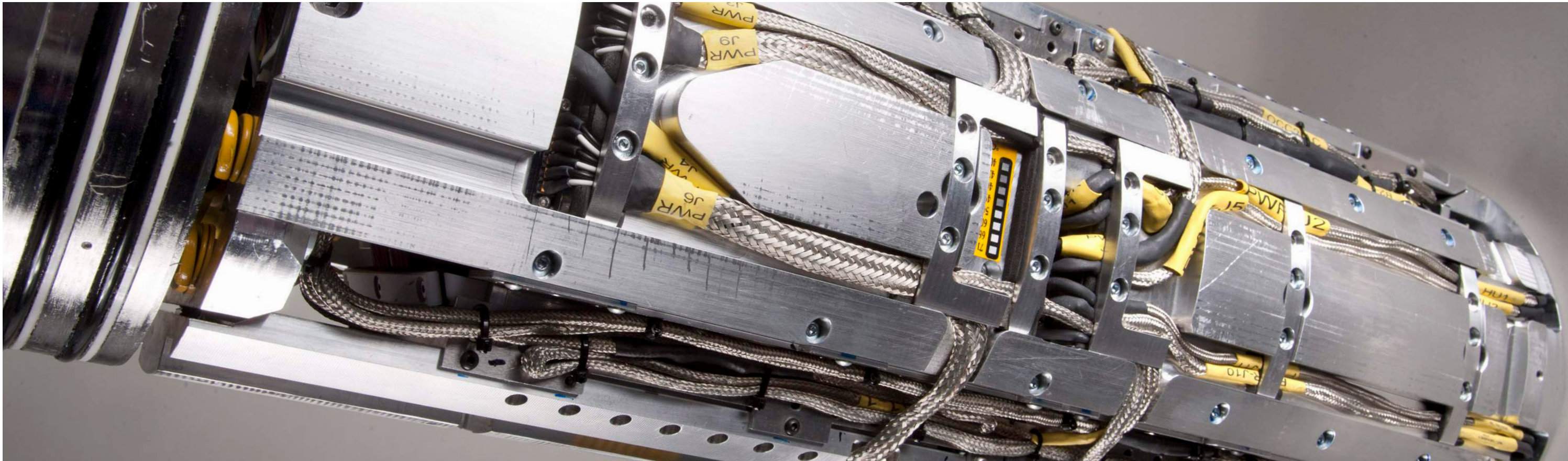
A new approach.

At Proserv, we have identified that almost half of all client engagements looking for alternative solutions is because of dissatisfaction with the reliability of their current subsea production control systems. Others are seeking to add new wells or instrumentation to an existing asset, or simply looking to extend field life.

The challenges and opportunities that the industry faces with brownfield subsea developments are varied, but all too often the industry's initial response to them is not. The frequent reaction to a problem is to call for a complete system change – to 'remove the old and replace with new' – when sometimes a more flexible approach may be appropriate.

Core to our offering is the practice of working around the problem to find out the best solution rather than trying to address the issue with a restrictive approach that only offers products in isolation. We must think smarter about technology and how we can use what already exists in different ways together.





Challenge 1: Production Reliability

Poor reliability (electronics failures), poor OEM support, and poor local control of repaired systems are changing subsea control systems from being maintenance free to having planned maintenance regimes at unplanned cost.

Proserv Approach

Proserv offers a proven, highly reliable and obsolescence resilient solution to give the operator a ‘maintenance free’ subsea production control system and deliver uninterrupted production without a full system replacement.

Challenge 2: Obsolescence support for extended life

Often there is insufficient support for aging systems from the OEM. Parts are obsolete and the technology is no longer available or supported.

Proserv Approach

Proserv’s co-exist and retrofit technology enables a well life upgrade path without expensive full system shut downs, so maximising the availability of existing assets.

Challenge 3: Adding wells to brownfield subsea systems

To create additional wells by extending fields requires new technology to co-exist with existing technology both subsea and topside.

Proserv Approach

Our technology solution enables the seamless integration of both systems, without affecting existing subsea control systems. Co-existing alleviates the need for new umbilicals, so reducing CAPEX.

Challenge 4: Additional instrumentation to optimise production

Brownfield upgrades often require additional instrumentation to monitor aging assets (for leakages or vibration etc.) or for production performance (multiphase flow). Older installed subsea production control systems rarely have the capability to support the new monitoring technology that exists today.

Proserv Approach

Our co-exist technology solution eliminates the need for new umbilical infrastructures, providing

the required information to maximise production.

The Proserv solution delivers options that were never previously available and this has been recognised by global operators struggling with technology options for aging assets.

Thanks for challenging us to think differently during the Njord study. This has helped us to improve the end result by bringing valuable input before the FEED.

- Statoil

Americas
america.sales@proserv.com

Europe
europe.sales@proserv.com

Africa and Middle East
mea.sales@proserv.com

Far East
fareast.sales@proserv.com

Australia
au.sales@proserv.com

www.proserv.com

Rev 001