

# Light Well Intervention Systems - What's Actually Available Today

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*Updated technical article - Well Access Systems, pressure-control architecture, and current market capability*

I wrote earlier on the makeup of an LWI vessel or intervention unit, the key enabler remains the well intervention package itself.

Previously I focused more on the companies involved. That hasn't really changed. What has changed is how these systems are configured, what they're capable of, and how they're now being applied in the field.

Before getting into that, it's worth resetting the baseline - what is actually available in the market today in terms of intervention systems.

## Abbreviations and Terminology

The following abbreviations are used throughout this article:

- **LWI** – Light Well Intervention
- **RLWI** – Riserless Light Well Intervention
- **IRS** – Intervention Riser System
- **CWOR** – Completion and Workover Riser
- **SIL** – Subsea Intervention Lubricator
- **RWIS** – Riserless Well Intervention System
- **SRIS** – Subsea Riserless Intervention System
- **SID** – Subsea Intervention Device
- **IRIS / BORIS** – Oceaneering Riserless Intervention Systems
- **WCP** – Well Control Package
- **IWOCS** – Intervention Workover Control System
- **ROCS** – Remote Operated Completion System
- **SCILS / eSCILS** – Subsea Controls and Intervention Light System
- **HPHT** – High Pressure High Temperature
- **P&A** – Plug and Abandonment
- **XT** – Christmas Tree

Terminology is used in a practical sense aligned with offshore operations, and system naming may vary between suppliers despite performing equivalent functions.

## Current Intervention Systems in the Market

The core suppliers remain largely unchanged. Systems have consolidated around a fairly standard envelope - primarily 7" class bore, 10k working pressure, with established 15k capability on riser-based systems and proven 20k capability within modular and open-water intervention systems.

### AKOFS Offshore

- 7 3/8" Intervention Riser System - 10k psi
- 7 3/8" Riserless SIL System – 10k psi

They also provide coiled tubing services through a CPI provided EDP/LRP system and a marine riser.

## **Baker Hughes**

- 3 1/16", 4 1/16", 7 1/16" RLWI systems - 10k psi
- 7 3/8" Subsea Riserless Intervention System (SRIS) - 10k psi
- 4 1/16" Riser-based system

Baker still carries the widest range of bore sizes in the market, driven largely by tree interface requirements rather than a shift in intervention philosophy.

Where their offering differs is not the base stack, but the intervention capability built around it, typically including:

- Fluid intervention and stimulation capability
- Subsea pumping and circulation systems
- Mechanical intervention tooling

Baker systems are frequently deployed as part of full intervention and stimulation spreads, rather than standalone well access packages.

## **Expro Group**

- 7 3/8" Intervention Riser System (IRS) - 10k psi
- 7 3/8" Riserless Well Intervention System (RWIS) - 10k psi

Expro remains a 7 3/8", 10k riserless well access provider. The development here is not in bore size or pressure rating, but in the modularisation and campaign deployment of the RWIS, with broad tree compatibility and wire-through-water capability.

## **Helix Energy Solutions**

- 7 3/8" Subsea Intervention Lubricator (SIL) - 10k psi
- 5 1/8" Intervention Riser System (IRS) - 15k psi

Helix operates both 10k riserless systems and 15k intervention riser systems, with the IRS supporting full intervention, completion, and abandonment scopes.

Their systems are deployed as part of an integrated intervention model, combining:

- RLWI (SIL)
- Riser-based intervention (IRS / CWOR equivalent)
- Coiled tubing capability
- Vessel-based execution systems

In addition, systems such as ROAM (Riserless Open Water Abandonment Module) enable open-water tubing recovery while maintaining barrier integrity.

Helix sits at the forefront of RLWI-to-P&A transition capability, with a fully operational 15k intervention riser system supporting a wide range of intervention and abandonment scopes.

## **Oceaneering**

- 7 1/16" IRIS - 10k psi
- 7 1/16" BORIS - 10k psi

While base specifications remain unchanged, these systems are now routinely deployed with:

- Hydraulic intervention capability
- Subsea stimulation systems
- Mechanical intervention tooling

Supported by systems such as WST and RAT, Oceaneering's strength lies in integrated subsea intervention execution rather than changes in core stack design.

Oceaneering systems are rarely deployed as standalone RLWI packages and are typically integrated into broader subsea intervention scopes, including robotics and hydraulic intervention.

### **Sapura Energy Well Services**

- 7 3/8" Subsea Intervention Device (SID) - 10k psi

No significant change in base specification. Improvements have been in execution and system reliability.

### **TechnipFMC**

- 7 1/16" RLWI system - 10k psi
- 5 1/8" Completion & Workover Riser (CWOR) - 15k psi

TechnipFMC continues to operate across both riserless and riser-based intervention. As with Helix, the 5 1/8" system sits firmly in the completion/workover/intervention riser space, with naming differences rather than functional differences.

TechnipFMC's riserless intervention system remains based around a 7 1/16", 10k psi configuration. Unlike other providers who have moved toward 7 3/8" bore systems, TechnipFMC has focused on expanding capability through system integration, including riserless coiled tubing and hybrid intervention modes, rather than increasing bore size.

Systems now support:

- Riserless coiled tubing capability
- Integrated barrier systems
- Hybrid intervention campaigns

### **Trendsetter Engineering**

- Trident Modular Intervention System
  - 5 1/8" - up to 20k psi
  - 6 3/8" - 15k psi
  - 7 3/8" - 10k psi

Trendsetter's Trident system represents a shift away from fixed intervention packages toward a modular, reconfigurable platform.

The system can be configured for:

- Riser-based intervention
- Riserless intervention
- Hydraulic intervention
- Open-water intervention and abandonment

Importantly, this includes fully realised 20k capability, supported by high-pressure shear and seal valve systems, enabling intervention in pressure regimes previously outside the practical LWI envelope.

The 20k capability is currently associated with modular and open-water configurations, rather than conventional riser-based intervention, but is fully realised and field-applied.

### **Worldwide Oilfield Machine (WOM)**

- 6 3/8" Deepwater Riser System - 15k psi
- 7 3/8" Deepwater Riser System - 10k psi
- RLWI-compatible systems and pressure control equipment

WOM remains a core OEM supplier of riser systems, wellhead interface equipment, and pressure control components that underpin multiple intervention spreads.

## Well Access Systems Beyond the Primary Packages

The well access market shouldn't be viewed purely in terms of the main RLWI/IRS/CWOR packages. A significant portion of the capability sits in the hardware, pressure control systems, and alternative access configurations that sit around them.

### Interventek

A key technology provider in high-pressure and open-water well access systems, focused on:

- High-pressure subsea valve systems
- Shear and seal barrier technology
- Open-water intervention safety systems

Most notably:

- 5 1/8" 20k shear/seal valve packages
- Designed for open-water intervention and abandonment
- Integrated into modular systems such as Trendsetter's Trident

This technology enables a shift from full riser return to surface toward subsea / open-water barrier establishment.

### Enovate Systems

Enovate sits within the well access equipment layer, focused on:

- Subsea lubricator systems
- Open-water access equipment
- Valve and pressure control architecture

Their systems contribute to open-water intervention capability, rather than complete intervention packages.

### Alternative Well Access Configurations - Aquaterra Energy

Alternative access models exist where the well access system is built from:

- Third-party riser systems
- Subsea tree interface equipment
- Pressure control packages
- IWOCS
- Intervention tooling

These configurations provide campaign-specific well access solutions where a conventional RLWI package is not the optimal technical or commercial fit.

## General Observations on System Design

Across all suppliers, system differences still primarily relate to:

- Bore ID (7 1/16" vs 7 3/8")
- Pressure rating (10k, 15k, and now established 20k capability)
- Depth capability

The move toward 7 3/8" systems is now fully established, driven by larger bore trees and 7" OD plug requirements.

10k psi remains the dominant working pressure, with 15k systems applied where required.

20k capability is already established and has been applied in field operations, although not yet standard across all intervention systems. It represents a proven extension into:

- HPHT intervention
- Open-water barrier systems
- High-pressure well access applications

## Control Systems and IWOCS

One area that doesn't get the same attention as the stack itself is the control system.

The intervention package gets most of the attention, but without a reliable control system, none of its functions. As systems have moved toward more complex intervention, open-water operations, and multi-barrier configurations, the control layer has become more critical, not less.

This is where systems originally developed by Optime Subsea, now part of Halliburton, and competitors such as Aker Solutions sit.

### Halliburton (Optime Subsea)

Optime's technology has pushed a slightly different direction compared to conventional IWOCS - specifically around reducing dependence on traditional umbilical-based control systems.

Core systems include:

- Remote Operated Completion System (ROCS)

Eliminates the need for traditional hydraulic umbilicals and topside control units by enabling remote control of the tubing hanger.

- Direct impact: reduced deck space, reduced red-zone exposure, simplified spread
- Subsea Controls and Intervention Light System (SCILS / eSCILS)

Closed-loop subsea control system with:

- Redundant pumps
- Redundant control modules
- Self-contained control architecture
- Removes reliance on continuous surface hydraulic supply
- Subsea Hydraulic Pump Systems

Modular hydraulic power systems deployed subsea to support:

- Valve actuation
  - Intervention functions
  - Barrier operations
  - Umbilical-less Tubing Hanger Systems
- Simplifies installation and intervention by removing complex umbilical interfaces.

### What That Actually Changes

This is not just a different control system - it changes how the spread is built.

Instead of:

- Long umbilicals
- Large topside HPU spreads
- Heavy control infrastructure

You move toward:

- Self-contained subsea control
- Reduced deck footprint
- Less congestion in the tower / intervention area
- Fewer failure points in long control lines

## **Aker Solutions**

Aker Solutions sits in a more conventional, but still highly capable, control system space, but it would be wrong to limit them to IWOCS and umbilical-based systems only.

Their offering includes:

- IWOCS and workover control systems
- Electro-hydraulic distribution systems
- Umbilicals and subsea control architecture
- Tubing hanger running and landing systems (equivalent in function to Optime's ROCS-type capability)

While typically deployed under different naming and system architecture, these tools perform the same fundamental role:

Remote installation and control of tubing hangers and subsea components without reliance on large, traditional control spreads.

This isn't unique to one supplier. Both Halliburton (Optime) and Aker Solutions are solving the same problem - how to remove unnecessary topside infrastructure and simplify control - just with different system architectures.

## **Where This Fits in the System**

This isn't a separate layer - it's part of the same system.

A complete well access system now includes:

- Intervention stack / SIL / riser
- Pressure control equipment
- Intervention tooling
- Control system (IWOCS / electro-hydraulic / subsea closed-loop systems)

Without that: you don't have a functioning intervention system.

## **Why It Matters Now**

As intervention systems move toward:

- Open-water operations
- 20k pressure environments
- More complex barrier configurations
- Multi-phase intervention and P&A campaigns

The control system becomes a limiting factor if it's not designed properly.

More valves, more sequencing, more dependencies - and less tolerance for failure.

## Additional Intervention Modules and Systems

In addition to base intervention systems, the following are now routinely integrated:

- Fluid intervention and stimulation systems
- Subsea injection and circulation systems
- Mechanical cutting and retrieval tools
- Open-water abandonment systems
- Subsea isolation and barrier devices

These are deployed as part of a combined intervention system, rather than standalone tools.

## What Has Actually Changed

On paper, intervention packages themselves have not materially changed in terms of bore size.

The real change is in capability and application.

### System Integration

Modern intervention spreads now combine:

- RLWI stack / SIL
- Riser system (where required)
- Coiled tubing capability
- Hydraulic and mechanical intervention systems
- Subsea isolation and barrier systems

### Expanded Capability

Riserless systems now support:

- Coiled tubing operations
- Subsea stimulation
- More complex mechanical intervention

This significantly extends what can be achieved without a rig.

### Application Shift

Intervention systems are now being used for:

- Well suspension and make-safe
- Early-stage abandonment
- Preparation for full P&A

## Conclusion

The first generation of subsea well access systems became competitive because they reduced the requirement to mobilise a drilling rig for every subsea well entry.

That technology is no longer new. Much of the base WAS / RLWI / CWOR architecture has been around for years, and in some cases decades.

What has changed is the operating envelope.

The market has moved from basic 7 1/16" and 7 3/8" 10k riserless access toward a broader well access toolbox:

- 7 3/8" 10k riserless systems remain the baseline
- 5 1/8" 15k riser-based systems are established across both Helix IRS and TechnipFMC CWOR
- 20k capability is already present and applied in the field, particularly through modular/open-water systems such as Trendsetter's Trident platform
- Campaign-specific alternatives can be built using third-party riser systems, IWOCS, pressure control and intervention tooling

The competitive advantage is no longer simply riserless versus rig.

It is whether the full well access system - riser, stack, lubricator, valves, controls, barriers, tooling, vessel, and contingency - can execute the scope safely without crossing into a rig-required operation.

That is the real screening point.

Not what the system is rated to - but what can actually be achieved with it.