

# Standard Subsea Control Systems

Integrated offshore  
offering for reliable,  
high-quality, and capital-  
efficient performance



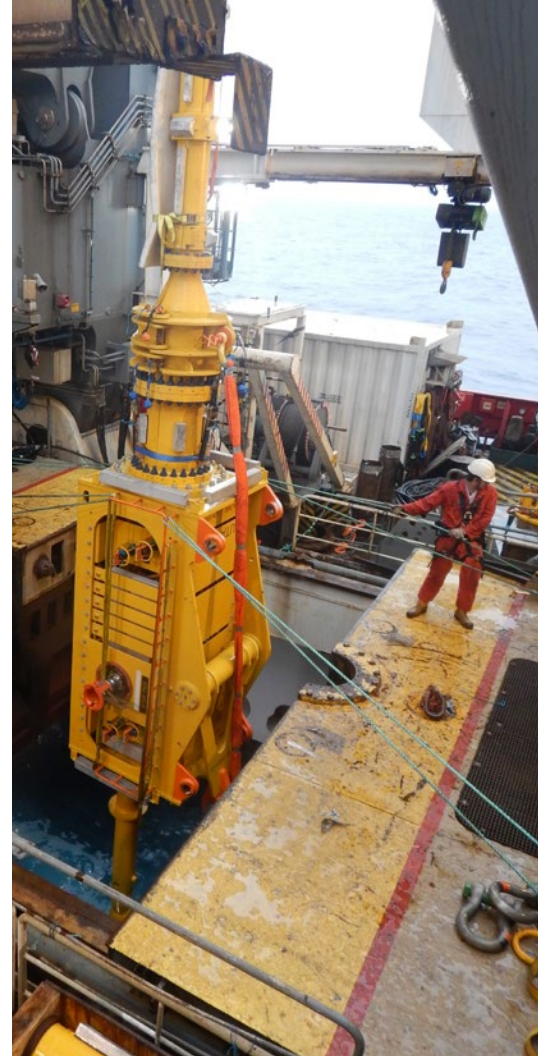
**OneSubsea**

A Schlumberger Company

# Standard Subsea Control Systems

Through standardized processes, common core components, and qualified, field-proven assemblies, OneSubsea can deliver a complete control system solution — from topside through subsea distribution to subsea equipment mounted controls — **within 12 months.**

These highly configurable solutions are designed to bring greater efficiency and reliability to subsea operations, enabling project viability and helping you meet a range of functionality requirements while driving down capex.



# Advantages

Since 1999, OneSubsea has designed and delivered more than 900 subsea control modules in more than 50 projects worldwide. Our control system uses existing robust and reliable technology, providing the versatility and flexibility your project requires to achieve maximum capital efficiency.

# Flexible Functionality

The control system can be configured for various projects:

- cluster layouts, tiebacks, daisy chains, and templates
- shallow to ultradeep water
- tree- and manifold-mounted controls
- riser base, pipeline end manifold, or pipeline end termination systems
- short to ultralong stepout.

OneSubsea control systems have the highest reliability in the market, delivering

- reduced opex by minimizing interventions
- significantly reduced deferred production.

A range of power and communication architectures is available:

- AC or DC power for longer reach and reduced umbilical costs
- various communication options
  - copper communication (on power or separate)
  - high-speed fiber optics (FO)
  - industry-leading DSL-distributed Ethernet communication.

The standard subsea control system is built from a suite of preauthored quality control, material, welding, and coating specifications that simplify and expedite our execution processes. OneSubsea works with approved vendors to ensure that they can manufacture the required components, enabling high confidence in quality and lead time.

## Quality Control

The QC requirements for our subsea control systems are in accordance with API Specification 17F. Our facilities are certified per API Q1, and our strategic subcontractors are certified to ISO 9001. Surveillance by independent competent bodies facilitates preengineering of materials, which enables preordering and, in certain cases, stocking them to secure lead time and protect schedule. Surveillance by customers is available during factory-acceptance testing.

## Materials

All material specifications used conform to API 6A and API 17D and were chosen on a component-by-component basis. Pressure-containing components additionally conform to DNV GL recommended practices (RP) for steel forgings for subsea applications (DNVGL-RP-0034). A range of standardized material options is available based on component criticality, manufacturability, and environmental compatibility.

# Welding

Our welding procedure for subsea control systems conforms to API 6A, API 17D, API 17F, API 17P, and ASME B31.1. Adhering to proven, tested, and repeatable processes enables OneSubsea to

- standardize welding specifications within and across product lines and vendors
- provide a superior engineering design that meets or exceeds industry specifications at a lower cost
- deliver increased value by enhancing the product without incurring added costs.

# Coating

The coating for controls equipment is rated to temperatures up to 122 degF [50 degC]. A separate procedure is available for topside equipment. The standard coating specifications give the requirements for surface preparation, selection of coating materials, application procedures, and inspection of protective coatings to be applied on the subsea control systems equipment.

# A Truly Unified Control System



Subsea control module.

## Manifold- and tree-mounted controls

- Subsea control module (SCM)
- SCM mounting base
- Subsea accumulator module (SAM)
- Downhole interface unit
- Electrical and hydraulic connections
- Various instruments
  - Pressure and temperature transducer
  - Acoustic sand detector
  - Pig detector
  - Leak detector
- Corrosion monitor
- Erosion monitor
- Single-phase and multiphase flowmeter
- Chemical injection metering valve



Electrical power unit.

Master control station.

## Topside controls

- Master control station (MCS)
- Electrical power unit (EPU)
- Chemical injection unit (CIU)
- Hydraulic power unit (HPU)
- Topside umbilical termination assembly (TUTA)



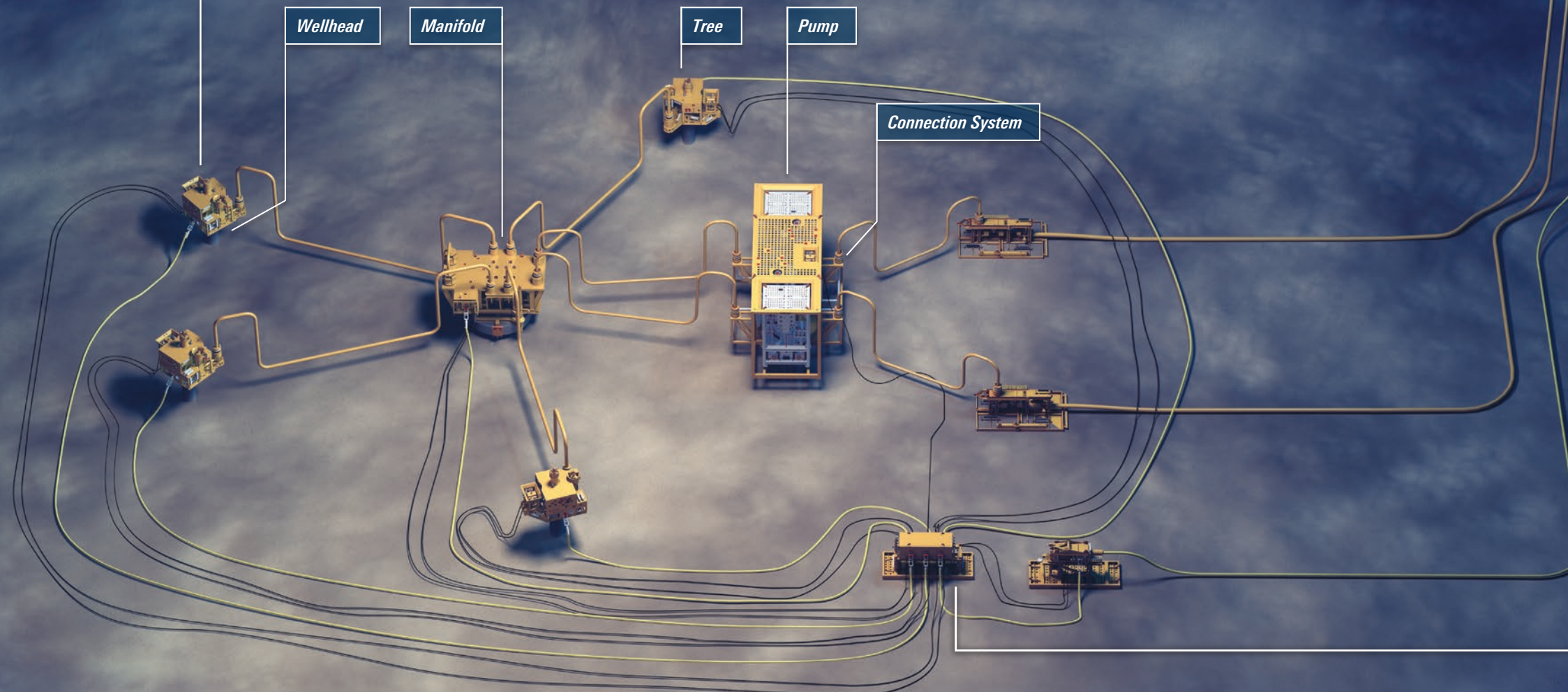
FPSO



Subsea distribution unit.

## Subsea distribution

- Umbilicals
- Umbilical termination assembly (UTA)
- Umbilical termination head (UTH)
- Subsea distribution unit (SDU)
- Communication distribution unit (CDU)
- Flying leads (FLs)
  - Electrical (EFLs)
  - FO (FOFLs)
  - Hydraulic (HFLs)
  - Steel tube (SFLs)



# Subsea Control Module

The SCM is configured to suit your specific field requirements using field-proven designs built from a suite of standard components. The modular system approach enables customization to meet your project needs. Extremely reliable in design, OneSubsea SCMs provide market-leading availability for subsea production fields with an unparalleled response time.



*Subsea control module and mounting base.*

## SCM Specifications

Electronic reliability	Dual redundancy
Hydraulic supply (dual), psi [bar]	
Low pressure	3,000–5,000 [207–345]
High pressure	7,500–15,000 [517–1,034]
Functions	Up to 32 hydraulic
Electrical power supply (dual), V	300–850 AC (689 nominal) 400–1,200 DC (1,100 nominal)
Electrical connection locations	Top, bottom, or side
Communication	Copper wire or DSL
Instrument interfaces	API 17F (Level 1, 2, 3) and Intelligent Well Interface Standardization
Downhole gauge interface card	Integrated Schlumberger Additional cards can be accommodated

# Topside Controls

The OneSubsea topside controls provide you with a suite of equipment mounted on the host structure to communicate with your subsea infrastructure. The system interface is user friendly and provides the control and monitoring required for surface and subsea installed equipment. It comprises five main components:

- MCS—fully redundant Linux<sup>®</sup>-based operating system with full obsolescence management, which supports all relevant interfaces like the MCS and distributed control system (DCS) interface standardization (MDIS) to the DCS
- EPU—fully redundant system that provides conditioned AC or DC power to the subsea infrastructure
- CIU—unit that provides a turnkey solution on the chemical delivery and distribution
- HPU
- TUTA.



*Master control station.*

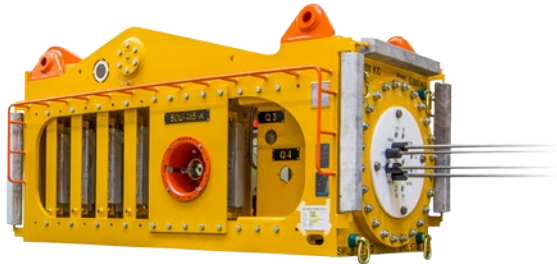


*Electrical power unit.*

# Subsea Distribution

The OneSubsea distribution system provides you with a fully integrated subsea system to control, communicate with, and optimize your field. It is made up of six main field-proven components:

- Umbilicals—dynamic, static, and infield umbilicals can be supplied with the required project configuration of tubes, hoses, electrical cables, and fiber optics to simplify interfaces and reduce delivery time
- UTA—supporting sizes B and D per the standard outlined by the Umbilical Termination Size Reduction joint industry partnership, with one to four hydraulic stabplates and electrical and fiber-optic termination and distribution
- UTH—umbilical termination head for direct connections of infield umbilicals to subsea structures
- SDU—modular design for up to 12 hydraulic stabplates with the capability to mount CDUs or SAMs as well as electrical distribution
- CDU—highly reliable communication distribution for FO and DSL Ethernet communication, including power switching capabilities
- Flying leads—various configurations for HFLs, SFLs, EFLs, and FOFLs available to match the layout and connection requirements.



*Umbilical termination assembly.*



*Subsea distribution unit.*



*Communication distribution unit.*



# Standard Subsea Control Systems

Integrated offshore offering for reliable, high-quality,  
and capital-efficient performance

[onesubsea.slb.com/standardization](https://onesubsea.slb.com/standardization)

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