

# Standard Vertical Subsea Trees

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



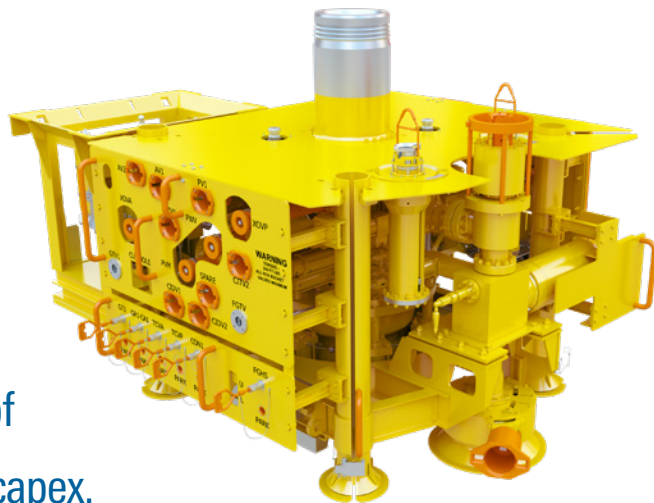
**OneSubsea**  
A Schlumberger Company



# Standard Vertical Subsea Trees

Through standardized processes, common core components, and qualified, field-proven assemblies, OneSubsea can design and deliver standard vertical subsea trees anywhere globally **within 18 months** and the tubing head spool (THS) **in 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 the 1980s, OneSubsea has delivered more than 1,100 vertical tree systems to offshore global locations. Of these, more than 300 were configured with THSs and 800 with a tubing hanger for wellhead installation.

Vertical tree systems offer the lowest opex in multiple field types. The latest evolution of the OneSubsea standard vertical monobore tree uses qualified and field-proven technology that can be configured to meet global functional requirements to deliver maximum capital efficiency.

# Flexible Functionality

- Common core components, the majority of which are interchangeable with the horizontal tree system
- Ratings of 10,000 psi [689 bar] and 10,000-ft [3,048-m] water depth
- Deployability onto THS

The standard vertical tree 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 the subsea tree are in accordance with API Specifications 6A and 17D. Our facilities are certified per API Spec 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 Specs 6A and 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

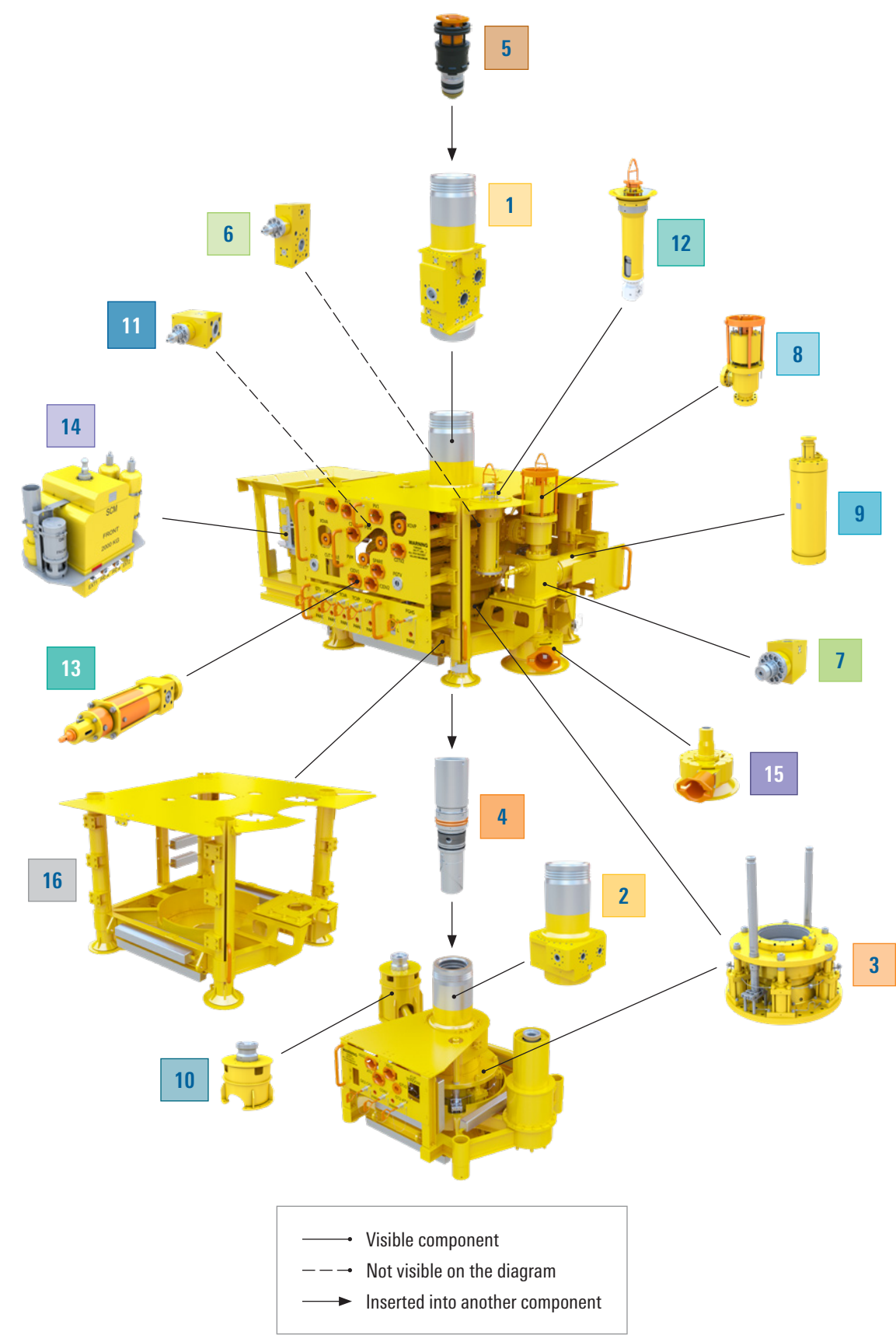
Our welding procedure for subsea trees conforms to API Spec 6A, ASME Section IX, ASME Code B31.3, and NACE MR0175/ISO 15156. Adhering to proven, tested, and repeatable processes enables OneSubsea to

- 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

There is one overall coating procedure comprising two preferred subsea coating systems—one for temperatures up to 122 degF [50 degC] and one high-temperature system for up to 302 degF [150 degC]. The standard coating specification gives the requirements for surface preparation, selection of coating materials, application procedures, and inspection of protective coatings to be applied on the standard vertical tree.

# Standard Vertical Tree



<b>1. XT Valve Block</b> 	<b>2. THS Valve Block</b> 	<b>3. Tree and THS Connector</b> 	<b>4. Tubing Hanger</b>  5- and 7-in nominal	<b>5. Tree Cap</b>  Lightweight tree cap	<b>6. Crossover Valve Block</b> 	<b>7. Flowline Isolation Valve Block</b> 	
<b>8. Choke</b>  Compact choke	<b>9. Actuators</b>  10,000 ft   OR   5,000 ft		<b>10. Flowline Connector Hub</b>  Diver makeup and swivel flange   OR   CVC* flowline connector hub   OR   OneSubsea clamp system (OCS) vertical hub   OR   OCS horizontal hub				<b>11. Annulus Wing Valve Block</b> 
<b>12. Chemical Injection Metering Valve</b>  High flow   OR   Medium flow   OR   Low flow			<b>13. Downhole Hydraulic Control and Chemical Injection</b>  Manual valve   OR   Hydraulic valve		<b>14. Controls</b>  OneSubsea direct hydraulic controls   OR   OneSubsea-supplied controls		<b>15. Tree-to-THS Clamp Connector</b>  OCS-V 100
<b>16. Tree Frames</b>  Guidelineless frame (shown); guideline-installable design available.			<b>Metering, Monitoring, and Instrumentation</b>  Third-generation PhaseWatcher* subsea multiphase flowmeter with Vx* multiphase well testing technology   AquaWatcher* water analysis sensor   Retrievable process module				

OneSubsea offers a comprehensive suite of measurement technology, including pressure, temperature, water, and erosion monitoring.

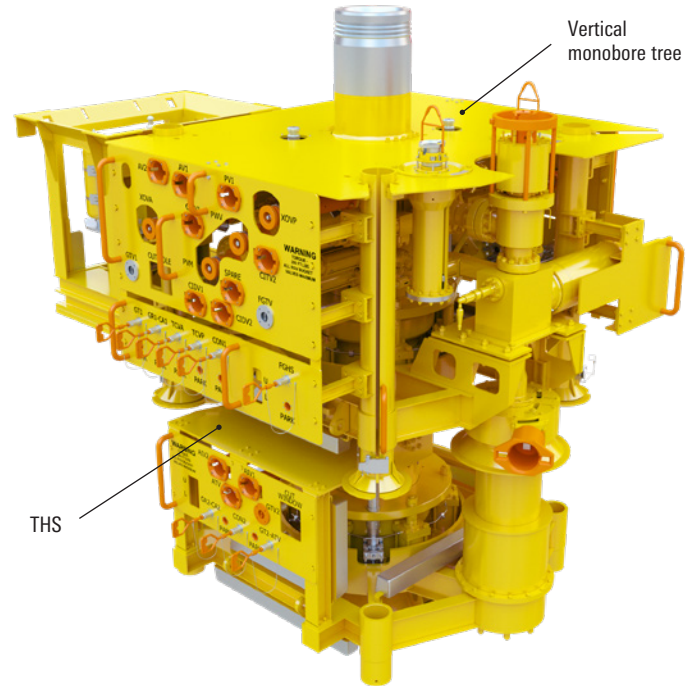
If you require a custom-tailored solution to meet your project objectives, please contact OneSubsea.



# Vertical Monobore Tree

## Differentiation

- Annulus routing that decreases environmental exposure to gallery components
- Tree cap designed for openwater deployment and retrieval with ROV assistance
- Simplified THS that enables quick delivery and installation
- Guideline or guidelineless installation capability



*Vertical monobore tree and THS stackup.*



Debris cap



Tree cap



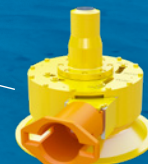
Production choke



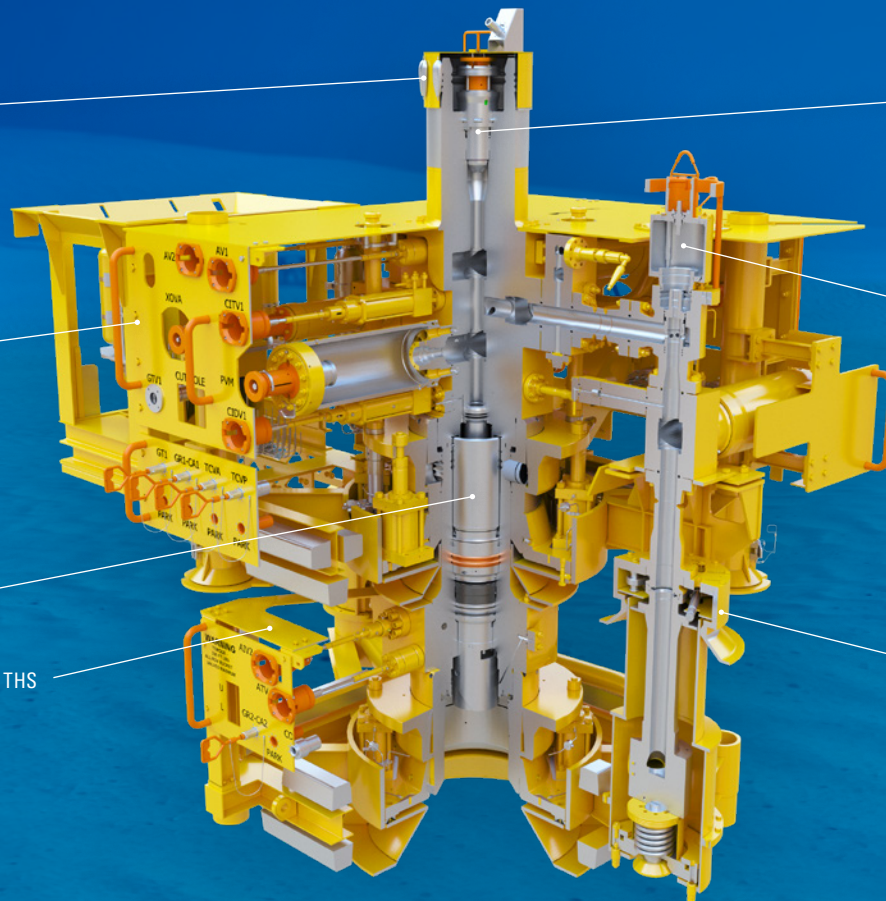
Tubing hanger

Vertical  
monobore tree

THS



Tree-to-THS  
clamp connector





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

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