



SFX Wellhead System

A standardized solution for simple operation and ultra-reliability in the most demanding fatigue applications

Subsea wellheads, conductors, and casing systems are subjected to some of the most severe fatigue conditions in offshore drilling operations. Key concerns include vessel motion, wave loads, vortex-induced vibrations, drive-offs, new drilling vessels with larger BOPs, and extended field operations.

Common mitigation techniques involve project-specific customizations that rely on a range of distinct product specifications and technical requirements. This approach has led to long lead times, specialized supply chains, extensive engineering costs, and product variability — all combining to reduce inventory flexibility for global operations.

Solution: SFX

A standardized fatigue-resistant solution

SFX is a system solution designed for ultra-reliability in the fatigue-critical zone. Our design process included collaboration with global operators to ensure that the SFX system meets or exceeds fatigue requirements. As a result, we have significantly reduced the complexity, variability, and long lead times of project-specific applications.

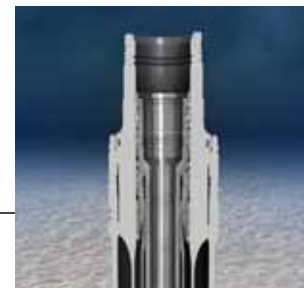
Up to 16X fatigue improvement

Stronger by design

We have taken our field-proven MS-700 and MS-800 architectures to the next level with an optimized design that directly addresses fatigue issues and maintains system stiffness. We didn't just increase wall thickness or move the fatigue issues elsewhere in the system — we developed a comprehensive solution that provides more days of confident drilling in the harshest environments.

Fatigue improvement factors

- Stress-reducing geometries
- Longer socket spacing
- Extended length forgings
- Tougher materials: A707 and F22
- Tighter pipe tolerances
- State-of-the-art welding
- Improved inspectability
- Reduced number of welds
- Eliminated short pipe sections



SFX subsea wellhead

- Standardized design enables both MS-700 and MS-800 configurations
- Maintains all familiar system interfaces, tools, and operating procedures
- 5" of extra sealing surface for compatibility with all completion systems



State-of-the-art welding practices ensure enhanced fatigue life

- Stringent fabrication requirements and receiving inspection
- Part selection and checks prior to fabrication
- Tight control for axial and radial misalignment with a max SCF of 1.3
- Highly controlled welding and grinding
- Advanced NDE



DSAW pipe

- Above and beyond API 5L
- Improved material properties and tolerances



22" Ulti-Max SFX casing connector

- ISO 13679:2011 CAL I-E with gas
- Gas tight metal-to-metal seal
- Single thread start with advanced threads and stress-relieving groove for enhanced fatigue performance
- Full scale resonant testing



36" RL-SFX conductor casing connector

- Based on field-proven RL-2HCX
- Single thread start with advanced threads and stress-relieving groove for enhanced fatigue performance

High-quality materials and processes

Standardizing materials and processes requires guidelines and collaboration. We worked with operators around the globe to develop one common material specification and adopted DNVGL-RP-0034 and API 20B to source and stock raw materials while meeting or exceeding customer quality certification requirements.

All SFX components have newly developed Inspection Test Plans (ITPs) carried out by an independent 3rd party which allows for improved lead times and reduced cost to the customer while maintaining stringent quality verification expectations.

We've adopted the most stringent practices and acceptance criteria from raw material sourcing through system completion to ensure each SFX system provides inherent quality and optimized fatigue performance no matter how extreme the conditions.

Core building blocks

These building blocks provide the foundation to ensure that every system delivered from our global supply chain adheres to our high standards for design, testing, and manufacturing.



Optimized Fatigue Performance

- A707 and F22 materials to provide greater toughness and fatigue life
- Highly controlled chemical composition, grain size, and imperfections for optimal performance
- DSAW pipe goes above and beyond API 5L

Raw Materials

- DNVGL-RP-0034 and API 20B for high quality raw materials
- Raw materials are certified in accordance with BS EN 10204:2004, section 3.2

- Optimized geometries to reduce stress concentrations in all components: wellhead housings, conductor connectors, and subs
- Radial preload between low and high pressure housing achieved without additional tooling
- Reduced number of welds

Component Design and Manufacturing

- Standardized design enables MS-700 SFX or MS-800 SFX configurations
- Compatible with all completion system options
- All SFX components have new ITPs carried out by an independent 3rd party

- Lengthened forgings to improve thermal effects during welding and inspectability
- Tighter pipe tolerances to reduce stress
- Fatigue-friendly weld profile
- Advanced NDE ensures base material soundness and maximizes probability of detection

System Fabrication

- Global standardization of processes, equipment, and procedures
- Independent 3rd party inspection of critical processes
- Improved process cycle time

- Up to 16X fatigue life improvement
- Maintains all familiar system interfaces, tools, and operating procedures
- Suitable for global use

Wellhead Installation

- Significantly reduced cycle time with component stocking and 3rd party quality verification
- Simplification of entire procurement process with a full range of optimized wellheads and connectors
- Global manufacturing capability and service support

Standardized Processes, Inherent Quality

Faster delivery worldwide

Through standardization and the adoption of DNVGL-RP-0034, we are able to stock materials and manufacture SFX components with consistent high quality around the world. This approach greatly simplifies the entire procurement process — allowing customers to easily obtain the full range of optimized wellheads and connectors from any of our global manufacturing locations, with quick delivery no matter where the project is located.

Global manufacturing network with standardized equipment and capabilities at all sites.



Key specifications (MS-800 SFX)

Structural	
Mandrel size	27"
Bending capacity (ft-lbs)	5.25 MM
Casing program	36 x 28/26 x 22 x 18 x 16 x 13 1/2 x 9 1/2
Casing load (lbs)	8 MM
Hanger positions	3
Pressure, Temperature, and Lockdown	
Pressure rating	15 KSI above, 7.5 KSI below
Temperature	35 °F to 250 °F
Lockdown per seal (kips)	750
Fatigue	
Fatigue loading	Extreme
Materials	F22 and A707 DNV C curve tested welds DNV C curve tested casing connector
Design Quality	
Qualification	API 17D and API 6A DNVGL-RP-0005 ASME Section VIII Div 2 GE Material Characterization
Manufacturing Quality	
Specification	API Q1, API 17D, API 6A Cert. per BS EN 10204:2004, section 3.2 DNVGL-RP-0034 SCF2+ GE-hired independent 3 rd party ITP - forging, pipe, and machining operations Option for customer 3 rd party ITP - joint assembly
Below Mudline Hangers (Maximum)	
	18" 5,000 PSI @ 500 kips 16" 10,000 PSI @ 2,000 kips
Options (please contact your local sales representative)	
	• High bending capacity wellhead system with 30" mandrel • MS-700 variant • Can be rated up to 350 °F



All wellhead images in this document are the MS-800 SFX.

SFX enables more drilling days

- 22" Ulti-Max SFX: A707
- 36" RL-SFX: A707



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