



UH-1 Unihead[®]

Standardised solutions
improving well economics





Surface Technologies

Surface Technologies is a market leader in the design and delivery of products and services to the oil and gas industry. We are defined by technological innovation, reliability, product quality and integrated services, making us the partner of choice.

Technology delivering customer success

Industry leading wellhead technology

TechnipFMC has a proven track record focusing on customers, challenging conventions, minimising non-productive time and delivering sustainable and successful economics with our standardised solutions.



Global capabilities

TechnipFMC is a world class equipment and service provider. We offer the best solutions to help exploration, production, and service companies succeed in achieving their drilling, completion, efficiency and safety goals. We also offer a suite of complementary aftermarket services.

TechnipFMC's extensive commitment to producing the highest-quality equipment and systems through advanced designs and manufacturing techniques is on full display at each of our plants. We use lean principles to deliver zero-defect cost-effective solutions. And we constantly explore new ways to optimise our customers' success by reducing complexity and the cost of ownership.

We have the expertise, contacts and resources worldwide to help our customers 24/7.



Photographer/Aker BP

Our drilling technology

Experience faster time to production, lower operating costs and reduced non-productive time through field-proven standardised drilling systems

Field proven from cost effective conventional to high performance Uniheads®

TechnipFMC's structured and comprehensive portfolio delivers a broad set of standardised drilling products with cost and time efficient solutions, delivering the perfect balance of functionality and reliability for all our customers' well applications.

The technology is fully validated through rigorous test protocols that align with API standards, and when required exceed those limits providing a greater level of reliability for customer operations coupled with many years of field use, this ensures our technology meets our customer's requirements of reliability and quality.

We continually invest in research and development to meet the evolving needs of our industry. All innovations are subjected to exhaustive laboratory and field tests to ensure their reliability and integrity before they are released to the marketplace.

Safety and reliability

TechnipFMC's standardised equipment and renowned sealing technology help eliminate the threat of working under suspended loads, minimise BOP manipulation, reduce installation risks and improve safety throughout the drilling process.

Our ability to address complex project challenges comes from a strong track record of project management expertise. We deliver projects on time, reducing installation risks and never compromising on quality or safety.

Shorter time to production

Non-productive time (NPT) can have a major impact on well economics. Our drilling technology mitigates risks through our robust design verification and validation program, optimising well integrity and minimising NPT and the risks associated with the drilling and equipment installation process.

TechnipFMC's stocking programs ensure our standard components and sub-assembly products are available and ready to be installed to help boost your productivity and accelerate time to first oil.

We deliver top-rated field execution services 24/7, with trained, competent technicians to make sure the job is done right and safely.

Surface wellhead systems

TechnipFMC offers a fit for purpose range of drilling products covering simple onshore and offshore drilling to complex operations in harsh well conditions and environments

Onshore technologies

- ▶ Conventional wellhead
- ▶ Unihead® (UH-1, UH-2, UH-3, UH-4, UH-5)

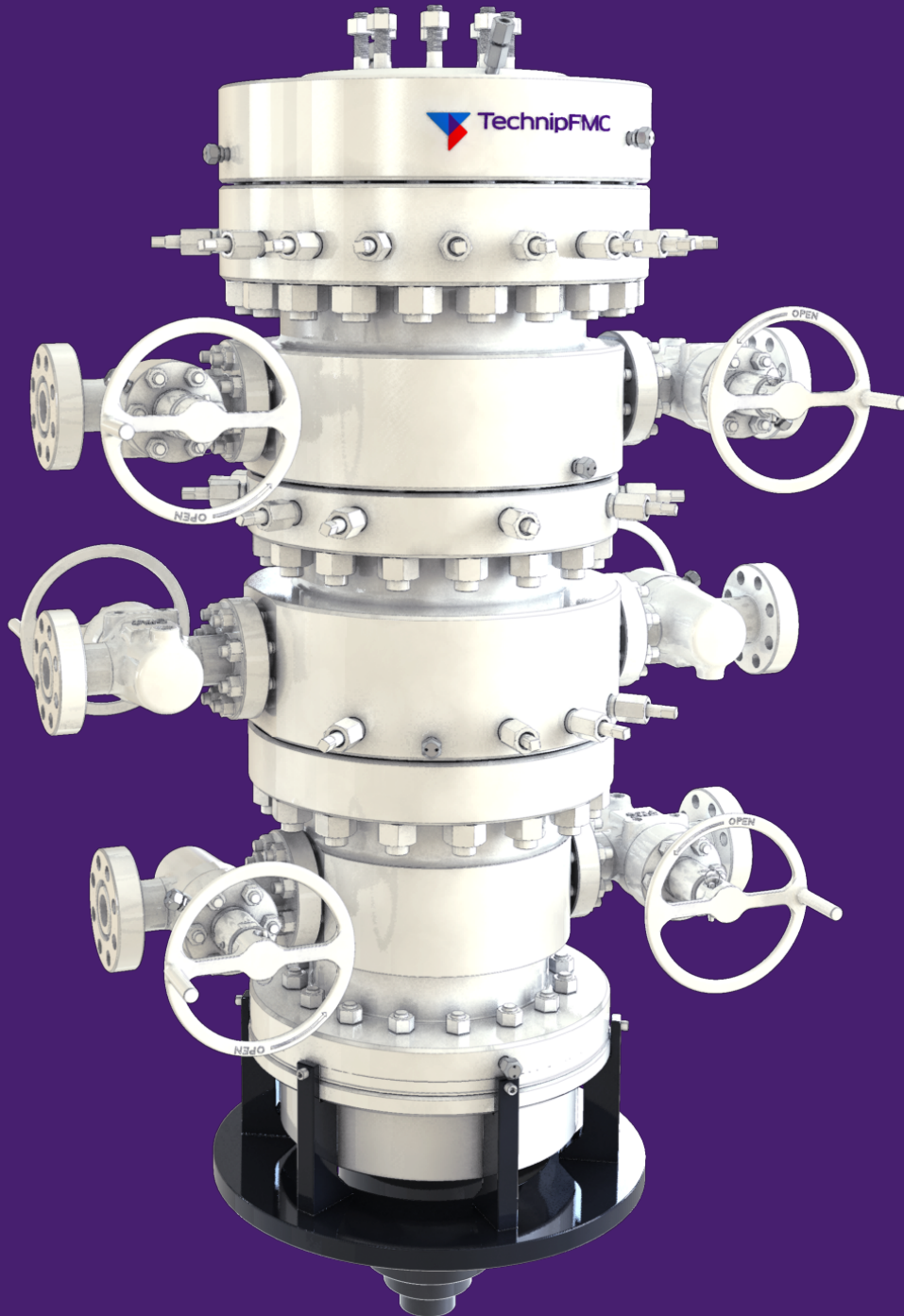
Some systems can be installed on land and offshore platforms.

Offshore technologies

- ▶ Conventional wellhead
- ▶ Unihead® (UH-2, UH-3, UH-4, UH-5)
- ▶ SPAR, TLP and SXS

System	Working pressure	Hanger / packoff retenion	Sealing technology	Nominal sizes	Temperature rating
Conventional	2,000 psi thru 20,000 psi	Lockscrew	Elastomer and Rough Casing Metal Seal (RCMS)	7 $\frac{1}{2}$ " thru 21 $\frac{1}{4}$ "	-75° F to 350° F
UH-1	5,000 psi, 10,000 psi	Lockscrew	Elastomer	11", 13- $\frac{5}{8}$ "	-75° F to 250° F
UH-2	5,000 psi, 10,000 psi	Internal latch	Elastomer	11", 13- $\frac{5}{8}$ "	-20° F - 250° F
UH-3	5,000 psi, 10,000 psi	Internal latch	Hybrid PI-metal end cap	11", 13- $\frac{5}{8}$ "	-75° F - 350° F
UH-4	5,000 psi, 10,000 psi	Internal latch	Single metal to metal	13 $\frac{3}{8}$ ", 18 $\frac{3}{4}$ "	-75° F - 250° F
UH-5	5,000 psi, 10,000 psi, 15,000 psi	Internal latch	Dual metal to metal	13 $\frac{3}{8}$ ", 18 $\frac{3}{4}$ "	-75° F - 400° F

UH-1 Unihead®



Sealing technology

The foundation of any wellhead system is the sealing technology and its integrity over the productive life of the well

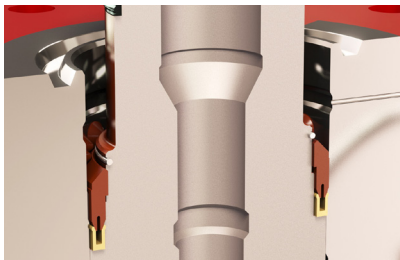
TechnipFMC has a solid track record of investing in the development of new seal technologies both metallic and non-metallic to handle all well conditions from low pressure oil wells to high pressure and high temperature gas wells. Our seal technologies are reliable, robust and practical, delivering trouble-free seal integrity throughout the life of the well. Our seal capabilities cover 2,000 psi through 20,000 psi and temperatures from -75° F to 400° F.



FS Seal

The UH-1 product family provides a broad range of non-metallic seal technologies:

- ▶ S and FS Seals for machined and rough casing designed in-house using proprietary elastomer compounds (NBR, HNBR and FKM)
- ▶ Dovetail, L-Packing and compression packing for installation tooling

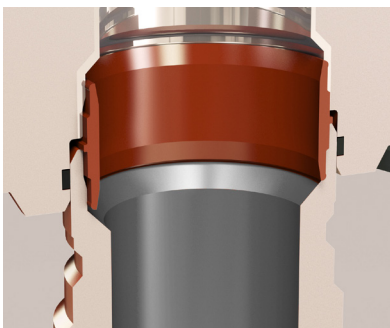


Externally Energised Metal Seal (XEMS)

When enhanced sealing performance is needed, we offer a wide variety of metal-to-metal seal technology:

- ▶ Externally Energised Metal Seal (XEMS) for annular sealing on casing and tubing hangers. Activated via the External Thread (ET) lock screws
- ▶ Straight Bore Metal Seal (SBMS) for gas tight sealing between the tubing hanger neck and Christmas tree
- ▶ Fire testing on metal-to-metal seals

Metallic and non-metallic seals have been qualified in accordance with API 6A PR2F.



Straight Bore Metal Seal (SBMS)

UH-1 compact and flexible drill-through system

A practical entry level drill-through system minimising non-productive time and the total cost of ownership

The UH-1 Drill-Through Unihead® system is a split compact design offering improved rig time savings, superior well control and added safety for the rig crews. BOP manipulation is kept to a minimum as all the primary casing hangers, packoffs and completion are installed under BOP control.

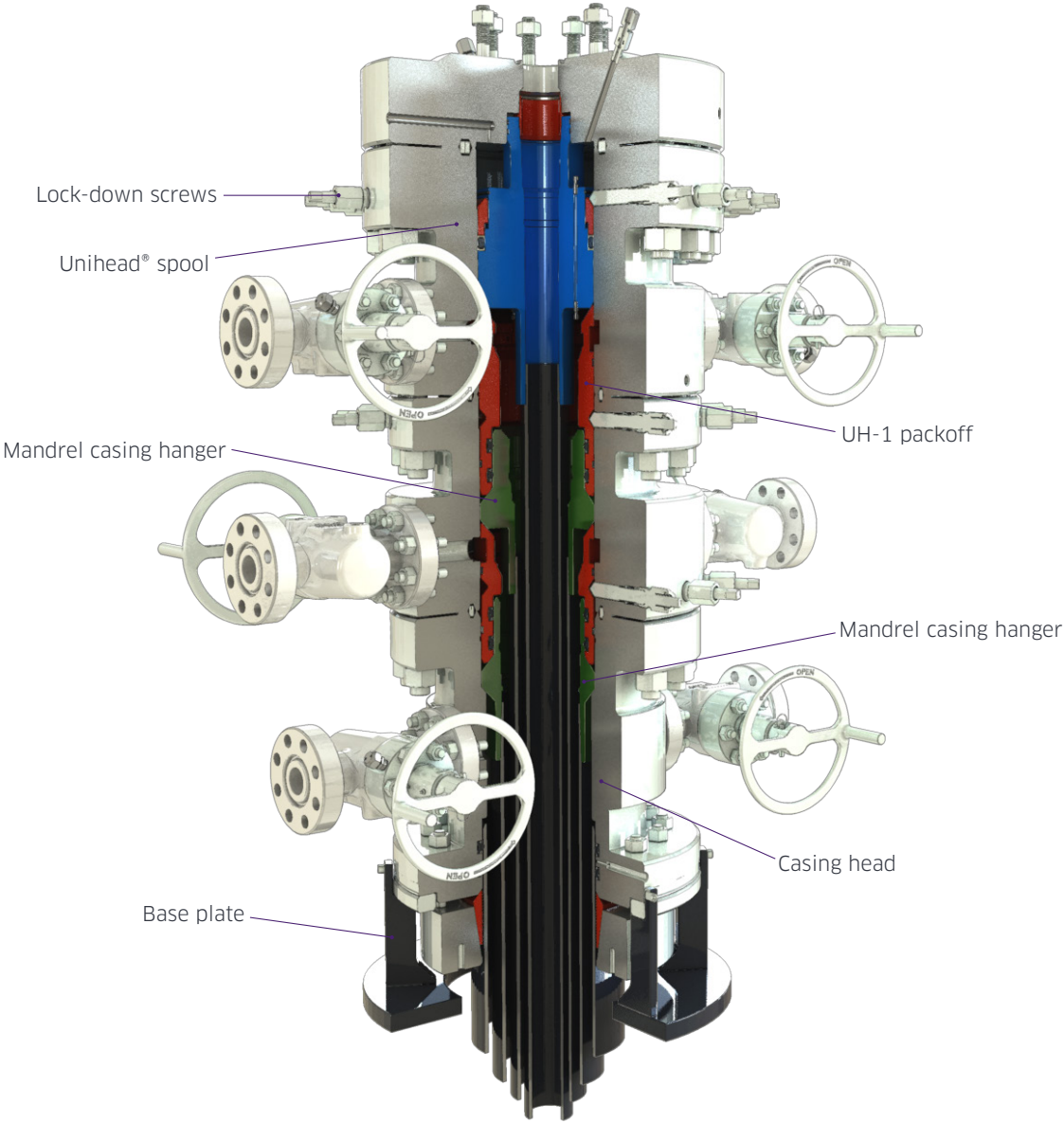
The system has a high degree of flexibility and can be configured with two or three sections depending on the well architecture. The foundation of the system is the casing head, which is a standard C-22 design and the same configuration as our conventional product family. This allows customers to transition easily to the UH-1 system utilising the same tooling from conventional.

UH-1 Unihead® system benefits

- ▶ Maximum 10,000 psi working pressure and rated from -75° F to 250° F
- ▶ Available in both 11 and 13⁵/₈ inch nominal sizes
- ▶ Unihead® housing is split using API flange connections.
- ▶ Hanger and packoff installation through the BOP
- ▶ Annular packoff uses proprietary S and FS seal technology
- ▶ Lower connection can be slip-on-weld, threaded or sliploc
- ▶ Hanger and packoff retention achieved through ET lockscrews
- ▶ Upper connection is an API flange minimising the need for special BOP crossovers
- ▶ Upper heads will accommodate a full range of Tubing Completion (TC) style tubing hangers with elastomer or full metal to metal sealing
- ▶ BOP testing and wear bushing installation achieved with dual purpose tooling
- ▶ Common tooling with conventional system

UH-1 Unihead[®] systems overview

Providing our global customers with a field-proven, time-saving drilling solution with trouble-free service.



Improved safety, cost and well economics

A key benefit of the UH-1 Drill-Through Unihead® system is the reduced rig time compared to a conventional spooled system. By using the the sliploc connection and mandrel hangers, our customers save significant rig time.

Conventional equipment typically uses a slip-on-weld connection requiring many field operations to weld to the surface casing. Using a sliploc head avoids unnecessary welding and saves about eight hours of rig time.

Standard components also allow the system to be configured for multiple casing programs. The system retains flexibility and interchangeability as the equipment and tooling are common with the conventional product line.

Using mandrel hangers for casing suspension has several benefits. Once the hanger is landed, cementing can begin and once complete there is no need to wait on the cement prior to the installation of the annular packoff. Both the hanger and packoff are installed under BOP control, minimising the BOP manipulation, saving rig time and increasing safety. Well economics are improved with more than 20 hours of rig time savings compared to a conventional system.

Offering our customers a cost-effective and reliable solution

- ▶ Cost effective tools
- ▶ API flanged top connection to interface directly with standard riser spools and BOP stacks
- ▶ Split Unihead® design allows contingency equipment to be run in the conventional way, eliminating the need of special internal casing cutting operations
- ▶ Split Unihead® design allows the replacement of a section of the wellhead if damaged
- ▶ Tubing hanger with false bowl is available to allow the retrieval of the tubing through a lighter work-over BOP

Cut installation by 20 hours of rig time

The UH-1 Unihead® system is a split-bowl wellhead design that allows a high degree of flexibility and multiple casing schemes to be accommodated. Operators save an average 20 hours of installation time per well compared a conventional spooled wellhead.

Incorporating proprietary elastomer seal technology and retaining the packoff with lockdown screws, the UH-1 Unihead® is ideal for up to 10,000 psi applications in sweet and sour (H2S) environments.

UH-1 Unihead® time saving analysis: 13⁵/₈ inch system

Conventional Wellhead	Time (hours)	UH-1 Unihead®	Time (hours)
Run and weld casing head nipple up BOP	12	Run UH-1 Unihead® with sliploc	4
Run and cement 9 ⁵ / ₈ " casing, nipple down BOP, set slips, wait on cement and install next head and BOP	14	Run 9 ⁵ / ₈ " casing and packoff (no BOP removal or installation of the next head)	6
Run seven casing, nipple down BOP, set slips, wait on cement and install next head and BOP	14	Run seven casing and packoff (no BOP removal or installation of the next head)	6
Install christmas tree	4	Install christmas tree	4
Total time	44	Total time	20



Global service and aftermarket support

Service has long been a key differentiator for TechnipFMC. We sustain our customers with a full range of services and aftermarket support 24/7 worldwide.

TechnipFMC supports client operations from our strategically located field bases, providing responsive service, quality equipment and local expertise. Competent technicians deliver superior service including installation, repair, maintenance and asset management. We offer extensive local inventories and rental options.

Our commitment to HSE, value and service excellence helps our clients maximise their potential.



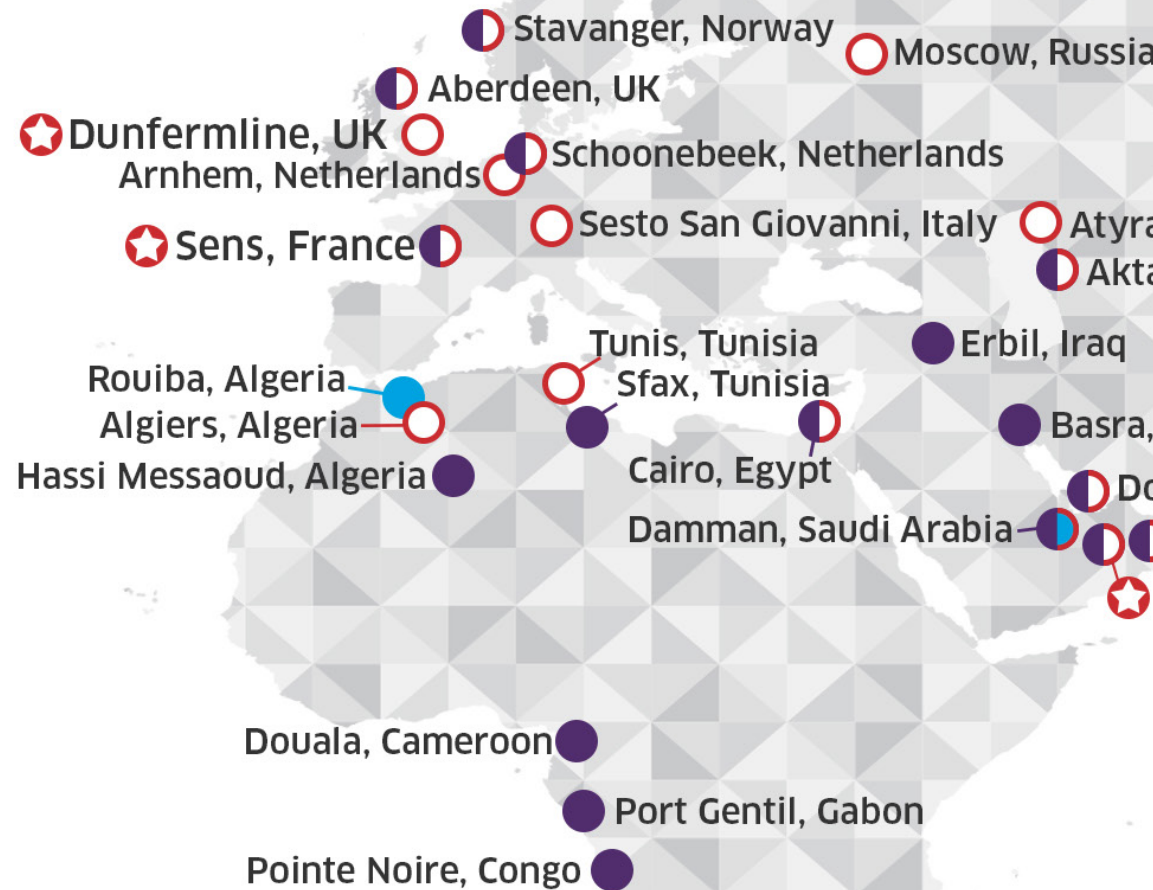
Life-of-Field services

- ▶ Installation and workover support
- ▶ Cold casing cutting
- ▶ Bolting service
- ▶ Asset integrity and maintenance
- ▶ Wellhead and Christmas tree decommissioning

Workshop services

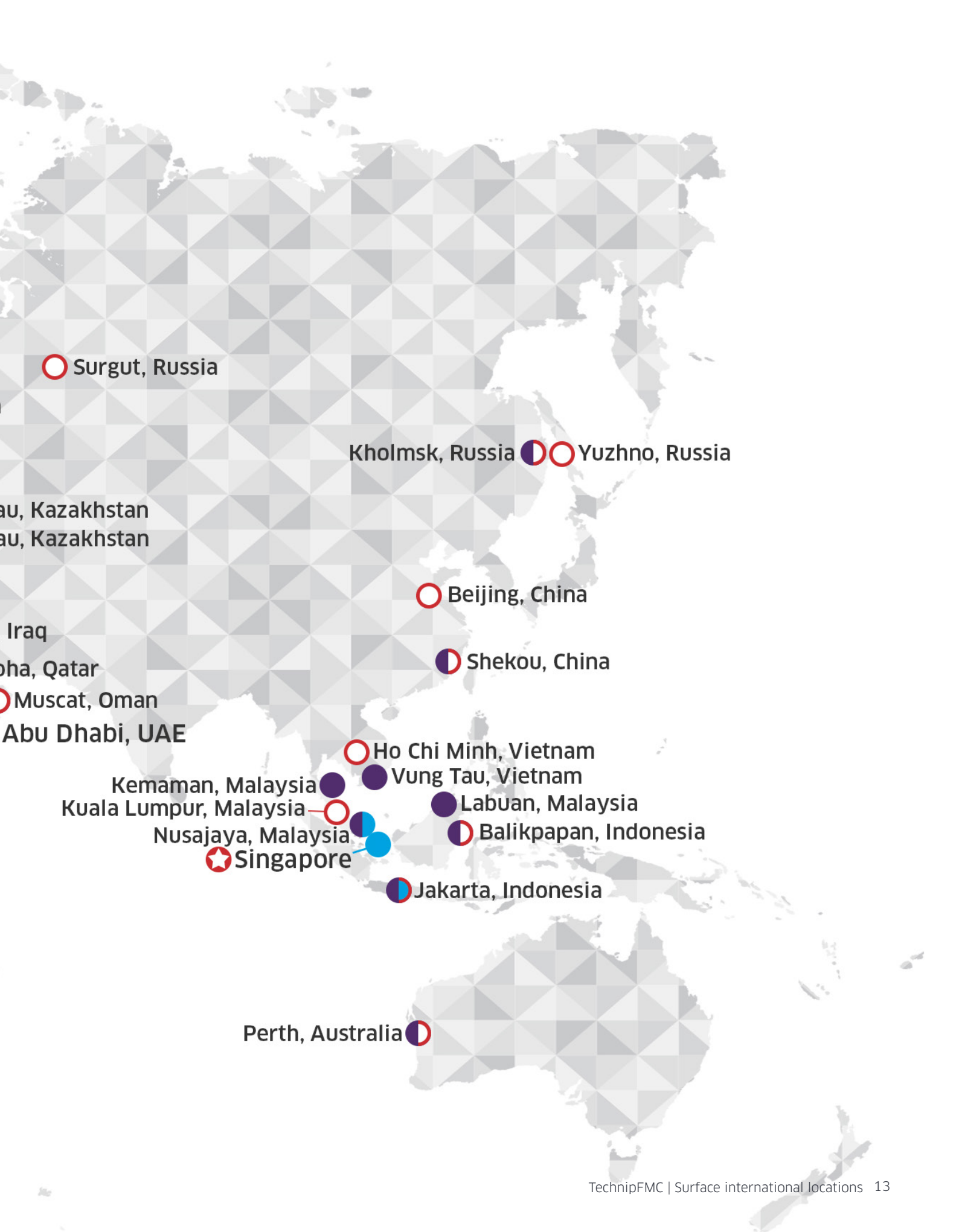
- ▶ Inventory management
- ▶ Preservation, storage and maintenance
- ▶ Inspection, refurbishment and repair
- ▶ Torquing service on hangers and landing strings
- ▶ Systems integration testing

Surface international locations



Legend

- Service base
- Manufacturing
- Sales office
- ★ Geomarket headquarters



Surgut, Russia

Kholmnsk, Russia Yuzhno, Russia

au, Kazakhstan
au, Kazakhstan

Beijing, China

Iraq

oha, Qatar

Shekou, China

Muscat, Oman

Abu Dhabi, UAE

Ho Chi Minh, Vietnam

Kemaman, Malaysia Vung Tau, Vietnam

Kuala Lumpur, Malaysia Labuan, Malaysia

Nusajaya, Malaysia Balikpapan, Indonesia

Singapore Jakarta, Indonesia

Perth, Australia

USA

11740 Katy Freeway
Suite 100
Houston Texas 77079 USA

South Europe and Africa

Route des Clérimois – ZI des Clérimois
CS 10 705,
Sens France 89107

North Europe and CIS

Pitreavie Business Park
Dunfermline Scotland KY11 8UD

Asia Pacific

149 Gul Circle
Singapore 629605

Middle East

Guardian Tower
Sheikh Sultan bin Zayed First
and Dhafeer Street
PO BOX 7657
Abu Dhabi United Arab Emirates (UAE)