



UH-5 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-5 Unihead®



UH-5 Unihead® systems

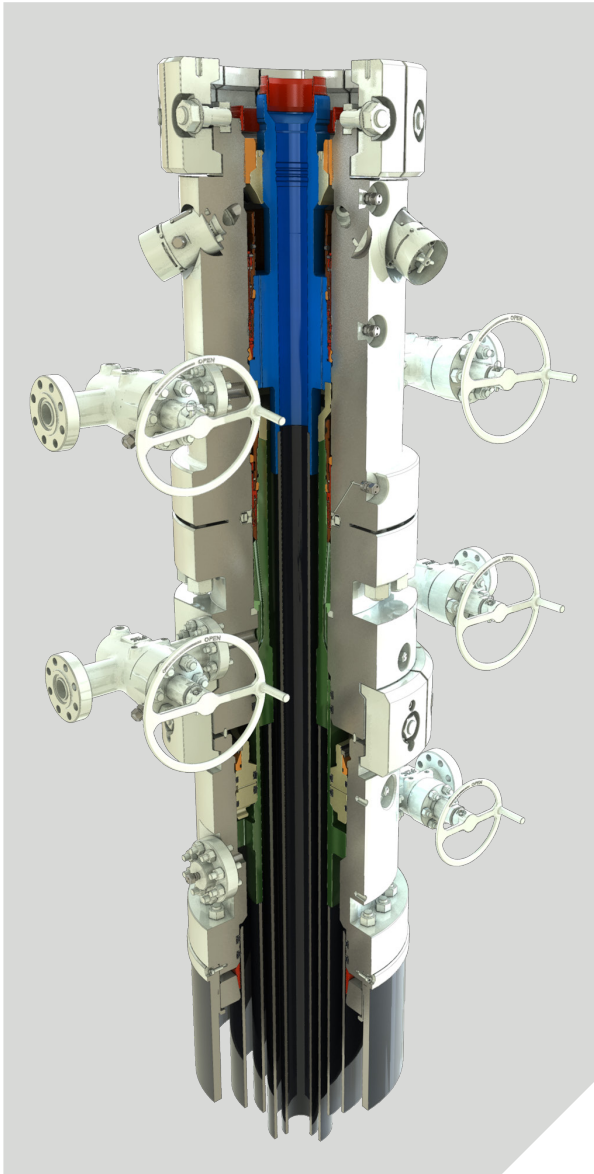
Reduce Non-Productive Time

The UH-5 Surface Unihead® is a technical advancement over the highly successful UH-4 Unihead® and UWD-15 Subsea Unihead®. The UH-5 Unihead® was developed by TechnipFMC under the direction of international oil companies and represents 10 years of continuous wellhead enhancements, including the removal of elastomers.

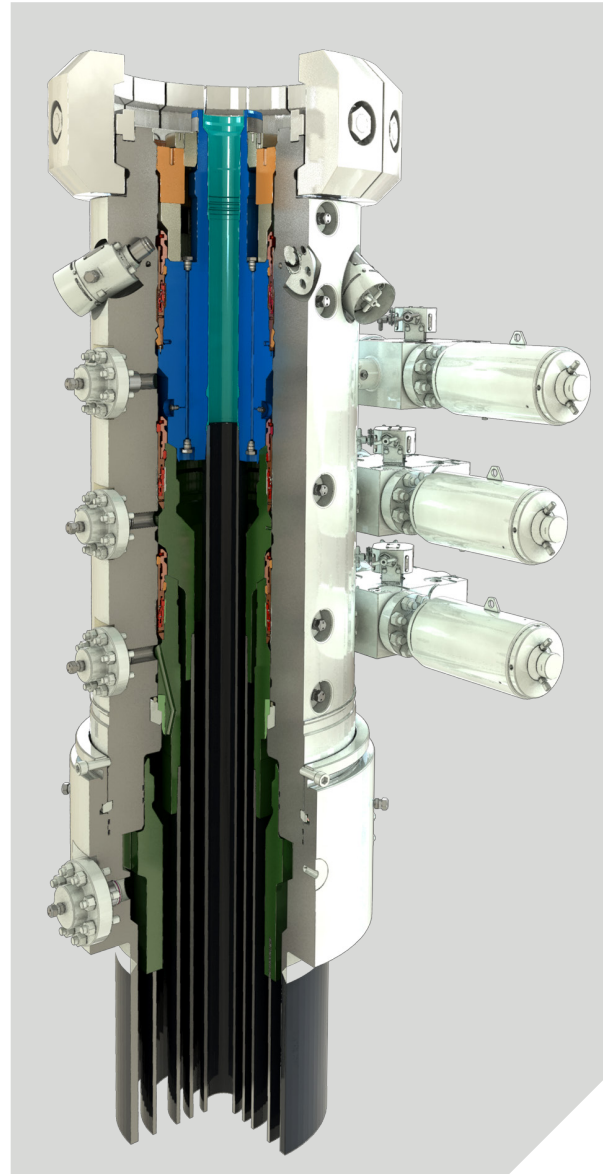
Removing elastomers reduces nonproductive time (NPT). Unlike the UH-4 System, the UH-5's annular packoffs and wellhead feature dual metal seals instead of elastomer seals. The dual metal seals in UH-5 Unihead® is well suited for handling pressures up to 15,000 psi, temperatures up to 400° F and gas applications.

UH-5 Unihead[®] systems

Available in 10,000 and 15,000 pressure ratings, the UH-5 primarily addresses high pressure and high temperature applications especially in the presence of gas. Like the UH-4, it caters to a wide range of casing programs. Typically the most common casing program is 30" x 20" x 13³/₈" x 9⁵/₈" x tubing. However, 10³/₄-inch, 14-inch, and 18⁵/₈-inch casings can be used while employing the same metal sealing packoff. A wide range of conductor sizes also can be used. The 13⁵/₈-inch system can use a single stack (18³/₄-inch) or a twin stack BOP, while the 18³/₄-inch system uses a single stack 18³/₄-inch BOP.



13⁵/₈-inch UH-5 Unihead[®] with nested load shoulders

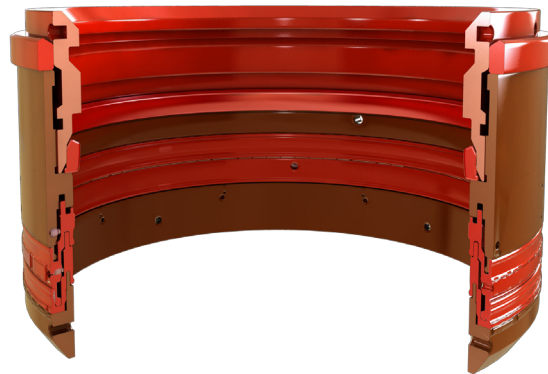


18³/₄-inch UH-5 Unihead[®] with nested load shoulders

UH-5 Unihead[®] packoff

TechnipFMC's dual metal seal is the most tested metal seal to date

The UH-5 Unihead packoff was developed by TechnipFMC through a multi-year research & development program supported by funding from an international oil company. Launched onto the market in 2015, the packoff technology has achieved a Technology Readiness Level (TRL) 7 based on the multiple field installations globally. When our customers demand the highest level of seal technology for extreme wells at 15,000 psi and 400° F the only choice is the UH-5 packoff.



UWD-15 Dual Metal Sealing Packoff

Qualification testing of the dual metal to metal packoff:

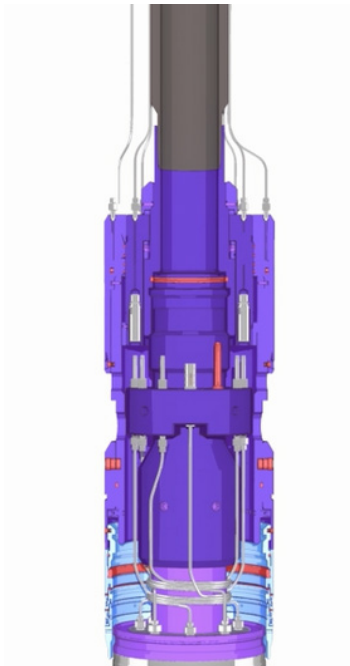
The UH-5 packoff was qualified to API 6A PR2 Appendix F based on 15,000psi and -75° F to 400° F. In addition, over 100 extended pressure and temperature cycles were also performed validating the performance of the packoff technology for 25 years.

During the extended cycle testing, the packoff was not only tested above and below at full working pressure but also between the dual seals. This sequence of pressuring the packoff from above, below and in between the seals was conducted throughout the extended cycle testing at full pressure and across the -75° F to 400° F maximum temperature.

At the request of our customers, fire testing was also performed on the packoffs for both the 13⁵/₈ and 18³/₄ inch nominal sizes based on the requirements of the API 6FB specification. In summary, the packoff technology was validated through one of the most stringent test programs and exceeds the API 6A requirements.

UH-5 Unihead[®] features and benefits

The UH-5 System offers all the key features of the UH-4 and goes further with the elimination of elastomer seals, a major contributor to nonproductive time (NPT). Our goal in developing the UH-5 System was to deliver a superior product by reducing installation time, improving safety and minimizing NPT.

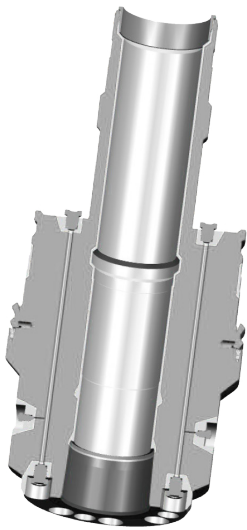


Single trip tubing hanger / packoff running tool



Trip Optimisation / Trip Reduction / Minimal trip tooling package

- ▶ Multipurpose tools to improve functionality and operating costs
- ▶ No rotation of tools (all are stab-in, stab-out with the exception of the Casing Hanger Running Tools which employ ACME running threads)
- ▶ Elimination of J-slots on bowl protectors
- ▶ Elimination of cup testers
- ▶ Single trip tubing hanger/packoff running tool provides electrical continuity after installation
- ▶ Removes 2 x trips. Tubing hanger washout and tubing hanger packoff installation
- ▶ Rig time saving 4.5 to 6 hours
- ▶ Production casing bowl protector left in place to facilitate BOP test
- ▶ Wet riser packoff setting with no drainage or opening of annulus valves
- ▶ More efficient wash tools

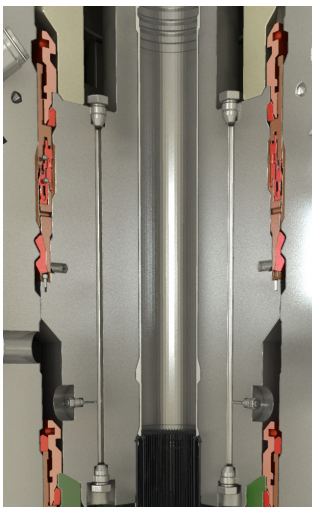


Tubing Hanger showing large bore control line galleries



Minimised NPT on drill floor

- ▶ Assembled and tested equipment and tools
- ▶ Easy installation; control lines in tubing hanger - large bore control line galleries for rapid feed through of control lines. With recessed lower profile to protect from tonging application and gas lift in the production annulus
- ▶ Fewer trips, saving time.
- ▶ LP riser quick connector (5 mins make-up compared to a standard API flange)
- ▶ Angled tangential exit block outlets and installation rods make for safety
- ▶ Ability to reconnect tubing hanger running tool to downhole lines after breaking out connection



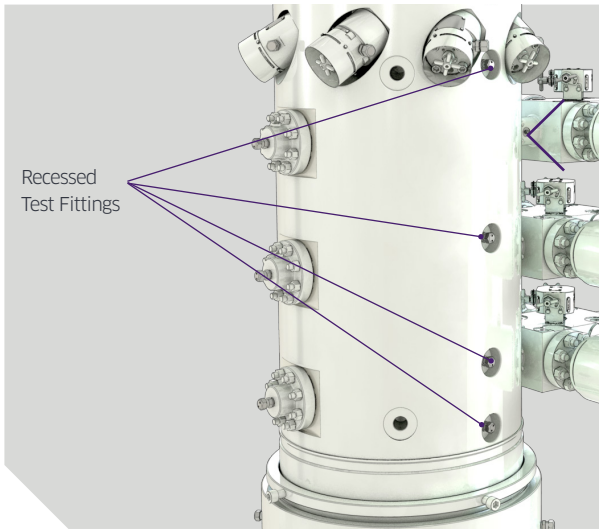
Elimination of elastomers



Elimination of elastomer seals for wellhead equipment

- ▶ Eliminates the risk of elastomeric degradation from gas and/or chemical exposure
- ▶ Full dual metal-to-metal seal assemblies
- ▶ Improves alignment and helps eliminate debris

UH-5 Unihead[®] features and benefits



< Safety By Design

- ▶ Sunken bleeder plugs recessed and fixed in place to protect from dropped objects
- ▶ Casing hanger running tool capacity exceeding top drive, reducing uncertainty of equipment limitations and capacities should operational conditions change
- ▶ Elimination of sharp v-threads on annulus outlets; all annulus connections use ACME VR plugs
- ▶ Optimization of production and drilling with all identical annulus outlets the same (minimising spares, commonality of equipment, 1 set of drilling valves, all BOP tests performed at maximum pressure rating)

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.



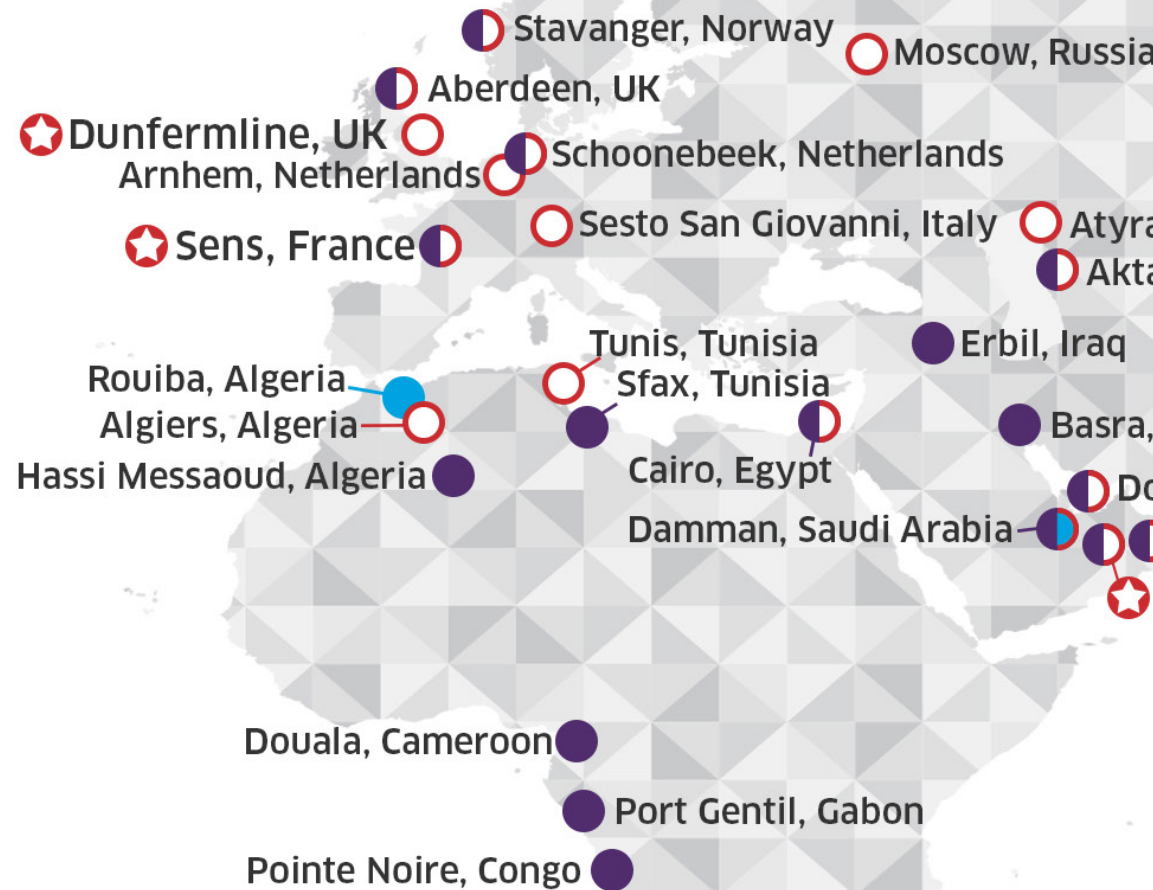
Life-of-Field services

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

Workshop services

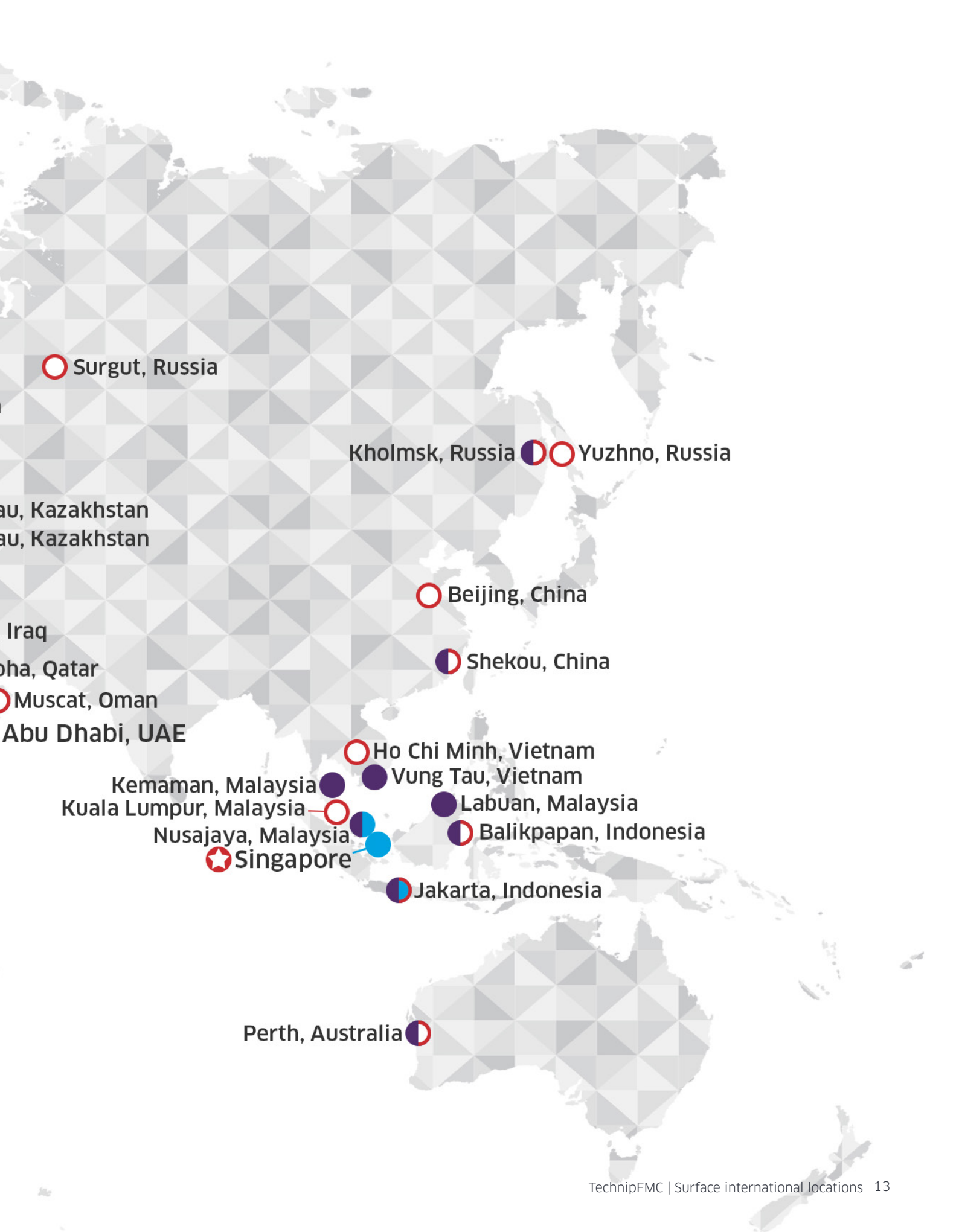
- ▶ Inventory management
- ▶ Preservation, storage and maintenance
- ▶ Inspection, refurbishment and repair
- ▶ Torquing service on hangers and landing strings
- ▶ Systems integration testing

Surface international locations



Legend

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



Surgut, Russia

Kholmshk, Russia

Yuzhno, Russia

au, Kazakhstan
au, Kazakhstan

Beijing, China

Iraq

oha, Qatar

Muscat, Oman

Abu Dhabi, UAE

Shekou, China

Ho Chi Minh, Vietnam

Vung Tau, Vietnam

Kemaman, Malaysia

Kuala Lumpur, Malaysia

Labuan, Malaysia

Nusajaya, Malaysia

Balikpapan, Indonesia

Singapore

Jakarta, Indonesia

Perth, Australia

USA

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Suite 100
Houston Texas 77079 USA

South Europe and Africa

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