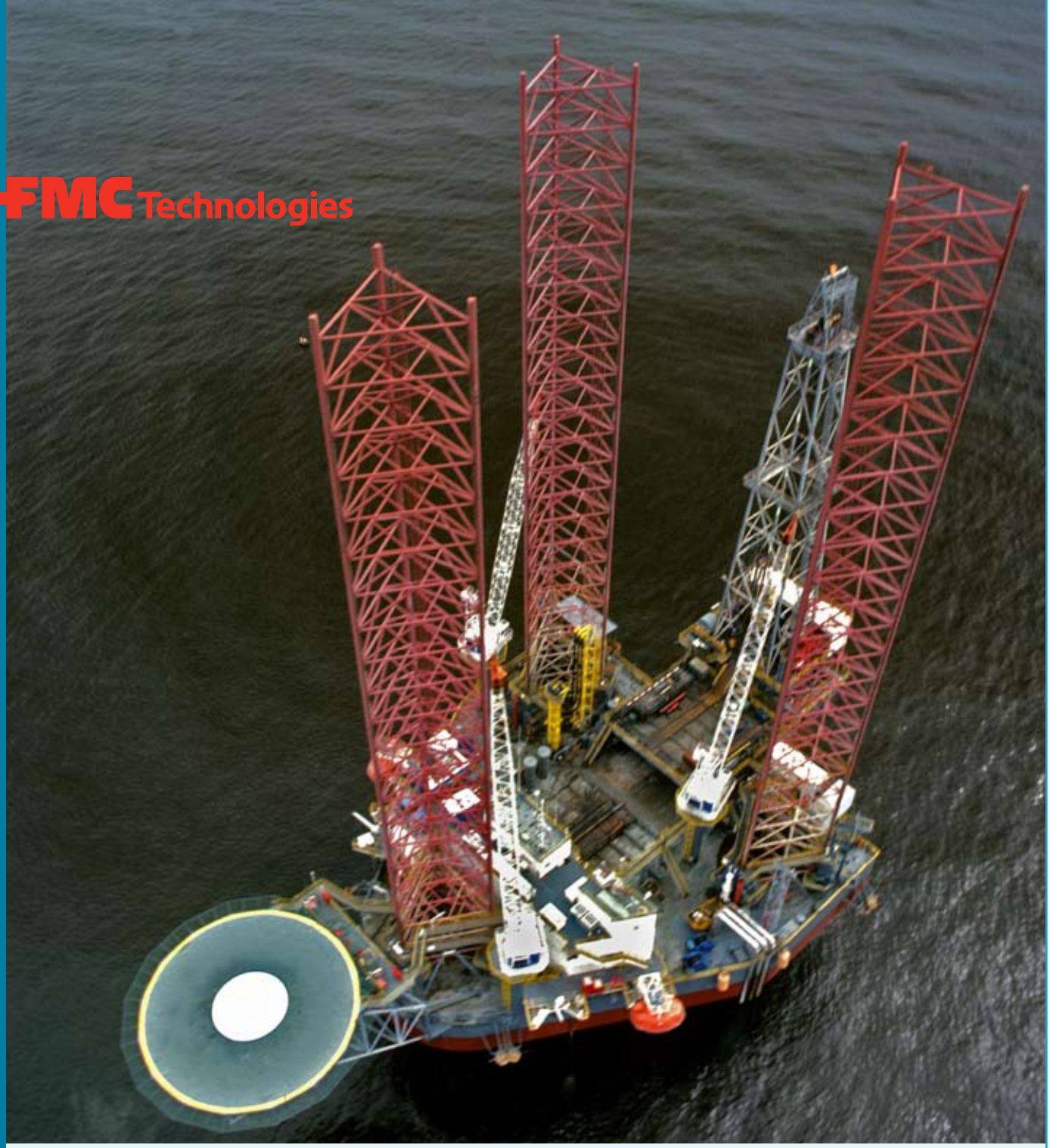
FMC Technologies



OBS-II Exploration Wellhead

Adjustable Wellhead for Mudline Exploration Drilling

Exploration Wellhead Systems

The OBS-II drill-through rental wellhead system can run mudline hanger systems much faster and safer than conventional wellhead systems. This new rental wellhead system has saved between 21 and 29 hours of jackup rig time during exploration drilling. More importantly, the OBS-II system reduces operational risk and improves safety for rig workers. Both the time savings and safety improvements come from FMC's Unihead thru-bore technology.

Applications

- Exploration jackup drilling
- Shallow water wells with mudline suspension systems
- Predrilled development wells for tieback to platform
- Drilling program:
  30" (26") x 20" (18-5/8") x 13-3/8" x 9-5/8"
  30" (26") x 13-3/8" x 9-5/8"

Benefits

- Drill-thru system saves rig time
- Less BOP handling reduces exposure to hazardous operations
- Speedloc-II connectors reduce nipple up time
- Safer operations:
  No welding
  No cutting casing strings
  No open-well exposure
  No working under suspended BOPs
- Complete 24-hour service support

Features

- 10,000-psi pressure rating
- Large 8-in. space out tolerance
- Proven sliplock technology
- Industry standard clamp hubs and ring gaskets
- Standard FMC 100 series gate valves
- Full range of crossovers to fit all BOP configurations

OBS-II Adjustable Wellhead

FMC Technologies' OBS-II drill-thru wellhead system has a revolutionary design that allows adjustment and tensioning of two casing strings inside the wellhead. The system is designed for typical 13-3/8" and 9-5/8" casing strings, but this can vary according to your casing program.

The system is available in a full hole design, 30" x 20" x 13-3/8" x 9-5/8", and a minimal configuration, 30" x 13-3/8" x 9-5/8".

The principle application of this system is for drilling exploration wells using mudline suspension equipment without having to break the stack, set slips, add another spool, and nipple up again. Thus, operators benefit from significant time savings over conventional wellhead systems and reduced exposure to hazardous operations.

The spaceout of all the casing strings is achieved within an 8-in. range. The 13-3/8" string is adjusted mechanically, and the 9-5/8" string is run on a mandrel hanger with tension retained by hydraulically actuated slips.

The OBS-II system has been designed in accordance with API 6A, validated by in-house testing, and field proven in many locations.

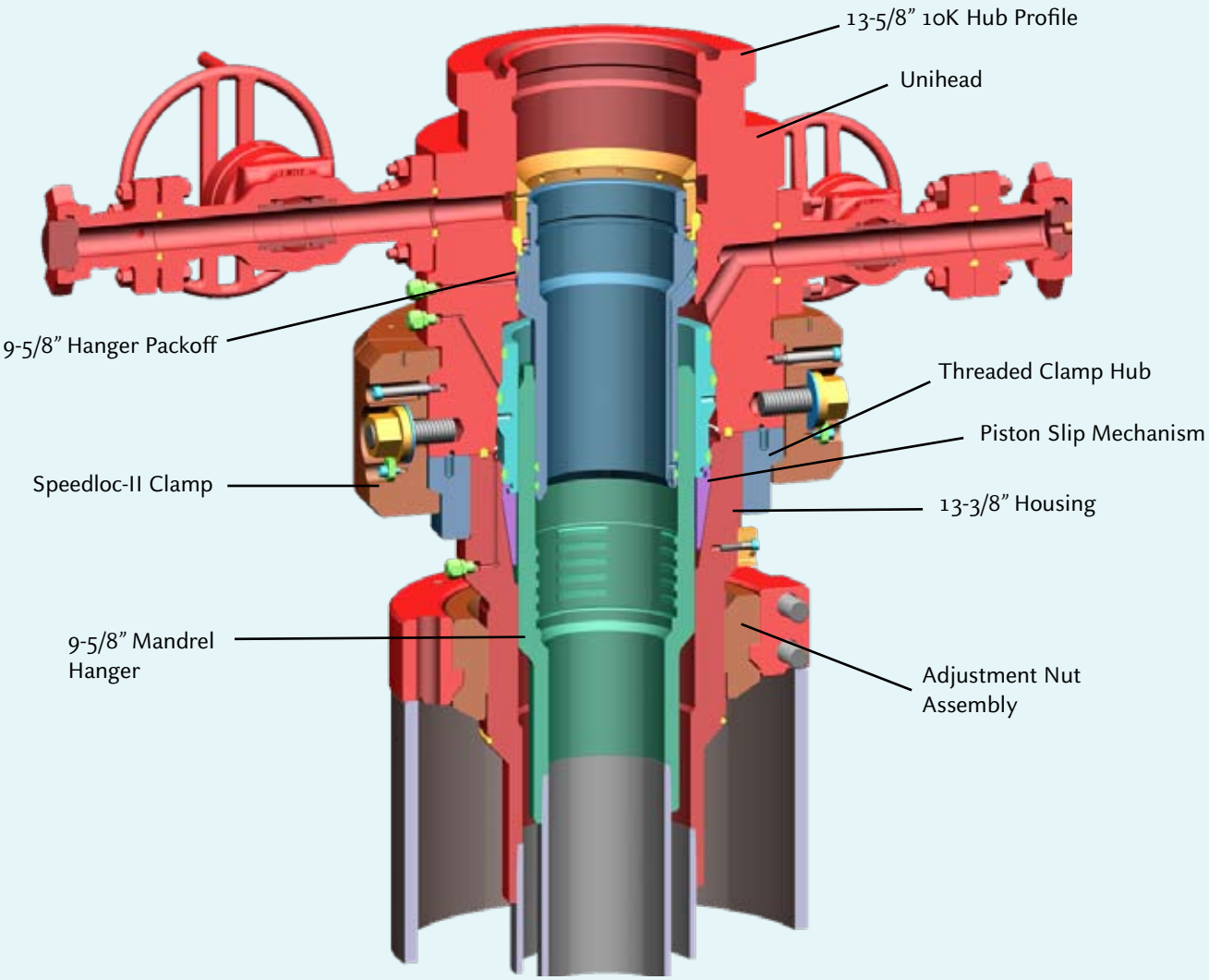
SD-1 Mudline Suspension

FMC's OBS-II system is used in conjunction with the SD-1 mudline suspension system, which suspends casing weight at the mudline for wells drilled with a jackup rig. The SD-1 system provides economical, efficient drilling, abandonment, and tiebacks for offshore exploratory wells.

The SD-1 is a fully field-proven system with more than 20 years of worldwide use. It is available in all popular casing and conductor sizes. The system is a compact stack down design, provides improved cement washout, and meets NACE requirements for H_2S service. The SD-1 system is rated for 10,000 psi working pressure and can be supplied to 15,000 psi upon request.

Minimal System

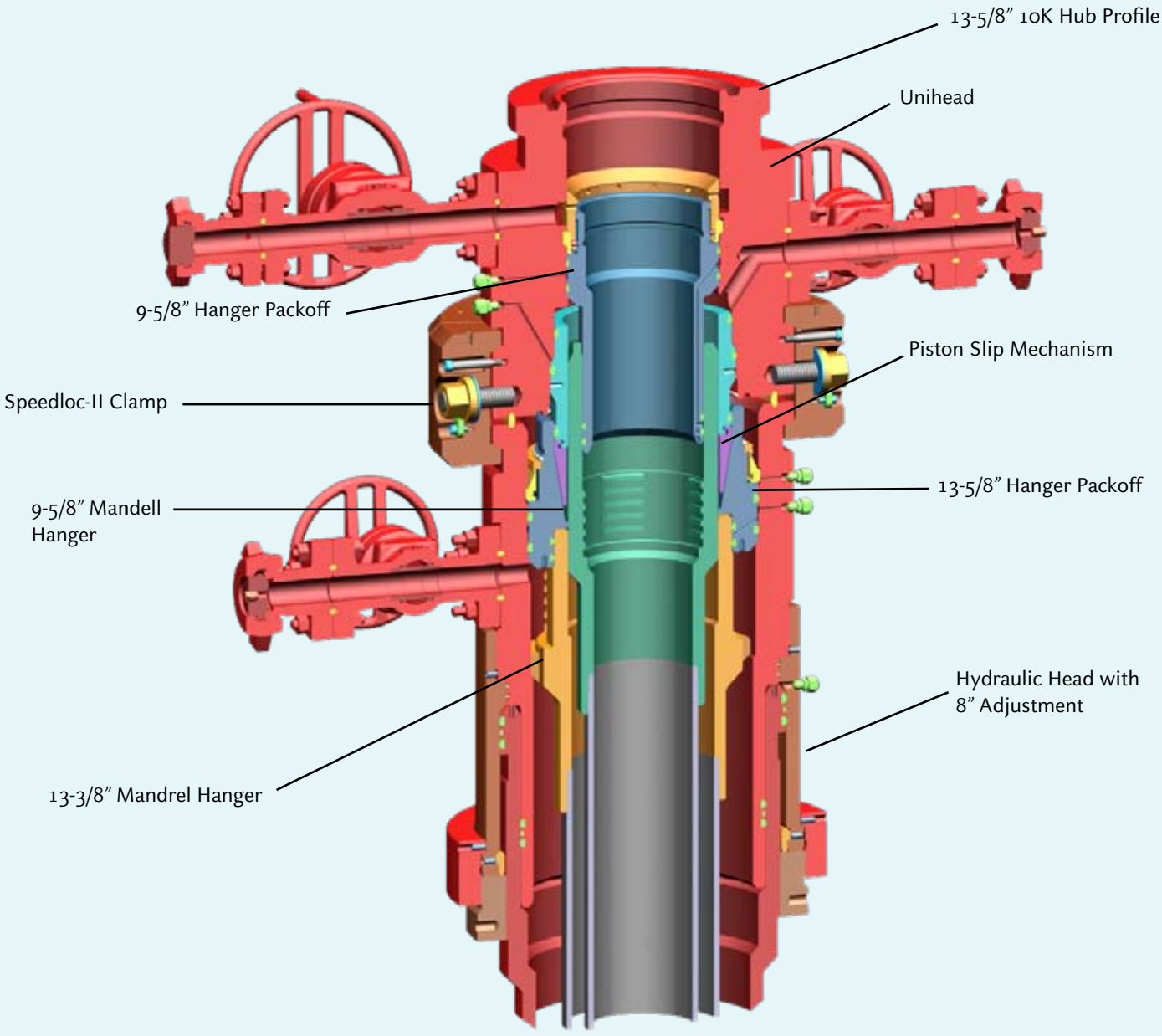
30” x 13-3/8” x 9-5/8” drilling program



The Unihead is common to both the minimal and full systems.

Full System

30” x 20” x 13-3/8” x 9-5/8” drilling program



The Unihead is common to both the minimal and full systems.

Safety and Rig Time Savings

The Unihead design, with mandrel hangers, eliminates the need to pick up/nipple down the blowout preventer (BOP) stack between drilling phases. With conventional exploration systems, the BOPs must be removed so slips can be installed to hold the casing in place after cementing—this is one of the riskiest and most dangerous periods during the drilling process. At this time, the only protection from a kick is in the form of partially set cement.

With the OBS-II system, the 13-3/8" and 9-5/8" casing strings can be hung in tension between the mudline hanger and the surface hanger and packoff installed, all under full BOP protection. This also affords additional safety to the rig workers, who do not have to work in dangerous situations to set casing slips beneath suspended BOPs.

Additional time is saved through FMC's Speedloc-II connections, which allow quick, safer makeup of the BOPs and the wellhead system. They also provide easier, quicker access to the well for installation of contingency equipment, if needed.

The OBS-II has a large space out tolerance of 8 in., which makes field operations easier and more forgiving. All of the equipment is manufactured with standard machining tolerances—not extra tight tolerances as on other systems—so equipment fits together easily and properly. Industry-standard connections make the equipment familiar and inspire confidence with rig crews, which in turn translate into greater cost savings for the operator. FMC's industry-leading seal technology assures gas-tight sealing under a broad range of operating conditions.

Full Service Organization

The OBS-II and SD-1 systems are fully supported by FMC Technologies' worldwide operations, with more than 40 sales, engineering, manufacturing, and service facilities in every major oil and gas basin. FMC provides highly trained, experienced technicians to ensure all equipment is installed properly and efficiently.

FMC provides a 24-hr full service support package, managing pup joint makeup, threading, and all aspects of equipment installation. Full system support includes all necessary contingency and backup equipment and spare parts mobilized in dedicated offshore workshop and storage containers to your rig. FMC also offers package solutions to simplify administration of the job and avoid unforeseen additional costs.

HSE Focus in All We Do

At FMC Technologies health, safety and the environment are core values. The safety and well being of our personnel and customer personnel always come first. All personnel complete regular HSE classes, safe driving programs, and training seminars online and in class rooms. Extensive training programs for service technicians keep their skills up to date and ensure they follow proper, safe procedures for installation and maintenance of equipment. The priority for safe conduct in work operations keeps our employees prepared to respond quickly and correctly during contingency situations and emergencies.

"We believe all accidents are avoidable. FMC focuses on anticipating and preventing hazards. The result—Our recordable incident rates and lost time incident rates are below industry averages and steadily decrease, remarkable in our industry."

Peter Kinnear
Chairman, President and Chief Executive Officer

FMC Technologies

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