

Herrenknecht Vertical

Automated Rig Technology

Late-life asset management is one of the challenges for onshore and offshore operators of mature oil and gas fields. Whether their workover or P&A campaigns are economically reasonable also depends on the rig equipment used. Herrenknecht Vertical, a subsidiary of Herrenknecht AG, the market leader in mechanized tunnelling systems, designs and manufactures customized high-quality rigs for drilling, workover and decommissioning, meeting the needs of our customers and their projects. The hydraulic rig designs for multi-purpose applications on existing platforms incorporate comprehensive, safety-based automation, setting new standards of safety, efficiency and environmental protection. **Automated Rig Technology. Engineered and built for your performance.**



Headquarters in Germany, active worldwide. With more than 40 years of engineering and manufacturing experience, around 5,000 employees and 76 locations within the Herrenknecht Group, we support our customers globally.

MODULAR RIGS

MULTI-PURPOSE OFFSHORE PLATFORM RIGS



Hydraulic rack & pinion rigs for automated offshore operations

- › Field-proven rig solutions for cost-efficient P&A, workover and drilling operations
- › Modularized design with small module weights for better weight distribution on the platform and flexible re-location between different platforms
- › Ultra sensitive hydraulic rack and pinion hoisting system with push and pull capability
- › Automated pipe handling system (hands-off-technology) for easy and safe operations
- › Easy integration of third party equipment for time-efficient activities like coiled tubing or wireline
- › Adjustable XY skidding system for existing platform skid beams
- › Optimized rig-up/rig-down times down to 5 days
- › Offshore safety standards
- › Made in Germany



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**AUTOMATED
RIG TECHNOLOGY**



**HERRENKNECHT
VERTICAL**

Multi-purpose, modular platform rigs for flexible operations on existing platforms

The **Herrenknecht Vertical modular rig**, a multi-purpose rig solution for offshore drilling, workover and P&A on existing platforms. The rigs are equipped with a precise hydraulic rack and pinion hoisting system and incorporate automation for pipe handling and racking as well as rig floor processes. The modular rigs are available with hook loads of 150 metric tons (165 short tons) up to 250 metric tons (275 short tons), with super singles range 3 mast. The multi-purpose design ensures the deployment on a wide range of different platforms and project specific modifications are available upon request.

Key features of the modular platform rig design are the lightweight and compact design, the minimized module weight of 20-35 metric tons (22-38.5 short tons) and the high flexibility in arranging required third party equipment. The rig-up and rig-down can directly be managed by any vessel of opportunity, supported by the existing platform cranes. This maximizes the operational envelope and utilization rate, making the modular rigs suitable for a wide range of (down-graded) platforms. The comprehensive automation concept allows for hands-off operations remotely controlled from the driller's cabin and ensures highest safety and process efficiency.

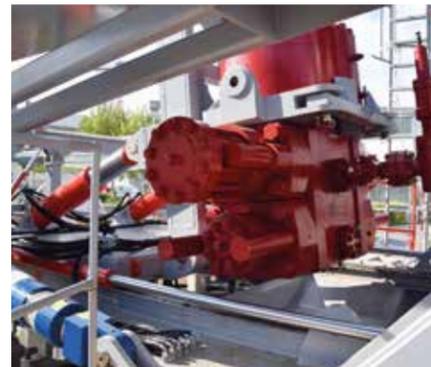


Rig operating in SDD mode on existing slanted well slot

The automated, hydraulic offshore rigs contribute significantly to operational cost savings, making a broad range of economically and technically challenging P&A, workover and drilling operations viable.

The modular platform rig is also available as SDD version, enabling operations on slanted wells (60°-90°) with rotatable substructure to align to the existing well slots on the platform. The rig design can also be used for onshore applications.

The modular core rig can be completed to a customized rig package with supporting equipment such as high and low pressure mud system, power generation and well control equipment. Tailored modifications, e.g. in terms of custom-made modules or integration of special equipment, are possible upon request.



BOP handling dolly adjustable to drilling angle for vertical and slanted operations



Stepping shoe of XY skidding system to skid along existing platform beams

Technical specifications

HOOK LOAD

- › Max. hook load: 150 mt (165 sht) at saver sub

MAST*

- › Type: single mast structure, for vertical or SDD mode (60°-90°)
- › Height: 28.8 m (95 ft)

HOISTING SYSTEM*

- › Type: rack and pinion
- › Hoisting power: 470 kW (630 hp)
- › Stroke: 16.4 m (53.8 ft) for super singles
- › Brake: hydraulic lowering brake valves

Ultra sensitive operation due to multi-valve hydraulic control.

SUBSTRUCTURE*

- › Type: frame below mast, rig floor and driller's cabin with stepping feet
- › Rig floor height: 4.3 m (14 ft)
- › BOP handling: BOP handling dolly for 13 3/4" 5K BOP stack; suitable also for slanted drilling to align the BOP to the wellcenter line

XY skidding system to move along the existing platform skid beams. Rotatable substructure for slanted drilling to align the rig to existing well slots and height-adjustable rig floor to align to rotary table height in slanted mode.

TOP DRIVE*

- › Max. static load: 150 mt (165 sht)
- › Max. push load: 90 mt (100 sht)
- › Max. rotary speed: 80 rpm
- › Max. continuous rotary torque: 60,000 Nm (44,250 ft-lbs) at 36 rpm
- › Drive: hydraulic; combined with hoisting drive

AUXILIARY ROTARY TABLE*

- › Table opening: 698.5 mm (27 1/2")
- › Load rating: 150 mt (165 sht)
- › Drive: hydraulic

The rotary table frame is part of the lower mast part. It is transported together with the mast. This ensures always a proper alignment of the rotary table to the wellcenter line.

DRILLER'S CABIN*

- › Type: joystick, trackball and touch screen with camera control

RIG POWER SUPPLY*

- › Hydraulic power unit: 470 kW (630 hp)

Diesel-driven hydraulic power unit drives all components including hoisting and rotary drive, rotary table and pipe handling system.

PIPE HANDLING SYSTEM*

- › Type: automated horizontal pipe rack system with horizontal-to-vertical pipe handler
- › Operating range: 102 mm - 302 mm (4" - 14")
- › Max. load: 1.6 mt (1.75 sht)
- › Max. length: range 3 super singles
- › Max. tripping speed: 300 m/h (985 ft/h)
- › Drive: hydraulic

The complete pipe handling system is designed to handle drill pipe range 3 in super singles, drill collars and casing. The controls are semi-automated and the system is operated by the pipe handling operator or the driller. An integrated anti-collision system ensures a safe pipe handling process during all operations. The pipe handler is adjustable for slanted drilling (60°-90°).

WEIGHTS

- › Max. module weights: 20 mt - 35 mt (22 sht - 38.5 sht), adjustable according to project requirements
- › Total dry weight: approx. 180 mt (200 sht)

OPTIONAL EQUIPMENT

- › Pipe handling tools, e.g. slip lifter, elevator
- › High and low pressure mud system
- › Power generation system
- › Well control equipment

* Components manufactured by Herrenknecht Vertical

The rig is available with up to 250 mt (275 sht) hook load and can be customized to fulfill project specific requirements in terms of capacities and equipment needed. The design is also available for onshore applications with tailored scope and functionality.

