



DRILLMEC
DRILLING TECHNOLOGIES

HH Series

Automated Hydraulic Rigs



The core
of drilling
innovation



HH Series

Today's E&P companies demand rig manufacturers to design drilling equipment with an emphasis on safety and the environment while improving performance, reducing NPT and operational costs.

Drillmec brings it all together in one drilling rig – the HH Series. The evolution of the HH Series began with a simple hydraulic rig for water wells and advanced to one that meets and exceeds current oil well standards for automation, pipe handling, transportation and rig-up.

Since 1993, hundreds of Drillmec HH rigs have been deployed around the world working in extreme climates and in difficult well conditions. The advantages the HH series provides in terms of drilling efficiency, safety and sustainability make it suitable for 90 percent of onshore wells.

90%

high utilization rate

The flexibility of this design means high utilization rate since 90 % of onshore wells are within the range of capability of the HH series.

75-272

metric tons

(165,000-600,000 lbs)

hook load capacity

Today nearly two hundred of these rigs are successfully operating worldwide.



HH Series			HH 75	HH 102	HH 150	HH 220	HH 300
Pull Up	lbs		165,000	220,000	300,000	440,000	600,000
	m ton		75	100	136	200	272
Pull Down	lbs		44,000	44,000	44,000	44,000	66,000
	m ton		20	20	20	20	30
Top Drive Torque	lbs*ft		23,800	23,800	23,800	26,435	38,521
	Nm		32,300	32,300	32,300	35,840	52,230
Top Drive Speed	rpm		150	154	154	200	200
Rotary Table	in		27.5	27.5	27.5	27.5	32.5
	mm		698	698	698	698	825
Vertical Pipe Rack Capacity	DP 3 1/2 "	ft	3,360	9,500	15,000	15,000	15,170
		m	1,025	2,900	4,600	4,600	4,624
	DP 5 "	ft	2,395	5,900	11,800	11,800	12,040
		m	730	1,800	3,600	3,600	3,670
	DC	ft	360	360	630	630	630
		m	110	110	192	192	192

Complete Range

The HH Series Rigs range from 165,000 lbs (75 metric tons) to 600,000 lbs (272 metric tons) of static hook load capacity, which translates into a drilling capacity of wells up to 15,000 ft depth, depending on the well design and its casing profile.

This covers over 90% of all oil and gas or geothermal wells drilled on land worldwide.

HH Series are multipurpose drilling rigs available in various configurations, including manual, semi-automatic and automatic, for both drilling and workover operations.

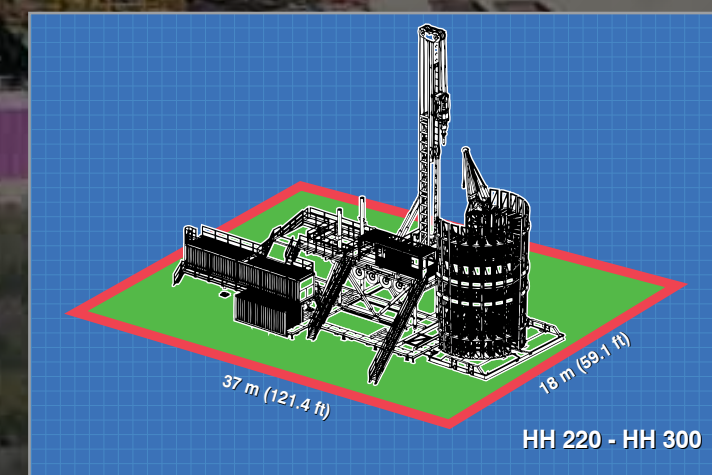
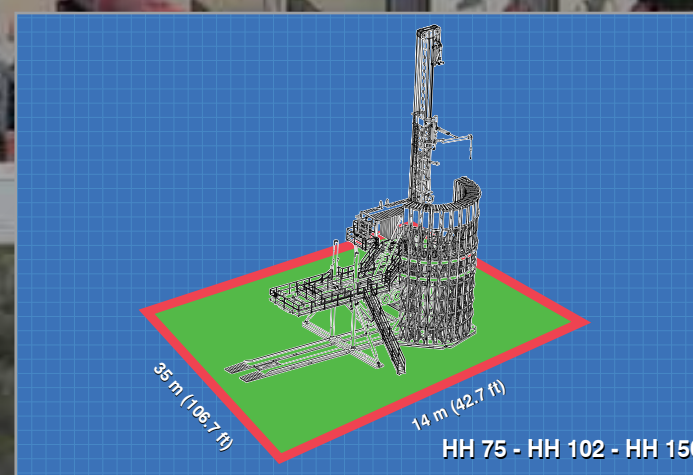


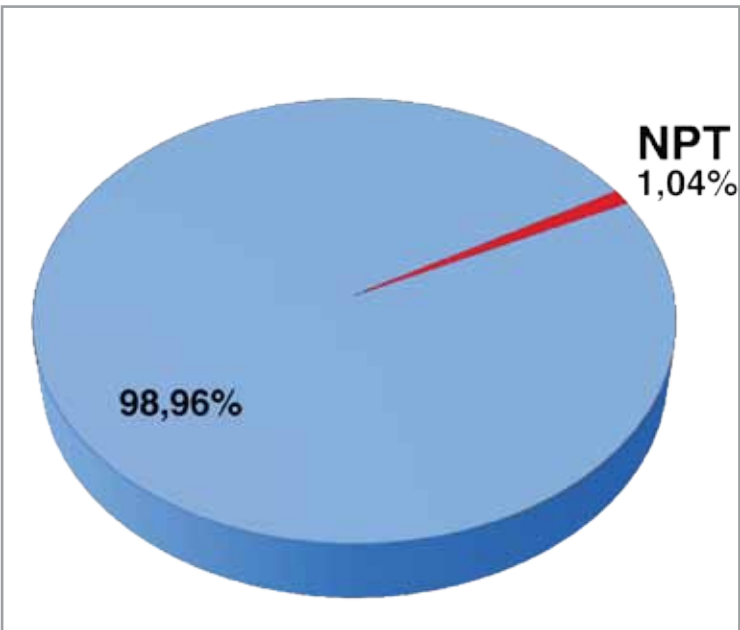
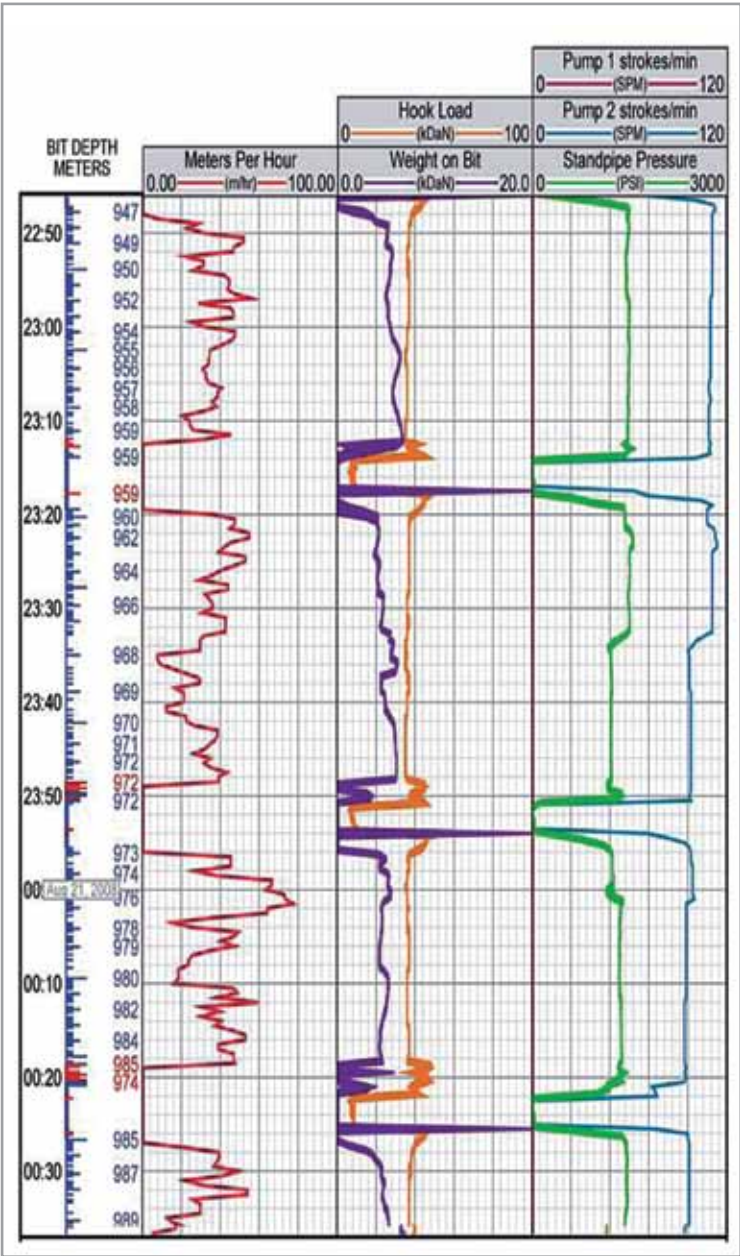
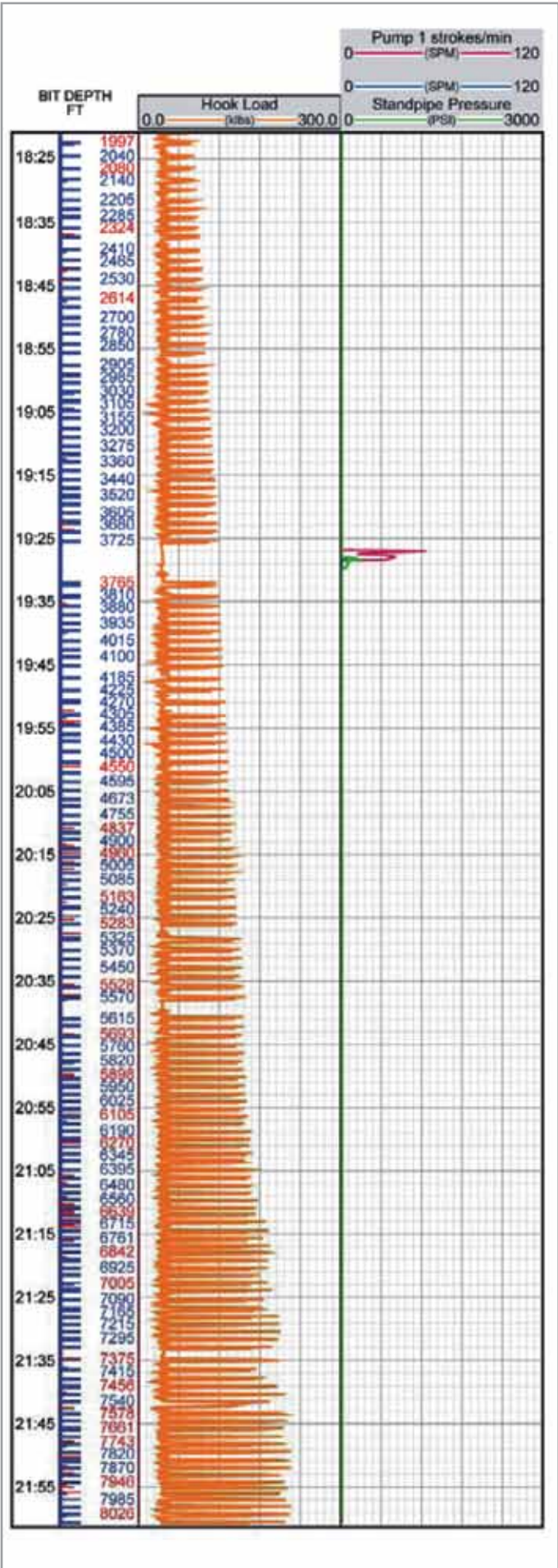
Reduced Footprint

The HH Series Rigs do not have a conventional mast structure, nor drawworks, long wires or travelling equipment; these are replaced by a powerful hydraulic cylinder, which is the main hoisting element of the rig. It is a self-standing telescopic mast with reduced height and reduced dropped objects.

Compared with rigs of equal power and capability, the HH Series Rigs create a smaller footprint reducing environmental impact, making rigging-up a simpler task.

Major rig components are permanently mounted to semi-trailers for fast rig-up or down for transportation between drill sites.



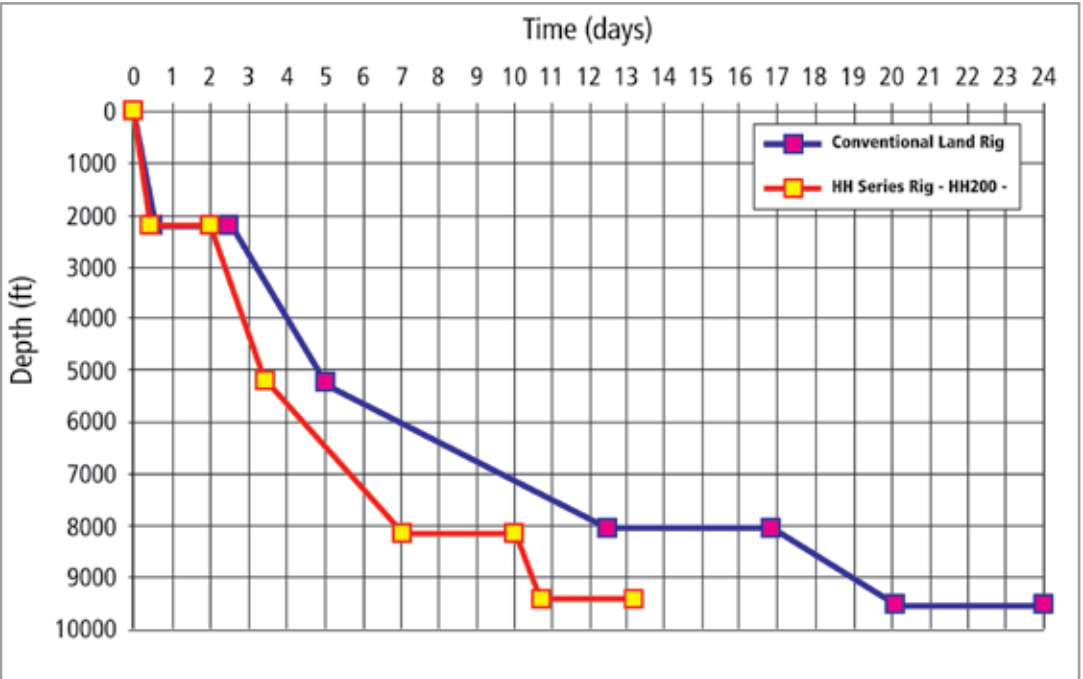


Enhanced Performance

The HH Series Rigs are designed to achieve high levels of safety and outstanding performance. They integrate various hydraulic equipment in a drilling process that is largely automated and where all the drilling functions are centrally controlled from the driller’s cabin. An advanced automation concept allows performance for most of the routine drilling operations, including tripping in and out the drill string and tubulars, with minimal manpower needed on the rig floor. Therefore only a reduced drilling crew is needed to operate the rig; it is a “hands off” operation, where nobody is exposed to direct contact with rotating tubulars, tongs and wrenches or falling objects.

The length of time of each repetitive activity becomes regular, predictable and sustainable, mostly because it is not affected or conditioned by human behaviour, attention, or tiredness of the drillers.

Tripping in and out is done almost entirely automatically, without depending on manual labour and regardless of weather conditions or time of day or night.



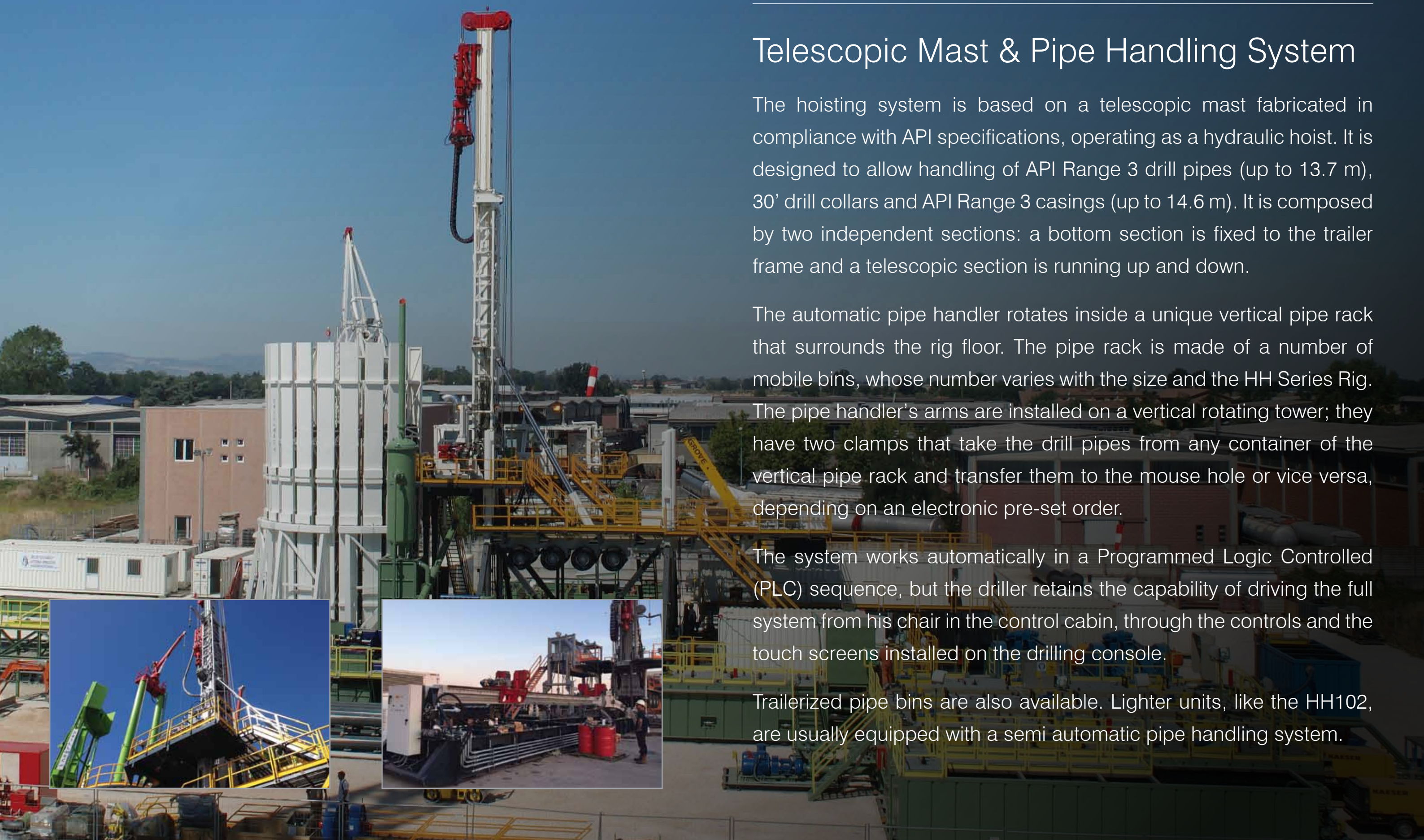
Telescopic Mast & Pipe Handling System

The hoisting system is based on a telescopic mast fabricated in compliance with API specifications, operating as a hydraulic hoist. It is designed to allow handling of API Range 3 drill pipes (up to 13.7 m), 30' drill collars and API Range 3 casings (up to 14.6 m). It is composed by two independent sections: a bottom section is fixed to the trailer frame and a telescopic section is running up and down.

The automatic pipe handler rotates inside a unique vertical pipe rack that surrounds the rig floor. The pipe rack is made of a number of mobile bins, whose number varies with the size and the HH Series Rig. The pipe handler's arms are installed on a vertical rotating tower; they have two clamps that take the drill pipes from any container of the vertical pipe rack and transfer them to the mouse hole or vice versa, depending on an electronic pre-set order.

The system works automatically in a Programmed Logic Controlled (PLC) sequence, but the driller retains the capability of driving the full system from his chair in the control cabin, through the controls and the touch screens installed on the drilling console.

Trailerized pipe bins are also available. Lighter units, like the HH102, are usually equipped with a semi automatic pipe handling system.



Drill Floor Equipment

Every rig operator is looking for the greater efficiency and safer operations combination. Drillmec designs and manufactures drill floor equipment that are fully integrated in the rig set and control system.

The automatic power tong, with electronic control operated from driller's console, is used to make-up and break-out the drill pipe and the drill collars. It consists of a clamping unit with one fixed bottom clamp and one hydraulically operated top clamp; a vertical rod where the clamp unit is pivoted, allowing up and down movement by means of hydraulic cylinder including a set of hydraulic cylinders for power tong moving from well center to the parking position.

A hydraulic clamp is installed in the mouse hole and located underneath the drill floor. Furnished with a steel guide to help the pipes to center the hydraulic clamp.

The hydraulic jib crane is installed on the mast's fixed section and it can lift up to 4000 kg increasing the manageability of the equipment on the rig floor. A service crane is installed on the top of the pipe handler as well.

The independent hydraulic driven rotary table is fabricated in compliance with API Specifications.

Drill Floor Equipment products

POWER TONG

BACK UP BREAK OUT TONG

POWER SLIPS

AUXILIARY JIB CRANE ON MAST SIDE

MOUSE HOLE CLAMP

AUXILIARY CRANE ON TOP PIPE HANDLER

CASING RUNNING TOOL

ROTARY TABLE



Top Drive & Torque Wrench

In the HH Series Rigs, the top drive has a horizontal displacement capability that allows it to move the pipes from the center hole to the mouse hole and vice versa.

The hydraulic top drive allows automatic drilling with a constant WOB or constant RPM that is selected by the driller on the control console.

Predetermined values of over-pull can also be set.

Such features coupled with the back reaming allowed by the top drive while tripping out considerably reduce the risk of stuck pipes.

The top drive can be equipped with a torque wrench. Hydraulic torque wrench is used during tripping operation for fast make-up and break-out operations.



Control System & Drilling Instrumentation

In the years Drillmec moved from pneumatic/hydraulic control to fully digital control and Cyber Chair integrated with four touch screens to display parameters in drilling and tripping operation, data acquisition, power management; three joysticks to control main and auxiliary drilling equipment (drawworks, top drives, links, power tong, etc).

Instrumentation can be completed with data acquisition system for any rig parameter, including mud pumps, mud system and installed equipment.

Data can be displayed, analyzed, stored and transmitted. A maintenance system and remote assistance service is also available.

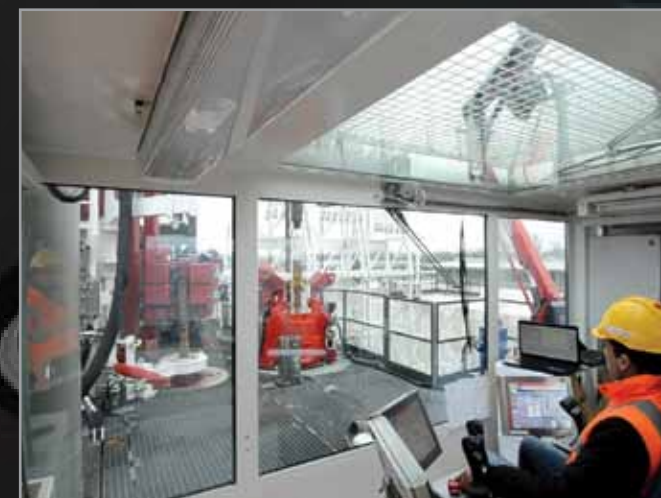
Drillmec technicians can access the rig set up remotely from headquarters to speed up troubleshooting problems.

Control System & Drilling Instrumentation products

DMS

CONTROL CABIN

Electronic Control (Cyber Chair)





Casing Make-up Device

Casing make-up device is designed to handle 4 ½" - 20" casing sizes.

The device is located underneath the top drive's double hook, hydraulically operated from the main control panel. It allows the casing rotation with adjustable torque and fluid circulation during the running of the casing.

Drillmec partners with Volant to offer its customers CRTs as standard or optional equipment. It enables automated casing running using the automated pipe handling systems which are integral to Drillmec's automated hydraulic rigs. In addition to the casing running operations, the Volant CRT helps to improve the efficiency of the HH Series Rigs in casing drilling applications, which can be performed in an advanced semi-automated mode.

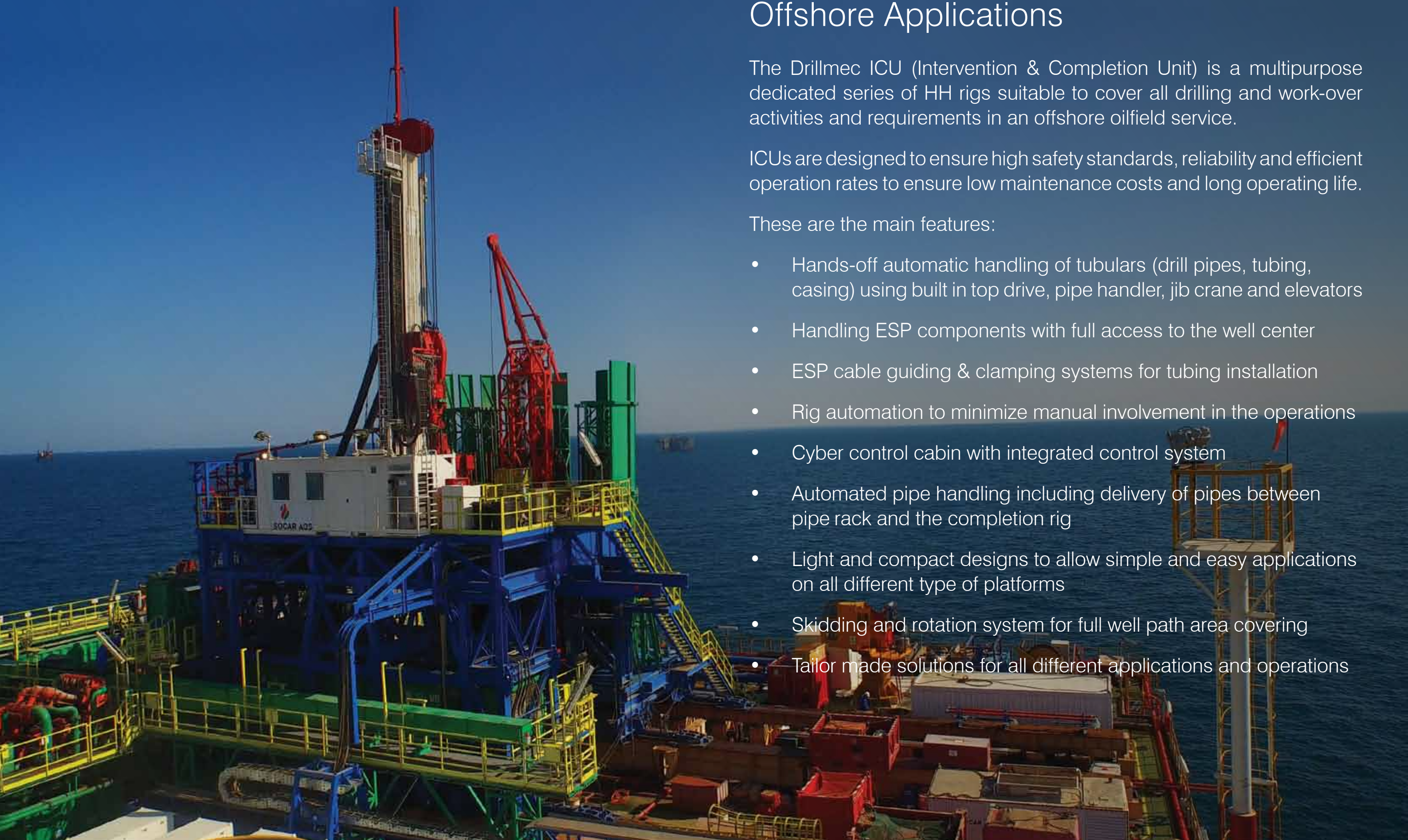
Offshore Applications

The Drillmec ICU (Intervention & Completion Unit) is a multipurpose dedicated series of HH rigs suitable to cover all drilling and work-over activities and requirements in an offshore oilfield service.

ICUs are designed to ensure high safety standards, reliability and efficient operation rates to ensure low maintenance costs and long operating life.

These are the main features:

- Hands-off automatic handling of tubulars (drill pipes, tubing, casing) using built in top drive, pipe handler, jib crane and elevators
- Handling ESP components with full access to the well center
- ESP cable guiding & clamping systems for tubing installation
- Rig automation to minimize manual involvement in the operations
- Cyber control cabin with integrated control system
- Automated pipe handling including delivery of pipes between pipe rack and the completion rig
- Light and compact designs to allow simple and easy applications on all different type of platforms
- Skidding and rotation system for full well path area covering
- Tailor made solutions for all different applications and operations



Quality System



Policy

Drillmec has always viewed continuous improvement of company processes and complete satisfaction of customer's needs as essential factors for standing out on the highly complex, competitive oil and gas market. Drillmec's Quality System and HSE System are essential tools for achieving its business goals.

In accordance with its general aims and strategies for growth, Management promotes:

- The central role of the customer
- Full involvement of all personnel to ensure complete awareness of the significance and importance of their work and how they can contribute to achieving quality goals, environment, health and safety protection
- Continuous improvement of the quality of products and services, especially through a strong drive toward technological innovation
- Continuous improvement of process performance
- Safeguarding of the environment and protection of workers' health and safety. Such commitment is widespread not only to our workers, but even to our subcontractors and suppliers.

Fast moving features provide an efficient tool to the drilling contractor enabling him to drill quickly and safely.

Certifications

Drillmec SpA quality management systems is certified by API (American Petroleum Institute), DNV-GL (DNV Business Assurance) and can work under NORSOK, ABS,DNV-GL Maritime and RMRS regulations, if required by the client. Drillmec products are also compliant with Technical Regulations of the Custom Union, (Russia, Bielorrussia, Kazakhstan) EAC certified.

*Drillmec INC is certified by API 4F-0058.
Drillmec India is certified API 4F-0341, API 8C-0273,
API Q1-1977 and ISO 2087.
OJSC Seismotekhnika (Drillmec Belarus) is certified
API 4F-0361, API Q1-2203 and ISO-2301.*

API Product Licenses Numbers	API/ISO/OHSAS Certification
API 4F-0062	API Q1-0527
API 6A-0492	ISO 9001:2008
API 7-1-0305	ISO 14001:2004
API 7K-0045	OHSAS 18001:2007
API 8C-0041	
API 16A-0112	



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|---|--------------------------------------|
| 01 Crown Block | 10 Workshop |
| 02 Telescopic Mast | 11 Cat walk - Horizontal Pipe Rack |
| 03 Top Drive | 12 Mud System |
| 04 Integrated Torque Wrench | 13 Mud Pumps |
| 05 Automatic Power Tong | 14 Hydraulic Power Unit |
| 06 Pipe Handling System | 15 Diesel Generator |
| 07 Integrated Jib Crane | 16 Power Control Room |
| 08 Verical Containers - Drill Pipes | 17 Pipe Handling System Control Room |
| 09 Dog House - Automatic Drilling Console | 18 Air Unit |

For further information...

If you would like further information about our company, products or services, please don't hesitate to get in touch with us. You can do this in a number of ways...

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