AUTOMATED HYDRAULIC DRILLING RIGS

HHSeries

DRILLMEC
DRILLING TECHNOLOGIES®

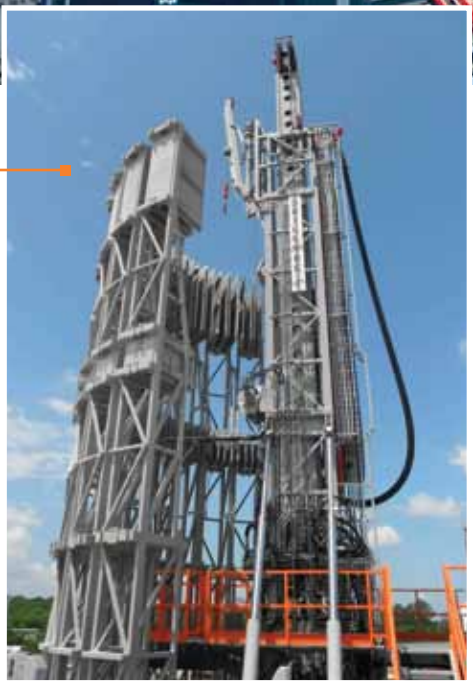
CUSTOMSOLUTIONS

HH600 Rig

THE HH HYDRAULIC HOIST SERIES

Today's E&P companies demand rig manufactures design drilling equipment that is increasingly safer for workers and the environment while improving performance and reducing NPT. 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 pipe handling, transportation and rig-up. They range from 75 to 545 metric tons (165,000 – 1,200,000 lbs).

Since 1993, hundreds of Drillmec HH rigs have been deployed around the world working in punishing climates and in extreme 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.



HH102 Rig

THE SHAPE OF THINGS TO COME

Everything about the HH Series is designed for speed, safety and efficiency. You can tell just by looking it is not a conventional rig. From it self-erecting telescopic mast made from a single powerful hydraulic cylinder to the built-in integrated hydraulic top drive, HH rigs are designed to optimize your drilling plan from top to bottom. Automated systems, centralized control and few rig floor workers combine for a safer and more efficient drilling operation, better performance and reduced costs.

The HH Series drilling processes are largely automated and centrally operated from the climate controlled driller's cabin. Stuck pipe becomes less of an issue with features that allow automatic drilling even with preset WOBs and ROPs or top drive back reaming. One noticeable characteristic is the rig's self-erecting telescopic mast composed of a single hydraulic cylinder that, although shorter than most conventional rigs, is capable of handling single stands of range 3 drill pipe.

Perhaps the most noteworthy feature is the rig's vertical pipe rack delivery system. The top drive is fully integrated with the vertical pipe rack through an automated pipe handler that rotates within the system. The top drive is equipped with a torque wrench for making up drill strings and has a horizontal displacement capability for moving pipe between the center hole and mouse hole.

The pipe rack consists of a number of mobile bins with the pipe handler installed on a vertical rotating tower in the middle. Clamps grab the drill pipe from the bins and transfer them to the mouse hole according to your preset trip plan. The semi-circular pipe rack is assembled around the rig floor and contributes to quick rig-up and rig-down. And, in addition to a smaller crew on the rig floor during drilling operations, the pipe racks can be transported fully loaded with pipe reducing pipe handing procedures.

Safety on the rig floor is also enhanced by the hydraulic power tongs stored in the fixed section of the mast. The power tongs are completely operational from the driller's cabin drilling console and connections can be made up or broken down without any manual intervention. With smaller crews and remote controlled operations, accidents on an HH Series drill site are dramatically reduced.

Compared with rigs of equal power and capability, the HH Series creates a smaller footprint reducing environmental impact and 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.

The HH Series answers many demands of the E&P industry; increased productivity, fewer accidents and a reduced impact on the environment. By automating tasks on the floor and mobilizing components for efficiency, the HH Series' unique design is the shape of things to come.

HH102 Rig end of pipe bins on semi-trailer

Safely Efficient

small drilling crew

With highly automated and remote controlled operations, accidents on an HH Series drill site are dramatically reduced evidenced by low recorded injuries.

90%

high rate of utilization

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

75-545

metric tons

(165,000-1,200,000 lbs)

hook load capacity

Today more than one hundred of these rigs are successfully operating worldwide.

HHSERIES

PERFORMANCE DATA SHEET

			HH75	HH102	HH150	HH220	HH300	HH350	HH375	HH600
Input Power		kw	403	429	720	1,000	1,150	1,150	1,200	1,686
		hp	540	575	965	1,340	1,542	1,542	1,600	2,261
Static Hook Load Capacity		m ton	75	100	136	200	272	317	340	545
		lbs	165,000	220,000	300,000	440,000	600,000	700,000	750,000	1,200,000
Max Pull Down		m ton	20	20	20	20	30	30	30	40
		lbs	44,000	44,000	44,000	44,000	66,000	66,000	66,000	88,000
Max Height from Ground Level		m	21.9	26.4	29.9	29.9	31.3	31.3	31,3	41.5
		ft	71.8	86.8	98	98	102.7	102.7	102.7	136.1
Clear Height from RT Level		m	15	16	15.7	15.7	16	16	16	22.6
		ft	49.2	52.5	51.5	51.5	52.5	52.5	52.5	74
RT Rated Capacity		m ton	75	100	136	200	272	317	340	545
		lbs	165,000	220,000	300,000	440,000	600,000	700,000	750,000	1,200,000
Top Drive Data	Capacity	m ton	75	100	136	200	272	317	340	545
		lbs	165,000	220,000	300,000	440,000	600,000	700,000	750,000	1,200,000
	PRM Max	N	150	154	200	200	200	200	200	250
	Max Torque	daNm	3,584	3,584	3,584	3,584	5,223	5,223	5,223	9,789
		ft lbs	26,435	26,435	26,435	26,435	38,521	38,521	38,521	72,200
Drilling Line Data	Line	N	2	2	4	4	4	4	4	8
	Nominal Diameter	mm	34	34	34	34	42	42	44	42
	Breaking Strength	m ton	115	115	115	115	175	175	178	175
		lbs	255,153	255,153	255,153	255,153	376,875	376,875	392,423	376,875
Vertical Pipe Rack Capacity	DP 3 1/2"	m	1,025	2,900	4,600	4,600	4,624	4,624	4,624	–
		ft	3,360	9,500	15,000	15,000	15,170	15,170	15,170	–
	DP 5"	m	730	1,800	3,600	3,600	3,670	3,670	3,670	3,670
		ft	2,395	5,900	11,800	11,800	12,040	12,040	12,040	12,040
	DC	m	110	110	192	192	192	192	192	192
		ft	360	360	630	630	630	630	630	630

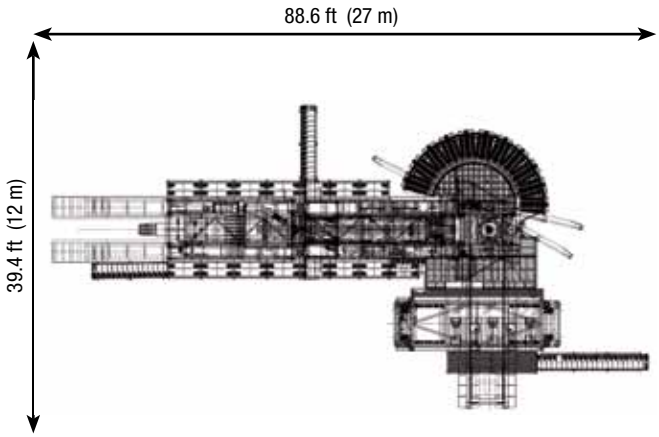
Mast on trailer for fast moving

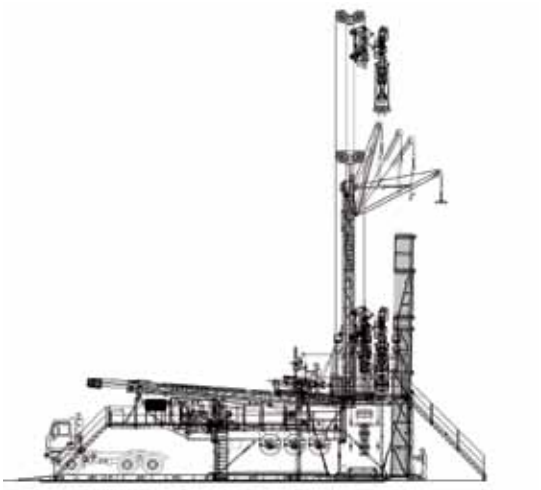
Driller's cabin – Automated drilling console

FOOTPRINT

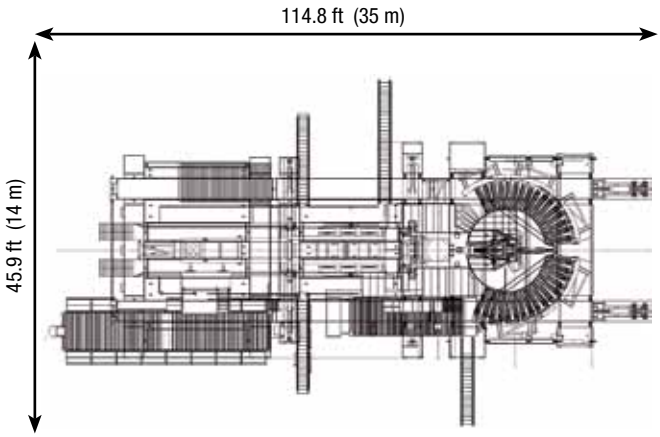
HH75 – HH220 Wide range of reduced footprint drilling rigs compared to conventional land rigs.

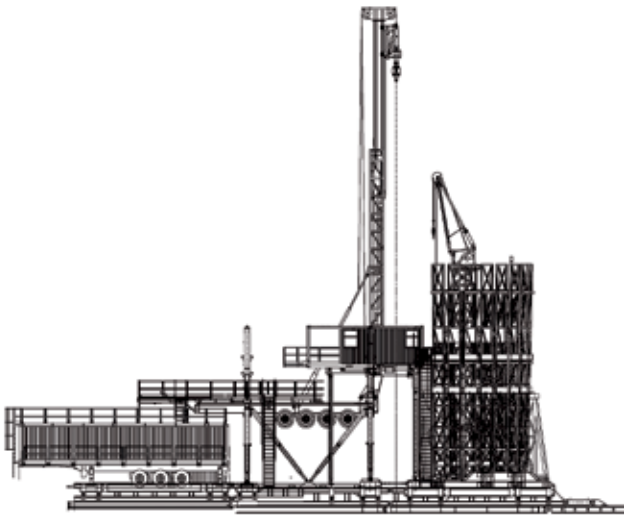
HH75 – **HH**102





HH150 – **HH**220

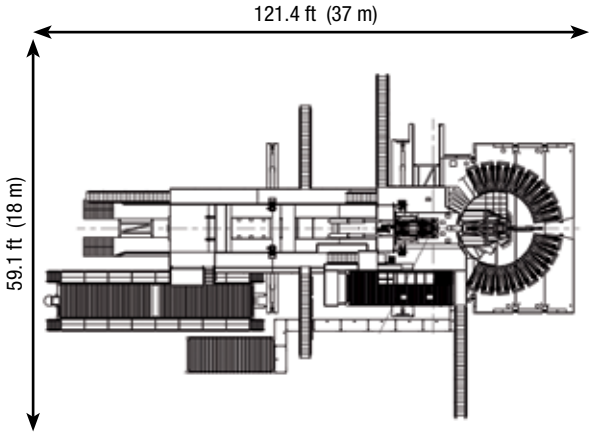


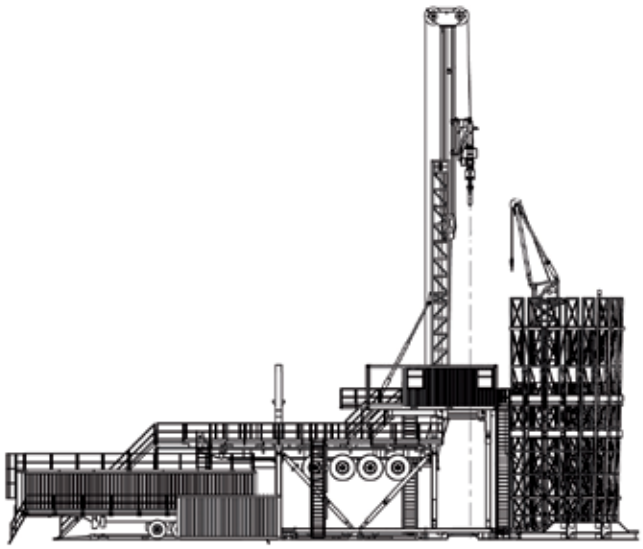


FOOTPRINT

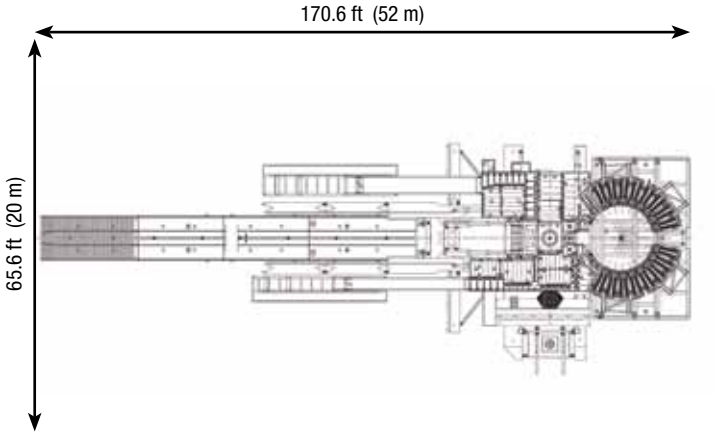
HH300 – HH600 The HH Series maintains a small job site dimension also in the higher capacity models.

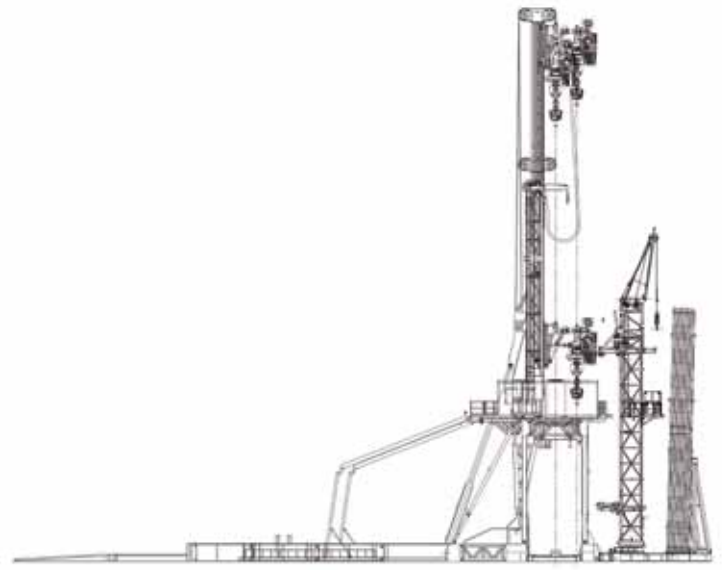
HH300 – **HH**375



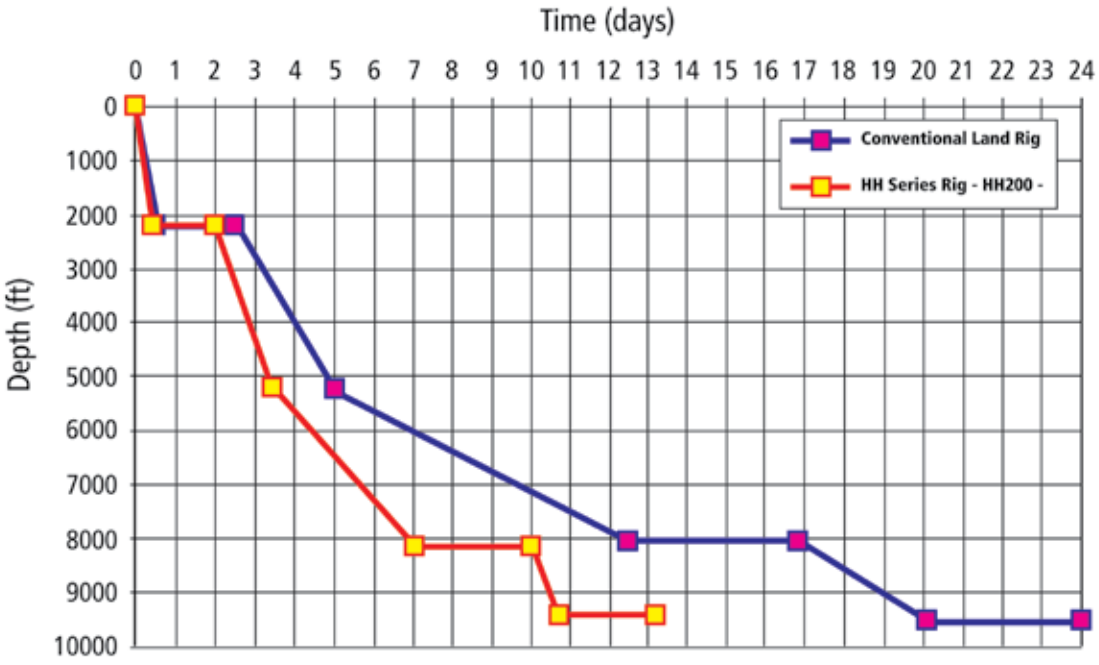


HH600





PERFORMANCE COMPARISON BETWEEN AVERAGE OF CONVENTIONAL RIGS AND HH200



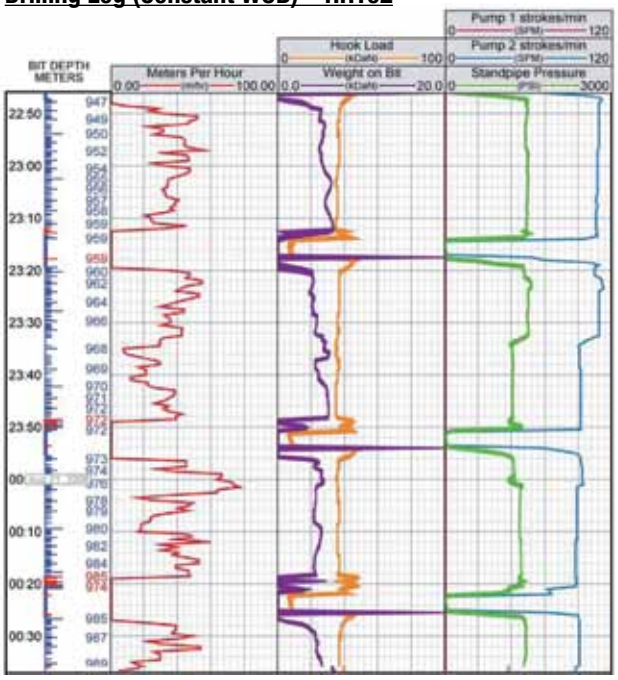
Drillmec's HH rigs are inherently more efficient than conventional land rigs because of their high automation, smaller footprint, faster rig-up and fewer truckloads to the job site. Tripping time is also reduced.

DRILLING PERFORMANCES

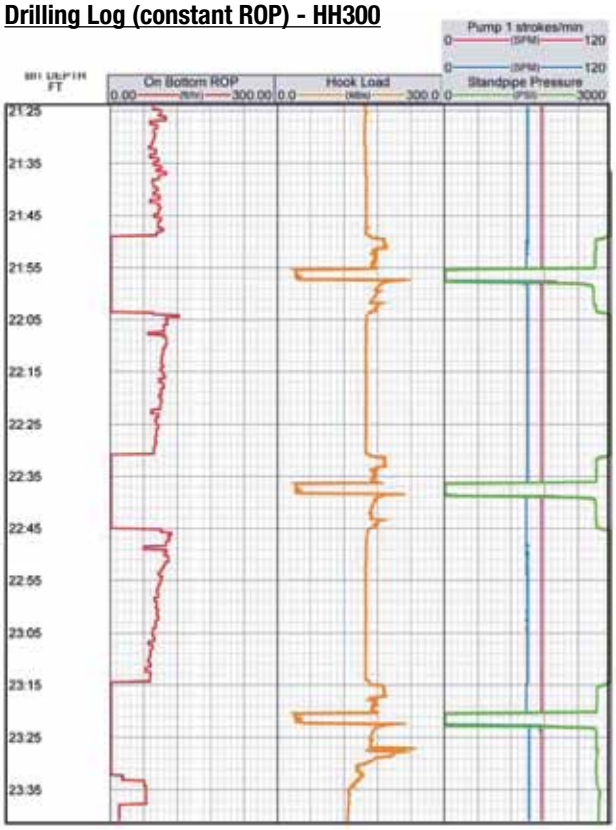
The HH Series hydraulic system implements an auto-pilot drilling device that offers drillers the option to drill with constant WOB or constant ROP. This system helps to respect targeted values, adapting its parameters based on different formations.

The tripping in log shows the fast and consistent performance of the HH Series accomplished through a totally unmanned, hands-free drilling operation that also enhances safety.

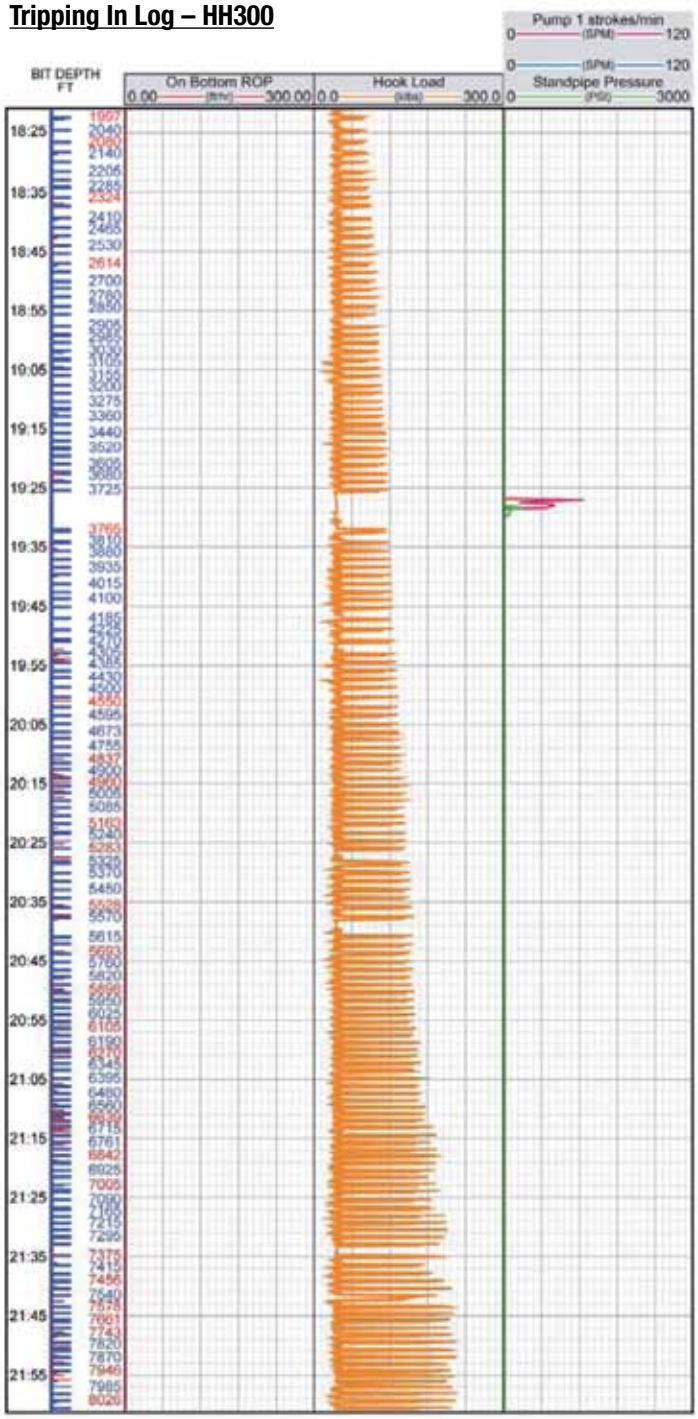
Drilling Log (Constant WOB) – HH102



Drilling Log (constant ROP) - HH300



Tripping In Log – HH300



WORK SITE

1. Crown Block
2. Telescopic Mast
3. Top Drive
4. Integrated Torque Wrench
5. Automatic Power Tong
6. Pipe Handling System
7. Integrated Jib Crane
8. Vertical Containers – Drill Pipes
9. Driller's Cabin – Automatic Drilling Console
10. Workshop
11. Cat Walk – Horizontal Pipe Rack
12. Mud System
13. Mud Pumps
14. Hydraulic Power Unit
15. Diesel Generator
16. Power Control Room
17. Pipe Handling System Control Room
18. Air Unit

HH102 Rig onsite

HH SERIES FEATURES & BENEFITS

- **Technology improves safety, environment and performance:** Automated systems including top drive, pipe handling, power tongs, slips and drilling parameters are controlled from the driller's cabin.
- **Rig-mounted equipment improves efficiency:** All primary components are on wheels and are self-erecting making transportation between drill sites safer and easier, and rig-up and rig-down faster.
- **Telescoping mast increases efficiency:** Not only is rig-up and rig-down faster with the hydraulic mast, but the top drive traveling system improves productivity between mouse hole to center hole.
- **Reduced footprint reduces impact:** The HH Series is half the size of comparable rigs.
- **Pull down capacity of 40 tons when you need it most:** In critical situations, performance and capability are important.
- **Integrated top drive improves performance:** The HH Series hydraulic top drive delivers back reaming, high torque and accuracy when performing WOB and ROP operations.
- **Drill pipe handling adds flexibility:** The HH Series mast can handle both range 3 and range 2 drill pipe.
- **Dry location drilling expands asset utilization:** The HH Series rigs are designed to avoid spills from the floor, mud tanks, generators and any other equipment handling fluids in accordance with ISO 14000 rules on controlling releases.
- **Design reduces noise:** Hydraulic equipment and sound proofing keep noise levels to a minimum.
- **Training improves performance:** High-tech simulators at Drillmec facilities permit operators to become fully familiar with all the HH Series rig features prior to deploying to the actual drill site.

HH220 while moving

Telescopic mast

Cyber drilling console on a HH220 EC Rig

Training drilling console

Torque wrench, hydraulic power tong and automatic slip

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

CERTIFIED QUALITY SYSTEM

Drillmec SpA and Drillmec INC quality management systems are certified by API (American Petroleum Institute), RTN (Rostechnadzor) and GOST-R (Russian approval) for special products.

- API 4F-0062
- API 6A-0492
- API 7-1-0305
- API 7K-0045
- API 8C-0041
- API 16A-0112
- API ISO-0076
- API Q1-0527
- API TS-0344
- API 4F-0058

- GOST-R 0529642
- GOST-R 0982253
- GOST-R 0529643
- GOST-R 0529646
- GOST-R 0529647

RTN: PPC 00-047448

OUR QUALITY 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 to our subcontractors and suppliers.

COMMERCIAL NETWORK

DRILLMEC INC. - U.S.A.
DRILLMEC MEXICO – Mexico
DRILLMEC COLOMBIA – Colombia
000 "DRILLMEC R" - Russia
DRILLMEC INDIA – India
DRILLMEC IRAQ LTD. - Iraq
SEISMOTEKHNIKA - Belarus
SOILMEC LTD. - U.K.
SOILMEC MISR. S.A.E. CO. - Egypt
SOILMEC GULF FZCO - U.A.E.
SOILMEC FRANCE SAS - France

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