



Advancements in HDD Equipment

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HDD Equipment



UCT Underground Construction Technology
International Conference & Exhibition



Challenges Facing HDD Crossing

- ▶ Longer
- ▶ Rougher Terrain
- ▶ Tighter Work Areas
- ▶ Inadvertent Returns
- ▶ ***Data Collection***



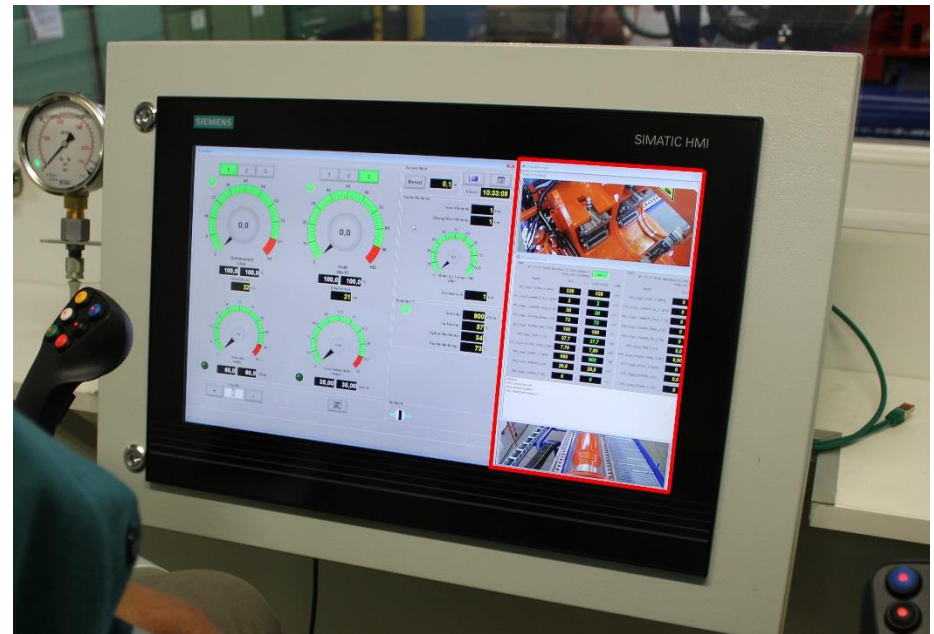
Information In the Field and at the Office

- ▶ Date
- ▶ Time
- ▶ Rotary Drive Torque
- ▶ Rotary Drive Speed
- ▶ Carriage Drive Pressure
- ▶ Carriage Drive Force fwd/bwd
- ▶ Carriage Drive Speed
- ▶ Bentonite Pressure
- ▶ Borehole Progress
- ▶ Machine Error Messages



Operator Screen

- ▶ Real Time Measurements
- ▶ Date and Time Log
- ▶ Set Maximum Forces
- ▶ Max RPM
- ▶ Max Speed
- ▶ Max Pressures
- ▶ Real Time Communication with Corporate Office



View Screen

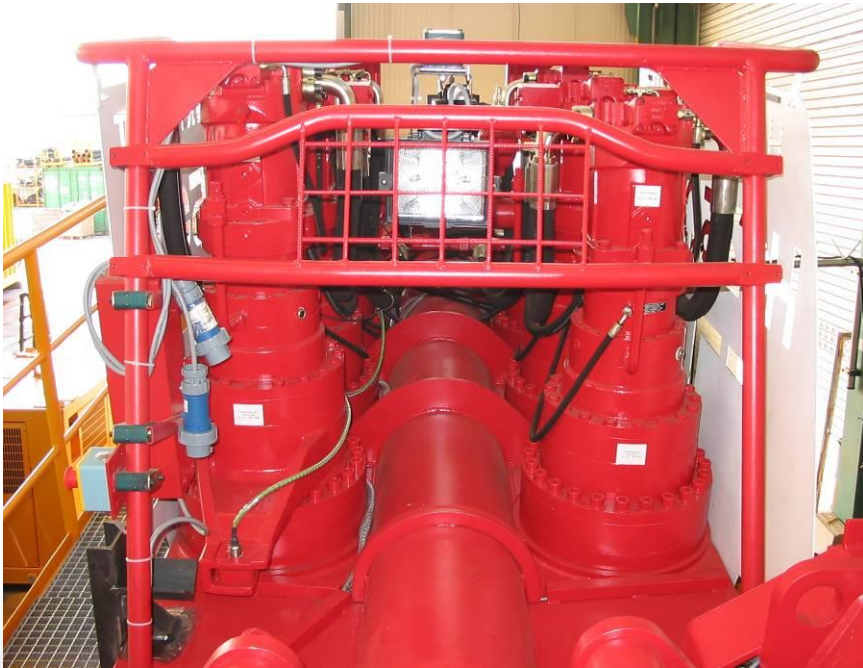


Remote Accessibility



Load Measurement

- ▶ Direct measuring of push/pull force and torque
- ▶ No measuring failures through a gear-box or hydr.- pressure





New Developments in the HDD Equipment

Electric Powered Job Site

Customers Goal

- ▶ Reduce or Eliminate Engine Tier Issues
- ▶ Reduction in Noise Levels
- ▶ Reduction in Down Time
- ▶ Lower Fuel Costs
- ▶ Reduce Daily Maintenance Cost



Rig Side Configuration

- ▶ One Power Source
 - ▶ Hybrid Electric Rig
 - ▶ Electric Drive Mud Pump
 - ▶ Electric Mud Cleaning
 - ▶ Hydraulic or Electric Drive Trash Pump

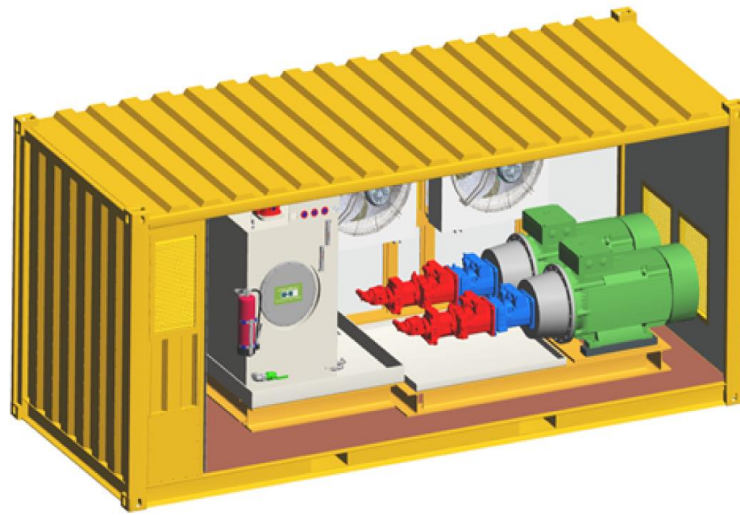


Hybrid Electric Rig

- ▶ Eliminate Diesel Engine
 - ▶ Move Engine Tier Issue to one Source
 - ▶ Reduce Maintenance Cost
 - ▶ Reduce Fuel Costs
 - ▶ Reduction in Noise Levels
 - ▶ Lower Emissions



Electric Power Drive Schematic



E-Power Pack 500kW

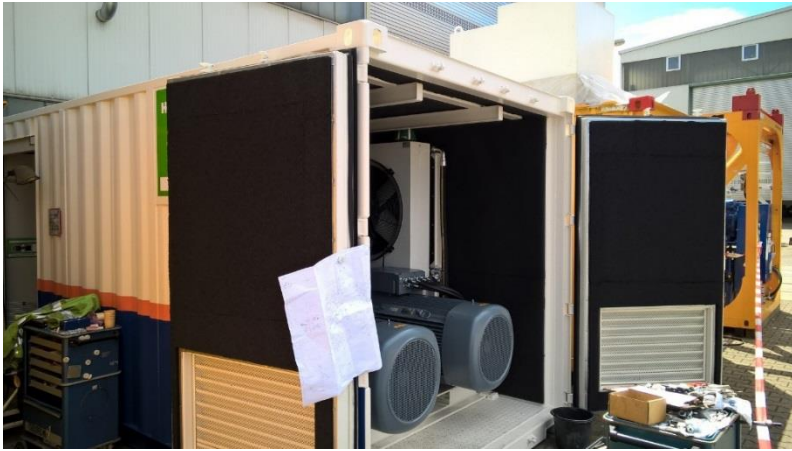
Noise insulated electric hydraulic power pack in standard 20ft container with several doors and openings for easy maintenance and operation.

The design of the container includes an oil-proof collecting tray, which can absorb the complete amount of fluids (oil, water).

The container can be placed with a max. distance of 20m from the rig (connection hoses with quick-couplings included). Provided with ISO-Corners and forklift openings.

Electric Motor	Manufacturer	VEM
	Installed power	2x 250 kW
	Soft start	2x yes
	Voltage	400 / 480 V
	Frequency	50 / 60 Hz
	Required external power	580 kVa
Hydraulics	Carriage drive hydraulic pump	2 No
	Rotary drive hydraulic pump	2 No
	Auxiliary drive hydraulic pump	2 No
	Oil filtration and cooling pump	2 No
	Oil cleaning filters	10 micron
	Hydraulic oil tank	1000 l
	Oil cooler capacity	2x 105 kW
Noise Protection	At 7m distance +/- 3dB(A)	64 dB(A)
Dimensions (20ft container)	Length	6 060 mm
	Width	2 440 mm
	Height	2 590 mm
	Gross shipping weight	12 000 kg
Working Environment	The Equipment is intended for usage in ambient temperatures of:	
		min. -10° C max. +45° C

Electric Power Pack



Electric Power Pack



HK80C Electric Hybrid Rig



HK80C Electric Hybrid Rig



Electric Mud Pump

- ▶ Eliminate Diesel Engine
 - ▶ Move Engine Tier Issue to one Source
 - ▶ Reduction in Noise Levels
 - ▶ Reduced Maintenance Cost
 - ▶ Reduce Fuel Cost



Electric Mud Pump

- ▶ Noise Reduction (Less than 70 dB(A) at 21 feet)
- ▶ Clean
- ▶ Gear Drive – No Transmission
- ▶ Complete Control From Cabin
 - ▶ On/Off
 - ▶ Mud Flow
 - ▶ Pressure



Mud Cleaning 250 kW



Trash/Transfer Pump

- ▶ Electric Power or Hydraulically Driven by the HDD Rig
- ▶ No Diesel Engine Required
- ▶ Complete Control from the cabin

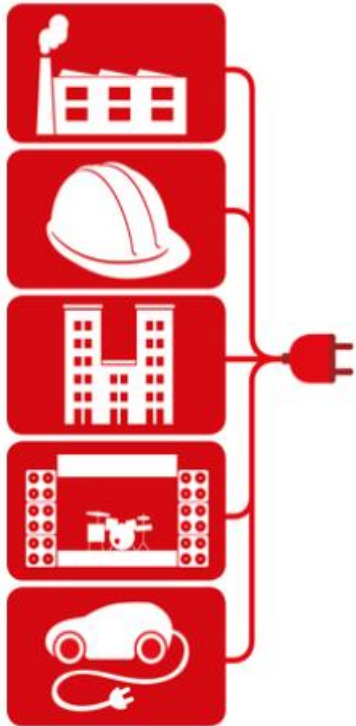


1500 kVA GenSet



Smart Power Management for Generators

Power consumption:



Several sources of power:



Advantages of Electric Job Site

- ▶ Single Source Power Supply
- ▶ Reduced Noise Levels
- ▶ Reduced Maintenance Cost
- ▶ Reduced Fuel Cost





Thank You

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