

# Drill Force AC Power Systems



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A worldwide reputation of reliability



We are the leading provider of drive solutions to the worldwide drilling industry. NOV has maintained focus on drilling drives coupled to drilling machinery and ensuring interface with control systems to provide seamless integration and operations.

Our Power Systems engineering staff is highly experienced and are ready to work with you. ATEX certification, CE marking, CSA, DNV, and ABS approvals, harmonic analysis, and extensive documentation are readily available. NOV has a drilling division comprised of several known brand name companies, which add to its breadth of drilling drives experience, including Baylor, Ross Hill Controls, IPS-Integrated power systems, and Tech Power Controls. Through our comprehensive knowledge and vast experience of drilling machinery, instrumentation, and controls, we offer the most comprehensive drilling system integration in the industry.

## Drill Force VFD systems

Drill Force is the latest product offering in NOV's innovative line of power systems. Leading the charge of the Drill Force power system family is the Drill Force LT and LS (air-cooled) which were developed from the original Drill Force and are type-tested to internationally recognized EC 61493-1 standards. The Drill Force product line design meets the requirement of all rig types.

Along with the modular design, the system is highly configurable for the smallest drilling machinery requirements and is easily expandable to meet the requirements of the largest drilling installation. Drill Force is designed in accordance with ABS and DNV rules for offshore electrical installations and is compatible with Cyberbase™ and Amphion™ systems.

The system integrates seamlessly with our innovative control systems and industry leading drilling machinery to provide complete closed loop rig control and the most reliable performance for the life of the rig.

## The Drill Force system is offered in three versions:

**1. LT and LS** (Air-cooled, land applications) **2. AC** (Air-cooled, offshore or high specification), **3. WC** (Water-cooled, offshore or high specifications)

## Features and benefits

- Rugged, robust construction
- Enhanced safety, installation and serviceability
- Isolated main bus and motor cable terminations sections
- Optimized for integration with oilfield/marine machines and controls
- Advanced diagnostic monitoring
- Centralized on board documentation system
- Plug-in Inverter Modules
- System is IP41 with doors closed; IP20 with doors open

## Distribution switchgear

Our 480V switchgear is designed to meet the latest global international requirements. Using years of know-how in each switchboard, we use the latest in circuit breaker and arrangements to get the most flexibility in the smallest space required. The switchboards can be designed to meet the latest IEC, NEMA, ABS and other third-party regulatory bodies.

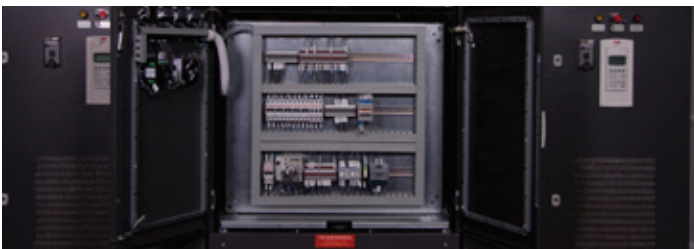




**Drill Force sections, capabilities, and ratings**

Air-cooled section	Size(s) and ratings
Segregated DC bus system	4000/8000A capacity; 220Ka fault bracing
Rectifier (air-cooled)	2500A, 3200
Inverter cubicles (air-cooled)	315 to 3200 kW
Chopper cubicle	1200kW, One/Two per cubicle
Optional cable termination cubicle	Top and bottom cable entry

Water-cooled section	Size(s) and ratings
DC bus system	4000/8000A capacity; 220Ka fault bracing
Liquid-cooled rectifiers	3200A
Liquid-cooled VFD cubicles	355 to 3000 kW sizes, 690 VAC
Liquid-cooled chopper cubicle	1200 kW, one or two per cubicle
Optional cable termination cubicle	Top and bottom cable entry



**Drill Force design considerations**

IEC 61439	Short circuit, EMC, Impulse voltage, temp
Drill Force Air-Cooled	Rise, Creepage/Clearance
IEC 61800-1, -2, -3	General requirements and EMC requirements for DC and AC drive <1KV
IEC 61892-1, -2, -3	General requirements for electrical installation
ABS MODU Part 4 2008	Rules for building and classing mobile offshore drilling units
DNV D201	Electrical installations

**600/690V Generator controls and switchgear**

Drill Force generator controls are an evolution of proven engine/generator control experience. The generator controls system is built with flexibility in mind. The controls can utilize the field proven Ross Hill™ control module or the Woodward generator control module depending on the needs of the rig. These units are designed for use around the world in the most challenging applications. The cubicle is designed for front access in land applications and can be outfitted for rear access in marine applications.

**Training and Aftermarket services**

As the Original Equipment Manufacturer (OEM), NOV provides comprehensive aftermarket product and service solutions to support the lifetime of your equipment through an integrated network of strategically located facilities worldwide.

NOV Safety 24/7 culture is the guiding principle by which the company operates. Technical support is one phone call away to an NOV Technical Support Center, which initiates a technical support team of multi-skilled backgrounds to troubleshoot and resolve your worldwide equipment needs, 24/7/365. Contact NOV at: +1-281-569-3050 or [houston servicedept@nov.com](mailto:houston servicedept@nov.com).

Field Support from our staff of proven field service personnel is available. NOV's highly skilled shop technicians overhaul, repair, rebuild, and re-certify a wide range of NOV equipment to NOV Quality Assurance and OEM specifications, using only OEM parts. In addition, eHawk™



remote support provides faster issue response time, reduces service personnel visits to the field, and allows NOV to remotely handle issues at reduced cost. Contact: [ehawk@nov.com](mailto:ehawk@nov.com) or 281-569-3051 phone 24/7.

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