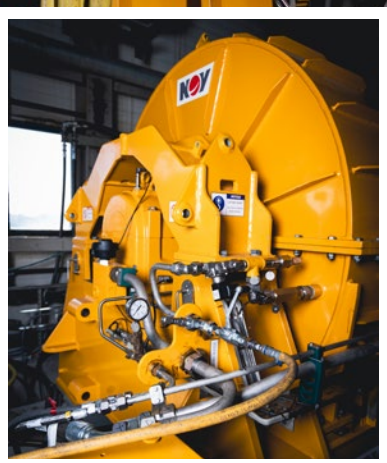
PowerBlade

Energy recovery system

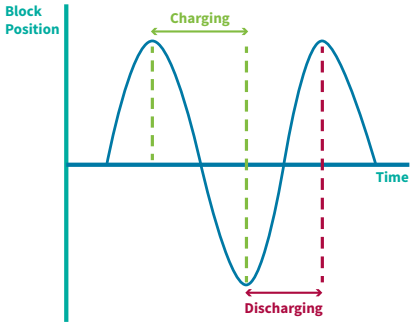


Capture. Store. Optimize.

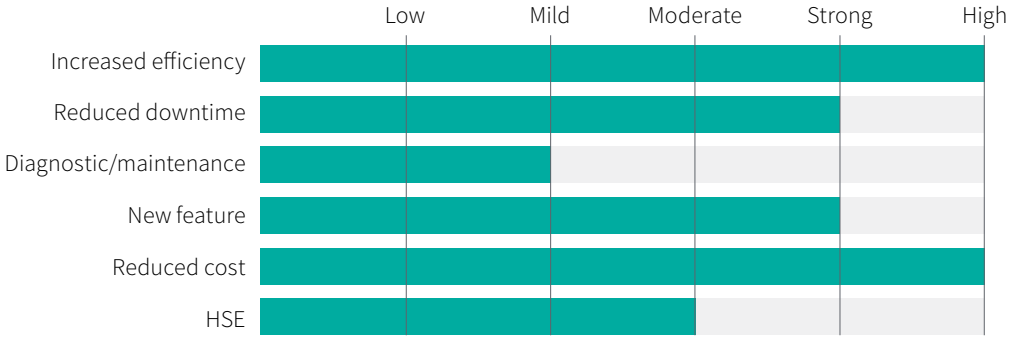
NOV's PowerBlade™ optimizes energy usage during drilling operations. Utilizing flywheel technology, the system minimizes peak power demand on the drawworks, allowing for more efficient drilling and tripping operations with fewer generators online.

PowerBlade regenerates braking energy when lowering the drillstring and stores this energy in a flywheel or a flywheel-and-battery configuration. That same energy is then used to shave off the peak power demand during the next hoisting cycle.

Peak shaving reduces drawworks power demand by 25–30%, enhancing operational efficiency. When integrated with our DC grid, power is distributed safely and evenly across the power splits/buses.



Value Added



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PowerBlade - energy recovery system

Why

With rising fuel prices and ever-increasing challenges with emissions and environmental regulations, NOV has developed a Kinetic Energy Recovery system for installation on a drilling vessel, platform, or rig.

What

PowerBlade is an energy recovery system that harnesses energy from braking resistors on the Drawworks or Winch, which normally are burned off as heat.

How

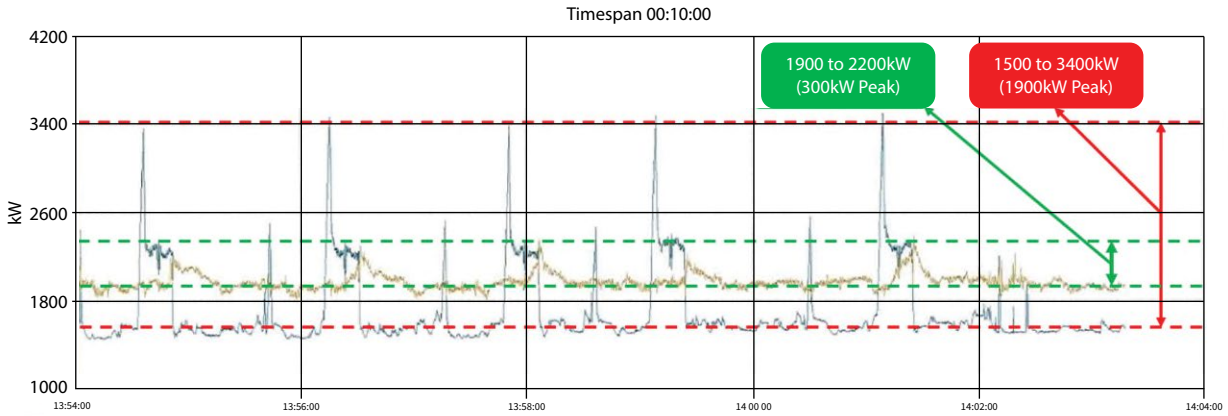
PowerBlade stores energy in a flywheel or a combination of a flywheel and battery. When a load is lowered, the braking resistors normally slow down the motion, and energy is lost as heat. By harnessing this energy and storing it in a flywheel, you will have a spinning reserve of energy ready to be injected into the energy grid. The goal is to shave off energy peaks in the power grid and thus avoid generators working at a non-optimal level, which causes unnecessary wear and high fuel consumption.

Together with NOV's DC grid system, power is distributed in a closed bus configuration to the power grid through two or more power splits to manage peak power demand evenly. Solid State Breaker Switches (Intelligent Tie Breakers) and DC/DC converters enable the DC grid by controlling power flows.

With PowerBlade enabling peak shaving, your drilling rig can expect to reduce the number of generators online.

Benefits

- Reduce operating costs by cutting fuel consumption and maintenance
- Increase performance and operational speed and response
- Will greatly contribute to ISO 50001 rig certification and DNV Abate Notation compliance
- Increase safety by creating redundancy within the power grid
- Increase flexibility in power distribution and load profile
- Reduce the risk of a generator tripping and reduce the generator duty cycle



Related

Maestro Power Management System

As an add-on product for NOV drilling control systems, the Maestro™ system helps operators reduce fuel consumption while maintaining safe drilling operations. The configurable system monitors drilling equipment while effectively calculating and determining the appropriate, safe levels of required power generation. Unlike reactionary systems, the Maestro system functions in real time with rig operations; built-in overrides can make full power available for emergencies.

EcoBooster

EcoBooster™ is a hydraulic energy storage system that stabilizes ringline pressure and enables peak shaving on the hydraulic power unit (HPU), enhancing performance and reducing the number of active pumps.