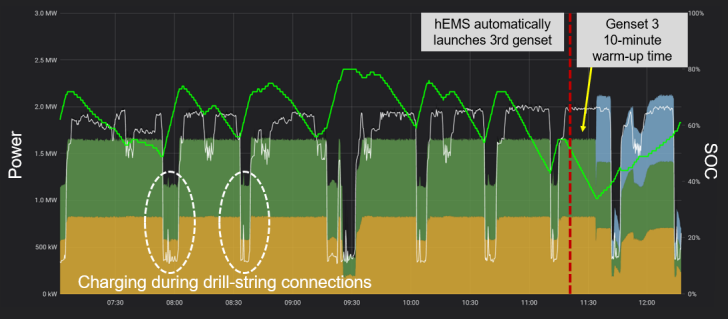
Precision DRILLING | EverGreenEnergy™

BATTERY ENERGY STORAGE SYSTEM

POWERED BY **CleanDesign**

THE CHALLENGE

To scale down land-based drilling GHG emissions by reducing the number of generators running, while meeting the load requirements of the rig. Load sharing between multiple generators leads to engines running at low loads, causing poor fuel efficiency and higher emissions.



THE SOLUTION

Precision offers an energy solution that uses battery energy storage and engine automation to reduce the number of generators operating while improving the average efficiency of each generator. Our Battery Energy Storage System (BESS) will efficiently monitor load sharing between generators and controls continuous battery power, providing power during generator issues, resulting in the maximum fuel and emissions savings.

THE TECHNOLOGY

BESS automatically monitors load sharing between multiple generators and shuts down any unnecessary generators, supplying 1.5mw of power to the drilling operation. The battery supports loads greater than the current operating generators and will compensate for transient load spikes resulting from the instantaneous rig equipment power demand. As the drilling rig gets deeper in the hole and power demands increase, the battery will automatically launch an additional generator while offering continuous power, bridging warm up times to start an additional generator. When our rig power demands drop below the power supplied by the generators, time is allowed for the battery to recharge. Generator performance data is continuously available on demand throughout the drilling operation.

EverGreen™

Precision's EverGreen™ suite of environmental solutions reinforces our commitment to reduce our environmental impact and positions us as a leader in drilling technology solutions.

ENVIRONMENTAL

Our rigs when integrated with BESS significantly reduce fuel consumption and support using low-cost generators, resulting in lowered costs and obtaining your environmental goals.

SYSTEM DESIGN

Our BESS consists of three major components, a battery rack complete with a battery management system, a bi-directional inverter, and a system controller. All components are designed to withstand shock and vibration during transportation from well site to well site and the skid itself is designed to be unloaded/ loaded with cranes.

SAFETY DESIGN

- Hazzard and Operability Analysis (HAZOP) completed
- Equipped with simple start up and shut down instructions
- Designed for rig moves and rough roads
- Key switch lock-out hybrid mode
- HVAC System - providing both heating and cooling to maintain temperature

INTEGRATED EXHAUST VENT WITH BATTERIES

PRESSURE RELIEF VENT

CLOSED LOOP HVAC

TREE GUARD

EMERGENCY STOP (BOTH DOORS, INSIDE BATTERY HOUSE, & VFD HOUSE)

INTEGRATED WITH RIG E-STOP CIRCUIT

FIRE ALARM SYSTEM

TRIPLE REDUNDANT ENFORCEMENT OF OPERATIONAL PARAMETERS

MASTER CONTROLLER

BATTERY MANAGEMENT SYSTEM (BMS)

FAILSAFE DISCONNECT (PASSIVE)

OVERCURRENT PROTECTION

1-HOUR CLASS A FIRE RATING (WALL INSULATION)

ISOLATION DISCONNECT (FULL LOAD RATED)

EverGreen™

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HIGH PERFORMANCE HIGH VALUE

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