LUFKIN Well Manager™ 2.0 Variable Speed Drive

Accurate, Realtime Rod Pump Control

WELL CONTROL TO MAXIMIZE PRODUCTION

Oil wells require optimal pump operation, the LUFKIN Well Manager™ 2.0 Variable Speed Drive (LWM 2.0 VSD) integrates next generation pump-off control with variable speed control for optimum productivity for every stroke. Fully integrated LWM 2.0 VSD technology provides immediate and accurate downhole information, enabling the controller to match pump displacement to the well's inflow in realtime.

- **Produces accurate data which results in better pump performance.** Downhole calculations are considered the most accurate in the industry, utilizing intelligent control algorithms to enhance productivity.
- **Automatically adjusts pumping speed** as production changes over time to ensure optimal operation under all conditions
- **Intelligent, autonomous intra-stroke speed** changes for advanced pump stroke control
- **Automated system overrides, prevent damage** to surface and downhole equipment
- **Fully integrated downhole pressure gauge functionality** to control pumping speed in realtime
- **Automated reset, restart function minimizes manual intervention**
- **Maximizes run-time** in between failures

LUFKIN VSDs ARE THE IDEAL SOLUTION FOR:

- Wells with high mechanical failure rates when operated in a timer controlled or POC cyclic fashion
- Unconventional wells
- Wells with high GOR
- Fluids with high sand content
- Heavy crude production
- Steam flood operations

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The LWM 2.0 VSD technology provides ultimate control.

MAXIMIZE ASSET VALUE, MINIMIZE OPERATING EXPENSE

The Variable Speed Drive (VSD) protects equipment by adjusting pump speed as well conditions change to minimize fluid pound conditions, avoid working load violations and motor overload. The LUFKIN Well Manager (LWM) 2.0 monitors all aspects of production, such as pump fillage, motor torque and pumping unit balance conditions. The LWM 2.0 is serially integrated with the VSD and is capable to reset a VSD trip condition and automatically restart the system when deemed safe.

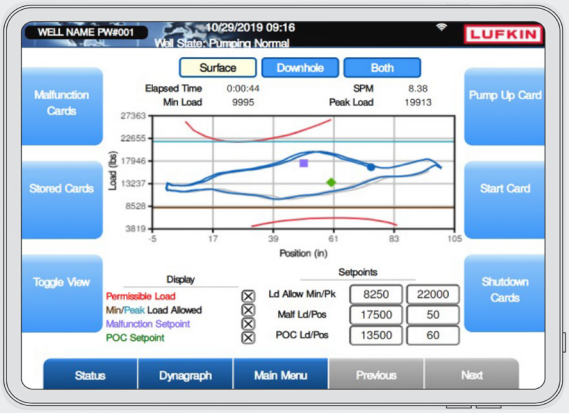
CUSTOMIZED TO WELL CONDITIONS

The VSD cabinet arrives to location fully assembled, integrated with the LWM 2.0. Operators with limited experience will find the Quick Start programming function intuitive to operate, setup and edit the default parameters that are appropriate for most well conditions. For conditions that require advanced precise control, settings can be fine-tuned using the local color LCD user interface or via a remote SCADA interface connection. Additionally, an operator may connect with a laptop computer, tablet PC or mobile smart device, utilizing the local Wi-Fi connection.

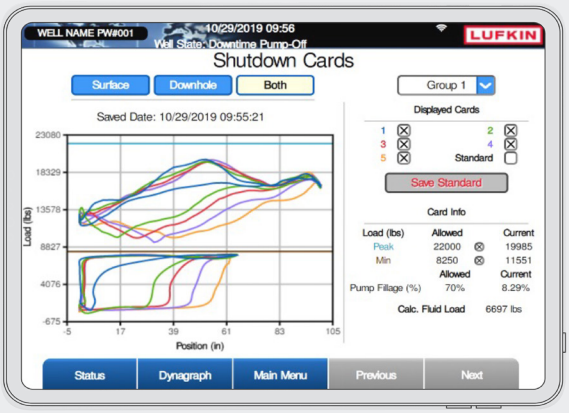
The VSD system stays in tune with a well's production by constantly monitoring well conditions and adjusting pump speed based on dynamometer card readings. The system is capable of mitigating undesirable operating conditions such as gas interference, rod float, fluid pound and pump tagging.

6-pulse VSDs are available with Passive Harmonic Filters, installed inside the cabinet to mitigate harmonic distortion. Harmonic Filters are designed to meet the IEEE 519-2014 standard.

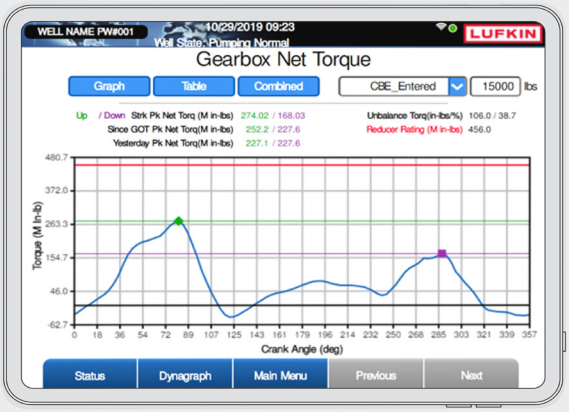
VARIABLE SPEED DRIVE KEY SPECIFICATIONS	
Power Rating	10-250 HP (7.5-200 kW)
Voltage	380 V – 500 V, +/- 10% 50/60 Hz, (+/-5%) 525 V – 690 V, +/- 10% (Special order)
Power Phase Operation	Three Phase or Single-Phase Operation (single phase HP derated)
Overload Current Rating	160% for 60 seconds
Enclosure Type, Ingress Protection	IP56 with convection-cooled cabinet with forced air-cooled frequency converter
Ambient Temperature	-40 to 60°C (derate above 50°C)
Certification/Standard	cULus, IEC



VSD Control function
Intuitive dynagraph setup with permissible loads



Shutdown cards
Multiple 5-card shutdown buffers, critical for diagnostics and Root Cause Analysis (RCA)



Gear Reducer Torque
For every stroke, the LWM 2.0 calculates gear reducer torque per 15 deg. Crank Angle intervals utilizing actual Polished Rod Load utilizing the API RP11E method.

A VFD is not required to generate the torque plots!

For detailed specifications, submit request to **contact@lufkin.com** or call your Sales Representative.

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