



Powered by SMARTEN™, the Thirsty Bird Variable Speed Drive is designed and built in Canada to meet the unique challenges of the Canadian oilfield. While being one of the most well optioned standard drive packages on the market, our unique design allows for unprecedented expandability and customization to meet any of our customers needs.

### What is SMARTEN?

#### Enhanced Production Control. Go-To-Well Technology. Plug-and-Play Design.

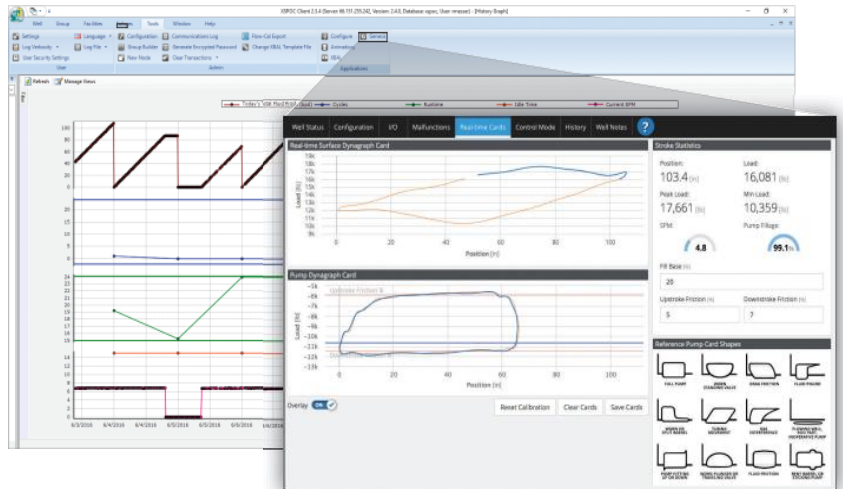
Reliable, remote management of your well site assets is increasingly important in a business environment where safety concerns are paramount and resources are stretched thin. Ensuring optimal production and maximum performance are just the beginning of your challenges. You also need a management system that provides pump diagnostics and operational histories—all in an intuitive, user-friendly design Rod.

The SMARTEN™ Rod Pump Controller from APERGY is the industry’s first automated well site manager to use artificial intelligence to deliver maximum performance and optimized production from your rod pumped wells. SMARTEN provides a versatile, programmable platform, customizable to your unique pumping environment. Featuring an easy-to-use interface, it provides remote, real-time diagnostics and alerts, allowing you to focus your energy where and when it is needed most.

#### Key Features:

- User friendly, flexible and intuitive Web interface
- Full control, total ownership. No extra software licenses or fees required to unlock the full potential of your hardware
- Live surface and downhole cards
- Onboard XDIAG card analysis provides powerful onsite analytics without reliance on a secondary server system
- Real-time rod string loading and pump animations for every stroke
- Advanced real-time system analytics and diagnostics
- Improved system reliability and energy efficiency through enhanced VFD speed control
- Inclusive I/O ports:
- 8 Analog Input Channels (0-5 V, 0-10 V, 4-20 mA)
- 10 Digital Input Channels (3 High Speed Counters)
- 10 Digital Output Channels (0-5 V or 0-12V)
- 2 Analog Output Channels (0-10V or 4-20 mA)
- Wireless internet capability
- 4 RS232/RS485
- Ethernet & USB
- Storage for 180-day operational history including Dynagraph cards every hour for 60 days and every event
- Full SCADA compatibility
- Advanced Theta XSPOC™ monitoring and “Go-Live” integration
- Extensible hardware and software architecture for future growth

Let Theta XSPOC manage your field...  
and SMARTEN take you to the well!



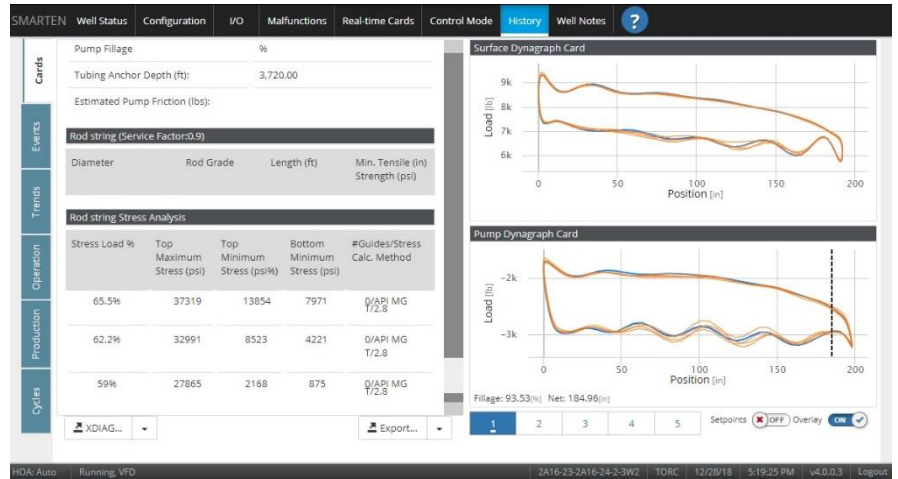
## How SMART is it?

### XDIAG On Site. XDIAG Anywhere.

With XDIAG card analytics built directly into the SMARTEN controller interface, you can quickly analyze any of the dynagraph cards stored in your local controller, either directly from the local display, XSPOC's SMARTEN Live interface or from any internet connected device with a web browser. Taking advantage of XDIAG directly gives you access to a much richer and thorough card history while taking a load off your XSPOC servers database.

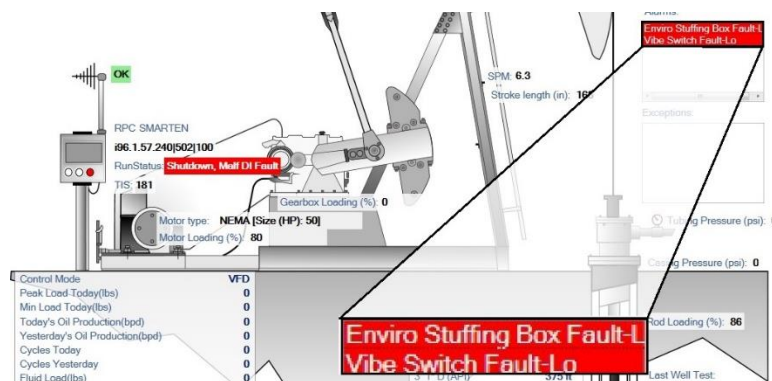
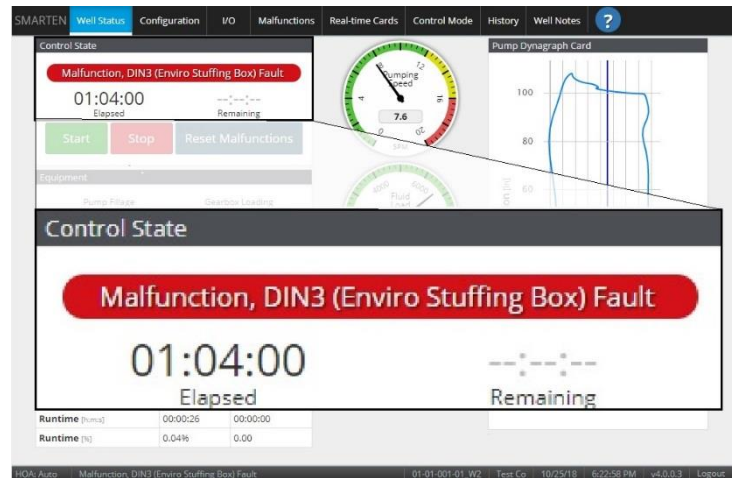
### What Can XDIAG Do?

XDIAG diagnostic and analysis software combines state-of-the-art pattern recognition technology with accurate wave equation diagnostic modeling to deliver expert analysis of deviated and vertical rod pumping systems. During analysis, XDIAG detects and corrects input data errors such as a load cell that reads too low or too high or an incorrect fluid level. After the analysis, XDIAG provides recommendations for fixing downhole problems and calculates parameters such as gross pump stroke, pump volumetric efficiency, overall system efficiency, peak torque and gearbox loading, and the counterbalance you need to balance the unit. Also, it shows the difference between balancing the unit for minimum gearbox torque and for minimum energy usage.



### Customized inputs that never leave you guessing.

Have you ever looked at your controller display or your XSPOC server and had no idea why your well is down and won't restart? No more generic or cryptic alarms, no time wasted tracking down problems or making expensive calls to a service provider, you'll know what's happening before you get to location or with a quick look at the local display. The SMARTEN controller and XSPOC integration can take the guess work away

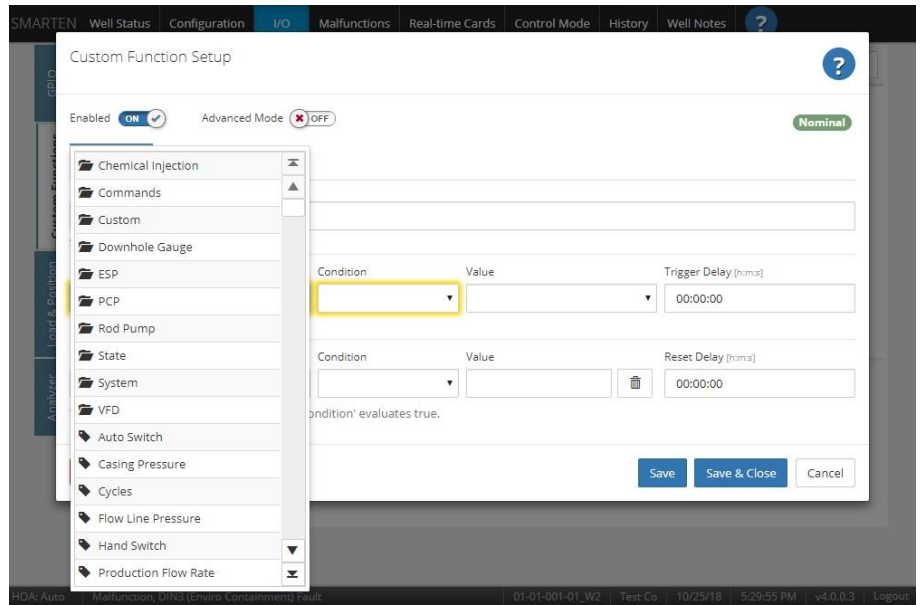


## Custom Functions take control further

No special software, no service calls, our Custom Functions put the full power of the controller's logic at your fingertips. With easy to navigate menus and intuitively named registers, the Custom Functions allow the user to set up a series of triggers and actions based on the status of inputs. A trigger can be either Analog or Digital Input Channel readings or some other calculated value from the controller. Actions can be as simple as a message banner displayed in the top right corner of the screen or as complex as closing multiple digital output channels, slowing down a VFD or stopping the well altogether. Complex rules can be created using this feature giving the user a great deal of flexibility for advanced controls.

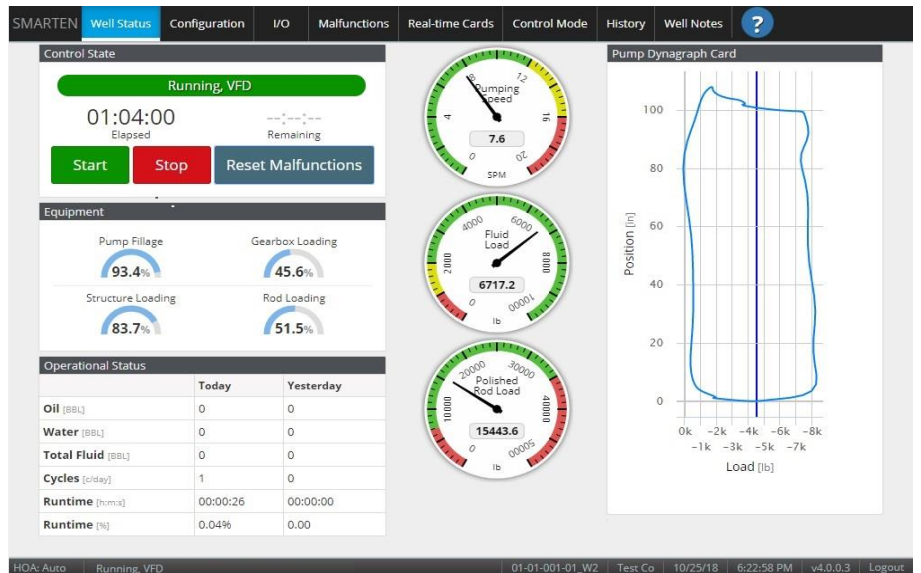
Trigger when **TubingPressure >500** for **00:00:05** then **Alarm 'Tubing Pressure High'** and execute **Custom.DigitalOutC =1**

Reset when **TubingPressure <200** for **00:00:05** then **Notify 'Tubing Pressure Low'** and execute **Custom.DigitalOutC =0**



## SMARTEN Standard features:

- 10" color touchscreen display
- 10 digital outputs
- 10 digital inputs
- 8 analog inputs
- 2 analog outputs
- 4 RS485/RS232 ports
- 1 ethernet port
- multi-zone stroke control
- custom logic functions
- XDIAG Card Analysis
- integrated email/text notification
- multiple position input options: hall effects, inclinometer or accelerometer



## Thirsty Bird VSD Standard Features:

- 5 relays pre-wired to control terminal strip for field connection
- Inclinometer with 100' cable
- wired load cell
- 2.4ghz wi-fi router for local wireless access to Genesis
- 5A 24v DC power supply
- 250VA AC power supply
- 3% Impedance Line Reactor
- Cabinet Cooling Fan/Filtered Suction Louver for fresh air intake
- Cabinet Heating
- Line Side Surge Suppressor
- Fused Disconnect with External Handle to outside of enclosure door
- POC Touchscreen, HOA switch, Speed Pot and VFD Faceplate inside of hinged Nema 4 door
- CSA Certification
- QA/QC Documentation

## Optional Equipment:

- up to 5 more pre-wired relays for a total of 10
- pre-wired NRL plugs for field shutdowns (Argus pressure switch, vibration switch etc.)
- cellular, unlicensed or licensed communications pre-installed
- higher VA AC power supply with external plugs and disconnect for powering extra equipment (chemical pump, heat trace, etc.)
- wireless load cell and inclinometer
- 10% duty cycle or higher dynamic braking resistor
- casing/tubing pressure transmitters
- VFD stand with tie-downs
- 1080p video with sound, accessed via SMARTEN interface
- 12' camera stand

**Thirsty Bird Pumpjack Sales & Service Ltd.**

306-636-2473