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VEROS TECHNOLOGY ENABLES SHELL TO LISTEN TO MOTORS

AUSTIN, Texas, July 20, 2021 – Veros Systems ("Veros"), a leading industrial artificial intelligence company, recently released Veros ForeSight® 3.0 at Shell's Pernis Refinery in The Netherlands. This new version has potential for simple, scalable implementation of Veros AI algorithms within the Shell Cloud. Veros ForeSight 3.0 is the result of months of development between Veros and Shell IT teams that began in 2020. The two companies came together to provide improved accessibility, standardized program controls, and enhanced data governance across all Shell sites.

With this new release, Veros' machine learning algorithms are now simpler to implement in the large population (50+ million) of three-phase motors in the industry that drive machinery critical to operations. Motor-driven compressors, fans and pumps are the workhorses of industrial processing, and they consume about half of the world's electrical production. With the use of Veros ForeSight, these motors can be excellent sensors of machinery performance and health.

> "Since our founding over 20 years ago, Veros has been developing technology that enables motors to communicate powertrain performance and health information. With Shell's guidance, we can now provide this capability in a containerized solution that runs in a customer's Cloud. Coupled with the integration in Siemens Large Drive Applications, this is a huge step to scaling our technology and helping industrial users reduce their carbon footprint, optimize processes and eliminate unplanned, sudden machinery failures. All without adding any sensors on the motors and pumps/compressors in the field."
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> Jim Dechman, President & CEO, Veros Systems

Veros' on-premise hardware non-intrusively collects high frequency electrical waveform data, which help monitor the health of electric motors. Advanced signal processing then digitizes, compresses, encrypts and transmits these waveforms to the cloud. In containerized micro-services in the cloud, Veros leverages a series of machine learning techniques to meter and monitor motors in near real-time manner. Insights into motors' operating condition and evolving condition projections are provided to end users and historians via a web dashboard, alarm emails, and a data API.

A History of Partnership

What began as a vendor test in 2013 has developed into a fully integrated, sensorless Cloud AI monitoring platform within Shell.

Eight years ago, Shell asked vendors in the rotating machinery monitoring market to instrument an Electrically Submerged Pump ("ESP") housed at Texas A&M university. Dr. Alex Parlos, Veros Founder and CTO, was at the time a tenured Engineering professor, took part in the test. Shell asked vendors to setup their continuous monitoring systems and leave. Monitoring data, trends and alarms were all fed to Shell's Smart Connect system, after which the ESP would operate at different load conditions while intermittently injecting sand into the flow to damage bearings. Veros ForeSight earned top marks in this test, accurately showing damage conditions while avoiding false alarms under the varying load conditions.

Anticipating the potential from the testing result, Shell Ventures made an investment in Veros. News spread to the team at Shell Perdido, an offshore SPAR in the Gulf of Mexico. Perdido operates five subsea ESPs at a depth of 7,000 feet below water. After another installation test at Shell's Gasmer facility, Shell installed Veros ForeSight on its ESPs.

A team of Baker Hughes, Shell, Siemens and Veros engineers were able to drive new insights into design and operation of Perdido's ESPs. Results of the work at Perdido are detailed in the following article.

About Veros Systems

Veros Systems applies innovative data capture techniques and machine learning algorithms to electrical waveforms in industrial machines to continuously monitor rotating equipment health, gain real-time insights into operating performance and proactively predict failures. Enterprises implement Veros technology on a standalone monitoring platform, in the Cloud, or embedded within existing power distribution, metering and monitoring hardware to increase uptime, improve efficiency and optimize maintenance. For more information, visit www.verossystems.com.