

Monitoring Floor Panel Separation with a String Pot

Novus FieldLogger Provides Economical Data Acquisition

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CAS DataLoggers recently provided the datalogging solution for **GSI Grain Storage** in Assumption, Illinois, the world's largest manufacturer of steel farm grain bins, commercial storage grain bins and grain silos, as well as grain dryers and material handling systems including grain bin sweeps, spreaders, chain loop systems, commercial bucket elevators and conveyors. GSI was planning a troubleshooting application to see the extent to which their grain floor was separating every time their grain bins loaded and unloaded, which was impacting production and storage efficiency. The plank floor was sectioned out like a house's wooden flooring section, and personnel needed an industrial data acquisition solution capable of reading voltage and connecting to a string pot to read and record its measurements to learn where these separations were and their extent. This solution also needed to be highly accurate and flexible, yet economical.

GSI Grain Storage installed a **Novus FieldLogger data acquisition system** in a grain storage bin that was repeatedly loaded and unloaded into the storage floor area to measure the separation of the floor sections. An optional exclusive color HMI was chosen for local indication and configuration. The product engineer then connected the FieldLogger to a **CeleSCO SM2 miniature string pot** to detect and measure linear position and velocity over time. The string pot was mounted to a fixed surface and its cable attached to the floor panel under monitoring. A precision plastic hybrid 10K-ohm potentiometer delivered a voltage divider output signal that was linearly proportional to the travel of the spring-loaded measuring cable, based on the movement of the grain bins, which the FieldLogger then read and recorded at 1 reading an hour.

The Novus FieldLogger functioned as a versatile yet powerful data acquisition and SCADA system which the product engineer found simple to use. This analog and digital variables data logger featured 8 configurable analog inputs that could read thermocouples, Pt100, Pt1000, voltage and current signals. It also offered 2 relay outputs and 8 digital ports individually configurable as inputs or outputs. Accuracy was 0.2% of the span for thermocouples, and 0.15% of the span for other input types. The FieldLogger's small 164 x 117 x 70mm dimensions fit easily into the storage bin with plenty of room for the bin's normal load. The datalogger operated on 100~240 V ac/dc power and was configured, monitored and downloaded its data via USB interface, also featuring automatic data downloads via USB flash drive. The logger's spacious internal memory supported up to 500k of readings, which could be greatly expanded using an optional SD card. Additionally, the logger could detect up to 32 alarm events, allowing output activations, e-mails and SNMP traps sending.



With an RS485 interface, the FieldLogger could act as a Modbus RTU master and read registers from other slaves, and as a master, it was able to read and log up to 64 registers from Modbus slaves. Capable of performing mathematical operations in the input channels, this high-speed reading and logging device utilized a 24-bit A/D converter enabling up to 1000 samples a second and a suite of connectivity options including a 10/100 Mbps Ethernet interface that allowed for access through a browser (HTTP), FTP (client and server), e-mail sending (SMTP), SNMP and Modbus TCP.

Configuration and data accessibility were a snap: the FieldLogger's user-friendly configurator software was accessible by Ethernet, USB or RS485, and also provided means for online monitoring, downloading of all logged data, and quick exporting to spreadsheets and other formats.

GSI Grain Storage benefitted in several key ways following installation of the Novus FieldLogger. This versatile datalogger proved to be a cost effective solution for handling analog, digital and other types of variables with high resolution and speed and also offered expansion modules. This high performance and high connectivity equipment also offered personnel easy configuration and operation to get the project underway as quickly as possible. GSI Product Engineer Charles Ogbourn explained, "The user interface is very user-friendly, the programming and software to change your channels is simplified, you can leave the information in memory, and CAS customer service support was very helpful to get us up and running with the datalogger. It was certainly cost-effective for the information we needed. If you know a little about the logger, you can pick it up easily, and there were many ways to store and download the data."

For more information on the Novus FieldLogger, other dataloggers measuring voltage/current and other parameters, or to find the ideal solution for your application-specific needs, contact a CAS Data Logger Applications Specialist at (800) 956-4437 or visit the website at www.DataLoggerInc.com.

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