CAS DATALOGGERS
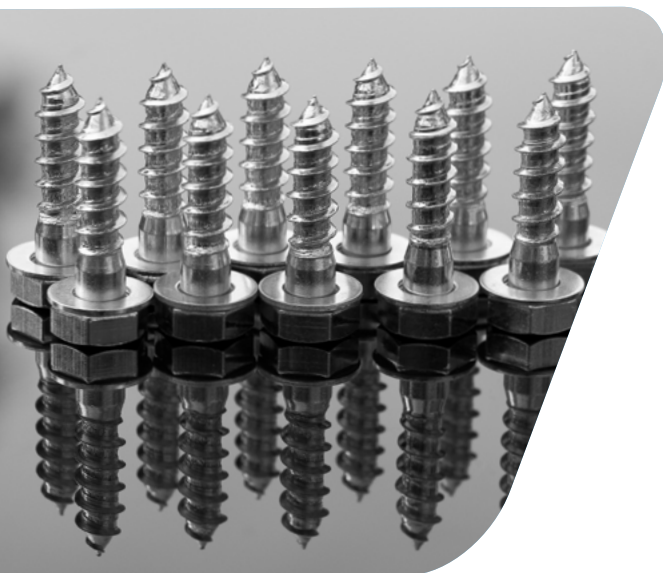
Load Cell Monitoring System for Testing Anchor Bolts

Optimize Structural Bolt Tightening Procedure with dataTaker

CAS DataLoggers supplied the data logging solution for a world-leading manufacturer of masonry fasteners. As part of their product development, company engineers needed to measure the peak installation load and to monitor how the load reduced as the newly-installed fastener "bedded in". Designers needed to determine such factors as bolt tightness over given periods of time (months/years) when calculating the required capacity for fastening beams in buildings or for securing roofs for high winds. To capture the peak load, continual monitoring was required to sample very quickly, but since the test was slated to run over several weeks, if this sample rate was continued throughout the test period, the sheer amount of data would make it hard to organize and analyze. Supervisors began looking for a load cell monitoring system capable of measuring load cell sensors with flexible schedule size and which also featured alarm capabilities and the ruggedness to withstand rough handling and occasional accidents.

INSTALLATION

The masonry manufacturer installed a [dataTaker DT80 Intelligent Data Logger](#) in its product test area. The data logger was then connected to a load cell sensor to measure peak load and interfaced with a panel-mounted display for easy data accessibility. The dataTaker offered 5 to 15 universal analog sensor inputs and 12 digital channels, 4 high-speed counter inputs, phase encoder inputs, and programmable serial sensor channels, allowing the dataTaker to connect to most analog sensors and other digital measurement sources. If needed, the logger could easily be expanded up to 300 analog inputs using expansion modules. Almost any physical value could be scaled and logged including temperature, voltage, current, 4-20mA loops, resistance, strain gauges, frequency, and more. The DT80 stand-alone, low power data logger also featured a robust construction, capable of withstanding harsh environments over years of constant use.

USAGE

The dataTaker DT80 provided the project with a cost-effective solution, measuring the load cell at high accuracy across a ±30V input measurement range with 10 million data point storage in the internal memory. Operators had independent control of schedule size and mode, allowing them to log only when required. With the dataTaker data logger's versatile alarms and schedule rates, users sampled the data rapidly at the start of the test cycle and then slowed down the sample rate as the test continued.

This unique ability reduced the large volume of data collected, making file size management and analysis easier to handle. Using the internal calculation abilities of the dataTaker logger, the peak load was recorded, and the load drop off monitored as a percentage of peak load. This value was logged for later analysis and simultaneously displayed so users could monitor the test progress without having to repeatedly connect the dataTaker data logger via computer and download the test results, saving both time and effort.

Additionally, user-friendly dEX software was included with the DT80. Users worked with an easy-to-use browser-style graphical interface enabling quick configuration of the data logger and display of real-time sensor measurements, calculations and diagnostic information. Users viewed real-time data in convenient dashboard displays, trend charts, and tables, and retrieved historical data for analysis. Enabling a quick start to the project, dEX came built-in with no applications to install, ran directly from a web browser, and could be accessed either locally or remotely anywhere that a TCP/IP connection was available.

Benefits

The masonry manufacturer's load cell monitoring system project was completed efficiently with the dataTaker DT80 intelligent data logger. The dataTaker's precision measurements from the load cell were initially taken at high sample rates, giving users an accurate picture of the structural data, and its unique ability to reduce the rate helped in the analysis phase when combing through all the data. The logger's versatile communications ports let users choose the easier way to access the data, and the free dEX configuration software was easy to learn and navigate. As a result of weeks' worth of logging, analysts had determined the bolt tightness needed for security in a wide range of structural conditions, significantly improving their product quality.

For more information on our **dataTaker Intelligent Data Loggers**, a load cell monitoring system or to find the ideal solution for your application-specific needs, contact a CAS DataLogger Application Specialist at **(800) 956-4437** or **www.DataLoggerInc.com**.