APPLICATION NOTE

CAS DATALOGGERS

How to Measure Surface Temperature of Metal for Quality Welds

Accurate Temperature Data Helps Prevent Metal Deformation

CAS DataLoggers provided the dataTaker datalogging solution for a welding company working on a wide variety of metal parts. In many of their jobs workers needed to monitor the temperature of long lengths of pipe. The high heat applied during the welding process distorts and warps the metal as it cools, so welders first have to preheat the metal before welding. During preheating the metal reaches temperatures as high as 800°F before it's ready to weld; afterward the metal cools and its stress is released. While on the job, workers needed a temperature monitoring system to display the metal temperature throughout the process and ensure a quality weld. In this apps note, learn how to measure surface temperature of metal for quality welds.

Installation

The business sourced a dataTaker DT82I Industrial Data Logger from CAS DataLoggers, enclosed in a Pelican case with a small display mounted in the lid. Datataker dataloggers feature universal inputs allowing temperature measurement from thermocouples, RTDs and thermistors so that users can monitor temperature across a wide range. Operators can utilize up to 4 isolated or 6 common referenced analog inputs in many different combinations. Here the dataTaker is connected to a pair of magnetic Type K thermocouple probes that snap onto the surface of the metal near the planned joint. These probes monitor the temperature of the lengths of metal before workers begin, helping to ensure a smooth weld.

Communications

The standalone dataTaker DT82I is designed for industrial applications and features flexible, user configurable analog inputs to accept direct connection for virtually any analog sensor. Its flexible feature set makes it ideal for temperature monitoring of equipment and process control.

DataTaker systems contain many options for users to connect locally via USB, RS232 or Ethernet. The low-power DT82I offers users an array of communications options supporting Modbus sensors and SCADA systems, FTP and Web interfaces. Digital I/O channels and high speed counters can be used to monitor equipment status or to count events or pulses.

Data Storage and Downloading

While on the job, users periodically check the current metal temperature on the dataTaker's built-in display. When metal temperatures are in the right range, workers know that the metal is ready for welding. In this way the work is completed in a timely manner and customers aren't overbilled for excess hours.

With dataTaker systems, users can also transmit warning messages, archive data on alarm events, or set alarms which can execute any dataTaker command. In industry this allows for sophisticated automated responses to faults, machine downtime and other disruptive or dangerous process situations.

As they work, users are able to leave the dataTaker unattended to run for extended periods on its internal battery. Meanwhile dataTaker's rugged design ensures that the data logger has durable protection against accidents in this unsecured environment. The DT82I can store up to 10 million data points in internal memory so there's no need to add memory cards in the middle of a job. When the memory is full, users just copy the data to USB stick as proof of best practices.

Software

Using the dataTaker's built-in dEX web interface, operators can configure the data logger, view recorded temperature data, and retrieve historical data for later analysis. dEX runs directly from a web browser and can be accessed either locally or remotely including globally over the Internet. Operators can use any of the logger's built-in communications ports to view dEX including Ethernet and USB. How to measure surface temperature of metal and analyze those measurements is made easy with the software's available options.

Benefits

In this application the dataTaker industrial datalogger has proven to be an effective business solution. The DT82I's ability to record temperature, display current readings, and store the data for quality assurance purposes—all unattended—makes it a logical choice here. All in all, the DT82I forms a completely self-contained solution which also includes graphical interface software.

For more information on the dataTaker DT82I Industrial Data Logger, other dataTaker models, how to measure surface temperature of metal 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.