

Testing Cooling Systems in Diesel Generators

Using Grant Squirrel 2020-1F8 Portable Universal Input Data Loggers

CHESTERLAND OH—November 22, 2011

CAS DataLoggers recently delivered the datalogging solution for a large company providing dependable power generation systems to customers. This company needed to monitor the temperatures of cooling systems built for newly designed large diesel engine-driven generators. The program's goal was to ensure that the engines operated within their safe operating area even under demanding loads and extreme environmental conditions. Engineers began shopping around for a portable data logger with the versatility to measure several different values including temperature and current, capable of standalone operation without a PC, and that included user-friendly software with graphing capabilities for data analysis.



The company installed 3 **Grant Squirrel 2020-1F8 Portable Universal Input Data Loggers** adjacent to their diesel generators under test. Engineers put together a portable data collection system using the battery-operated SQ2020 logger, including various configurations of thermocouple sensors which were connected to measure the generators' surface and liquid temperatures. Current sensors were also interfaced with the datalogger to monitor the generators' AC power output. The thermocouples were used to measure temperatures at various locations in the engine, cooling system and radiator, monitoring inlet and outlet temperatures as well as the ambient temperature. Split core current sensors were provided that could monitor the output of the generator up to 3000 Amps AC to study the effect of load on the system operation.

These universal data loggers offered plant engineers a high-quality, highly accurate (0.05%) battery-powered solution measuring a broad range of physical values including temperature, humidity, current, voltage and resistance. Popular for their ruggedness and reliability, the handheld and lightweight SQ2020s featured 24 bit analog-to-digital converters enabling precise measurements. The Squirrels' built-in displays and keypads allowed them to be used either in stand-alone operation or as PC-linked data acquisition systems. Each Grant data logger featured 8 to 16 universal analog inputs and 8 digital inputs, as well as up to 16 derived/calculated channels and 4 pulse rate/counter inputs. 4 alarm outputs notified engineers when engine temperatures went out of specification, and each Grant datalogger recorded up to 14 million readings and utilized a removable MMC/SD card. The SQ2020s were easily configured via integral interface or via PC and offered both USB and RS232 connectivity.

The Grant dataloggers also included FREE SquirrelView configuration and analysis software. SquirrelView's user-friendly, spreadsheet style interface allowed quick set-up of the data logger for any application, speedy download of data and direct export to Excel™. The optional SquirrelView Plus added additional benefits such as graphical data analyses and advanced reporting options.

The company's engine temperature monitoring process was immediately streamlined in several key ways after installation of the Grant Squirrel 2020-1F8 data loggers. Versatile and durable, the Squirrels monitored the engines' temperature and current data at a high level of precision, and were easy to modify for a wide range of different measurements. Additionally, the Squirrel loggers' ease of use and portability made for convenient, hassle-free operation at an affordable cost.

The plant's lead engineer commented, "The Squirrels allow us to easily collect data during operation of the generators to verify performance data and to see the effects of changes to the configuration of the cooling system. The ability to easily graph for multiple inputs is extremely useful." Since the loggers offered up to 2 million points of internal data storage, stored multiple runs of data, and could operate standalone without a PC, they were a convenient solution in field tests and to troubleshoot problems occurring outside of the factory.

For further information on the Grant Squirrel 2020-1F8 Portable Universal Input Data Logger, other dataloggers in the highly successful dataTaker line, 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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