SoLID Magnet Controls – Data Logger System

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2022-07

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During cooling down, energization, or stand-by operations of the magnet, the instrumentation and sensors readout used to provide the status of the magnet variables need to be monitor and recorded automatically over time to allow the users and experts to measure, analyze, document and validate the data.

I developed a data log system in *FactoryTalk View Site Edition*, version 10 software. The data log system runs as part of the Human Machine Interface (HMI) server configured in PHYCAD58 computer, system was set to log the data in the background and also be displayed in the trend screens for selected variables (e.i. cryogenic, current, force, and voltage variables).

I configured the log model to store the data in a Open Database Connectivity (ODBC) format, so the data can be accessed from *Microsoft Access* or any other compatible software. The data log model records the variables from the PLC tags periodically with intervals of 10 seconds. The data source file is stored in the local drive of the PHYCAD58 server computer and it is configured to be purge every 10 days; the size of the database file is limited by the computer storage hard drive, however network storage drives or storage clouds could be used if more space is needed.

To ensure a safe logging of the variables a back-up path directory was set in case the primary directory fails during logging of the data. So far, 82 variables or plc tags were added to the data log list and more variables can be added if required in the near feature without affecting any logging operations of the system.

- **Developed a data log system based on Rockwell software**
- **Testing of the data log model is in progress**
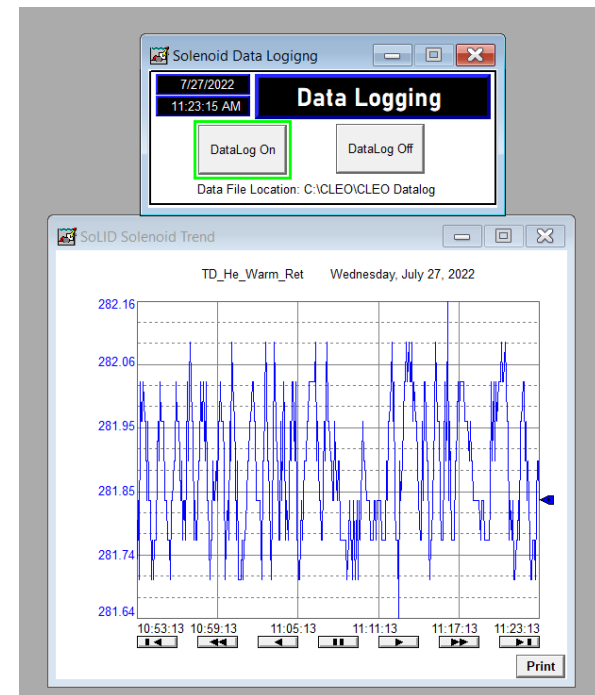- **Data log system will be used during first stage low current test of the magnet**

Fig.1. Example of trend for temperature sensor readout data logged

I found complications to setup the data source file and configuration files for the data log model since three different data file extensions were created in different locations when the data logger was initiated. Two files were created in the set primary directory and one in the set HMI project file directory. Issues of setting location of the different files were resolved by researching the specific file extension and file usability in the project.

I developed a HMI screen to control the data logging initiation during testing. See fig.1.

To facilitate the post acquisition data management and visualization, I generated tree tables, which are created automatically during recording of the data, tables sort the data in tags, float values and string values; all tables are accessible from the data source file.

I configured and tested successfully two clients to access the data logged simultaneously. I tested the trend screen showing the data being logged and the data source file accessibility.

I plan to run more tests to ensure that the data source file is store properly under different scenarios for the server computer such as power or network disconnection. I also plant to develop a code to start the data log automatically once power is back to the server computer.
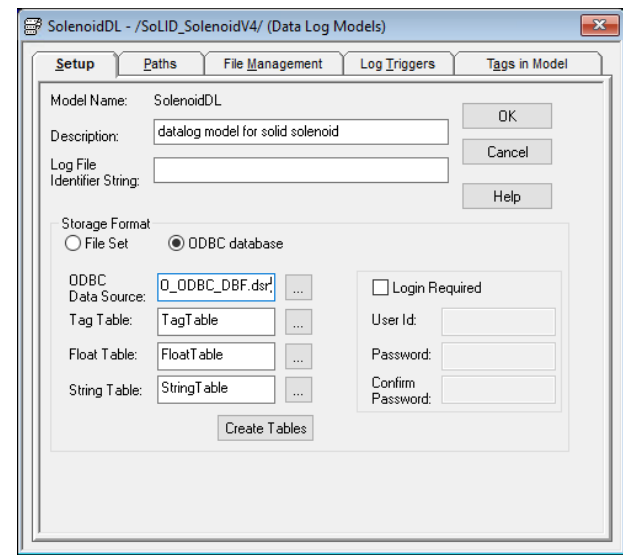

Fig.2. FactoryTalk View SE software configurations for SoLID magnet data log model