

## Monitoring Software for RICH Aerogel Dry Boxes

Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, George Jacobs, Mindy Leffel, Tyler Lemon, Marc McMullen, and Amrit Yegneswaran

*Physics Division, Thomas Jefferson National Accelerator Facility, Newport News, VA 23606*

February 13, 2020

This note presents the features of the LabVIEW code developed to monitor temperature and humidity of dry boxes in which the RICH aerogel tiles are stored. The developed code continuously monitors the temperature and humidity and sends email notification to appropriate personnel if either the measured temperature or humidity goes above preset limits.

The performance of the aerogel tiles used in the RICH detector deteriorates in humidity environments greater than 5% RH. To ensure that the tiles are always in a humidity environment less than 5% RH, they are stored in three dry boxes located in the Experimental Equipment Lab, Fig. 1. Manufactured by XDry, the boxes use a desiccant to maintain the selected humidity level, in the range of 1–50% RH.



FIG. 1. Three dry boxes located in Experimental Equipment Lab.

The developed LabVIEW user interface, Fig. 2, allows the user to enter an upper temperature limit and an upper humidity limit for each box. Also, each box has a button that can be turned on to send email notifications.

The developed software continuously monitors the temperature and humidity of each box and compares the upper limit values to the values measured (read) by the sensors located inside each box. If either the temperature or humidity reading goes above the preset limit, and the email button is on for that box, an email is automatically sent to the appropriate individuals, as set up in the code, alerting them to the problem.

Currently, the aerogel tiles are stored at ~80° F and 1.5% RH. The upper limits for the temperature and humidity are set at 85° F and 5% RH.

In conclusion, the developed software has been implemented to monitor the temperature and humidity of the three dry boxes. The software has been running for over a month, with no issues.

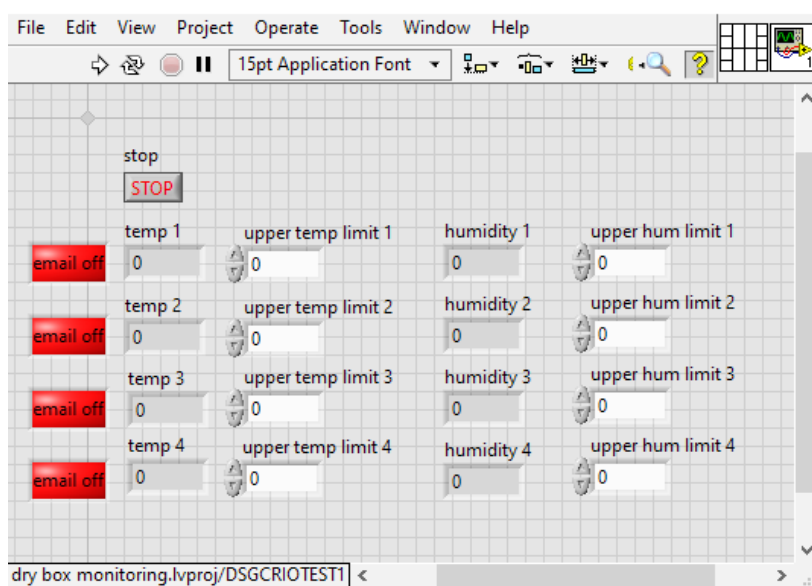


FIG. 2. Developed LabVIEW user interface. Temperature 4 and humidity 4 are for an additional box.