Hall B HTCC Gas System Controls and Monitoring Software

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This note presents the controls and monitoring software and hardware developed for the High Threshold Cherenkov Counter (HTCC) gas system.

The Hall B gas system comprises four custom designed chassis, which supply power to mass flow controllers (MFCs) and sensors, and interfaces signals between sensors and three National Instruments CompactRIOs (cRIO).

The HTCC is monitored by the cRIO located on Space Frame Level Three of Hall B. The cRIO in the gas shed provides the system interface GUI for changing gas flow, Fig. 1.

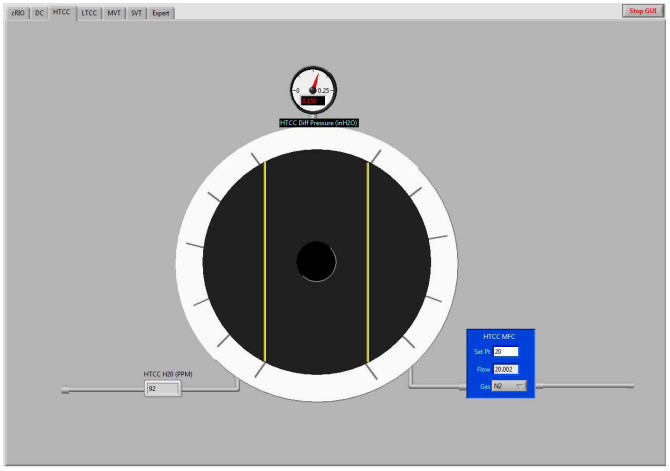

FIG. 1. LabVIEW GUI for changing HTCC gas flow.

The HTCC gas system is a purge system. The GE50a MFC can be set to use either nitrogen or air (maintenance) or carbon dioxide (operations). Additionally, the controls system provides EPICS with values for alarms for detector differential pressure, moisture in detector, and gas flow through detector.

The flow is typically set to 10 Lpm of carbon dioxide, and the moisture content in the detector for this flow is <100 ppm. A mineral oil bubbler is used for overpressure protection. Standard differential pressure between atmosphere and detector volume is ~0.1 InWC.

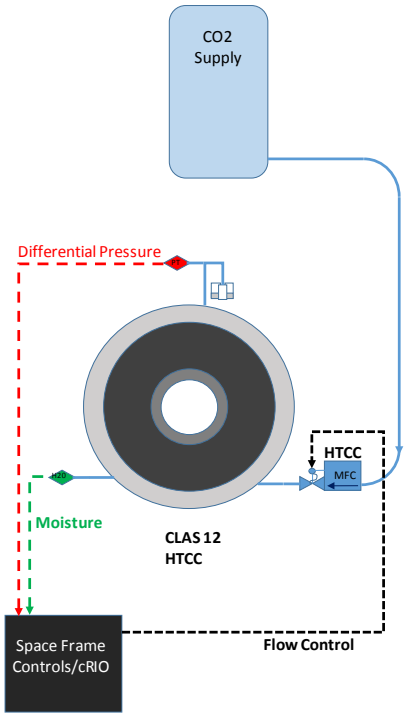

FIG. 2. HTCC gas system for operations.

The HTCC gas controls system has been operational since late 2017.