

## ICALEPCS 2019 Abstract

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Title New LHCb Scintillating Fibre Tracker Detector - Control System for the Vacuum and Dry Gas Monitoring Systems

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**Abstract** During the Long Shutdown 2 of the LHC at CERN, the LHCb detector will be upgraded to cope with higher instantaneous luminosities and to read out the data at 40 MHz using a trigger-less readout system. The new tracking system will be based on the scintillating fibres detector (SciFi). The SciFi tracker photodetectors will be cooled down to  $-40^{\circ}\text{C}$ . For performance and space reasons, the 48 cooling lines and the 24 manifolds are vacuum insulated. The vacuum system consists of, among others, 30 Pirani pressure gauges. The presence of ionising radiation, cumulating to 50 Gy over the lifetime of the experiment, requires to detach the readout electronics from gauges and to displace them to the bunker area. To avoid condensation and frost formation inside the detector electronic cold box, the atmosphere inside must be free from humidity down to a dew point of  $-50^{\circ}\text{C}$ . The low dew point will be achieved by flushing a dry gas through the box. Flowmeter devices will be installed on the outgoing line of each cold box to monitor the gas flow continuously. A total number of 576 flowmeters needs to be read out. The readout system will be based on a multiplexing technology widely used at CERN.

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Footnote

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