Contribution ID: **248** Type: **Contributed Oral Presentation**

5-year operation experience with the 1.8 K refrigeration units of the LHC cryogenic system

Wednesday 1 July 2015 14:45 (15 minutes)

Since 2009, the Large Hadron Collider (LHC) is in operation at CERN. The LHC superconducting magnets distributed over eight sectors of 3.3-km long are cooled at 1.9 K in pressurized superfluid helium. The nominal operating temperature of 1.9 K is produced by eight 1.8-K refrigeration units based on centrifugal cold compressors (3 or 4 stages depending to the vendor) combined with warm volumetric screw compressors with sub-atmospheric suction. After about 5 years of continuous operation, we will present the results concerning the availability for the final user of these refrigeration units and the impact of the design choice on the recovery time after a system trip. We will also present the individual results for each rotating machinery in terms of failure origin and of Mean Time between Failure (MTBF), as well as the consolidations and upgrades applied to these refrigeration units.

Author: FERLIN, Gerard (CERN)

Co-authors: Mr TAVIAN, Laurent (CERN); PEZZETTI, Marco (CERN); Mr CLAUDET, Serge (CERN)

Presenter: FERLIN, Gerard (CERN)

Session Classification: C3OrE - Operating Experience II

Track Classification: CEC-01 - Large-Scale Refrigeration and Liquefaction