

## **First assessment of reliability data for the LHC accelerator and detector cryogenic system components**

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The Large Hadron Collider (LHC) cryogenic system comprises eight independent refrigeration and distribution systems that supply the eight 3.3 km long accelerator sectors with cryogenic refrigeration power as well as four refrigeration systems for the needs of the detectors ATLAS and CMS. These cryogenic installations contain in total several ten thousand components.

In the two first years of physics operation, the cryogenic systems have proven that they can meet the availability requirement necessary for the LHC physics program. The high availability is owed not least to a reliability approach that has accompanied the project from the design phase through manufacturing and commissioning to operation and maintenance.

Today up to several million operation hours have been accumulated for some types of equipment, which allows to draw first conclusions for the component reliabilities and to optimize future maintenance efforts.

This paper shall present the first operation statistics, a compilation of reliability data collected over the first two operation years and their interpretation.

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