



Contribution ID: 65

Type: **Talk**

# Pressure relief protection in cryostats: CERN's experience on LHC and HIE Isolde

*Thursday, 22 September 2016 08:40 (30 minutes)*

Cryostats contain large cold surfaces, cryogenic fluids, and sometimes large stored energy (e.g. energized magnets), with the potential risk of sudden liberation of energy through thermodynamic transformations of the fluids, which can be uncontrolled and lead to a dangerous increase of pressure inside the cryostat envelopes. The consequence, in the case of a rupture of the envelopes, may be serious for personnel (injuries from deflagration, burns, and oxygen deficiency hazard) as well as for the equipment. Performing a thorough risk analysis is an essential step to identify and understand risk hazards that may cause a pressure increase and in order to assess consequences, define mitigation actions, and design adequate safety relief devices to limit pressure accordingly. Lessons learnt from real cases are essential for improving safety awareness for future projects: LHC and HIE Isolde are amongst these examples.

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**Session Classification:** Applicability in Projects

**Track Classification:** Cryogenic Safety