3M meeting
25/2/2020
O.Crespo
Summary

1. LHCb systems
2. Fluid analysis
SciFi

- Parameters
  - Temperature range: -50/+50°C
  - Pressure: PN16
  - Fluid Volume: 310 Liters
  - Tank pressure: 1.6 bar
  - Tank inertage: N2
- Filtration:
  - Activated carbon
  - Molecular sieve
  - Strainer 140µm
- Pumps: Magnetic coupling
RICH 1&2

• Parameters
  • Temperature range: +11°C
  • Pressure: PN16
  • Fluid Volume: 300 Liters
  • Tank pressure: -0.7 bar
• Filtration:
  • Activated carbon
  • Molecular sieve
  • Strainer 140µm
• Pumps: Magnetic coupling
RICH P&ID

Filters

HEX

Pumps
• Discussions about the possibility to swap one or two plants from C6F14 to Novec
  • Volume: 3.5 Tons
  • Temp: 16°C
  • Tank: under vacuum

• Questions are:
  • What is the risk to mix some residual C6F14 with Novec considering a C6F14 concentration @ 10%
  • Is there any risk with the polyethylene on a really long period
    • Do you have in your customers some users?
  • What is the sustainability of the fluid over the time
Analysis

• CERN is interested to:
  • Perform Analysis of water (ppm level) and acid content during operation
  • which analytical technic 3M use to perform these tests?
  • Is it possible to perform these analyses in 3M lab?
  • If yes what is the price?

• Material compatibility: [Novec 649 fluid is compatible with a wide range of materials of construction and requires no special piping or handling systems, and is very stable in storage] 3M doc
  • Are you able to certify the compatibility of NOVEC 649 with metals used in the CERN cooling plant (taking into account the CERN conditions: radiation, UV, O2, temperature, etc.)? And/or perform this kind of studies.

• Why no certificate is delivered with the NOVEC?
Analysis

- Do you know exactly the type of degradation products formed after reaction with water, and do you have a technique to monitor water (or detrimental degradation products) online?
- Are you agree to share with CERN chemistry lab, your analysis procedure put in place for the NOVEC 649?
- Should we be concerned about the presence of oxygen in the fluid which will be subjected to radiation?