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## Description of the flexible large scale Cryogenic test facility at CEA Grenoble and various test experiments connected over the past years

*Wednesday 24 September 2008 09:30 (25 minutes)*

This test facility at CEA Grenoble mainly consists of an helium refrigerator whose flexible operation permits various types of experiments or test benches to be coupled to it. This presentation first introduces the qualification of the performances of our helium refrigerator, able to cover a wide range of temperature, from 1.5K to 4.5K. Then we describe through several experiments successively connected to our test facility the possible configurations of this cryogenic test facility.

Indeed we can cool down the experiment by a direct flow pumped by the refrigerator cold compressors producing superfluid helium as in the "cryoloop" experiment where we carried out thermohydraulics studies with two phases flow superfluid helium at 1.8K for LHC. Other possible connection is to use a heat exchanger immersed in the refrigerator superfluid helium bath to cool down a circulating loop.

This separate loop allows to adjust pressure mass flow and temperature in an independent way This was done for Turbulence studies in HeII and also in He I performed thanks to high Reynolds numbers achieved in this circulating loop.

The next step will allow to study the efficient pulsed loads smoothing, specific to tokamak (JT60SA and ITER) operation by testing a supercritical helium circulation loop in various operating conditions.

### **Proposed for workshop session (see call for abstracts): 1- Operation 2- Maintenance 3 - Safety 4 - Control**

operation

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