

PERFORMANCE EVALUATION OF 1.3 KW AT 4.5 K HELIUM REFRIGERATOR/ LIQUEFIER (HRL) AT IPR

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- ❑ At IPR, 1350 W at 4.5 K helium cryo system is dedicated to facilitate the cooling requirements of SST-1 machine. Since 2004, helium refrigerator / liquefier (HRL) system is operational.
- ❑ The helium refrigeration system used for fusion devices requires performance or cold capacity test for its long term trouble-free operation, reliability and availability.
- ❑ After major maintenance, it is desirable to have performance test on the HRL
- ❑ HRL performance test done in three different modes of operation Viz. Liquefaction mode (L-Mode), Refrigeration mode (R- Mode) and the Mixed mode (L + R - Mode)
- ❑ A heater can be used as dummy load in the Liquid Helium Dewar to simulate the HRL capacity for three different modes.
- ❑ It has been shown that the “As on Today” measured HRL capacity is intact and more or less similar to that of “original commissioning” of helium plant in 2004 and subsequently cold capacity test carried out after preventive maintenance activities of 2009-10.
- ❑ The technical experience on cryo cold capacity test would be helpful for future fusion cryo systems.