

Mechanical Engineering Aspects for Overhauling of Helium Compressor and heavy duty Electrical Motors of 1.3 kW Helium Refrigerator/Liquefier system

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Institute for Plasma Research has 1.3 kW helium refrigerator/liquefier (HRL) cryogenics system, which is in operational state since 2003. The cryogenic HRL plant used to cool down the magnets of Steady State Superconducting Tokamak (SST-1). Three identical Mycom make helium screw compressors with Fimet make 315 kW Electrical Motor, Oil removal system operate to supply high-pressure helium gas to HRL cold-box and sub-systems. Heavy duty electrical motors of rated for 315 kW in an asynchronous induction drive is used to run the helium screw compressors. The compressors along with the electrical motors run on round the clock basis for a month long continuous operation. Hence, its reliability and availability is mandatory. Therefore, it is very essential to maintain and overhaul the Compressor and Motors as per their schedule of operation hours to facilitate the reliable operation of the Tokamak. In this paper, we will describes Mechanical engineering aspects of overhauling experiences of compressors and motors that include their alignment with compressor, online temperature monitoring and motor cooling arrangements and vibrations measurement of compressor, motor and skid.

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