

# **MECHANICAL ENGINEERING ASPECTS FOR OVERHAULING OF HELIUM COMPRESSOR OF 1.3 KW HELIUM REFRIGERATOR/LIQUEFIER SYSTEM**

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- ❑ The helium screw compressors station is heart of the complete cryo plant system. 1350 W at 4.5 K helium cryo plant system is operation at IPR since 2003-2004.
- ❑ In order to have reliability and availability of helium cryogenic system at IPR, the spares inventory plays a crucial role. There are two types of spares i.e. Mandatory spares and Global spares. The mandatory spares are consumed during the maintenance as well as overhauling activities whereas the global spares are required to co-op with any kind of emergency failure.
- ❑ As per Original Equipment Manufacturer (OEM) guidelines, every 24,000 hours of operation hours demands an overhauling activities on helium screw compressor.
- ❑ While ensuring reliability and availability of helium cryo plant system, regular monitoring and records of Machine Control Monitoring (MCM) shall be in a place, which will ensure continuous measurement of skid vibration, undue stress, undue noise and alignment related issues.
- ❑ Quality of lubrication oil (Breox-B35, Cognis Make), amount of oil in the compressors skid and primary oil separator (POS) have to be ensured and shall be replaced as per its operation hours to ensure the trouble-free operation of compressors station.
- ❑ Proper cycles of evacuation and purging with dry and hot nitrogen gas and then final purging with pure helium gas procedures are mandatory to have impurities / pollutant control within the plant system.
- ❑ During the activities of overhauling of helium screw compressors station, IPR cryo team has got lot more learning and technical experience in collaboration with M/s Axima Engie, France service engineer.