

# **Study of Electrical power distribution and layout for LI-VISTA setup at IPR**

## **Abstract**

LIGO India – Vacuum Integrated System and Test Assembly (LI-VISTA) facility has been setup in LIGO Lab, IPR. This setup comprises of two main systems integrated together – 80K Cryopump and Integrated Vacuum Vessel (IVV), which are fabricated as part of LIGO India project prototype development activities. 80K Cryopump is a part installed to test its operational performance in demonstrating vacuum and efficiency in capturing water vapor. IVV is assembly of two 1.24 ID x 10m long vacuum vessel connected with expansion joint (Bellows).

To meet objectives, LI-VISTA operates and maintains vacuums in the range of  $10^{-9}$  mbar. In order to achieve and maintain the UHV, entire setup is evacuated by using vacuum pumps as per their operational regime. Dedicated baking system also has been installed to remove water vapor at  $150^{\circ}\text{C}$  for long duration.

For evacuation, heating and control activities dedicated electrical power distribution system has been designed and distributed to cater the requirements during normal and off-normal scenarios.

In this project work student has to study, understand and detail out the electrical power distribution & its layout for the vacuum equipment and associated systems for LI-VISTA setup at IPR. The work also requires to consolidate the power ratings of different equipment's like vacuum pumps, heating system, compressor and investigate overall operational scenarios along with UPS system for uninterrupted operation.

## **Academic Project Requirements:**

**1) Required No. of student(s) for academic project: 2**

**2) Name of course with branch/discipline: B.E./B.Tech. Electrical**

**3) Academic Project duration:**

**(a) Total academic project duration: 6 Weeks**

**(b) Student's presence at IPR for academic project work: 5 Full working Days per week**

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