Design of Low-Pressure Phase Separator for the Supply of Liquid Nitrogen

Abstract

Exhaust and Fuelling Technology Development division is working in the field of cryogenics and vacuum. EFTD, Division have developed 80 K sorption cryopumps to pump water vapour, N2 and O2 gas and oil components for the TOKAMAK applications. Sorption pumps are vacuum pumps, which can produce ultra-high vacuum with large pumping speed and high adsorption capacity because of the high porosity of the coated activated charcoal. To avoid two-phase flow from high-pressure LN2 Dewar, a 80 K phase separator is required to develop for filling liquid nitrogen at low pressure. This phase separator will be used in the vicinity of the cryopumps and cryogenic systems to avoid the block gases in the LN2 supply line of the pump. Therefore, low-pressure phase separator is essentially required to develop. This project will be involved in design of phase separator, and analysis of controlled LN2 flow using the solenoid valve at different low pressures using pressure-relief valve.

Academic Project Requirements:

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

2) Name of course with branch/discipline: Mechanical Engineering

3) Academic Project duration:

(a) Total academic project duration: 40 Weeks
(b) Student's presence at IPR for academic project work: 5 Full working Days per week

Email to: vishal.gupta@ipr.res.in[Guide's e-mail address] and
project_me@ipr.res.in [Academic Project Coordinator's e-mail address]

Phone Number: 079 -079-2396-4418 [Guide's phone number]