

# PUMP CHARACTERIZATION OF 80 K LIQUID NITROGEN BOOSTER SYSTEM FOR SST-1

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- Dedicated liquid nitrogen booster system has been installed and commissioned to cater 7.0 bar (a) / 80 K single phase flow for uniform temperature distribution among all the 80 K shields of the SST-1 machine.
- The boosting system has been driven by three centrifugal cold pumps (booster pumps) at liquid nitrogen services.
- These pumps have been tested at steady state mode around 5.0 bar (a) / 80 K at the suction and 7.0 bar (a) / 80 K at discharge. The Pumps can handle the pressure head in the range of 1.3 - 3.5 bar (a) at the rated speed of 5500-7000 rpm respectively.
- Each of three pumps was characterized at their rated speed by evaluating various differential pressure and mass flow rate. The characterization of these pumps at the rated parameters, efficiencies were found to be in the range of 32 - 45% (as desired).
- The characteristic graphs plotted for various parameters helped in the further understanding of the booster system and booster pumps performance.