

Helium Liquefaction System Development at Cryo-Technology Division, BARC



Tubeexpander based (modified Claude cycle) helium liquefaction system developed and demonstrated for the first time in India.

Liquefaction of helium gas obtained on 21st of September, 2015 midnight after about 15 hrs of operation. Collection of liquid helium in Dewar started on 26th September, 2015 at around 14:00 hrs.

Measured liquefaction rate: 20 l/hr. The total process compressor flow is about 38 g/s.

About 600 litres of liquid helium collected and level maintained through heater.

Major highlights of the process/technology:

3 turboexpanders (designed and developed in-house).

Multi stream brazed plate fin heat exchanger designed at BARC and developed locally.

Liquid helium transfer line (cold box to LHe receiver Dewar) developed in-house.

No liquid nitrogen pre-cooling

