TUPAB375

SYNCHROTRON THAILAND NATIONAL LAB

Commissioning and Operation of Superconducting Multipole Wiggler at Siam Photon Source

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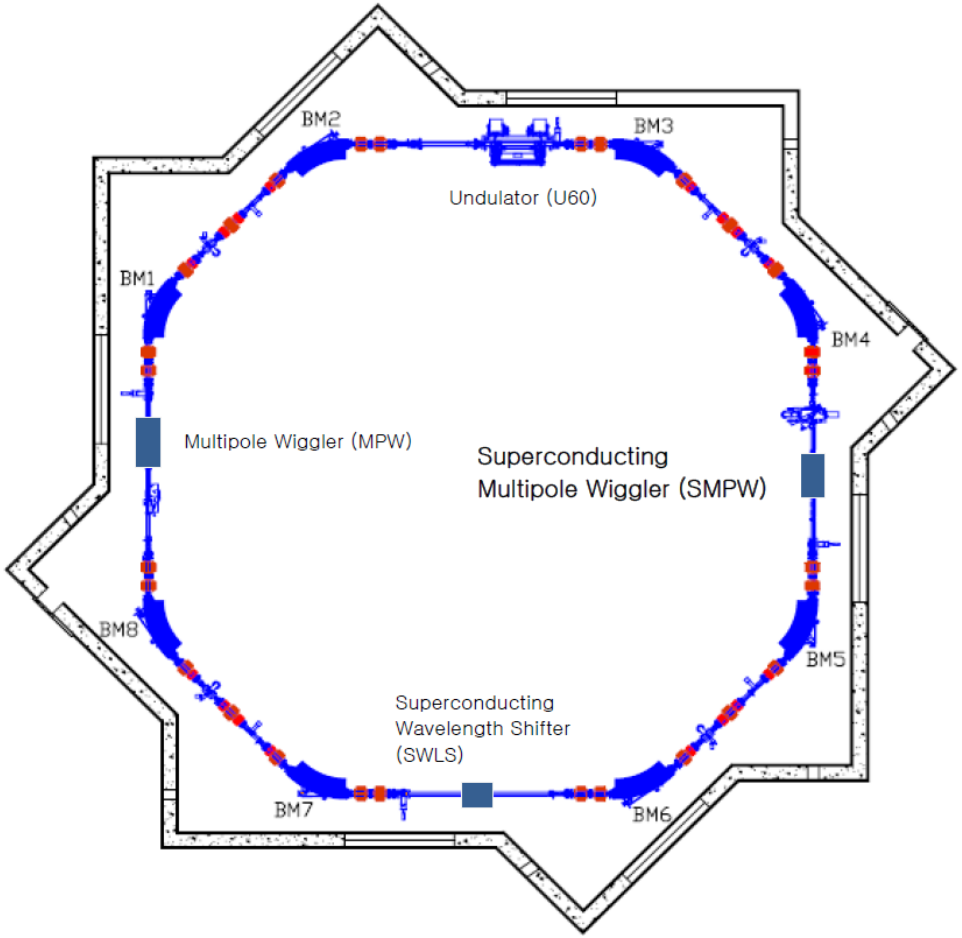
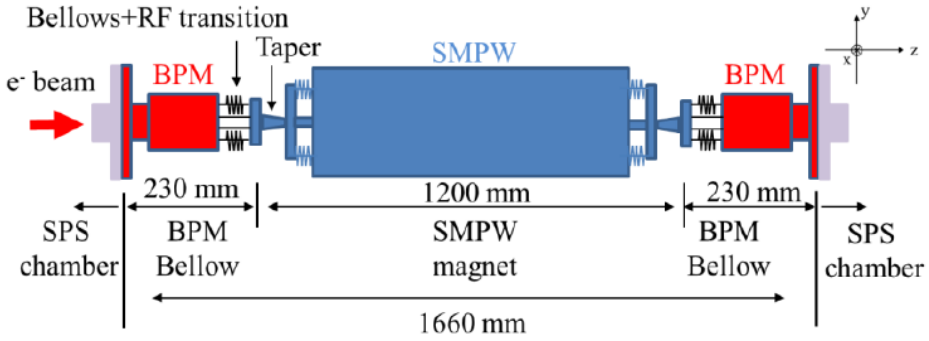
Siam Photon

กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัยและนวัตกรรม

Siam Photon Source

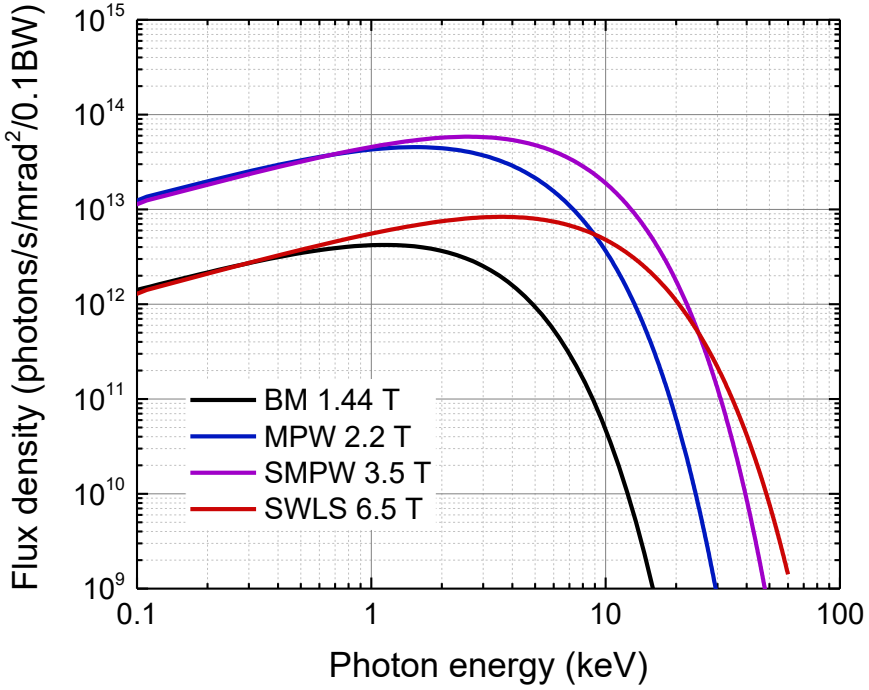




- Available space for insertion device between BM4 and BM5
- Helium recovery and liquefaction system @ 20 L/hr – capable for two superconducting insertion devices
- Superconducting Multipole Wiggler (SMPW) designed and manufactured by NSRRC, Taiwan
- X-ray Absorption Spectroscopy (XAS)

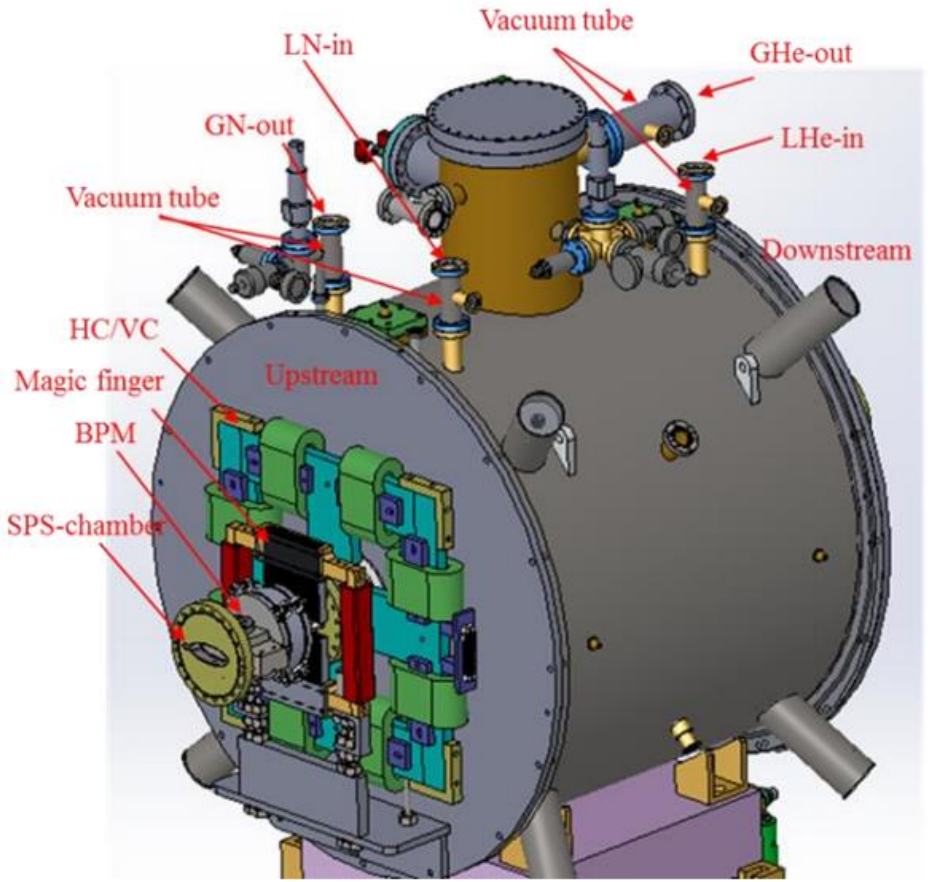
Superconducting Multipole Wiggler

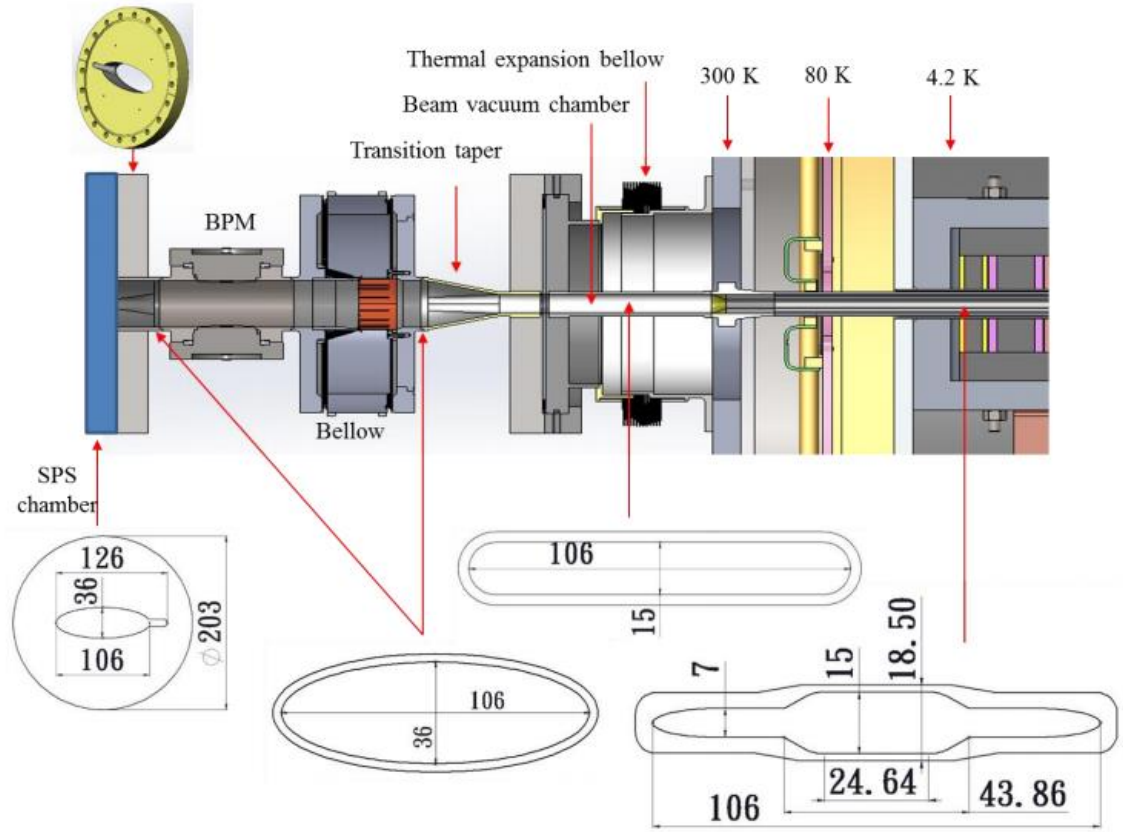
Parameter	Design value
Peak field strength (T)	3.5
Period length (mm)	77
Number of periods	6
Pole gap (mm)	22.5
Clearance aperture (mm×mm)	15×106
Good field region (mm)	±25
Static heat load (W)	1.54
Beam duct material	Aluminium



- The calculated flux density is 2×10^{13} photons/s/mrad2/0.1%BW @ 10 keV.
- A complete set of magnetic field measurement was obtained during FAT.

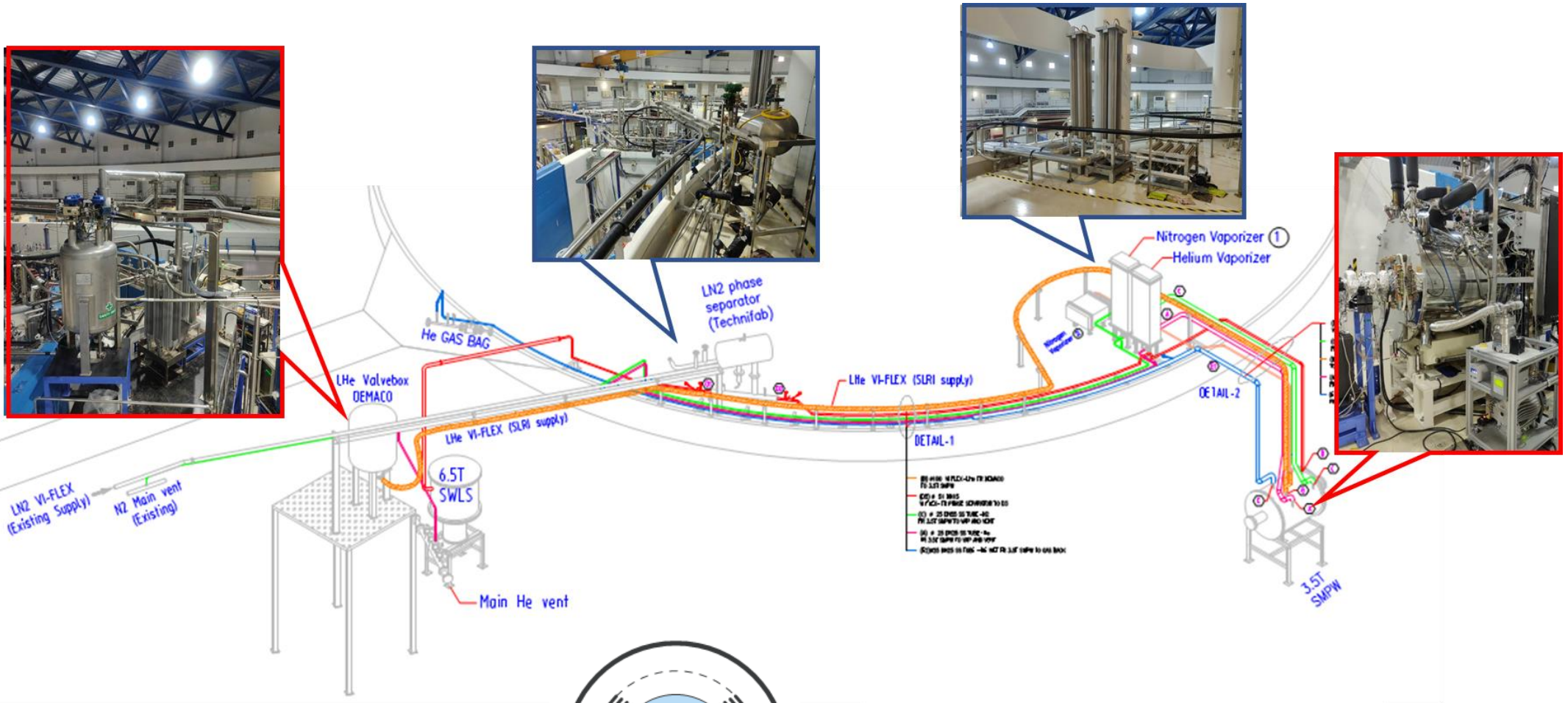
Superconducting Multipole Wiggler

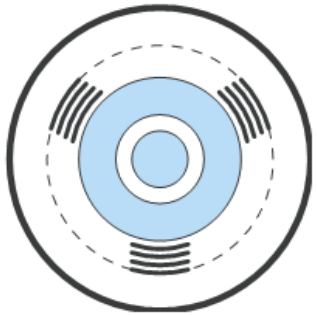




Courtesy of J. C. Jan et al

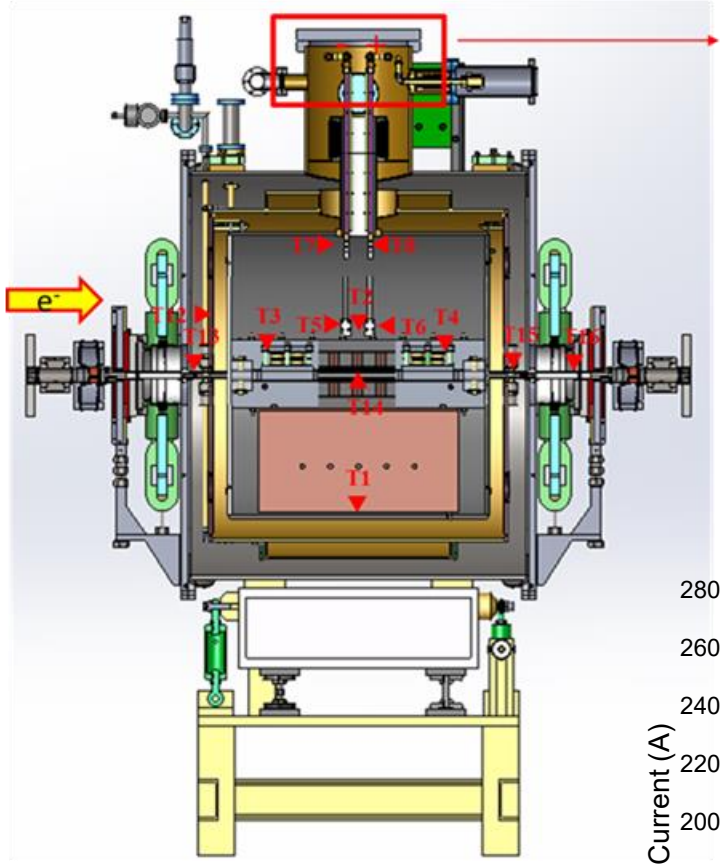
Cryogenics System

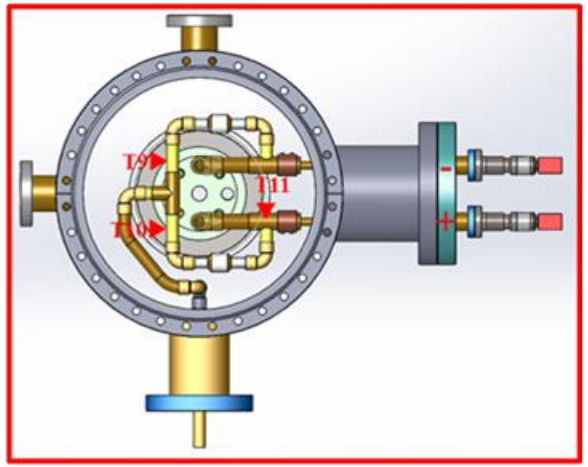


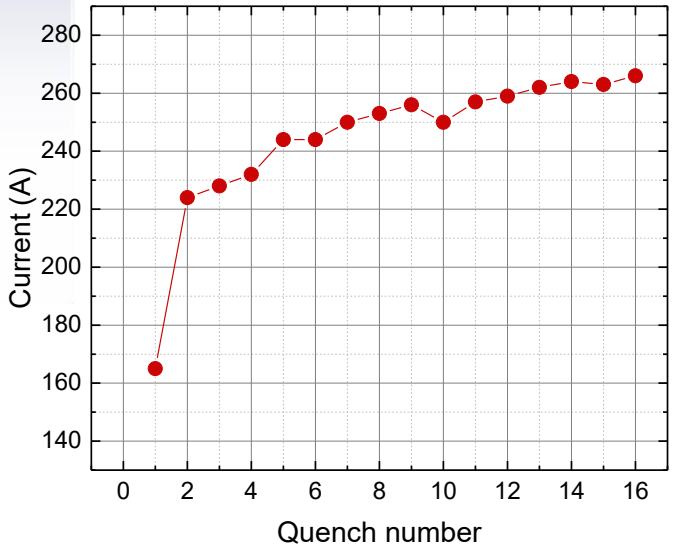


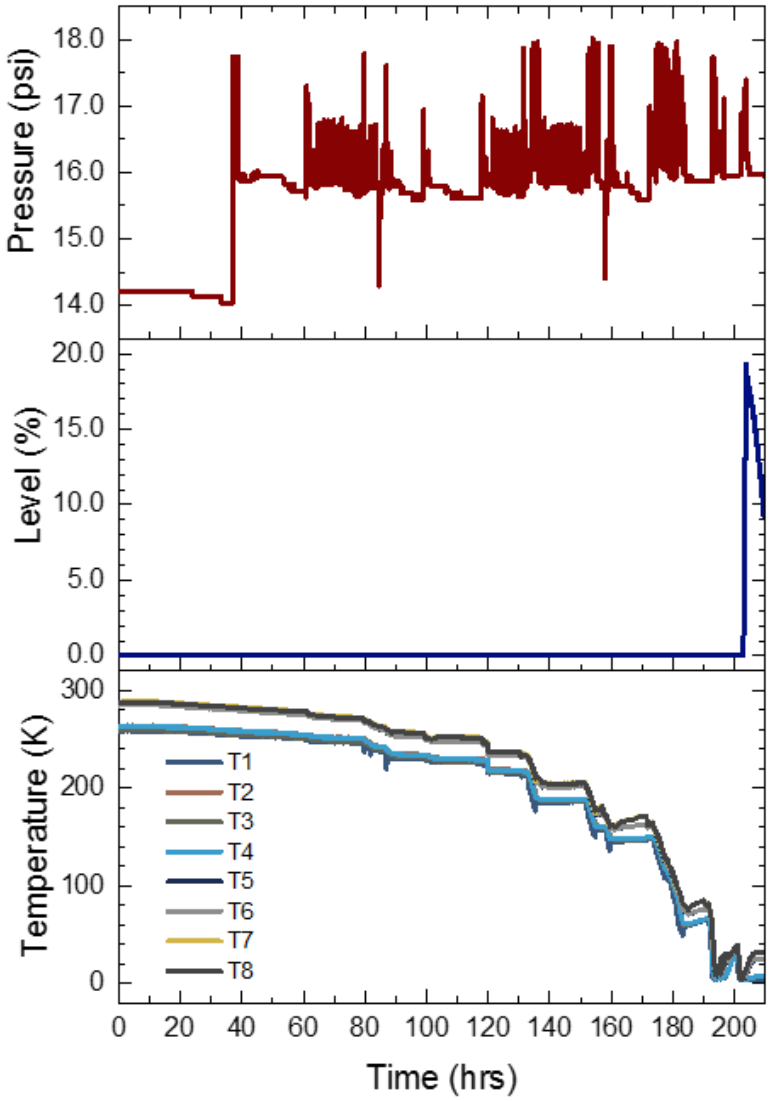
CRYOFLEX® transfer line with 4-tube design (CERN type) from valve box to SMPW (30m)

SMPW Commissioning

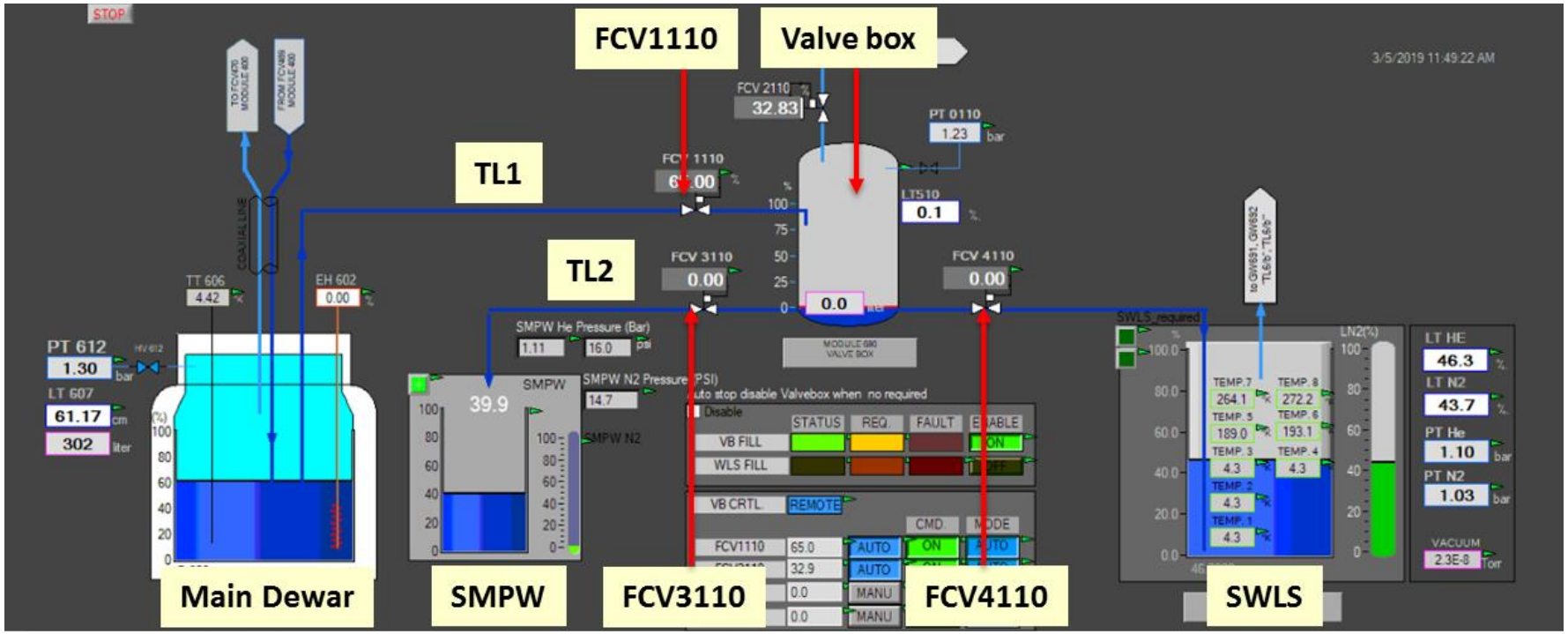








SMPW Operation and Management of LHe



- Optimized filling process of LHe.
- Maximum current lead temperature at the bottom end is controlled below 25 K.
- Maximum voltage rise across the current lead is below 10 µV at the nominal current of 253 A.
- Filling starts at 80% LHe level and stops at 95% (30.3 L of LHe, filling every 10 hrs)
- Pressure inside LHe vessel is controlled between 1.05 to 1.18 bara.