

2. Environmental Pressure Chamber

- High pressure capability (upto 50 atm)
- Closed loop cooling water (as low as 5°C) feedthrough connection
- Feedthroughs: thermocouple, electrical, RTDs, Baratron capacitive pressure transducer
- Data acquisition: National Instruments PXIe systems
- Imaging: (1) High speed camera – Phantom VEO 640 L (2) DSLR camera with InfiniProbe TS-160 lens.
- Operation: Initially, the vacuum pump is used to remove all NCGs from the environmental chamber. The secondary degas chamber contains the pure fluid to be tested. After removal of the NCGs (i.e., the chamber pressure ≈ 5 Pa), the evacuated environmental chamber is filled with the working fluid vapors and saturation conditions maintained inside the chamber. The flow of chilled water through the test section tube promotes external condensation on the surface of the outer surface of sample.
- Purpose: Condensation of steam and low surface tension fluids on nano-structured tube surfaces, measurement of heat transfer coefficient. Visual comparison of droplet removal from different surfaces. Long term continuous condensation experiments testing durability of various coatings and surfaces.

