

Xe-Lab

Design and Construction, Moving Towards Commissioning

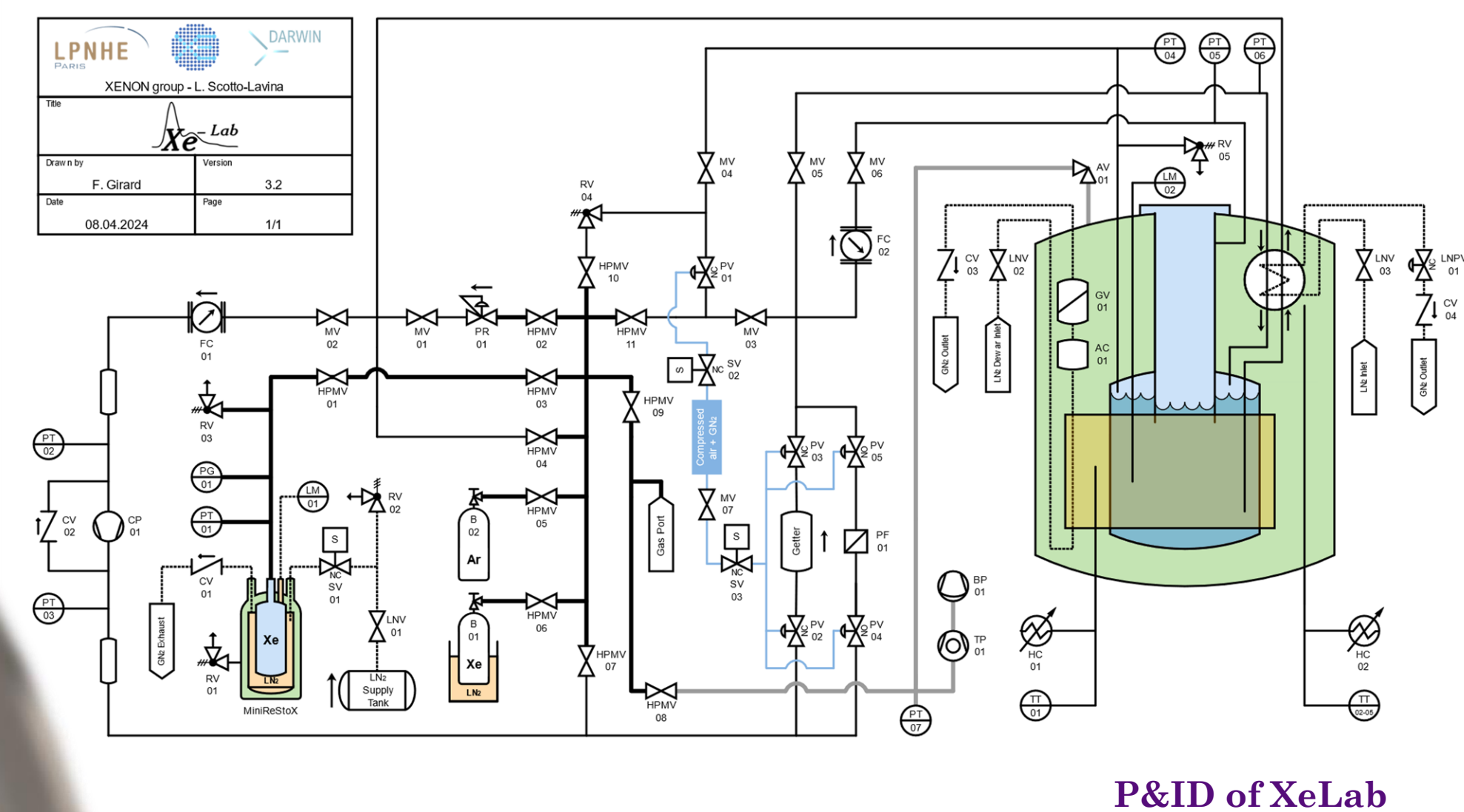
Frédéric Girard, on behalf of the XeLab Team, LPNHE-Paris

XeLab

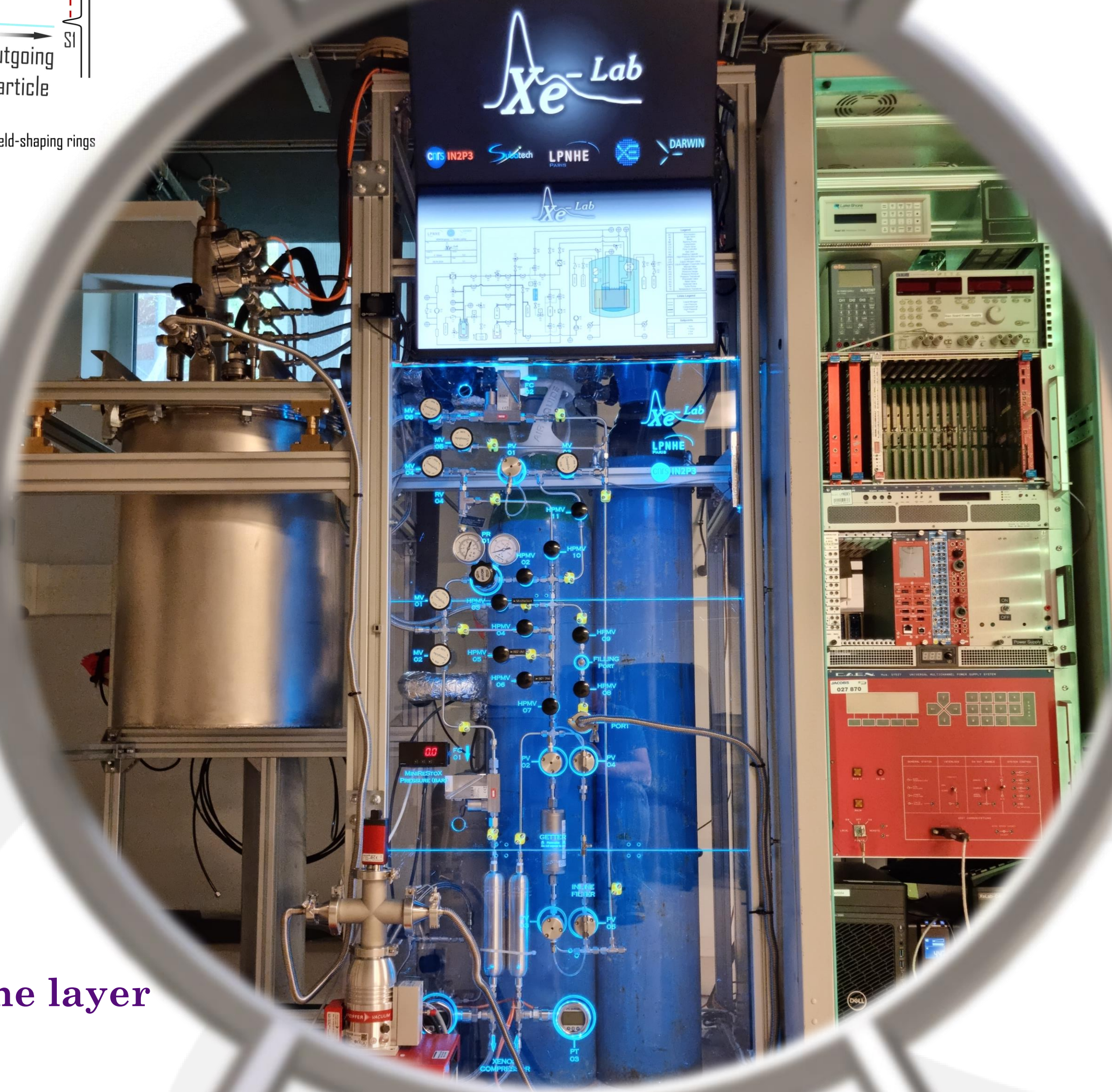
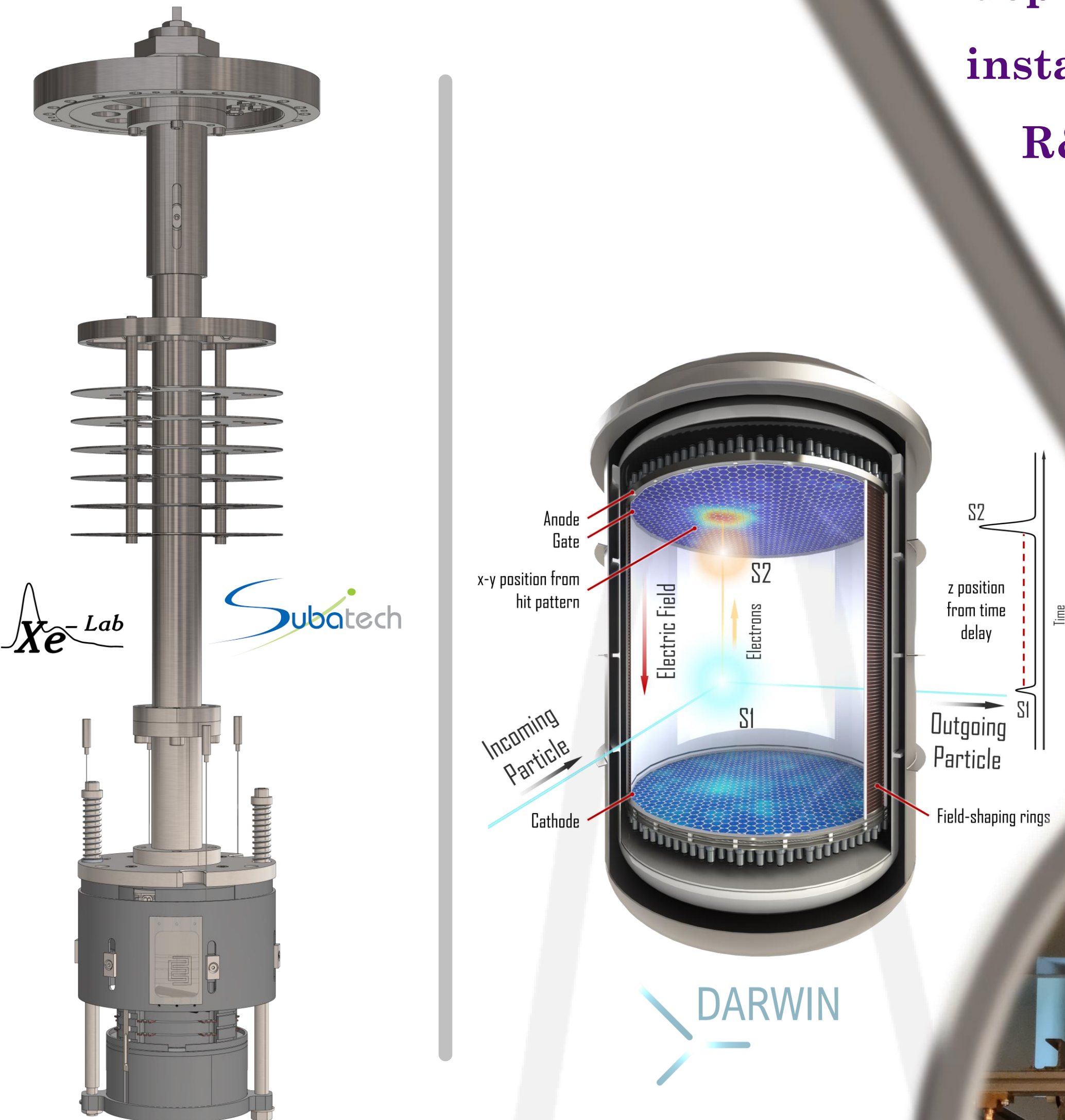
Built in the context of the DARWIN Observatory, XeLab is an R&D platform used to test innovative designs of electrodes for use in large detectors. It is the first dual-phase xenon TPC deployed and operated in France. Additionally, the installation will be used to perform complementary R&D on photosensors, on other liquefied gases such as argon, and much more! The construction of the facility was completed at the beginning of 2024. XeLab now enters its commissioning phase.

Xenon Gas Handling and Purification

- Gas handling system designed and assembled at LPNHE
- Xenon gas purifier: Entegris Gatekeeper GPU Getter
- Xenon compressor: KNF Neuberger model N026ANE

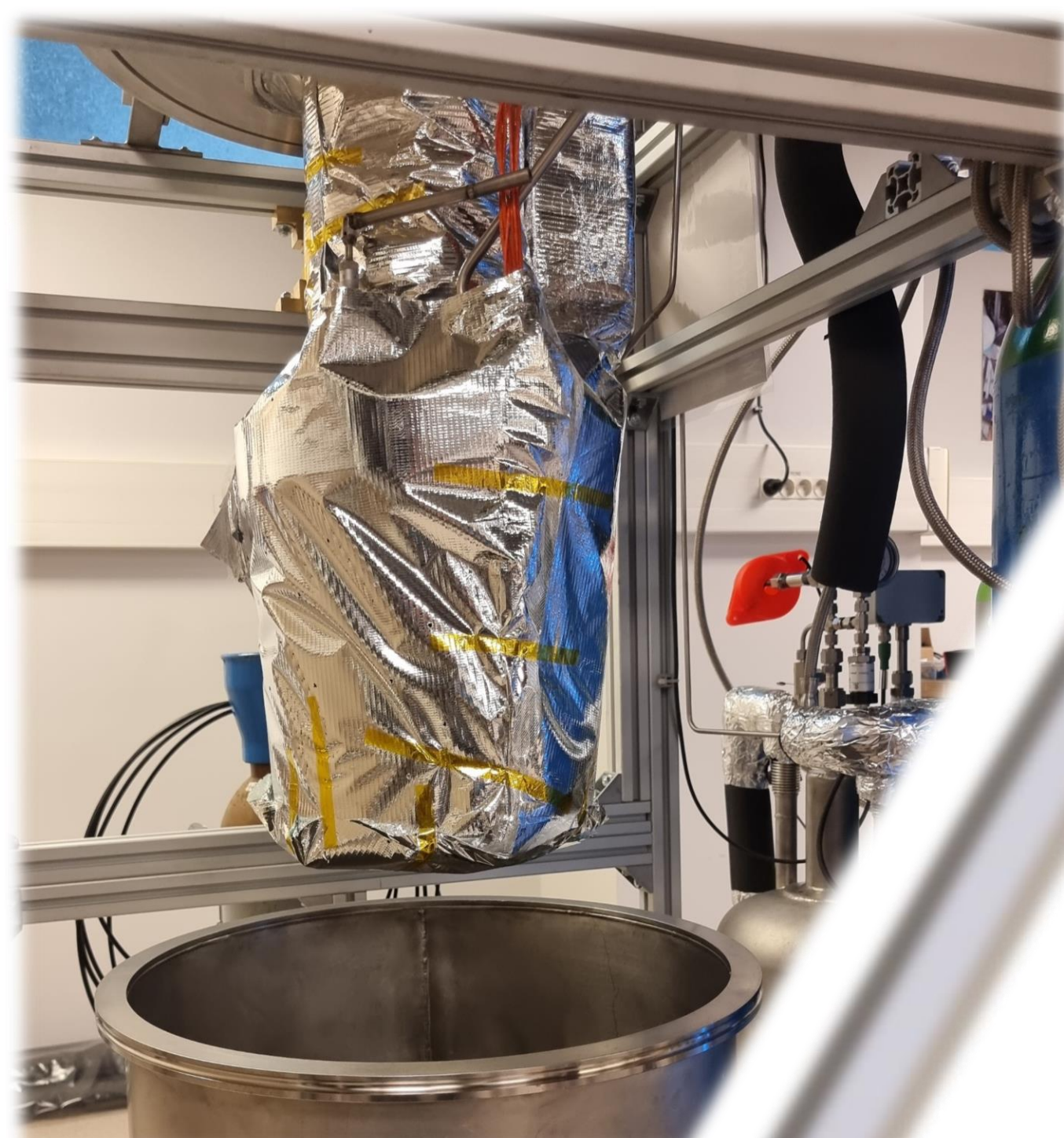
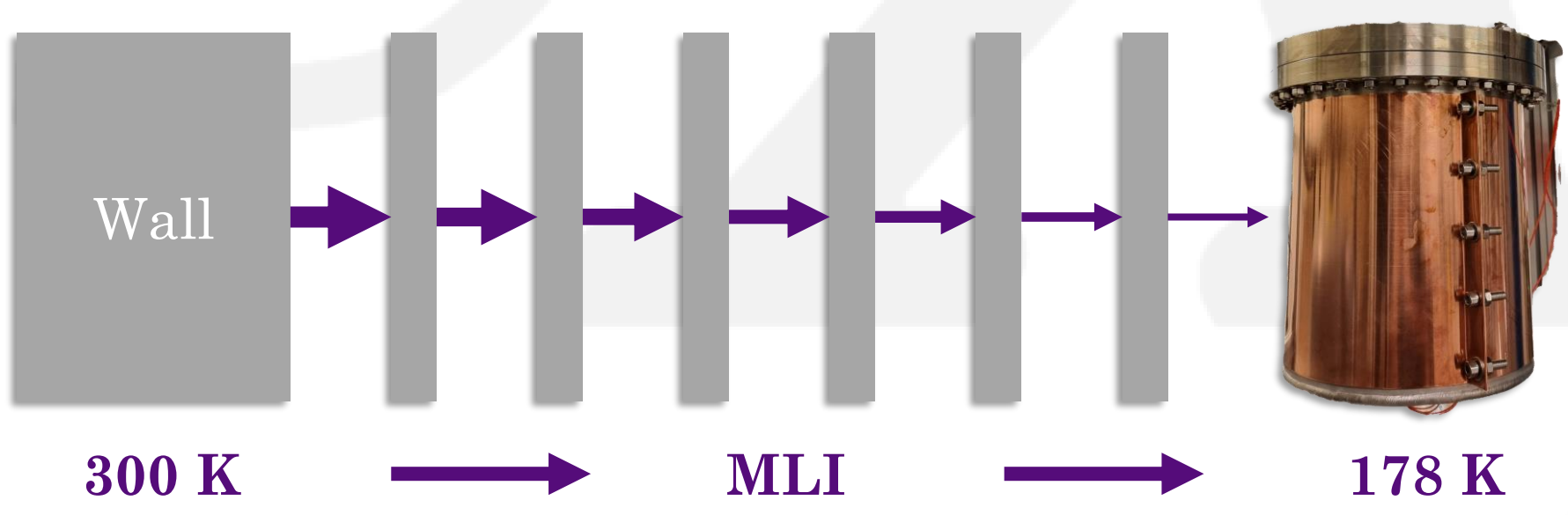


Time Projection Chamber



Multi-Layer Insulation

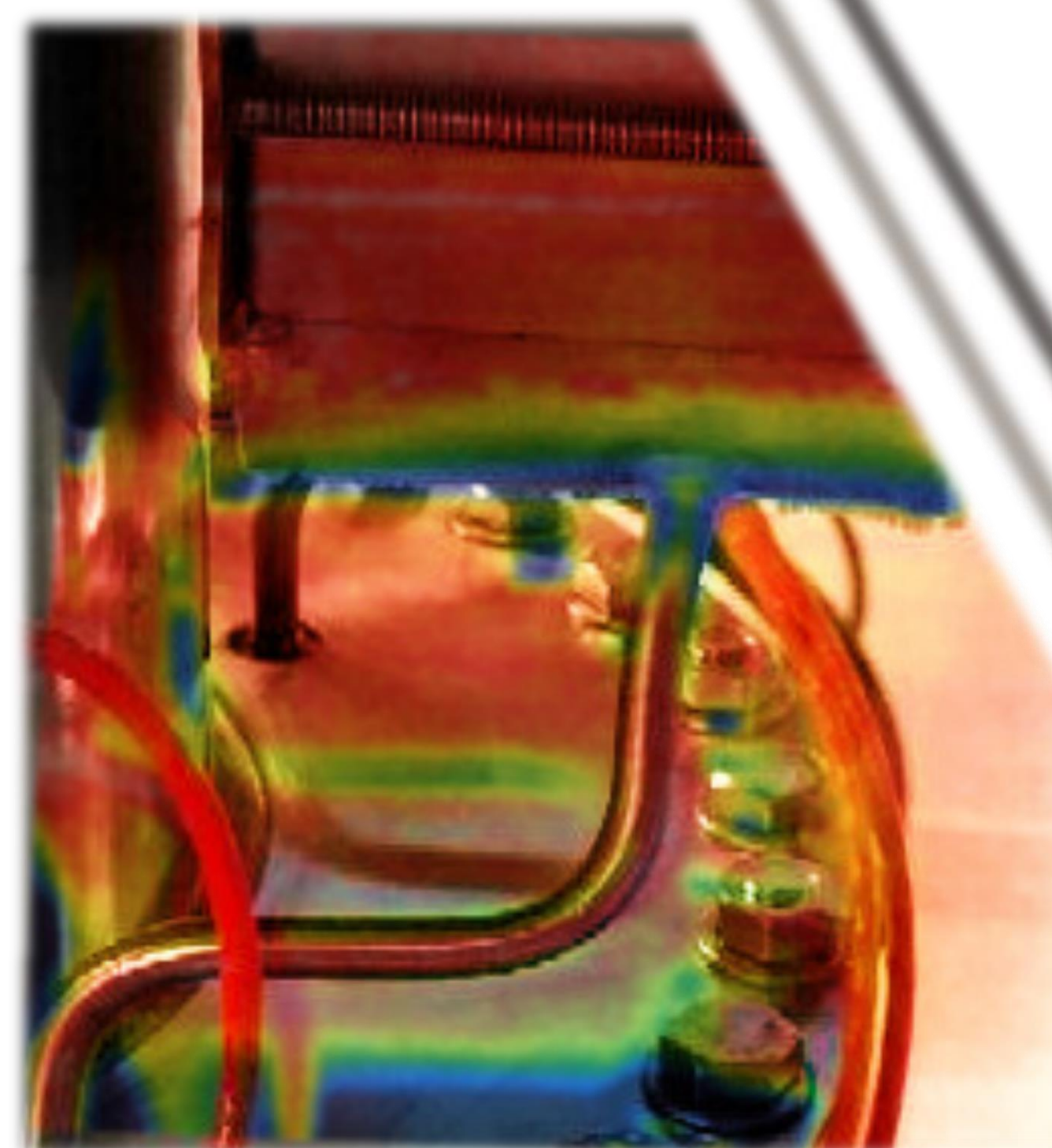
- 2x 10 layers of double-sided aluminized polyethylene sheets (Mylar)
- Each sheet separated by woven polyethylene layer
- Individual sheet reflectivity: ~ 95%
- Heat transmission via IR radiation: <math>< 0.6 \text{ W/m}^2</math>



First Cryogenic Tests



Inner vessel cooling test with LN₂



Heat exchanger with infrared overlay

MiniReStoX

