

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

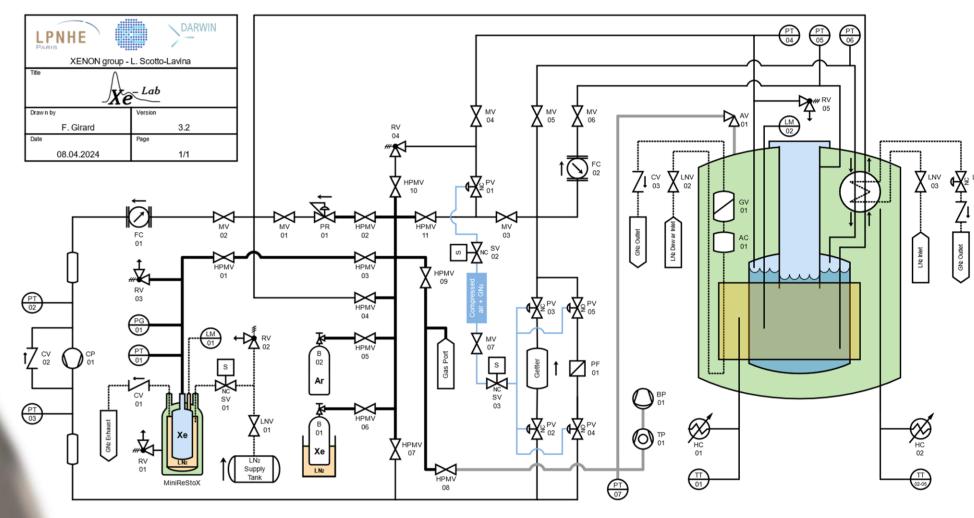
large detectors. It is the first dual-phase xenon TPC deployed and operated in France. Additionally, the installation will be used to perform complementary R&D on photosensors, on other liquefied gases

> 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



P&ID of XeLab

Multi-Layer Insulation

Time

Xe-Lab

Projection Chamber

- 2×10 layers of double-sided aluminized polyethylene sheets (Mylar)
- Each sheet separated by woven polyethylene layer

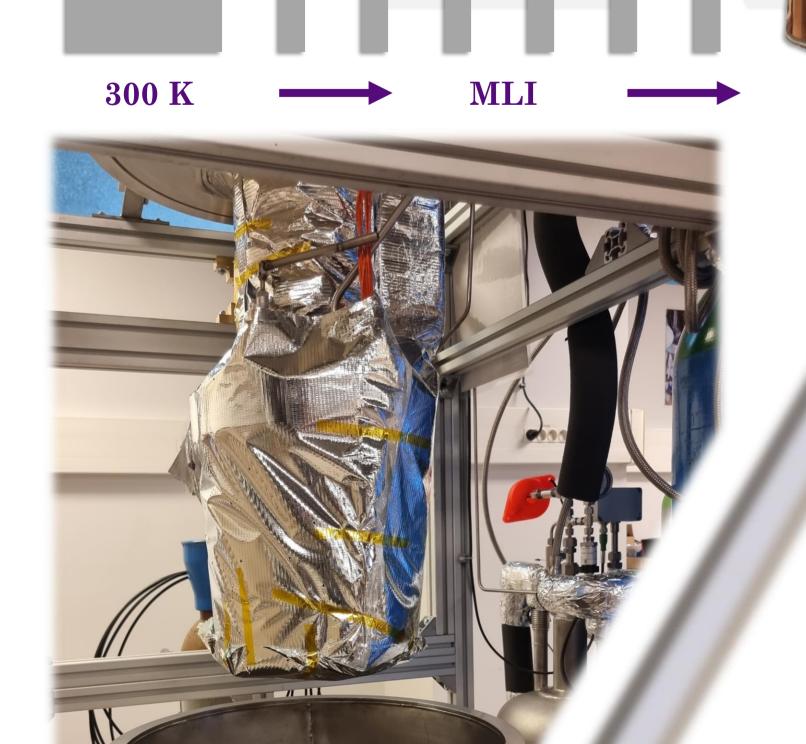
x-y position from

Outgoing

DARWIN

Field-shaping rings

- Individual sheet reflectivity: ~ 95%
- Heat transmission via IR radiation: < 0.6 W/m²

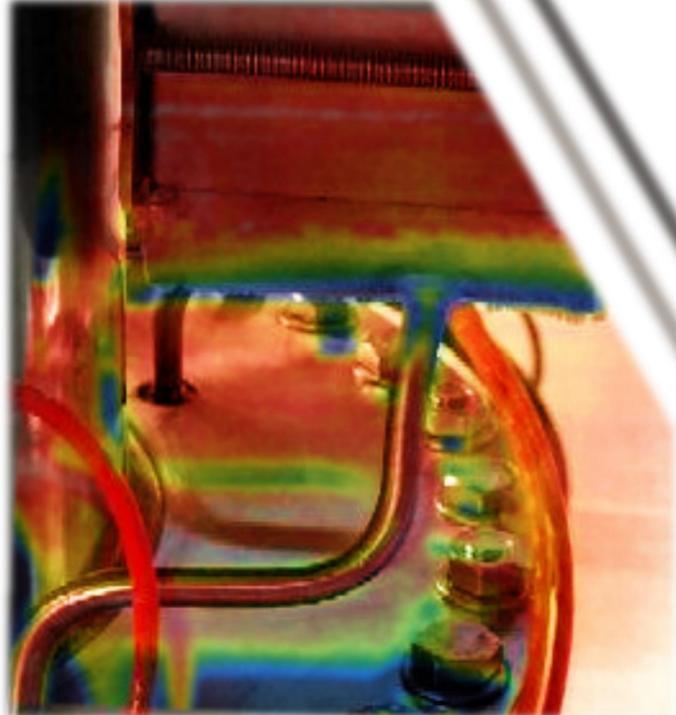


2022

First Cryogenic Tests

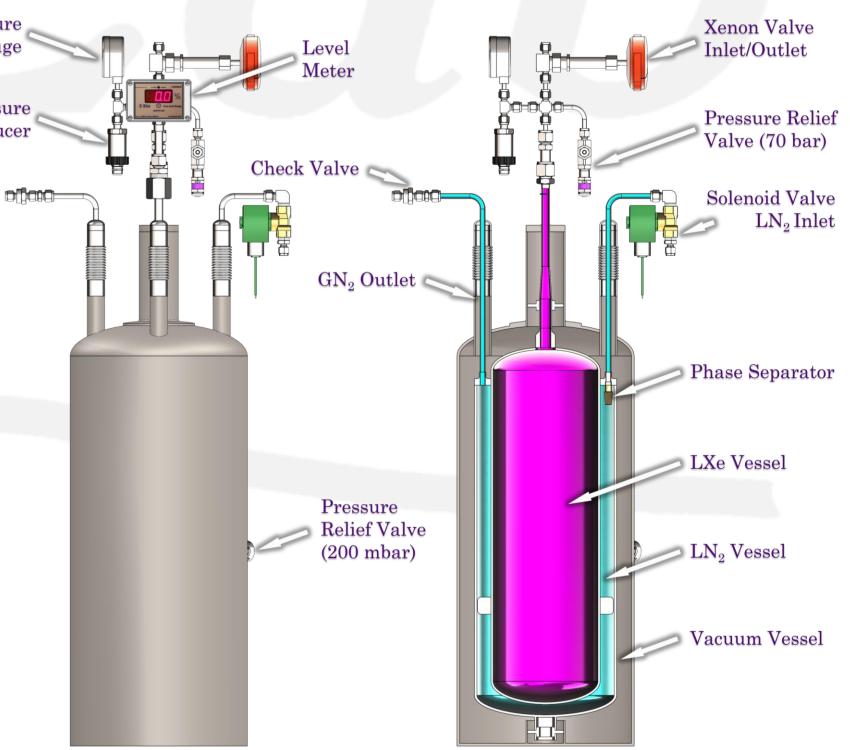


Inner vessel cooling test with LN₂



Heat exchanger with infrared overlay

MiniReStoX





Tender accepted, Conceptual design

2021

Cryostat & cryogenics fabrication, Development of simulations framework

2023

Installation of cryogenics, Assembly of purification system

Commissioning, Electrode design

Testing of electrodes



DARWIN



2024

2025

2026