

Infrastructure and Equipment for uRWELL Test Article

Xinzhan Bai
Jefferson Lab

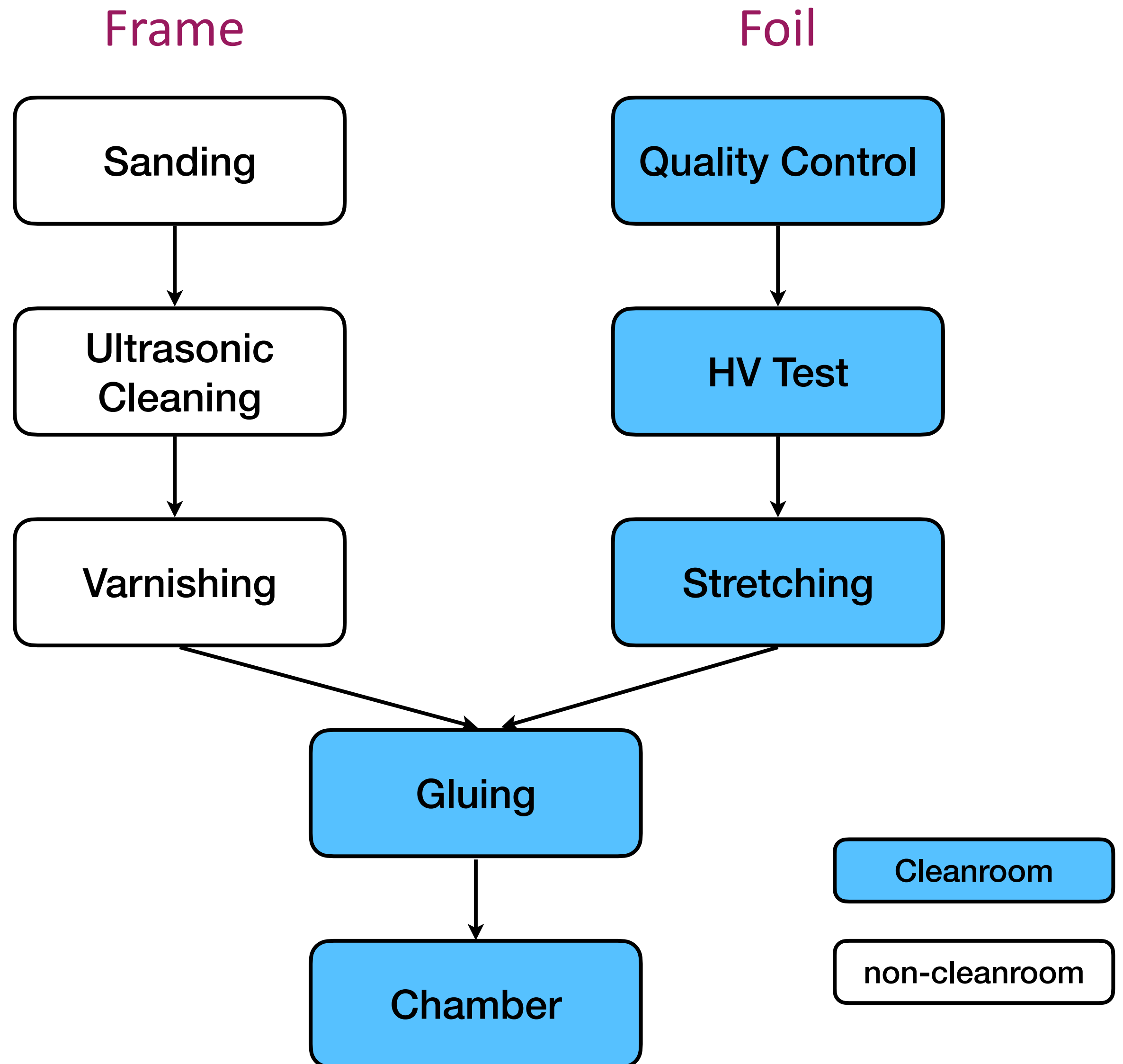
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Outline

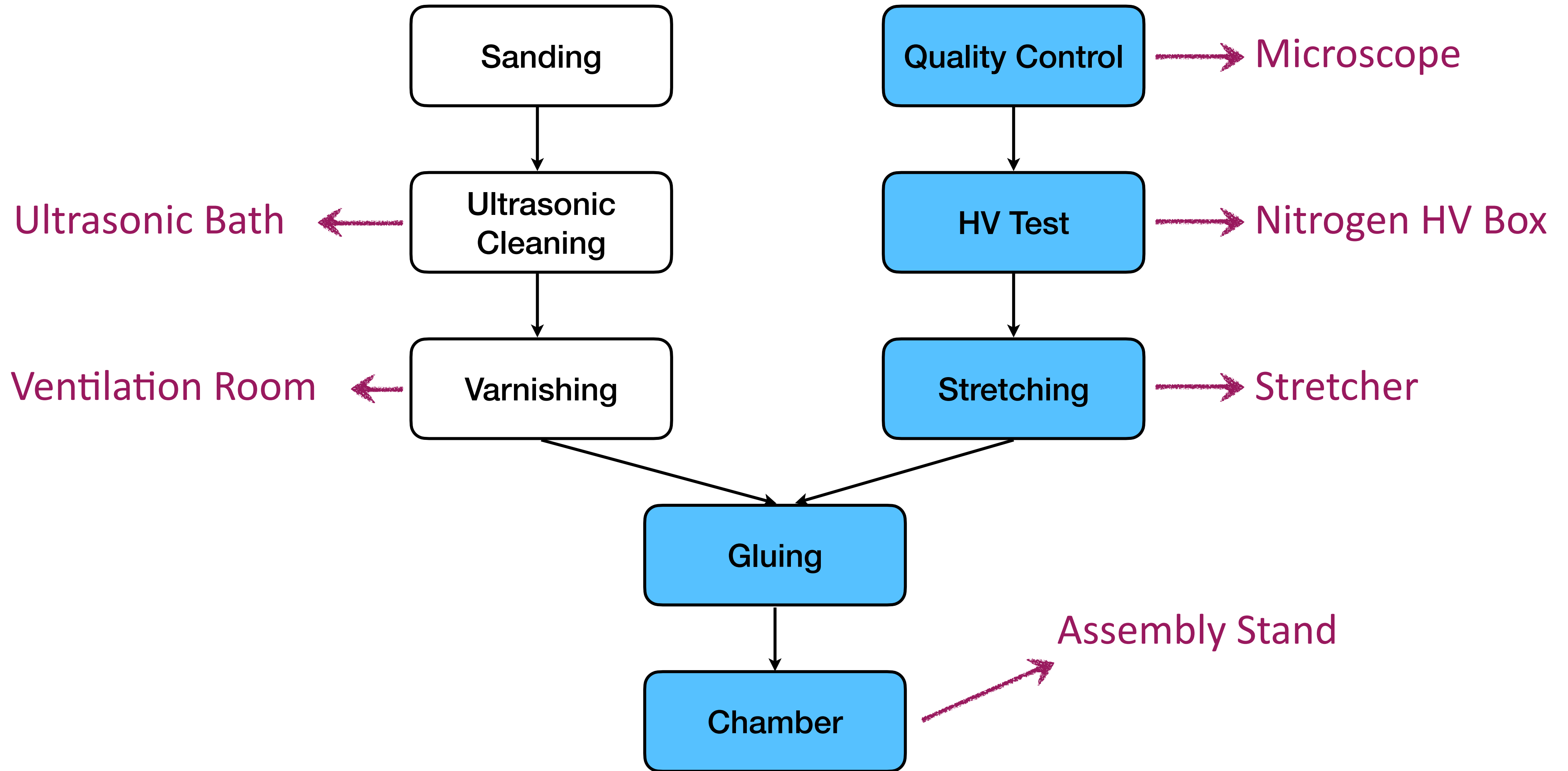
- General Introduction — essential procedures for large area GEM/uRWELL detector Assembly
- Equipments — referring to SBS/PRad Chamber Assembly (example)
- Infrastructure and plan at Jefferson Lab for This Test Article

Essential Procedures Overview

- Only includes major procedures
 - Two parts: **Frame** + **Foil**
- Skipping all other trivial steps
- For large Area GEM detector
- All these procedures still required by this test article + more
- uRWELL assembly is NEW — require new equipment



Major Equipments



Equipments

- Varnishing needs a **ventilation room** — regulation from UVA **EH&S** division
- Ultrasonic bath using de-ionized water



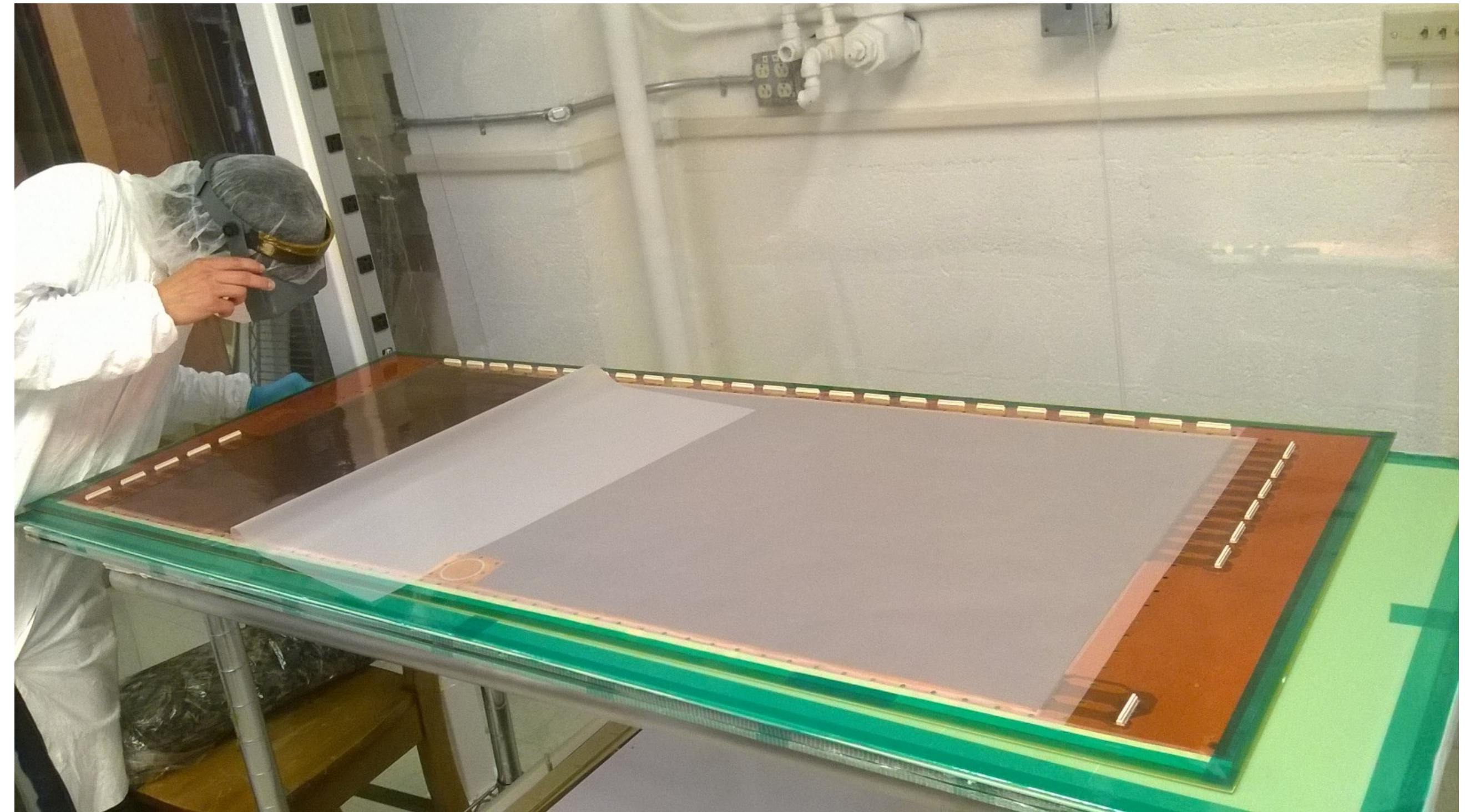
Varnishing Room



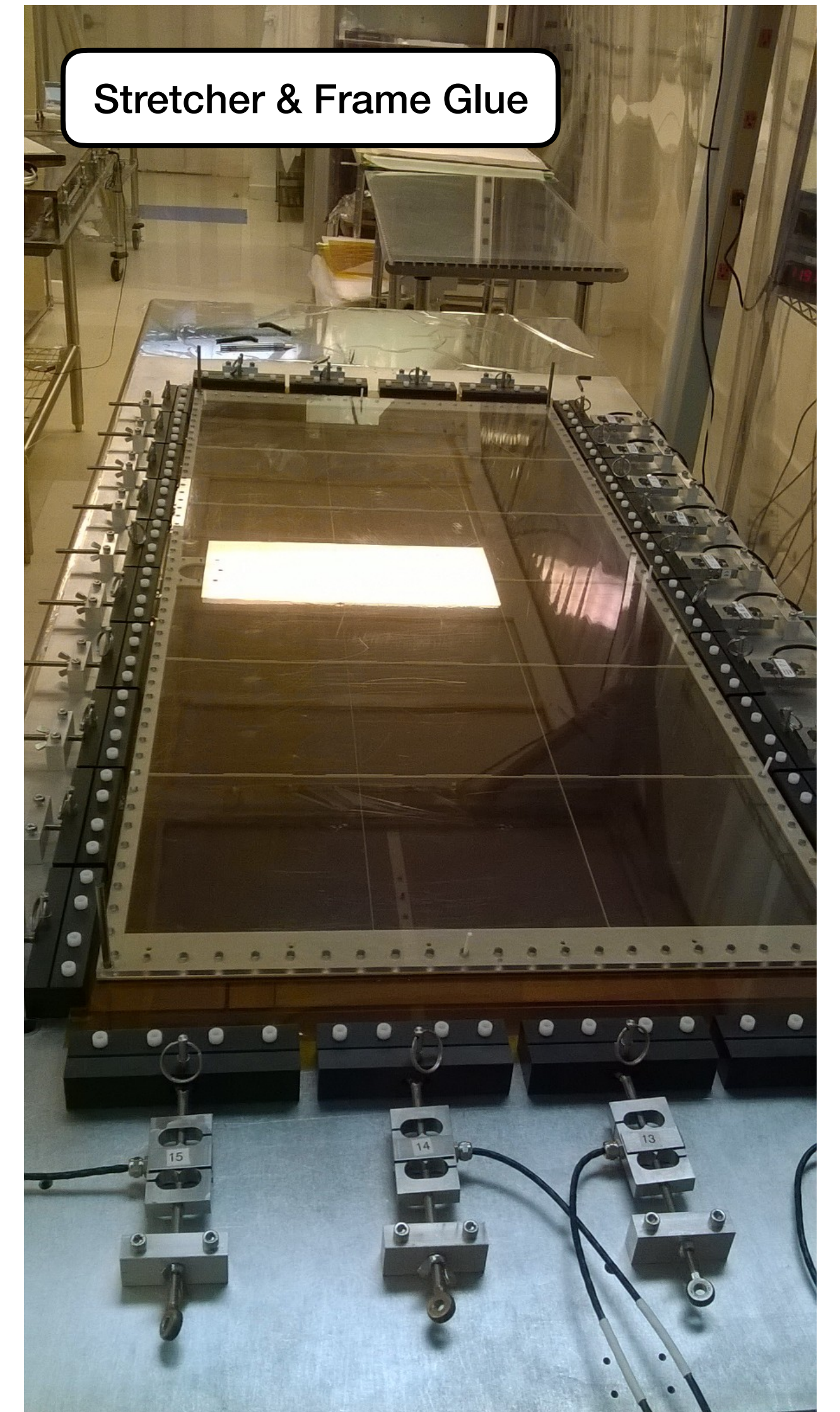
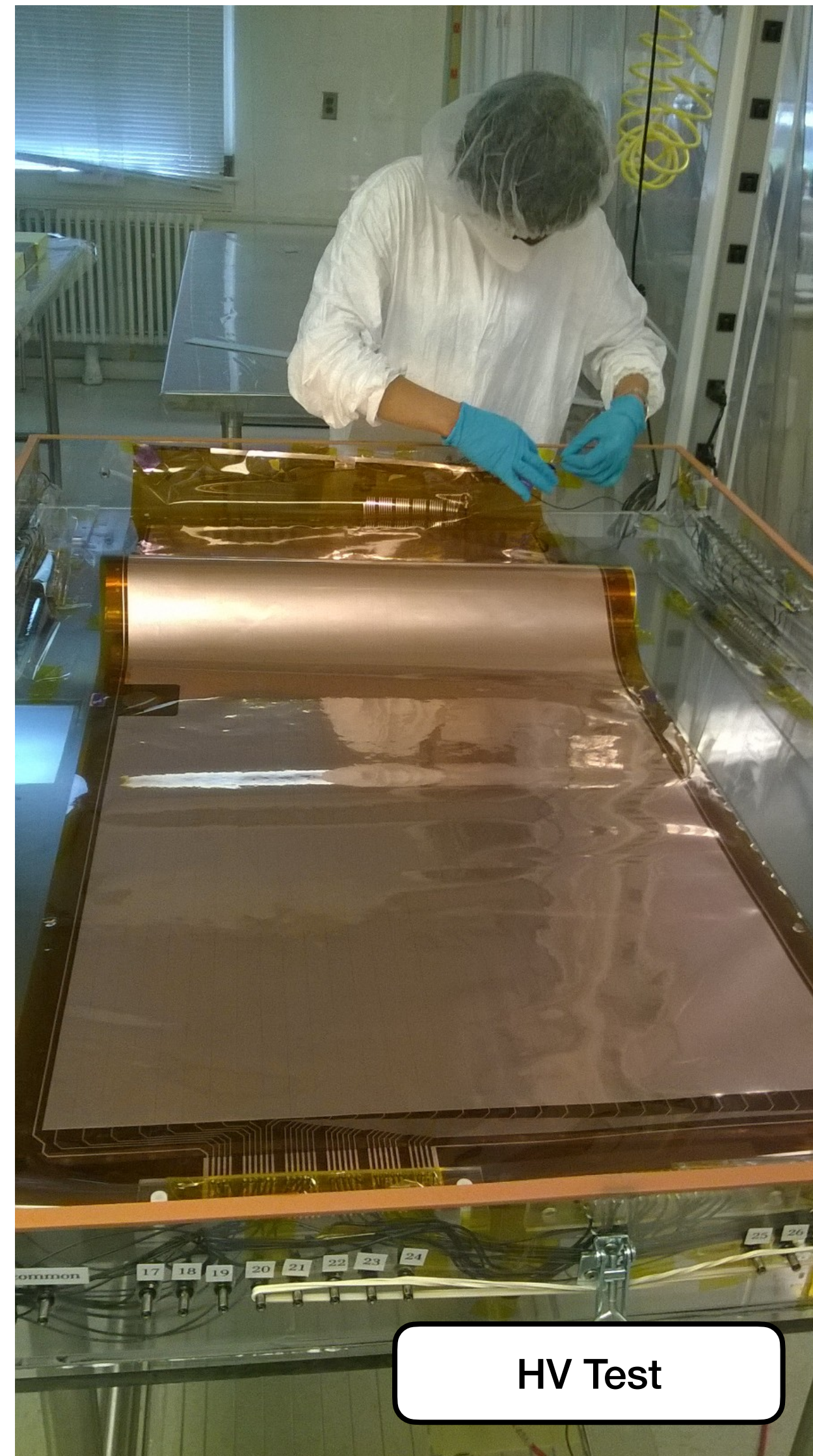
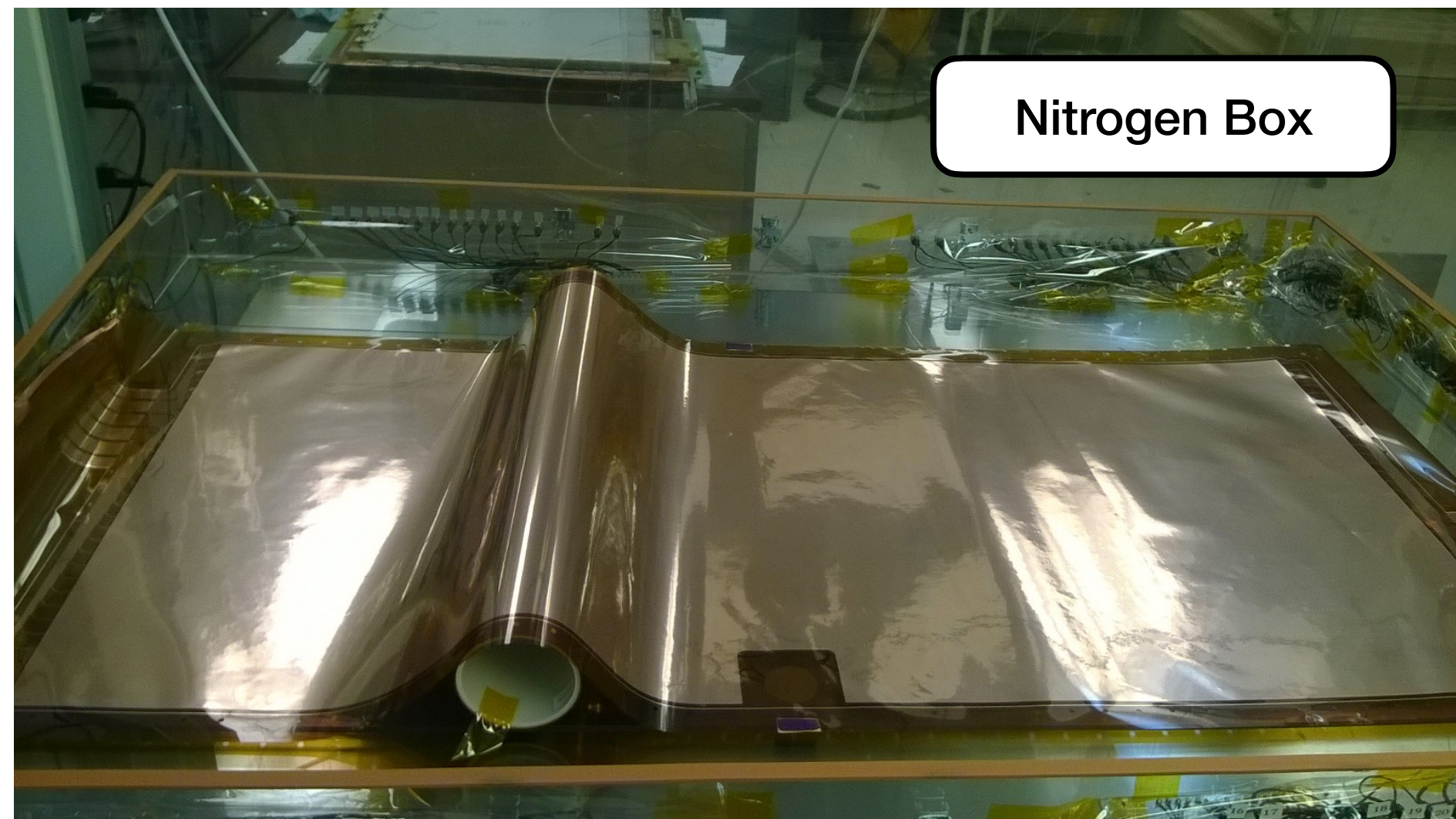
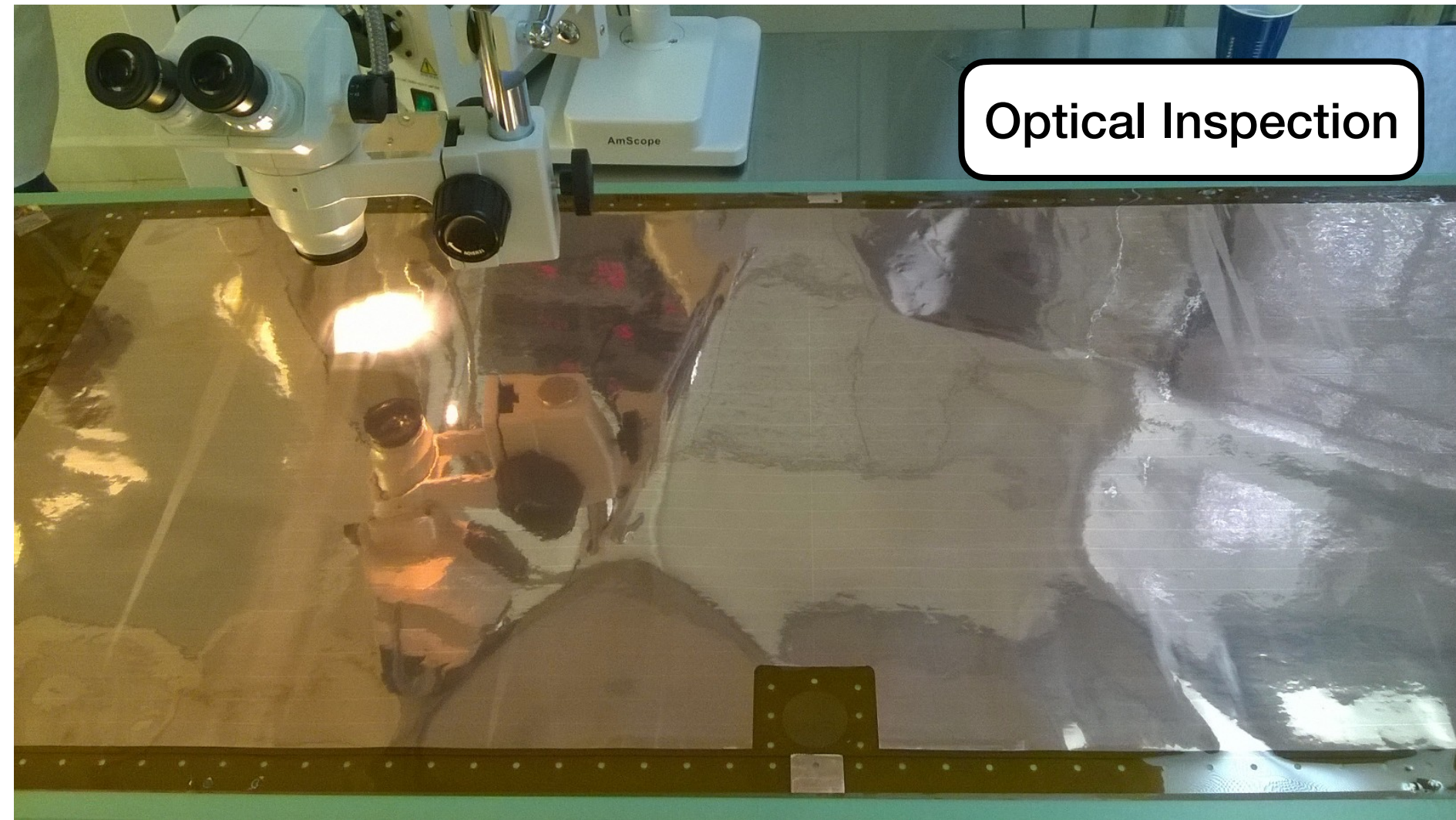
Ultrasonic Bath

Cleanroom

- Class-1000 clean room for GEM chamber assembly
- **Not enough** for uRWELL assembly — need a much cleaner solution

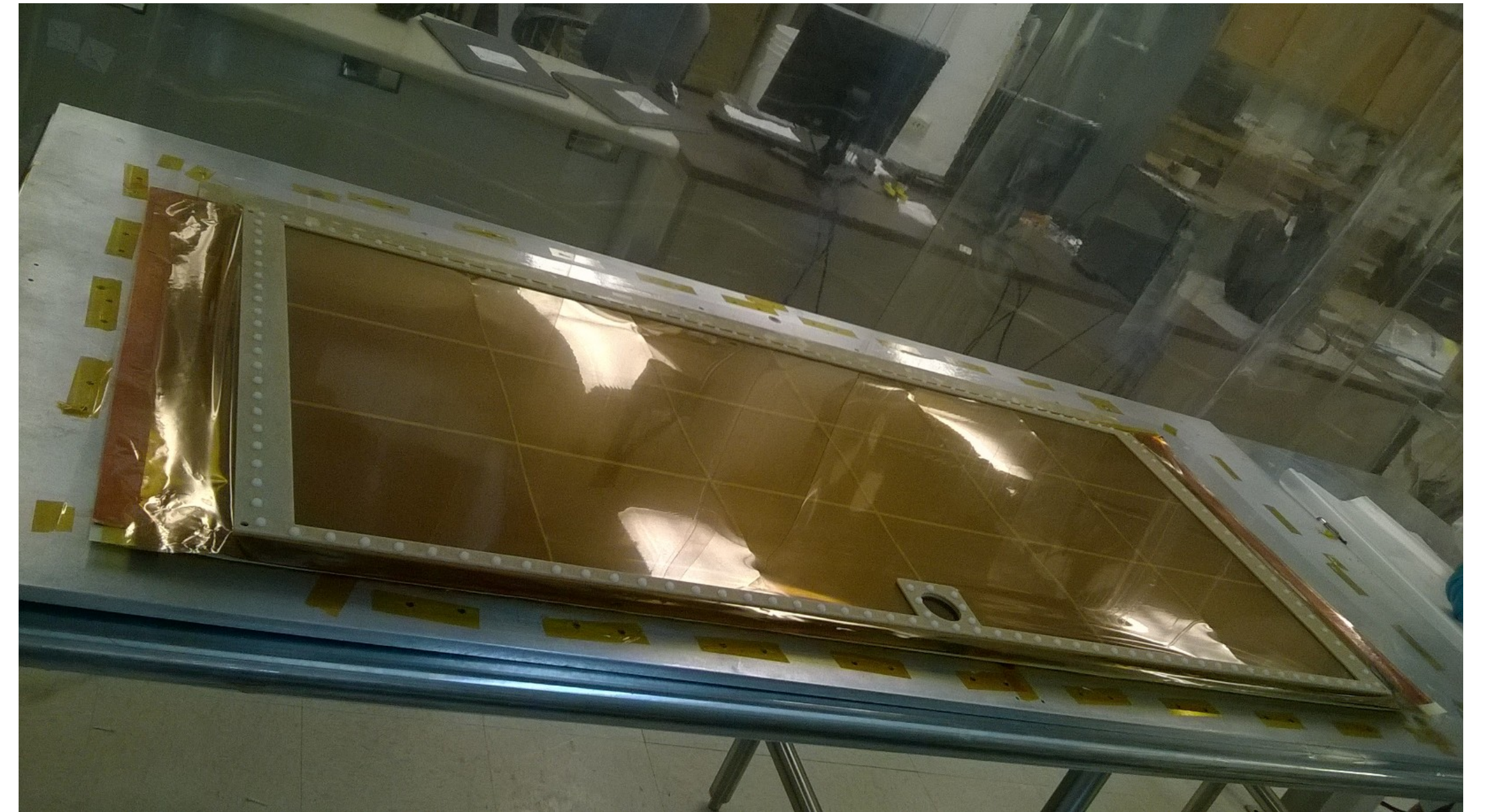
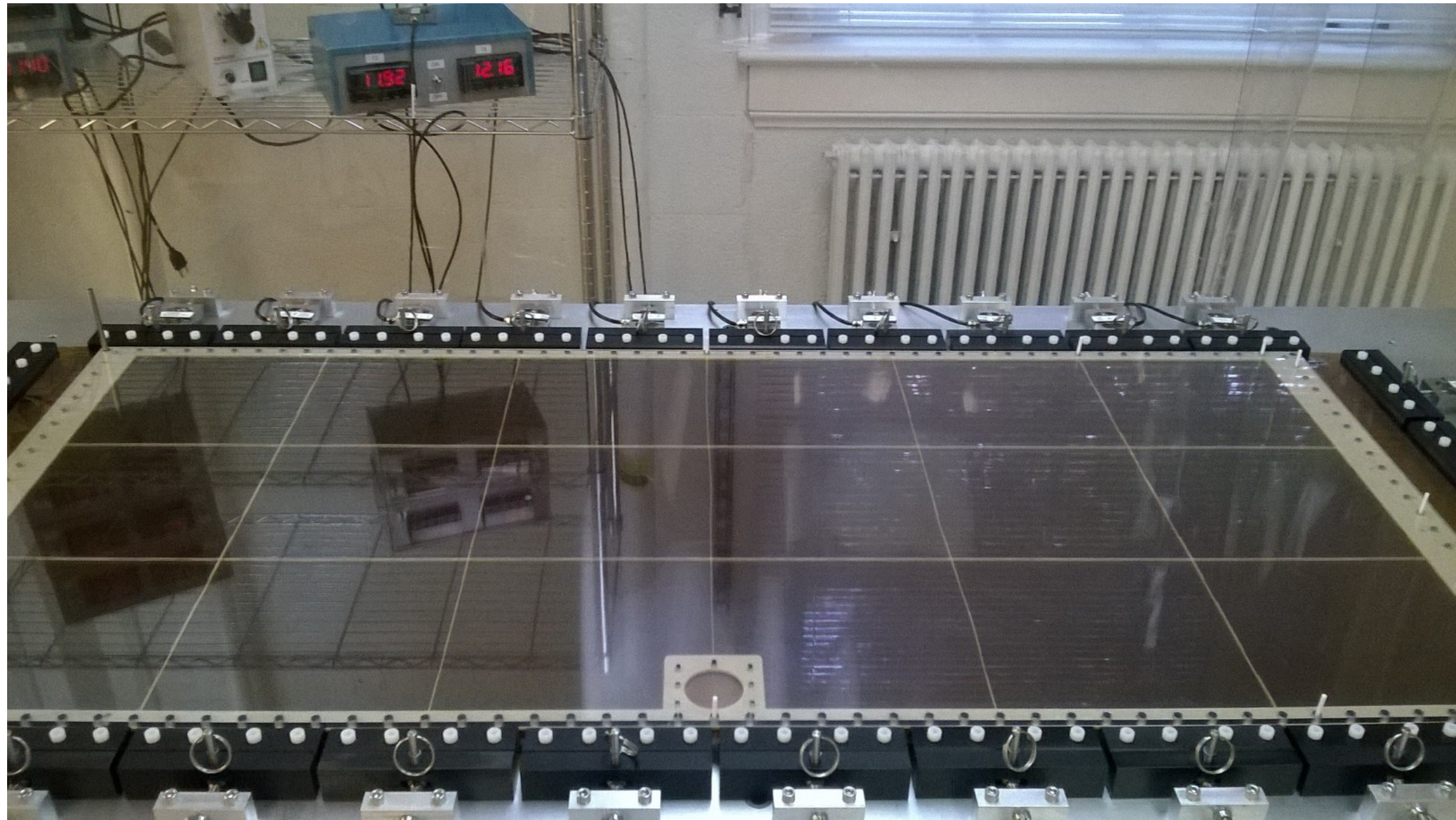


Equipments



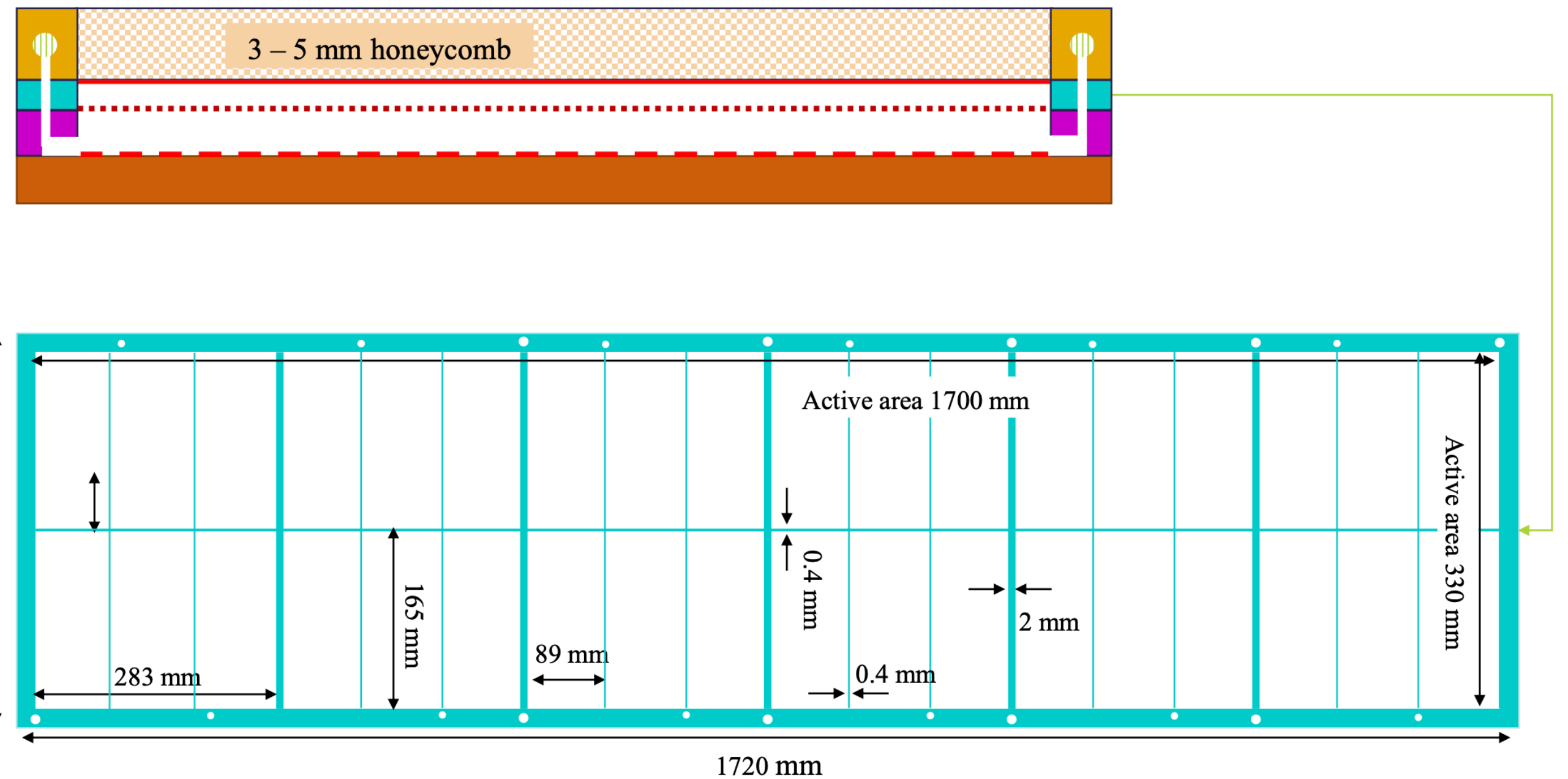
Equipments

- Foil Stretching and Assembled Chamber



EPIC Outer Barrel Tracker

Design consideration: Drift frame



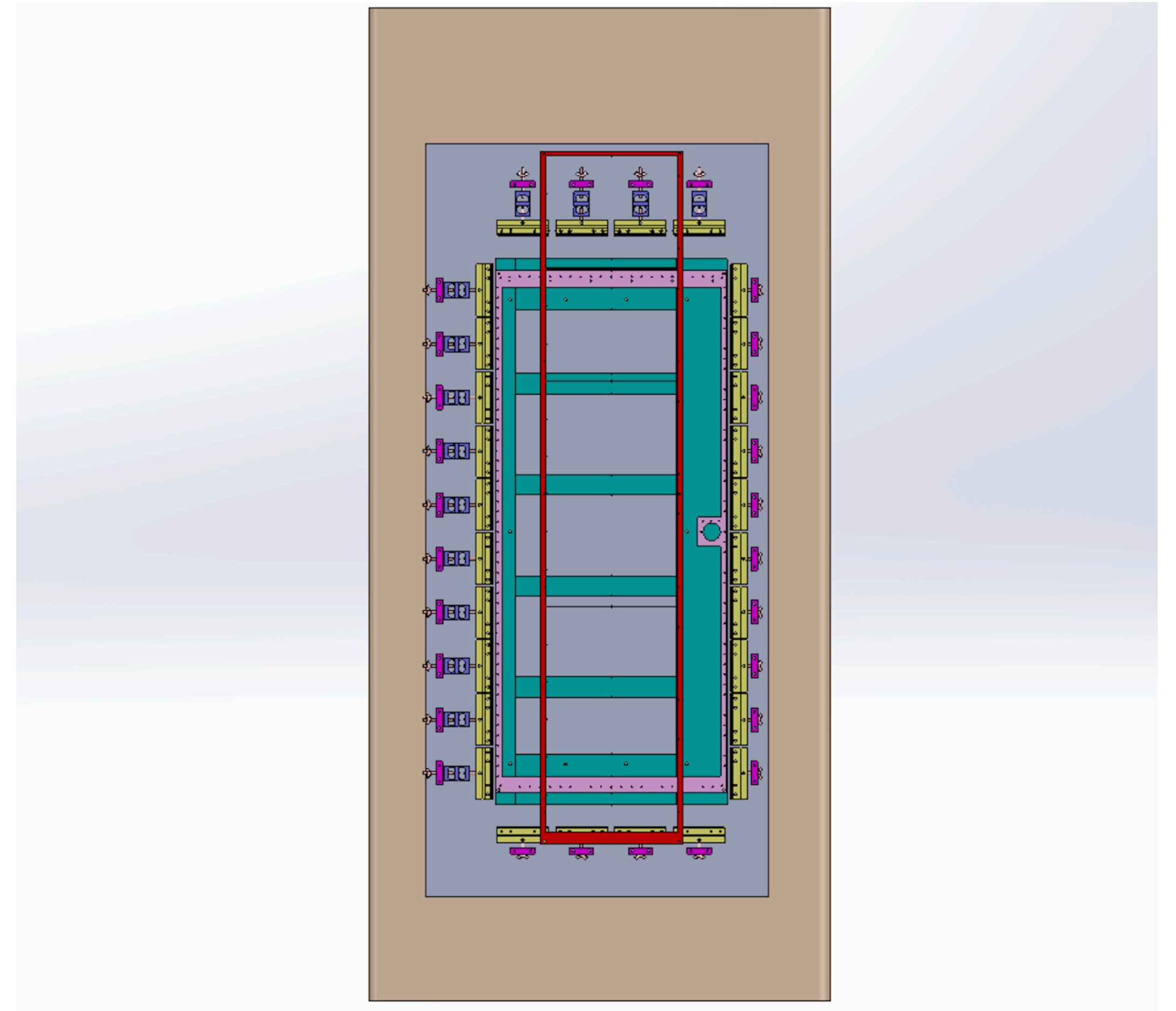
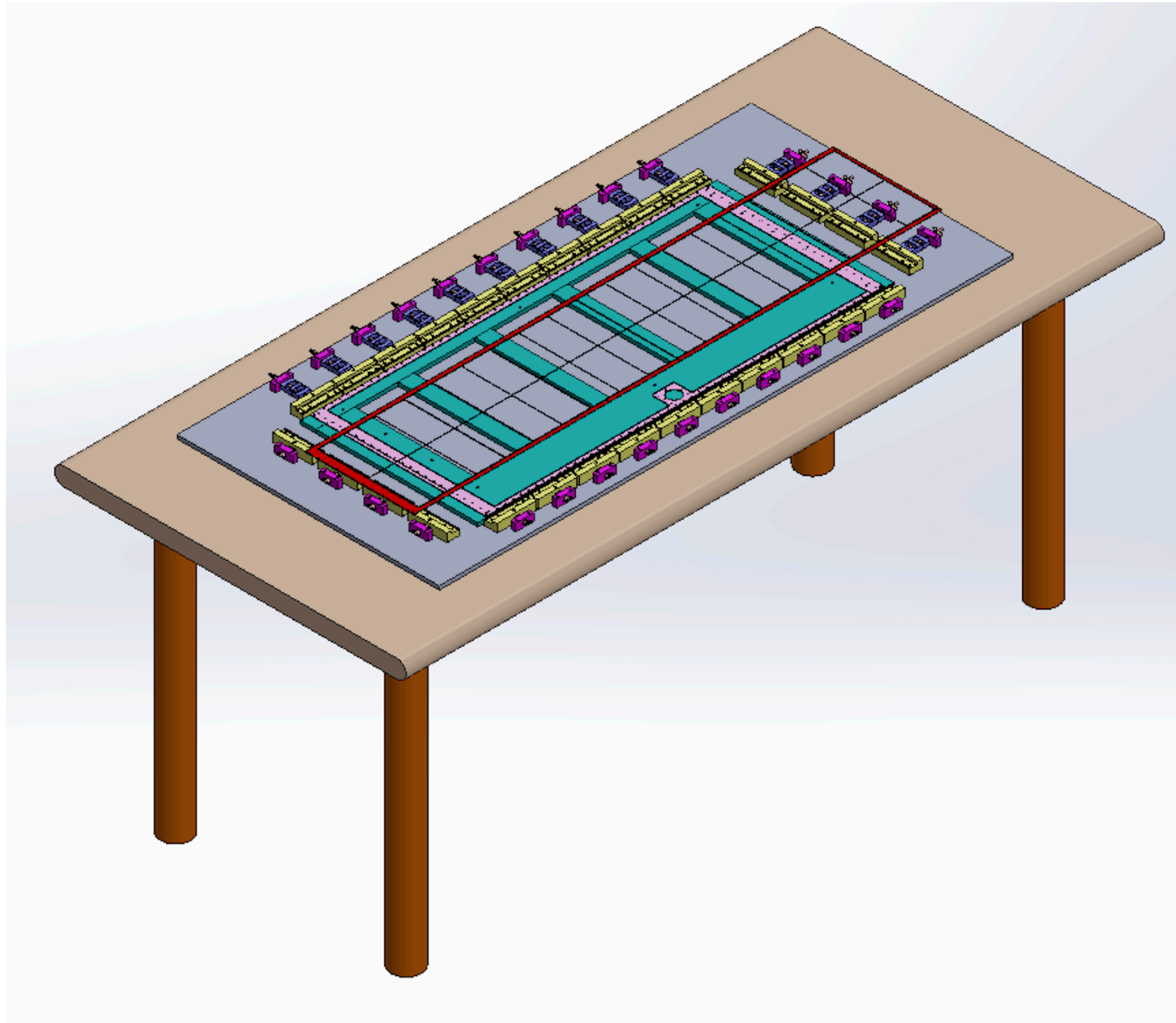
PRad Chamber Frames

Active area: ~1300 X 550 mm

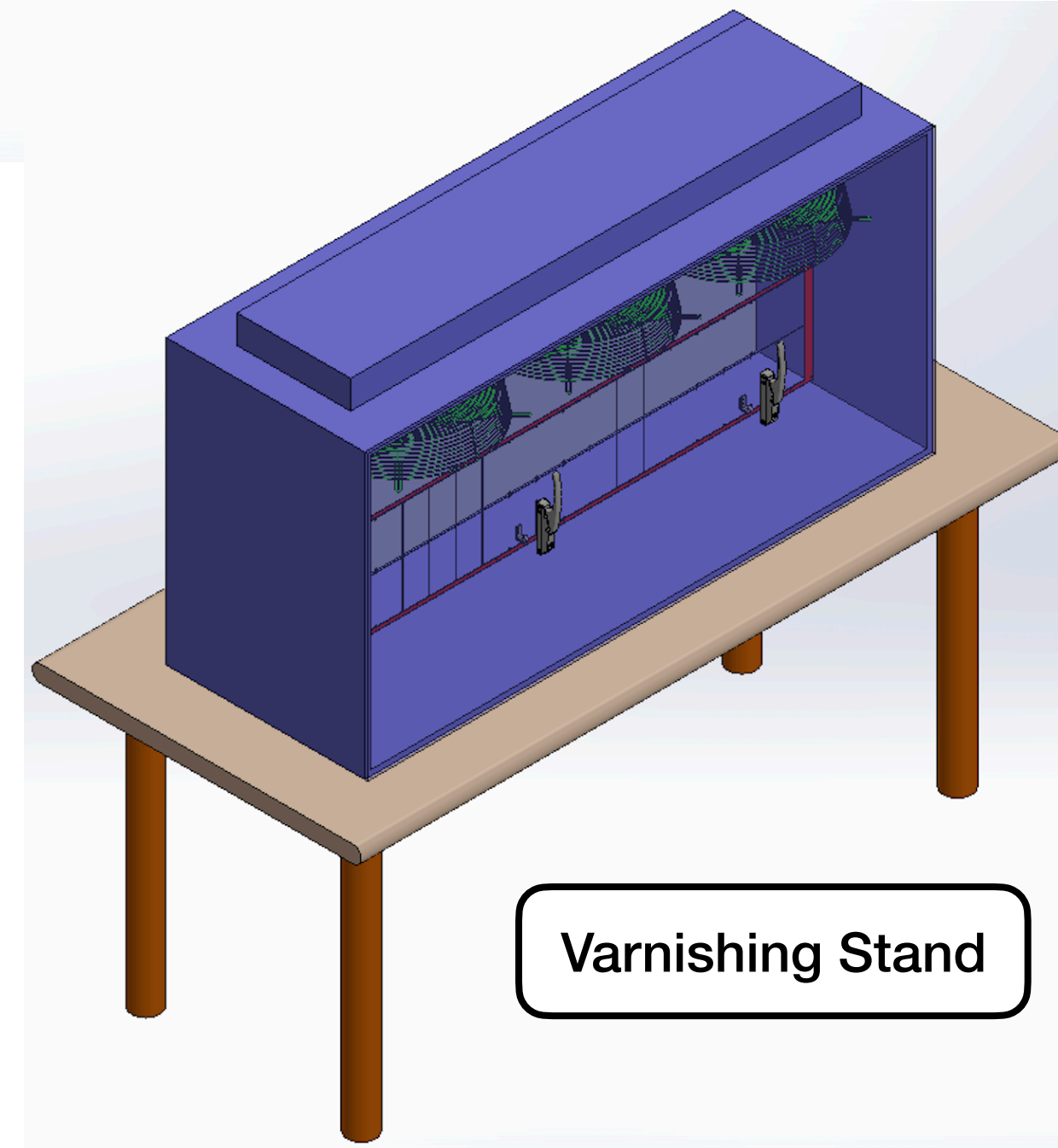
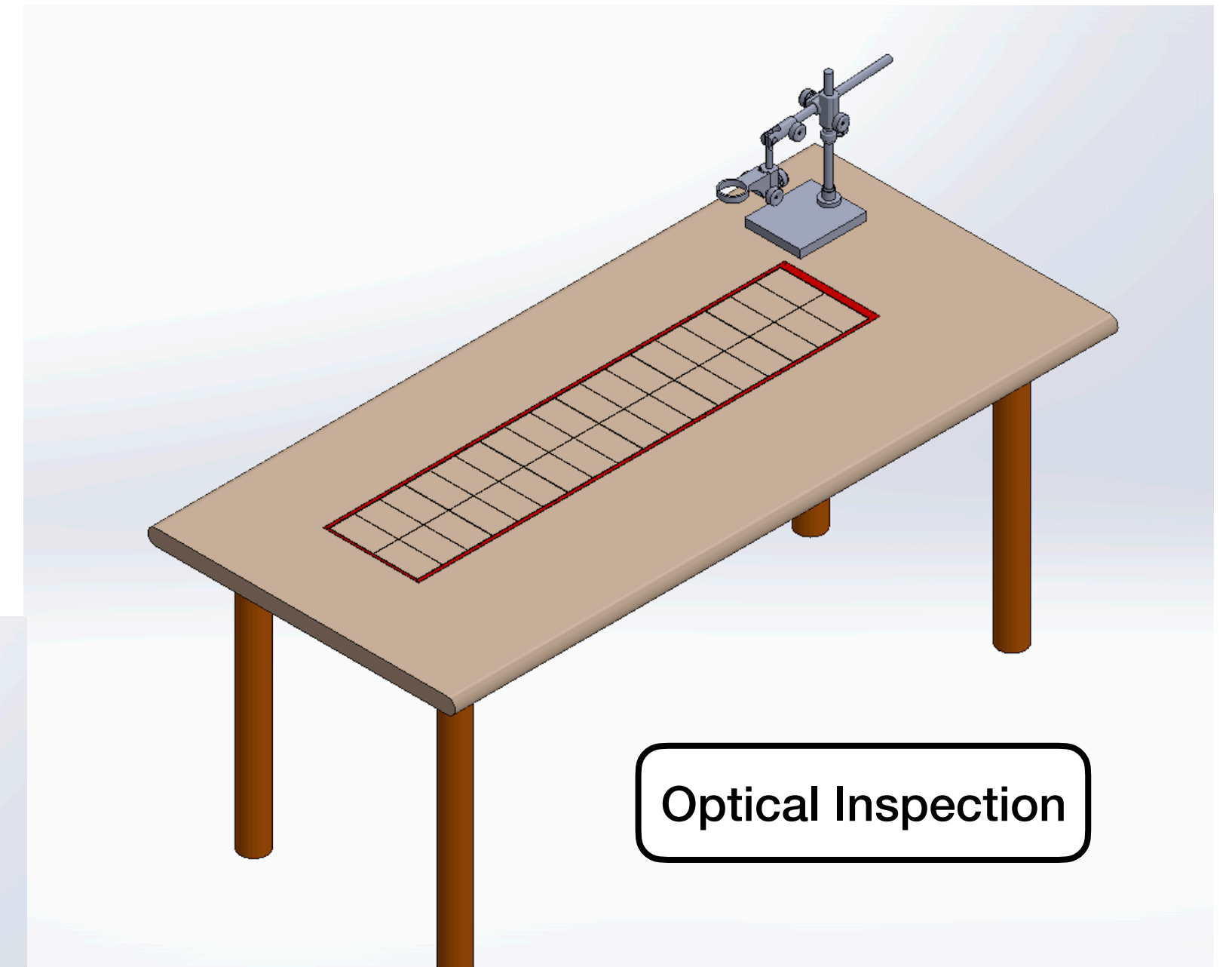
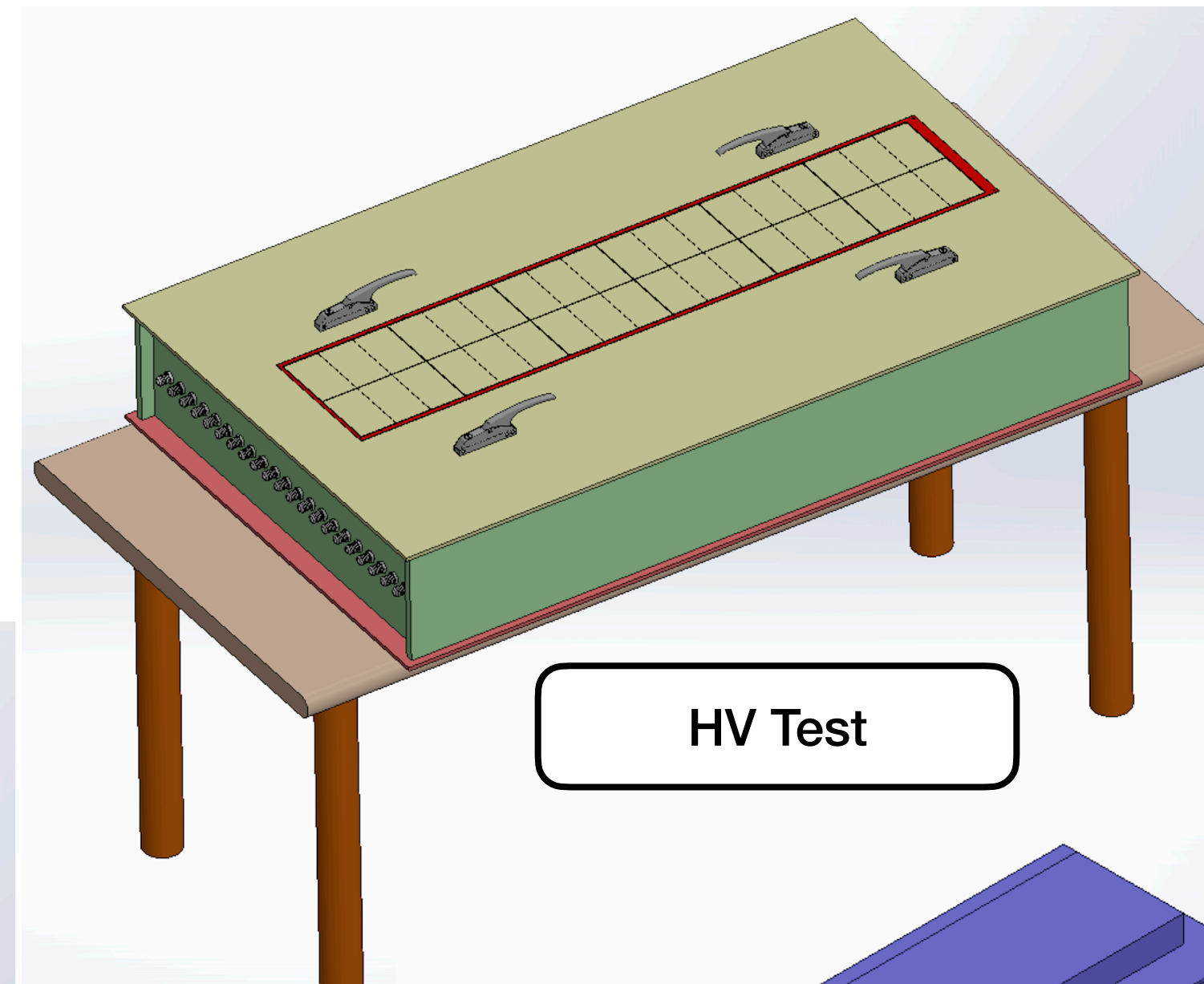
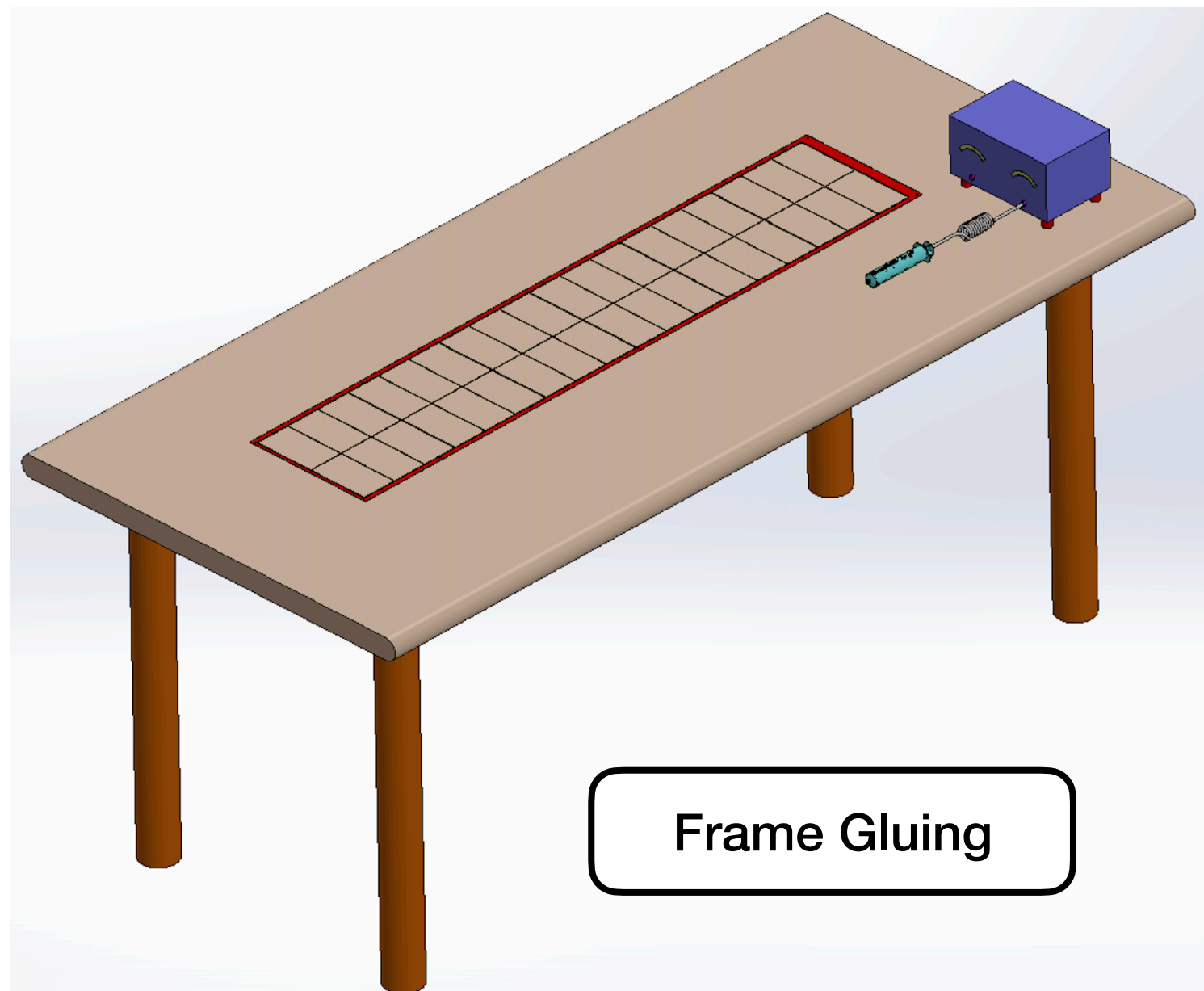
EPIC outer barrel tracker design — Kondo

EPIC outer barrel tracker

- PRad stretcher with EPIC outer barrel tracker frame size

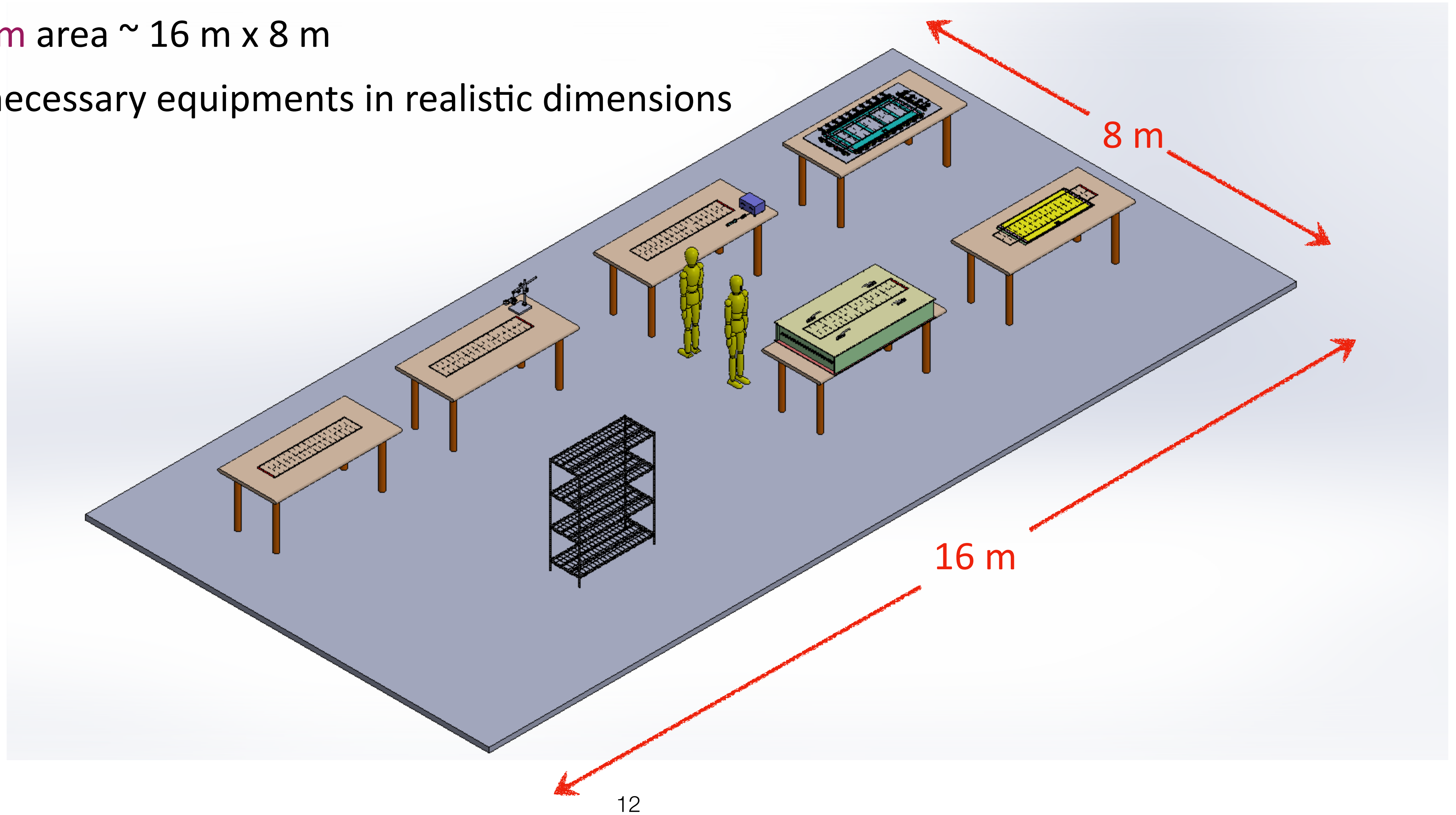


Infrastructure and Plan at JLab



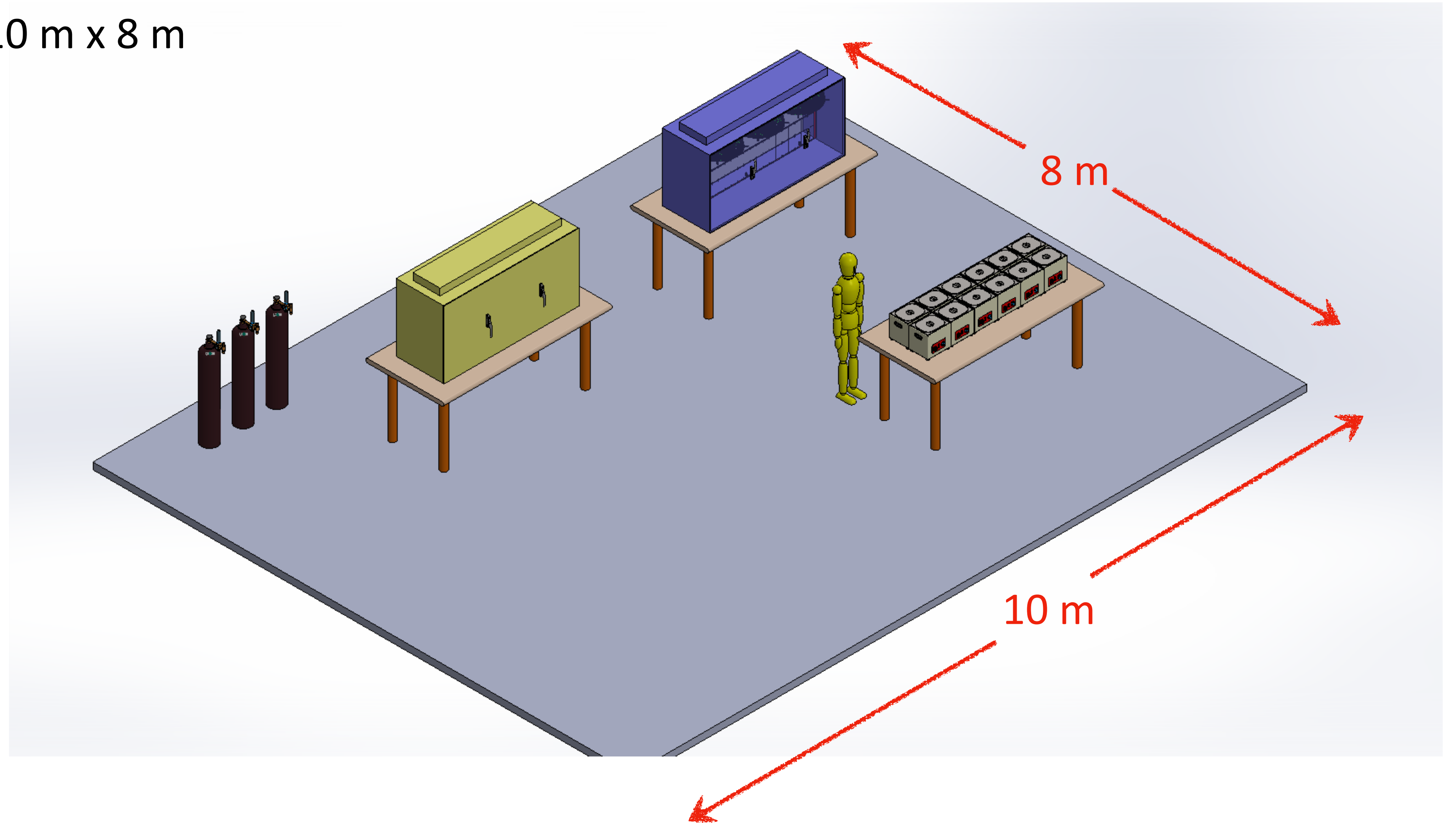
Infrastructure and Plan at JLab

- Cleanroom area ~ 16 m x 8 m
- With all necessary equipments in realistic dimensions



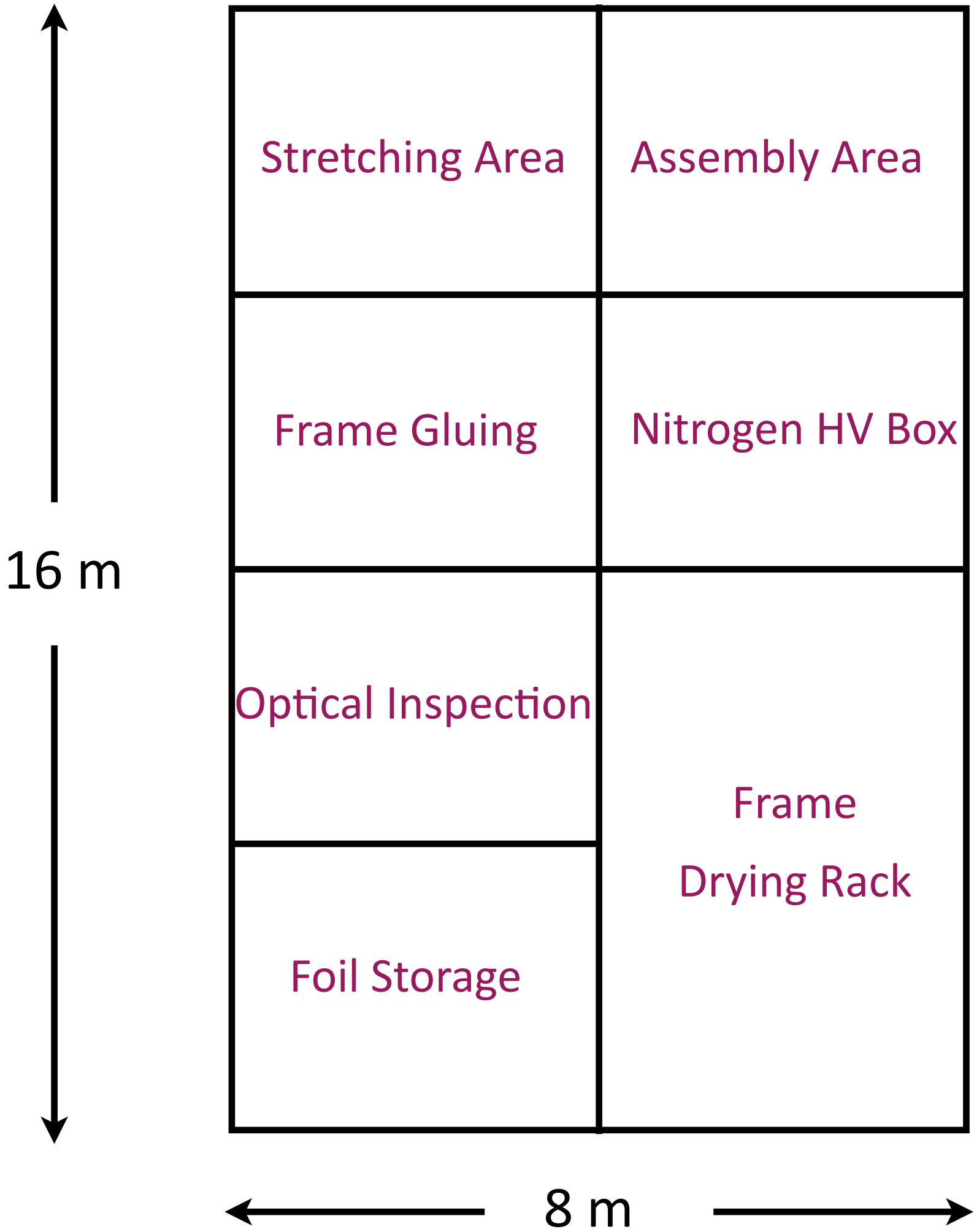
Infrastructure and Plan at JLab

- Preparation area $\sim 10\text{ m} \times 8\text{ m}$

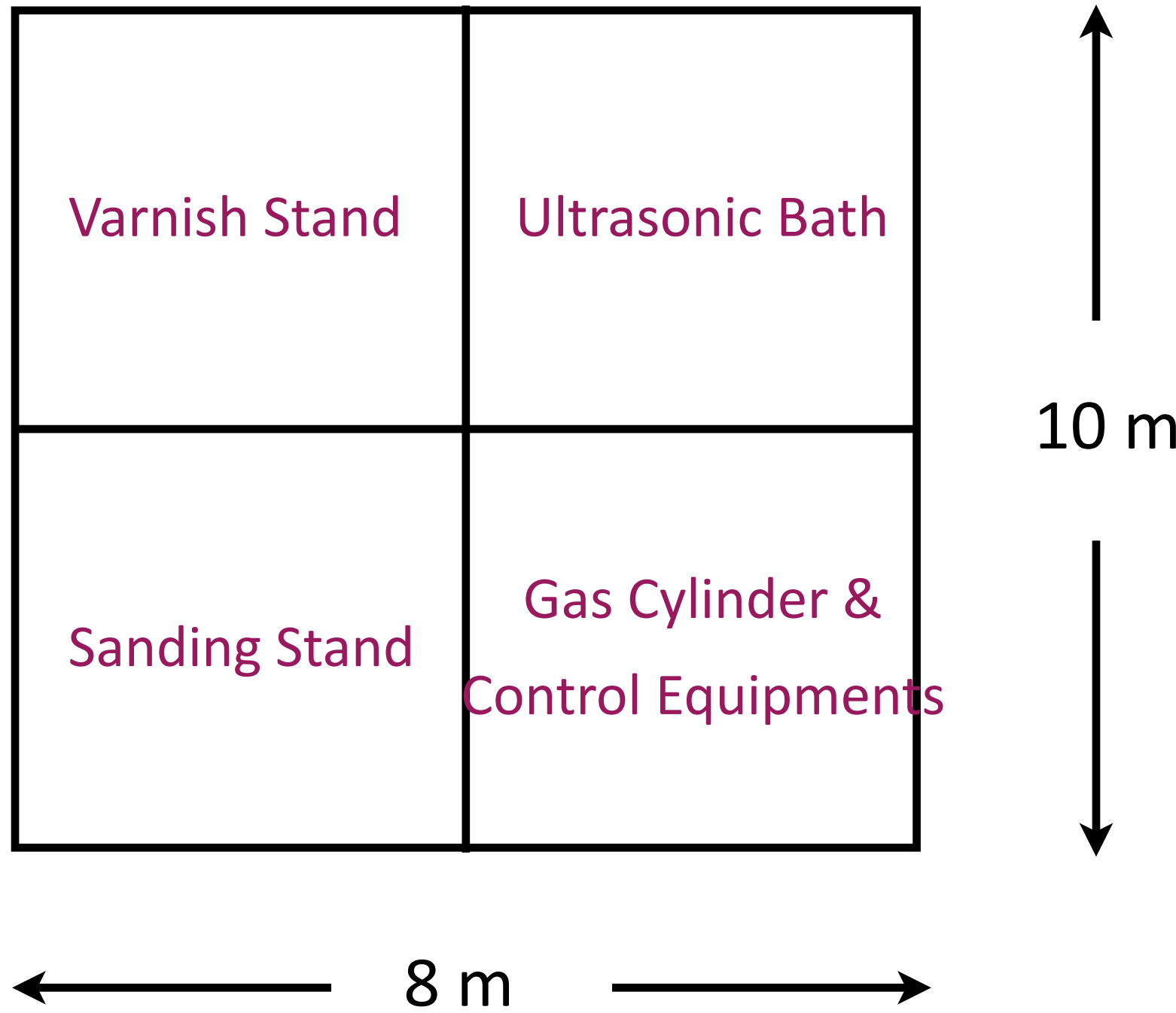


real-estate

Cleanroom Area



Preparation Area



Next Steps

- Plan to use the current ready large area clean room at JLab — EEL125?
- Need major upgrade
- Automated Assembly