

Module-0 XA Fabrication and Assembly Summary

Jane Nachtman, representing the Module-0 XA engineering team from CSU, Iowa, NIU (Zach Rautio, Jay Jablonski, Paul Debbins, Christian Hansen, Kurt Francis)

November 18, 2022

protoDUNE-VD PDS Meeting

Module-0 XA Schedule (details updated 11-15-2022)

Vishnu's schedule 11-7-2022

- CSU machines 6 frame kits for Dec./Jan. delivery to CERN
- NIU assembles and ships 2 membrane mounts and 4 cathode for Dec./Jan. delivery to CERN **(1st 2 will be assembled at CSU, hand-carried to CERN)**
- Iowa machines 10 frame kits for Jan. /Feb. delivery to CERN
- NIU assembles and ships 6 membrane and 4 cathode mounts for Jan./Feb. delivery to CERN

- updated/corrected module type schedule -- filter sizes adjusted according to availability
- Engineering team meeting often
- Careful planning and tracking required to meet this tight schedule
- Focus on
 - remaining design questions
 - Manufacturing components for first six modules
 - planning/orders/manufacturing for next ten modules

Anselmo -- detailed schedule 11-18-2022

Details of frames schedule, filter size, manufacturer, number of filters

December 12th:

- 2 membrane modules 97.5x202 (ZAOT) 36
- 2 cathode modules 97.5x202 (ZAOT) 72
- 2 cathode modules 143.75x143.75 x 1.5(PE) 64

January 16th:

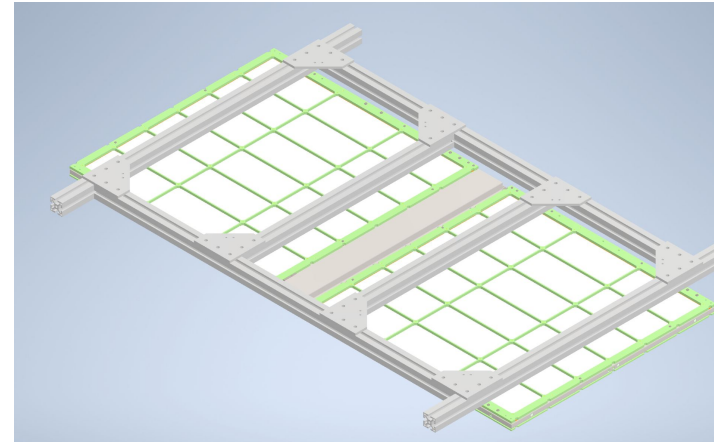
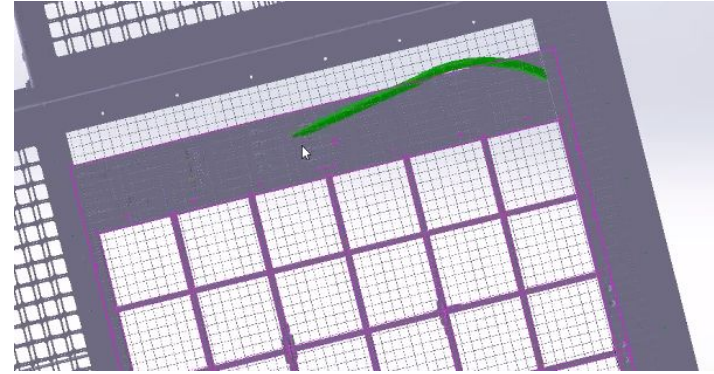
- 2 membrane modules 143.75x143.75 x 1.5 (PE) 32
- 2 cathode modules 143.75x143.75 x 1.5(PE) 64
- 2 cathode modules 143.75x143.75 x 1.1(ZAOT) 64

March 1st:

- 2 membrane modules 143.75x143.75 x 1.5 (PE) 32
- 2 membrane modules 143.75x143.75 x 1.1 (ZAOT) 32

Details -- design work in progress:

- Quick change this week was to modify frame design to accommodate available square filters for 2 December cathode modules (thanks to Zach!)
- Jay -- designed support for module for testing at CERN
- More design work in progress -- status same as Monday 11-15 report
 - Cathode enclosure box
 - the fiber bend radius -- difficult to enter/enclose in box
 - Membrane enclosure box -- need 1 for December
 - Will assemble box for December
 - Membrane modules installed in pairs
 - Have design for jig, modifying to make it lighter, smaller
 - Mesh support clamps
 - Slight design mods to make shorter for Module-0 design
 - Question of whether mesh is needed



Production of 6 modules for Dec/Jan, 10 for Jan/Feb

- First 6 modules (Dec/Jan)
 - Design modifications (previous slide) proceeding quickly
 - Manufacturing in progress
 - Frames being waterjetted now, dichroic lock nut machining for 2 modules done, WLS frame parts machining now (CSU)
 - 1st 2 modules assembled at CSU, hand-carried to CERN on ~12/12. Next four-- components will be shipped to NIU for assembly, then to CERN
- Planning for ten Jan/Feb modules
 - Assume designs will be finalized soon
 - CSU and Iowa manufacturing some components now (eg WLS frame parts for 2 modules(Iowa)), frames will have in-set filters
 - Material ordered
- **Summary: the team is working together to meet the schedule!**