

INTENSE WP1

NEUTRINO DETECTORS

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Intense Meeting

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- INTENSE WP1 is dedicated to the neutrino detectors development, commissioning and data taking of MicroBooNE, SBND and ICARUS.
- Objectives:
 - Operation and data taking of the MicroBooNE detector.
 - Commissioning, operation and data taking of the ICARUS detector.
 - Construction, commissioning, operation and data taking of the SBND detector.
 - Perform a global analysis across the SBN detectors.
 - Transfer knowledge from experience with the SBN detectors to the next generation of LAr-TPCs (DUNE).

Neutrino detectors: preparation and optimization

- Description of work:

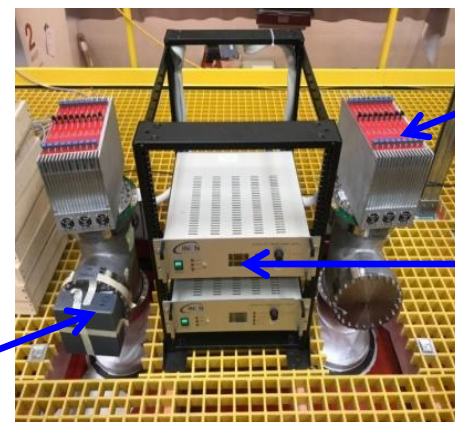
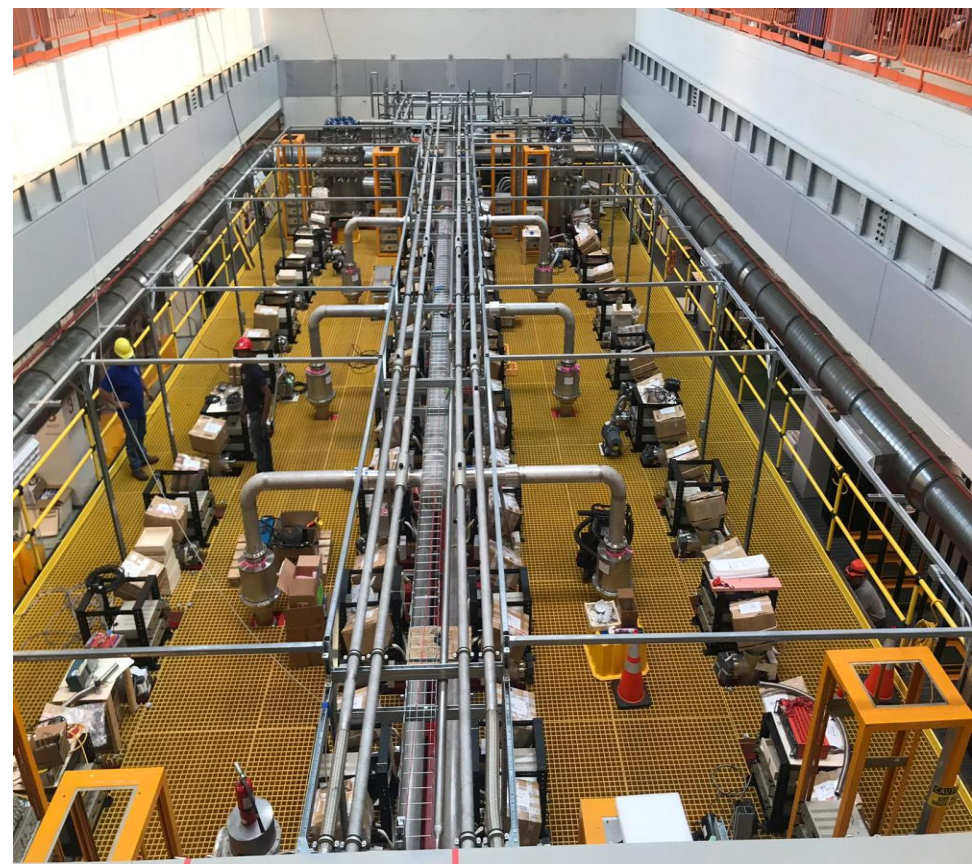
- Operation and data taking of the MicroBooNE detector.
- Optimization of the ICARUS online system and implementation of the beam trigger, event building and data processing.
- Set-up and qualification of the ICARUS laser pulsing system for the inner PMTs.
- Complete the installation and commissioning of the ICARUS CRT and its signal exploitation for trigger purposes.
- ICARUS operation, maintenance and data taking.
- Test stand of ICARUS front-end electronics for other experiments of the Neutrino Platform.
- Construction, commissioning and data taking of the SBND detector.

1. ICARUS Technical status of installation

● Progress since January 2019:

- ✓ All flanged connections, ports, valves, feedthrough flanges on top of two cold vessels were installed and tightened.
- ✓ All internal connections of wire chambers, PMTs, HV system, optical fibers, and slow controls verified before the tightening
- ✓ After closing all the apertures, when the internal volumes became dark, all PMT turned on & checked for functionality.
- ✓ All TPC FE readout electronics (mini-crates, CAEN boards and power supplies) installed and verified. Internal connections were verified for a third time together with the external ones (preliminary noise measurements).

*PMT Optical fibers feedthrough
(covered for protection)*



*TPC Mini-crate
with 9 read-out
boards*

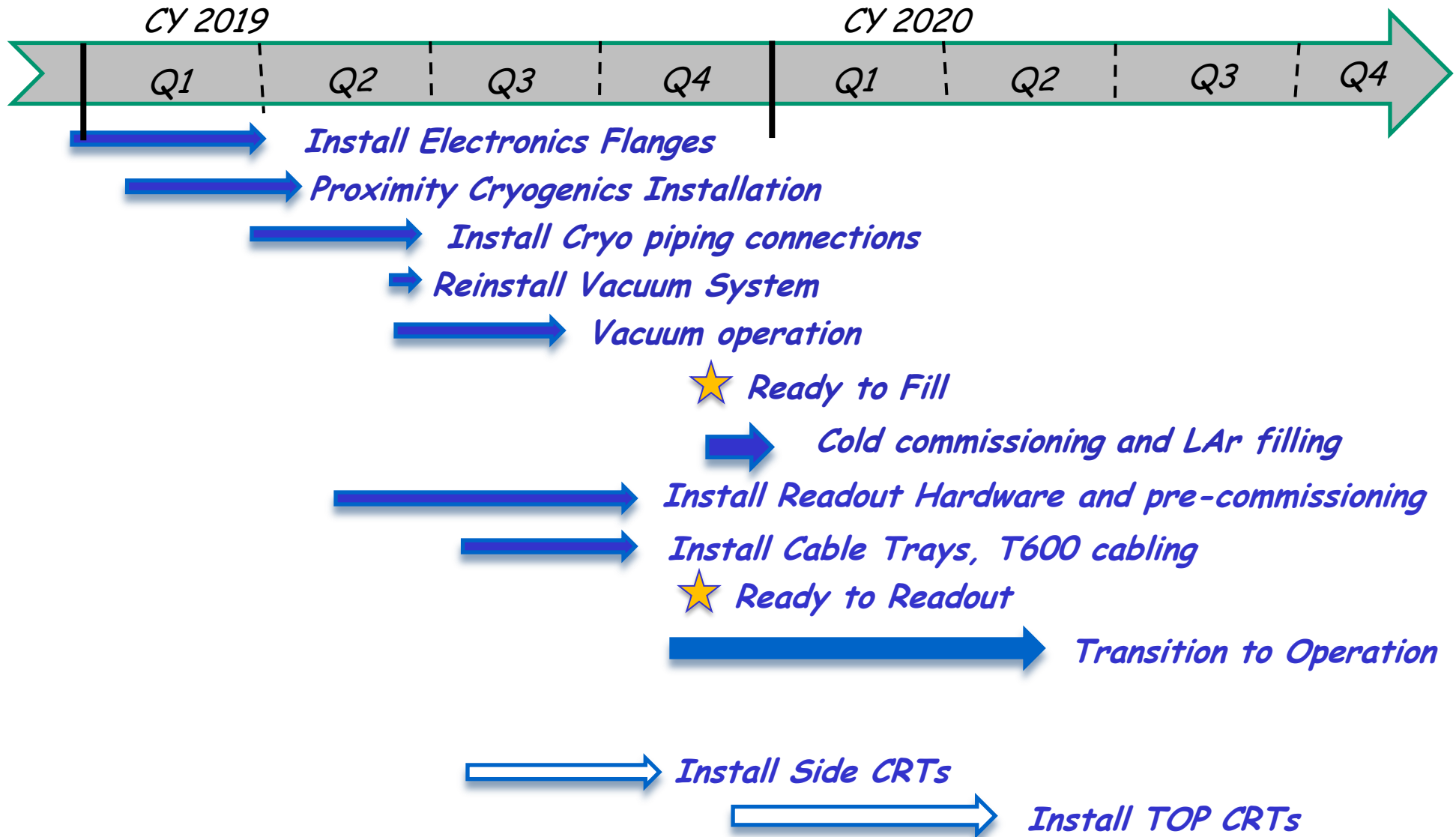
*2 power
supplies*

ICARUS Technical status of installation – cont.

- ✓ North part of side CRT was installed.
- ✓ All cryogenic equipment & transfer lines installed, welded and pressure tested, with exception of collector lines from the chimneys to gas recirculation units (under construction).
- ✓ Argon vent lines from magnetic safety valves from overpressure automatic valves installed;
- ✓ Strain gauges located on sides of cold vessels connected; readout system installed and operated.
- ✓ After installation of flanged connections, ports, valves and Ar cryogenic & purification equipment, the two cold vessels tested at 350 mbar overpressure.
- ✓ Cabling for PMTs, Laser system, wire biasing installed.
- ✓ Both cold vessels are under vacuum pumping since Sep 2019. **Ready for cooling down and LAr filling.**



ICARUS-T600: detailed plan-timeline



Secondments

- Status of used secondments (30 days each) for WP1, Nov 2019:
 - Padova: 16 secondments;
 - Pavia: 7 secondments;
 - Milano Bicocca: 2 secondments;

Thank You