

Status Degradation Study

29.09.2026

Collection of what has happend and what needs to still happen

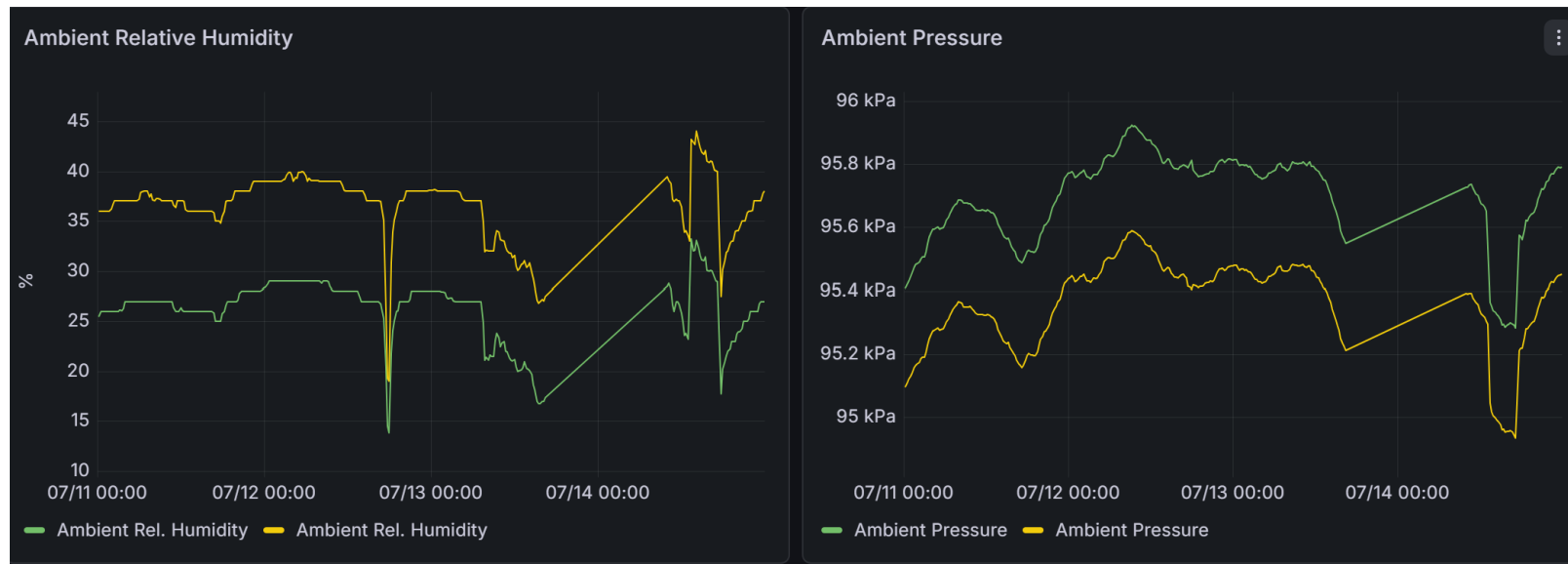
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What was done

- [ACL production introduction (mirror, glue, coating)]
- Light feedthrough tests
- Vacuum test
- Sensor Setup (integration into influxBD and Grafana)
- Light readout data acquisition
- Darkbox light tightness test
- Preliminary Argon flow tests
- Darkbox test (SiPMs and pulser LEDs)

What I still want to do (experimentally)

- Sensor Calibration (ongoing)
 - Anticipate differences between ambient and Argon atmosphere.
 - Incorporate calibration into Arduino code.
 - Calculate partial water pressure and automate reading (Grafana, Influx?)



What I still want to do (experimentally)

- In depth vacuum chamber test
 - (Vacuum leak test: pull vacuum with sensors and let sit for a period of time)
 - Quantified Argon leak test: pull vacuum, flush with Argon, adjust argon flow meter to keep humidity (temperature and pressure) stable. Quantify Argon usage

What I still want to do (experimentally)

- First “degradation” test
 - Two equally good Arclights, both into darkboxes, one in Argon the other in ambient.
 - Leave in boxes with periodic measurements via in situ pulser LEDs (how long?)

What I still want to do (experimentally)

- Full / partial scale degradation study
 - 4 or 5 similar Arclights, Degradation UV running, periodic measurements with in situ pulser LEDs, full 2D measurement after study
 - Length? Most degradation happens at the beginning.

Thesis

- Introduction into DUNE
- SiPMs + Sensors
 - Theory
 - Calibration
- Experimental Setup
 - Idea, Build, Data acquisition, Tests
- Degradation Study
 - Experiment
 - Analysis

Timeframe

- Due date end November!!!