

USE CASE · ENVIRONMENTAL & ENDURANCE TESTING

Run soak, cycle and life tests for days — and know what happened at 3 a.m.

Chamber profiles, thermal soaks and thousands of cycles with functional checks in between. Unattended runs alert you when something drifts, Lab Manager shows every chamber and bench from your desk, and every reading is there to replay.

24 / 7

unattended runs with text alerts on failure

Loop

step-level cycling with counters and Goto

1Hz +

continuous logging, per-sequence tagged

Lab

every chamber and bench on one dashboard

What you're up against

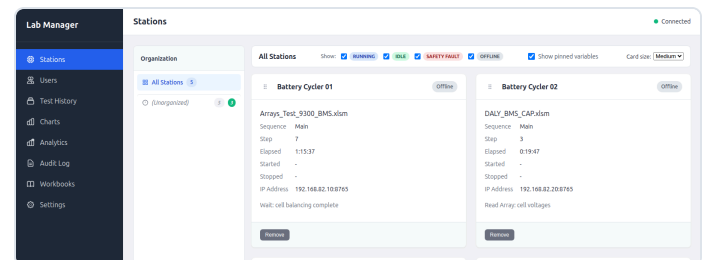
- Chamber, DUT power, DUT comms and sensors are four vendors and four tools
- A soak is only valid once the chamber has actually settled — not when the setpoint was sent
- Failures at hour 37 are discovered at hour 60, and the data before them is gone or unreadable

How the suite handles it

- Chambers over SCPI/TCP, supplies over VISA, DUT over CAN — one workbook
- Condition-based waits: proceed when chamber temperature is within ± 2 °C for 30 min, with a timeout
- Looping with cycle counters; a subsequence runs the functional check at each dwell
- Limit groups watch DUT current, temperature and comms continuously; faults alert by text and abort safely
- Lab Manager shows every station's step and pinned variables; EB Playback scrubs to the moment things changed

A typical sequence

Thermal cycle with functional check		
1	Start Instr.	Thermotron 8200+ (TCP) · DUT supply · CAN
2	Set Variable	Cycle_Count = 0 · Target = 500
3	Write Inst	Chamber setpoint -40 °C
4	Wait	until $ \text{Chamber_T} - \text{SP} < 2$ for 1800 s (t/o 7200 s)
5	Subsequence	DUT_Functional_Check → pass/fail logged
6	Write Inst	Chamber setpoint +85 °C · settle as step 4
7	Subsequence	DUT_Functional_Check · Cycle_Count += 1
8	If Any	Cycle_Count < Cycle_Target → Goto 3
9	End	Chamber to ambient · outputs off · report



Lab Manager — chamber station mid-profile: 'Soak at 45 C — monitoring limits', 4:27 elapsed

Typical instruments and interfaces

Thermotron chambers (TCP)

Programmable DC supplies

Electronic loads

cDAQ thermocouples

CAN / RS-232 DUT comms

RTSP cameras

Modbus I/O

"The stand couldn't answer new questions, so the questions stopped being asked."

When adding a dwell, a limit or a sensor is a workbook edit rather than a project, endurance programs keep up with engineering.