

CASE STUDY · INDUSTRIAL / TEXTILE

From a Tired Watchman to a Smart Brain — How a Textile Mill Got Full HVAC Autonomy

How EnSmart automated 3 compressors, 1 AHU, water heaters and strip heaters at Sree Parameshwari Textile Mills — delivering full humidity control, HMI visibility, and post-live complaint resolution in under one week.

Client: Sree Parameshwari Textile Mills · Platform: BMS + HMI · Location: Aruppukottai, Tamil Nadu · Year: 2026

At a Glance

3 Compressors Automated	1 AHU Controlled	2 Water Heaters Integrated	<1 Wk Project Completion	2 Complaints Resolved
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The Challenge

Sree Parameshwari Textile Mills in Aruppukottai operated with a dedicated Operation Manager — Dinesh — whose sole responsibility was humidity control on the production floor. With no automation, he manually switched 3 compressors and 1 AHU every shift based on memory and instinct. The AHU ran blind — no RH setpoints, no sequence, no feedback loop. Uncontrolled humidity directly threatened fabric quality, and the entire system depended on one person being present every single shift.

Pain Point	Description
No Automation	Dinesh manually switched all compressors and AHU — no BMS, no setpoint logic, no sequence.
Uncontrolled RH	Production humidity managed by human judgment. No RH sensor feedback, no control loop.
Risk of Human Error	Wrong switching order risked compressor damage or humidity spikes during active production.
No HMI Visibility	Zero real-time visibility into temperature, humidity, or equipment status on the floor.
No SOP	If Dinesh was absent, no operator knew the procedure. Production humidity left to chance.

"Imagine a hospital with just one nurse — no call bell, no monitor, no alarm — just one person walking room to room. That was Dinesh's reality every single shift."

The Solution — EnSmart BMS + HMI

EnSmart deployed a fully custom BMS solution — designed, wired, programmed, and commissioned solo in under one week. The system replaced all manual switching decisions with FBD (Function Block Diagram) logic driven by temperature and RH setpoints. An HMI screen gave Dinesh full real-time visibility for the first time. Strip heaters and water heaters were integrated into the RH control loop to automatically compensate when humidity rose beyond target thresholds.

Layer	What EnSmart Did	Technology
Field Devices	Read 3 compressors, 1 AHU, 2 water heaters, 1 strip heater	Modbus RTU, Hardwired I/O
BMS Controller	Custom FBD logic — temperature + RH sequence, setpoint-driven switching	FBD Programming
HMI	Full equipment screen, alarm pages, setpoint entry — real-time visibility	HMI Design & Config
Communication	P2P verification and MODScan validation before handover	MODScan
Handover	Full SOP delivered — any new operator can run system from day one	SOP Document

Control Sequence — How the Automation Works

The FBD sequence runs continuously during production hours. Compressors start in a timed sequence to prevent anti-short-cycle trips. The AHU runs on temperature setpoints. When RH exceeds target, water heaters and strip heaters activate automatically — a classic HVAC balance that previously had no automation at all.

Step	Detail
Step 01 - Edge Sensing	Temperature and RH sensors read production floor conditions continuously.
Step 02 - Setpoint Compare	BMS compares live readings against setpoints (23°C / 24°C / 25°C with RH band).
Step 03 - Compressor Seq.	C1 starts with 2-min delay. C2 at ~2.5 min. C3 at ~3 min — anti-short-cycle by design.
Step 04 - AHU Control	AHU activates when temperature setpoint demands — controlled by BMS, not operator.
Step 05 - RH Compensation	When RH rises above target, water heaters and strip heaters activate automatically.
Step 06 - HMI Monitoring	Operator views equipment status, live T/RH, alarms, setpoints from a single HMI screen.

Deployment Timeline — Under One Week

Day / Phase	Milestone
Day 1	Site survey, I/O count finalisation, BMS panel and controller selection
Day 2	Panel fabrication, controller wiring, I/O module termination
Day 3	FBD control logic development — temperature and RH sequence programming
Day 4	HMI screen design — equipment screens, alarm pages, setpoint entry
Day 5	P2P verification across all field devices — MODScan communication validation
Day 6	Live commissioning, client observation, operator training, setpoint tuning
Day 7	Final handover — SOP documentation delivered, client signed off

Results and Value Delivered

Area	Before EnSmart	After EnSmart
Manual Switching	Operator manually switched all 3 compressors and AHU every shift.	Zero manual switching. All equipment operates automatically on BMS logic.
Humidity Control	No RH control. AHU ran blind on operator judgment.	Production RH actively managed 24/7 by BMS setpoint sequence.
Temperature Control	No setpoints. Operator decided temperature by feel.	Setpoint-driven: 23/24/25°C with tuned RH compensation.
Heater Integration	Water heaters and strip heaters operated manually or not at all.	Heaters auto-activate when RH rises — preventing moisture-related fabric damage.
HMI Visibility	No HMI. Zero real-time visibility for operator.	Full HMI: live T/RH, equipment status, alarms, setpoint entry.
Post-Live Complaints	N/A — no BMS in place.	Two complaints raised. Both root-caused with data. Zero BMS faults found.
Documentation	No SOP. Procedure unknown if Dinesh was absent.	Full SOP delivered. Any new operator can run system from day one.

Post-Live Complaint Resolution

Two complaints were raised after commissioning. Both were investigated with data logs. Zero BMS faults were found in either case — each was traced to an external root cause.

Complaint	Root Cause and Resolution
"Cooling too high"	Compressor OEM tuning — not BMS logic. EnSmart sequence fully verified. OEM informed for re-tuning.
"Compressor 1 takes 6 minutes"	Operator manually toggled compressors ON/OFF, triggering the compressor's own internal protection timer. BMS delay is 2 min by design (anti-short-cycle). Proven with data logs.
"5-minute AHU delay?"	No 5-minute delay in BMS logic — verified and demonstrated to client. Perception was normal AHU thermal stabilisation time after startup, not a programmed delay.

Completed at Sree Parameshwari Textile Mills, Aruppukottai — April 2026. What began as a manual operator running between switches became a BMS-controlled, HMI-visible, setpoint-driven HVAC system — delivered solo, in under one week, with full client sign-off and zero outstanding faults.



Does your facility still have a "Dinesh"?

EnSmart designs and commissions BMS automation for industrial, textile, and commercial facilities. We integrate any equipment — compressors, AHU, heaters, chillers — into one smart, setpoint-driven sequence.

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