

MDF Core Moisture Content Post Press Calibration & Verification

1.0 Maintenance Objective & Frequency

The objective of this procedure is to calibrate and verify the MDF core moisture content measurement system located immediately after the continuous press. Accurate moisture content readings are critical for controlling press speed, resin application, and final board quality. This PM ensures the sensor provides reliable data within $\pm 0.2\%$ moisture content of the reference standard.

Frequency: Weekly or every 40 production hours, whichever comes first. Additional calibration is required after any sensor replacement, press shutdown exceeding 72 hours, or if product quality deviations are observed.

2.0 Lockout/Tagout (LOTO) & Safety

- Electrical Isolation: Disconnect main power to the moisture sensor control panel and apply personal lock and tag.
- Pneumatic Isolation: Close the compressed air supply valve to the sensor cleaning system and bleed residual pressure.
- Mechanical Isolation: Ensure the conveyor or roller system feeding the sensor is locked out and cannot be activated.
- PPE: Safety glasses, cut-resistant gloves, and hearing protection (if near operating equipment).

3.0 Required Tools, Parts & Lubricants

- Calibration reference standard (NIST-traceable moisture content test block, 6% MC typical)
- Digital multimeter (Fluke 87 or equivalent)
- Small flathead screwdriver (for potentiometer adjustment)
- Lint-free wipes and isopropyl alcohol (99%)
- Torque wrench (0-10 Nm range) with appropriate bit for sensor mounting bolts
- Sensor manufacturer's calibration manual (specific to model)

4.0 Step-by-Step Maintenance Procedure

1. Perform LOTO as per Section 2.0. Verify zero energy state by attempting to start the conveyor and sensor system.
2. Clean the sensor face and reference block using lint-free wipes and isopropyl alcohol. Remove all dust, resin, and debris.
3. Inspect sensor mounting bolts for tightness. Torque to manufacturer specification (typically 6 Nm). Check for physical damage or misalignment.
4. Connect the digital multimeter to the sensor output terminals as per the wiring diagram. Set the multimeter to DC voltage (0-10V scale).
5. Place the calibration reference block directly on the sensor face, ensuring full contact and no air gaps.
6. Record the voltage reading from the multimeter. Compare to the manufacturer's calibration curve for the reference block moisture content.

7. If the voltage reading deviates by more than $\pm 0.2\%$ moisture equivalent, adjust the sensor zero and span potentiometers using the small screwdriver. Recheck after each adjustment.
8. Remove the reference block and perform a zero-air reading (sensor exposed to ambient air). Verify the reading corresponds to 0% moisture (or manufacturer offset).
9. Repeat steps 5-8 until both the reference block and zero-air readings are within tolerance.
10. Document the final voltage readings and corresponding moisture content in the PM log.
11. Remove LOTO, restore power and compressed air. Verify the sensor cleaning system cycles properly.

5.0 Verification & Return to Service

1. Run a test board through the press at normal production speed. Monitor the moisture content reading on the HMI for the first three boards.
2. Compare the sensor reading to a lab moisture content test (oven-dry method) on a sample taken from the same board. The difference must be $\leq 0.2\%$.
3. If the verification fails, repeat the calibration procedure. If the issue persists, replace the sensor and re-calibrate.
4. Sign off on the PM work order in ServiceGrid, attaching the calibration data and any notes.
5. Return the machine to production and notify the shift supervisor.

Regulatory Disclaimer: This document is a generic maintenance template provided for educational and informational purposes only. It does not constitute professional engineering or reliability advice. The end-user assumes all liability for validating all step sequences, torque specs, and LOTO protocols against specific machinery OEM manuals before deployment to a live production floor.