Fixed Traceability Across PM, Dosing, Calibrations & Effluent Logs

CLIENT PROFILE

A large Industrial Zero Liquid Discharge (ZLD) facility supporting a major manufacturing plant. The ZLD system includes evaporators, RO units, ATFDs, clarifiers, dosing systems, blowers, pumps, flow meters, online analyzers, and effluent monitoring equipment, each of which must meet strict environmental and compliance standards.
With regulatory bodies increasing scrutiny, the plant needed airtight documentation and traceability to avoid non-compliance penalties.

WATER

CHALLENGE

Ahead of a major environmental and discharge audit, the facility faced several high-risk gaps:

- PM logs for evaporators, RO skids, and pumps scattered across registers, spreadsheets, and operator diaries.
- Dosing activities documented inconsistently, making it hard to verify chemical usage and treatment adequacy.
- Calibration lapses for pH meters, TDS analysers, flow meters, and online monitoring instruments.
- Effluent discharge logs missing timestamps or complete readings.
- Difficulty proving compliance data authenticity to auditors.
- No single dashboard showing PM compliance, dosing trends, effluent quality, or instrument calibration health.

These issues created a serious risk of receiving audit penalties, notices, or even temporary shutdown orders.

SOLUTION IMPLEMENTED

Asset Infinity deployed a centralized ZLD Compliance & Operations Traceability System, ensuring every operational record was audit-ready and digitally validated.

1. Preventive Maintenance (PM) Traceability

- PM schedules standardized for all equipment:
  - RO feed pumps
  - ATFD motors
  - Blowers
  - Chemical dosing pumps
  - Evaporators
- Technicians captured readings, photos, and evidence through mobile devices.
- PM escalations ensured no overdue activities remained unresolved.

2. Dosing Activity Digitization

- Operators logged chemical dosing with:
  - Chemical type
  - Dosage quantity
  - Batch number
  - Time of addition
  - Before/after process readings
- Data auto-linked to treatment outcomes for clear traceability.

3. Sensor & Instrument Calibration Management

- Calibration schedules monitored for pH, TDS, conductivity, turbidity, and flow meters.
- Calibration certificates stored digitally for audit review.
- Instruments automatically flagged if calibration was overdue or failed.

4. Effluent Quality Logging

- Field teams captured:
  - pH
  - Conductivity
  - TDS
  - Flow rate
  - Temperature
  - Sample photos
- Logs were timestamped and geo-validated, ensuring authenticity.

5. Unified ZLD Compliance Dashboard

- Consolidated visibility of:
  - PM compliance
  - Calibration status
  - Dosing patterns
  - Effluent quality trends
  - Repeated anomalies
- Enabled teams to identify and correct issues before the audit.

IMPLEMENTATION & ROLLOUT

- Rolled out across operations, maintenance, and laboratory/instrumentation teams.
- Operators trained to record dosing and effluent logs through mobile devices.
- Migration of historical calibration and effluent records for continuity.
- Deployment completed with zero disruption to ZLD operations.

MEASURABLE BENEFITS

- Successfully avoided a regulatory audit penalty through complete traceability.
- PM compliance increased to near 100% across ZLD equipment.
- Accurate dosing logs improved treatment consistency and reduced chemical wastage.
- Calibration documentation fully audit-ready with zero missing records.
- Effluent quality stabilized due to real-time monitoring and corrections.

OUTCOME & IMPACT

The ZLD facility achieved:

- A clean audit outcome with high praise for documentation quality.
- Stronger cross-team coordination and accountability.
- Early detection of anomalies through real-time dashboards.
- Consistent, compliant treatment and discharge performance.
- A repeatable audit-readiness framework for future inspections.

CONCLUSION

By digitizing PM, dosing, calibrations, and effluent logs, Asset Infinity enabled the ZLD facility to avoid a significant audit penalty, strengthening compliance, operational traceability, and long-term environmental reliability.