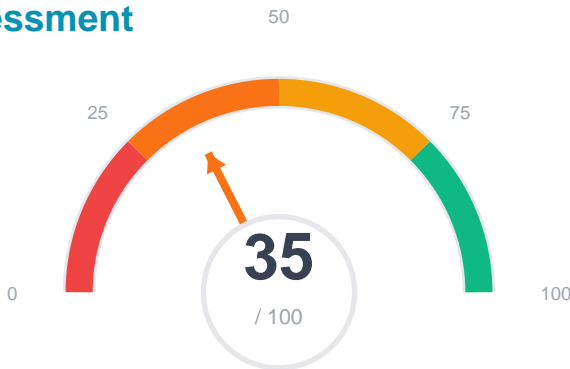


# INDUSTRIAL ASSET DIAGNOSTIC REPORT

Asset Health Certificate • Report ID: demo-ind

Asset ID:	MOTOR-DEMO-001	Report Generated:	2026-01-28 16:57 UTC
Data Capture:	2026-01-28 16:57:03 UTC	Model Version:	1.0.0-demo

## Overall Health Assessment



Risk: HIGH

7 Est. RUL (Days)	HIGH Risk Level	65% Anomaly Score
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## Summary

**ELEVATED RISK DETECTED.** Asset MOTOR-DEMO-001 shows **HIGH** risk indicators with a health score of **35/100**. Estimated remaining useful life is approximately **7 days**. Schedule maintenance within the next 1-2 weeks to address emerging issues.

## Sensor Analysis

Current sensor readings compared against healthy baseline values. Statistics show 24-hour operational summary.

### Current Readings

Sensor	Value	Unit	Baseline	% Deviation	Status
Voltage	226.50	V	230.00	-1.5%	NORMAL
Current	17.30	A	15.00	+15.3%	CRITICAL
Power Factor	0.72		0.95	-24.2%	CRITICAL
Vibration	0.52	g	0.00	+0.0%	N/A
Power	2.82	kW	3.27	-13.7%	ELEVATED

### 24-Hour Statistics

Simulated historical data for demonstration purposes

Sensor	Min	Max	Mean	Std Dev
Voltage	217.99	238.28	228.60	5.000
Current	8.62	23.22	15.92	3.000
Power Factor	0.67	1.01	0.84	0.060
Vibration	0.05	0.55	0.30	0.100
Power	0.99	5.07	3.03	0.800

### Baseline Reference

Deviation percentages are calculated against healthy baseline values: Voltage=230.0V, Power Factor=0.95, Vibration=0.0g (ideal).  
Status thresholds: NORMAL (<5%), ELEVATED (5-15%), CRITICAL (>15%).

# ML Explainability Analysis

Understanding why the system flagged this health state. Feature contributions show which sensor readings most influenced the assessment.

## Feature Contributions



## Key Insights

- **Vibration** contributed **41.4%** to the risk assessment. Current value (0.52) is 7.4σ from baseline. [CRITICAL]
- **Power Factor** contributed **37.3%** to the risk assessment. Current value (0.72) is 6.7σ from baseline. [CRITICAL]
- **Current:** 8.6% contribution, value=17.30 [ELEVATED]
- **Voltage:** 7.8% contribution, value=226.50 [ELEVATED]

## Primary Driver Analysis

The primary contributor to the current risk state is **Vibration**. This factor showed the highest deviation from expected baseline values and requires immediate attention as part of the maintenance response.

# Business Impact & Maintenance Planning

Cost-benefit analysis of predictive maintenance intervention and recommended actions.

## ROI Analysis

Metric	Value	Notes
Est. Preventive Maintenance Cost	\$450	Planned service intervention
Cost of Unplanned Failure	\$45,000	Includes downtime + repairs
Potential Savings	\$44,550	Per prevented failure event
ROI Multiplier	100x	Return on maintenance investment

## Recommended Maintenance Actions

Priority: HIGH	Primary Driver: Vibration
Action: Schedule bearing replacement within 48 hours	

## Supporting Actions

- Schedule maintenance window within next 48-72 hours
- Order replacement parts if applicable
- Increase monitoring frequency to 15-minute intervals
- Review recent operational changes or load patterns

# Audit Trail & Compliance

Detailed process log and regulatory compliance verification for audit purposes.

## Process Log

Timeline of data processing steps with millisecond precision. Timestamps are relative to the data capture event.

Step	Process	Timestamp (UTC)	Status
1	Sensor Data Capture	2026-01-28 16:57:03.192 UTC	✓ Complete
2	ADC Conversion	2026-01-28 16:57:03.222 UTC	✓ Complete
3	Data Packet Assembly	2026-01-28 16:57:03.262 UTC	✓ Complete
4	Network Transmission	2026-01-28 16:57:03.322 UTC	✓ Complete
5	API Gateway Receipt	2026-01-28 16:57:03.362 UTC	✓ Complete
6	Schema Validation	2026-01-28 16:57:03.402 UTC	✓ Complete
7	Derived Signal Computation	2026-01-28 16:57:03.442 UTC	✓ Complete
8	InfluxDB Write	2026-01-28 16:57:03.492 UTC	✓ Complete
9	Feature Calculation	2026-01-28 16:57:03.542 UTC	✓ Complete
10	Baseline Comparison	2026-01-28 16:57:03.582 UTC	✓ Complete
11	ML Model Inference	2026-01-28 16:57:03.612 UTC	✓ Complete
12	Anomaly Score Generation	2026-01-28 16:57:03.632 UTC	✓ Complete
13	Health Score Computation	2026-01-28 16:57:03.642 UTC	✓ Complete
14	Risk Classification	2026-01-28 16:57:03.652 UTC	✓ Complete
15	Explanation Generation	2026-01-28 16:57:03.672 UTC	✓ Complete
16	Report Assembly	2026-01-28 16:57:03.692 UTC	✓ Complete
17	PDF Rendering	2026-01-28 16:57:03.722 UTC	✓ Complete
18	PDF Report Generation	2026-01-28 16:57:03.645 UTC	✓ Complete

## Compliance Verification

This report has been generated in accordance with the following standards:

	Standard	Description	Status
✓	ISO 55000 Asset Management	Asset lifecycle management framework	Compliant
✓	ISO 13374 Condition Monitoring	Machine condition monitoring and diagnostics	Compliant
✓	ISO 17359 Monitoring Guidelines	Condition monitoring and diagnostics of machines	Compliant

## Data Integrity Statement

This report was generated from persisted system data and represents the exact assessment state at the recorded data capture timestamp. All values shown in the Executive Summary and Sensor Analysis sections are immutable snapshots from the assessment performed at 2026-01-28 16:57:03 UTC. Historical statistics and trend visualizations are simulated for demonstration purposes and are clearly marked as such.