



VIBWORKS AI

REVOLUTIONIZING ROTATING MACHINERY MAINTENANCE WITH AI

In the realm of industrial maintenance, rotating machinery stands as a cornerstone of production across numerous sectors. However, these machines also present a significant challenge due to their propensity for wear and tear, which can lead to costly downtimes.

Addressing this challenge requires a proactive approach to maintenance one that can predict failures before they occur.

Enter our revolutionary AI module:

Designed to seamlessly integrate with rotating machinery, this tool enhances predictive maintenance capabilities by detecting anomalies early, minimizing downtime, and extending machinery lifespan.

Our VibWorks AI is a cutting-edge solution that leverages machine learning to enhance the operational integrity of industrial machinery.

Here's how:



Comprehensive Data Utilization

The module analyzes data from five overall vibration indicators and six specific power frequency bands, providing a granular view of machine performance.



Robust Data Source

By drawing on the rich datasets available in the VibWorks Database, the AI module ensures that its analyses are both comprehensive and precise, enhancing its ability to detect potential issues before they escalate.



Business Impact

The module analyzes data from five overall vibration indicators and six specific power frequency bands, providing a granular view of machine performance.



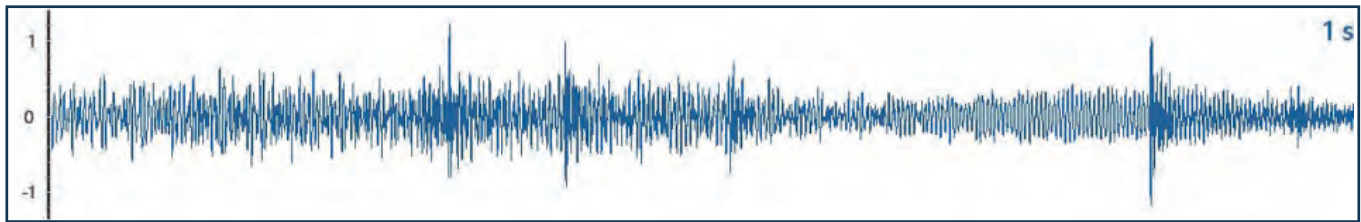
Cutting-Edge AI Technology

The VibWorks AI is described as a cutting-edge solution leveraging machine learning to enhance machinery operational integrity.

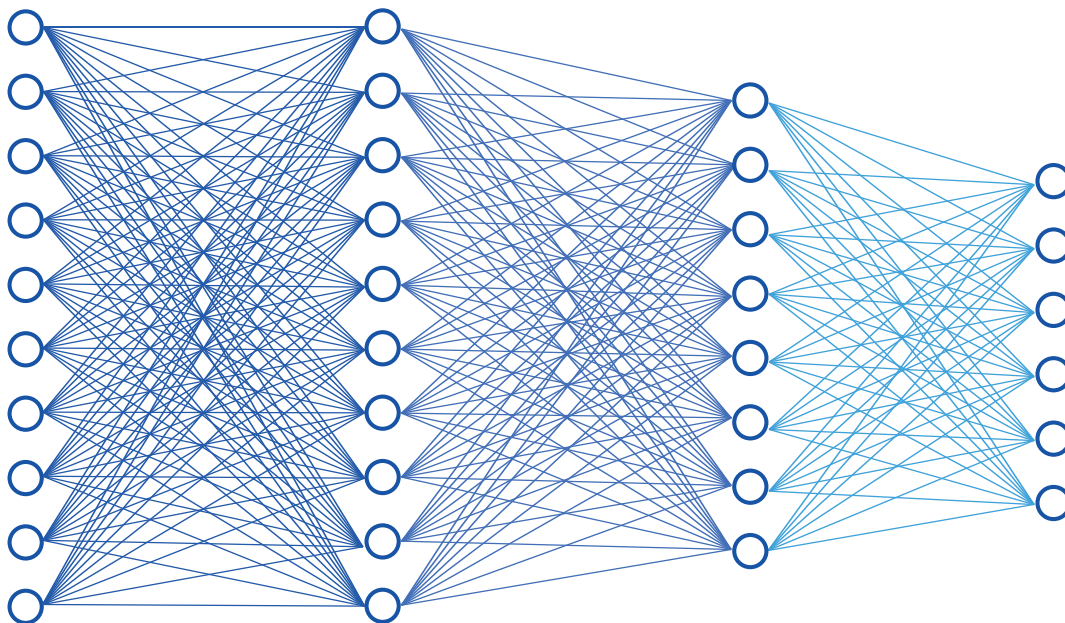


Machine Learning Process

VibWorks AI utilizes machine learning for real-time data analysis, detecting patterns and anomalies to prevent machinery failures. Proactive alerts enable timely maintenance interventions, optimizing efficiency and reducing costs.



- Peak
- RMS
- Velo
- CF
- B1
- B2
- B3
- B4
- B5
- B6



- Class#1 : Defect #1
- Class#2 : Defect #2
- Class#3 : Defect #3
- Class#4 : Defect #4
- Class #5: Defect #5
- Class#6 : No Defect

INPUTS

HIDDEN LAYERS

OUTPUT LAYER



Learning Database

This database comprises over 600,000 entries, collected from experienced analysts located across four continents, coming from BETA VIB solutions both portable and Online.

Such a vast and diverse dataset ensures robustness and accuracy in anomaly detection.

Specifically, 80% of these entries are utilized for training our algorithms, honing their precision and reliability,

While the remaining 20% are dedicated to validation processes, confirming that the module performs optimally under various industrial conditions.

This comprehensive approach to data usage not only enriches the training process but also boosts the confidence in the predictive capabilities our module provides to users worldwide.

PRODUCT LINE ARCHITECTURE

In industrial maintenance, rotating machinery is vital but prone to wear, causing costly downtimes.

Our innovative AI module integrates seamlessly with these machines, detecting anomalies early to predict failures, minimize downtime, and extend machinery lifespan for portable and online solution.



DATA COLLECTION ▶

FEATURE EXTRACTION ▶

DATA PREPARATION ▶

MACHINE LEARNING
TRAINING DB ▶

MACHINE LEARNING
TESTING EVALUATION ▶

AI MODEL



DATABASE : ARCHIVE AND STORAGE



DATA FACTORY



DATA FACTORY



DATA FACTORY



CORTEX



VIBWORKS



LT



Benefits and Business Impact

Implementing the AI module transforms maintenance from a reactive task to a strategic component of business operations:

Reduced Downtime :

Early detection and maintenance interventions significantly reduce unplanned downtime.

Cost Efficiency :

By preventing large-scale failures, the module significantly reduces repair costs and improves the overall ROI of maintenance expenditures.

Extended Equipment Life :

Proactive maintenance based on precise data analysis extends the operational lifespan of machinery.

The screenshot displays the 'VIBRATION FULL REPORT' interface. At the top, it shows the analyst's name (AI), report date (08/05/2024), client name (ALPHA BOX), client phone (+1-412-555-2381), and client email (john.doe@alphabox.com). Below this, there are five status indicators: Good Condition (green checkmark), Early Stage Of Warning (yellow warning triangle), Abnormal Condition For Long Term Continue Monitoring (orange warning triangle), Critical Condition / Intervention Required (red warning triangle), and Nothing To Report (grey circle with slash). The main table lists machines with their AI results, actions, criticality, and AI scores.

| MACHINE NAME | AI RESULTS | ACTIONS | CRITICALLY | AI SCORE |
|--------------|---|--|------------|----------|
| BLO-VX-04 | Alignment issue detected on Pt 2, Grade 5 | Immediate Alignment Required | 🚨 | 92% |
| DIESEL FIRE | Louseness issue detected on Pt 3, Grade 5 | Immediate Alignment Required | 🚨 | 92% |
| | Lubrication Issue detected on Pt 1, Grade 2 | Schedule Lubrication in the next 2 Month | 🚨 | 92% |
| P 1300 PUL | Lubrication Issue detected on Pt 1, Grade 2 | Schedule Lubrication in the next 2 Month | 🚨 | 92% |
| | Louseness issue detected on Pt 3, Grade 5 | Immediate Alignment Required | 🚨 | 92% |
| P 4000 ETH | Louseness issue detected on Pt 3, Grade 5 | Schedule Lubrication in the next 2 Month | 🚨 | 92% |

Implementing AI in vibration analysis is not intended to replace the Analyst but to augment their role by streamlining routine tasks.

This technology saves valuable time by handling extensive calculations and in-depth data analysis, allowing Analysts to concentrate on more complex issues that require their expert judgment.

AI efficiently sifts through data to identify clear-cut cases of defects or confirm the absence of issues, thereby filtering out straightforward situations.

This enables Analysts to focus their skills on diagnosing intricate problems and developing sophisticated maintenance strategies,

ultimately enhancing productivity and the effectiveness of maintenance operations.

As industries continue to evolve, so too must the technologies we rely on to maintain operational efficiency.

Our AI module represents a significant advancement in the field of industrial maintenance, providing companies with an essential tool for managing their assets health more effectively.

Don't wait for the next unplanned downtime—take control of your maintenance processes today. Contact us for a demonstration and see how our VibWorks AI can transform your maintenance strategy.