

# Condition-based Maintenance

Real-time vibration monitoring and fault detection

## Problem

Traditional maintenance models, such as corrective maintenance (fixing things after they break) and preventive maintenance (scheduled maintenance), often struggle with issues like unplanned downtime, inefficient planning, and labor shortage, ultimately leading to lower utilization and rising operational costs.

## Solution

An online CBM system with in-built fault detection and incident tracking, on the other hand, is non-intrusive and highly scalable. 4PointX CBM suite comes with necessary IoT hardware, vibration gauges, and real-time monitoring software — all integrated to deliver equipment availability at an affordable cost..

### BENEFITS OF A CBM SYSTEM

#### Increased Availability

– through real-time monitoring and acting

#### Cost Savings

– lower maintenance costs and increased productivity

#### Faster Troubleshooting

– single window, remote, and aided by algorithms

#### Knowledge Continuity

– immune to staff shortage and transitions

### ADVANCED CAPABILITIES OF 4POINTX CBM

**Scalable** to multiple plants and 1000s of equipment

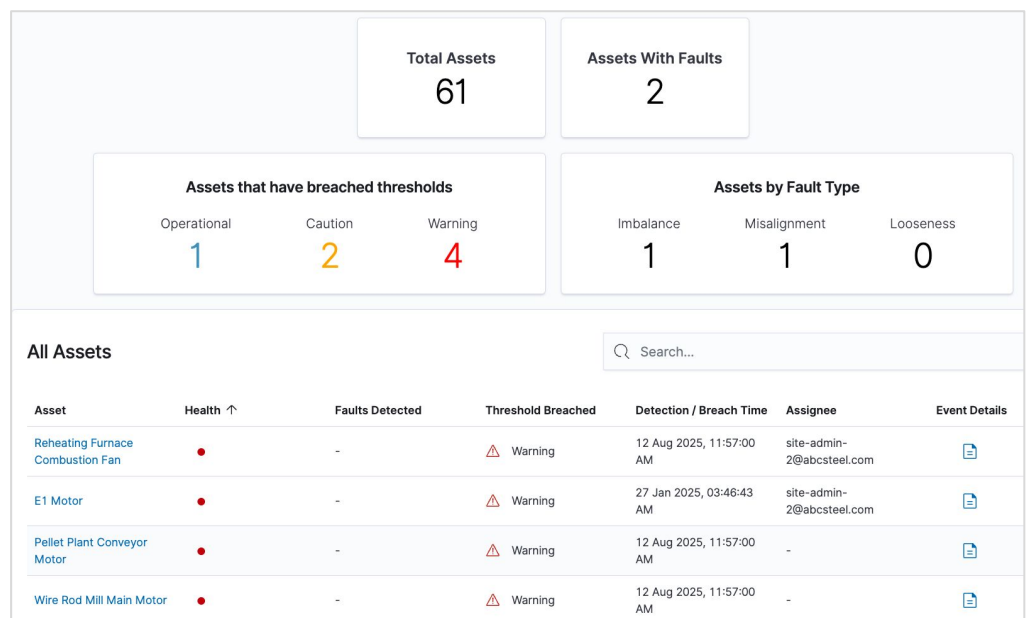
**IIoT Workbench** for merging condition data with process and production data

#### Custom Dashboards

Using a no-code, drag-and-drop interface

#### Notebooks

for advanced analysis and ML models



## Features

4PointX EMS is one of the three apps on 4PointX IIoT Workbench and comes with following features right out of the box.

### Condition dashboards

- Plant health summary
- Asset condition dashboard
- 3-axis velocity, acceleration and displacement with sensor-level drill down and trends

### Alerts

- ISO and custom thresholds
- Breach history

### FFT analysis

- FFT chart for 3-axis velocity
- Annotated peaks

### Predictive maintenance

- Automated fault detection
- RUL estimation

### Process correlation

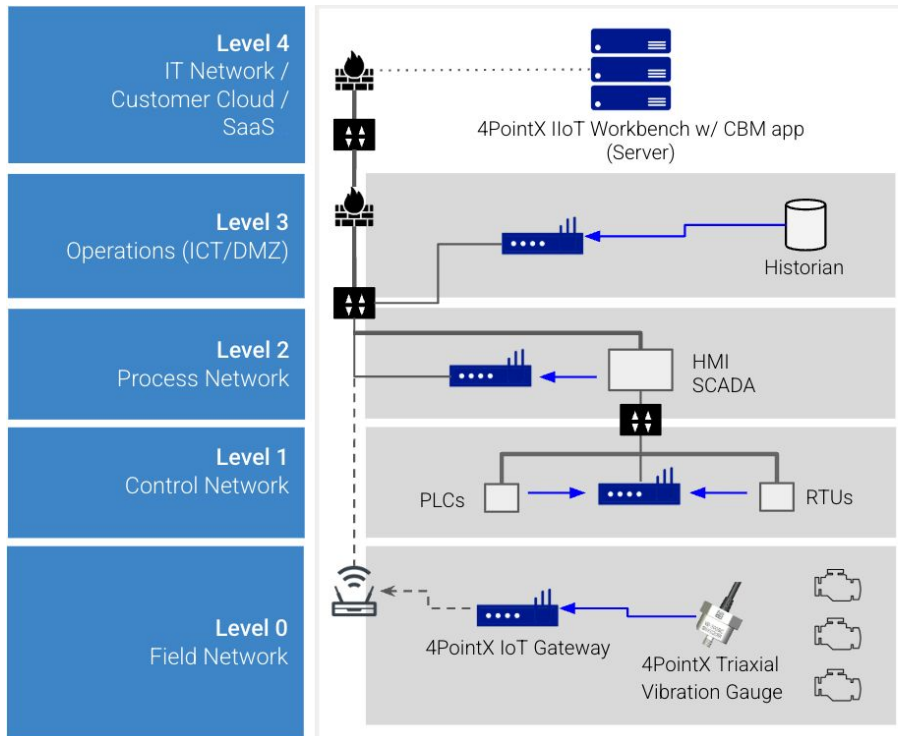
- Visualize process tags and vibration parameters in a single chart

### Event workflow

- Start-to-end incident tracker with assignee, investigation details, corrective action taken etc.

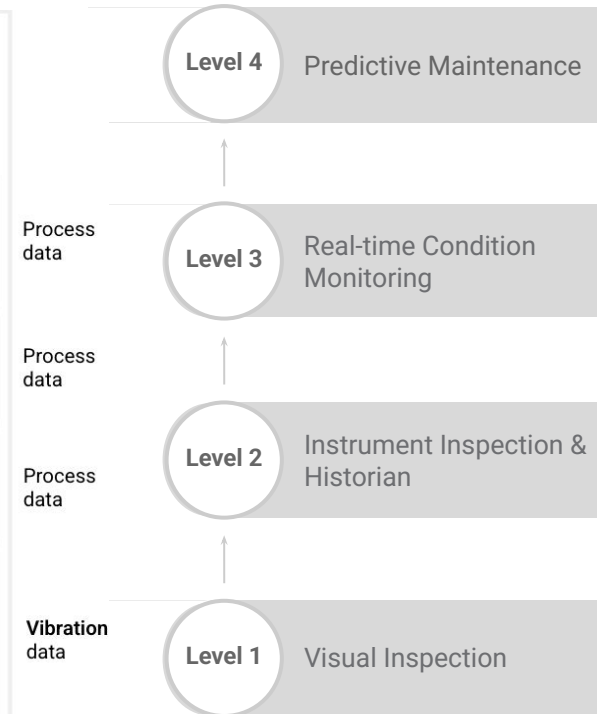
## CBM Deployment Architecture

4PointX CBM is one of the I4.0 apps on 4PointX IIoT Workbench. The solution comes with IoT gateway, and triaxial vibration gauge. The server can be either deployed locally in the Plant or Cloud, or subscribed as SaaS.



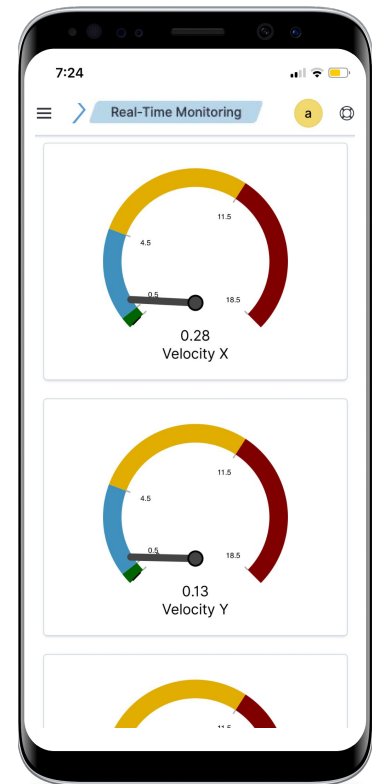
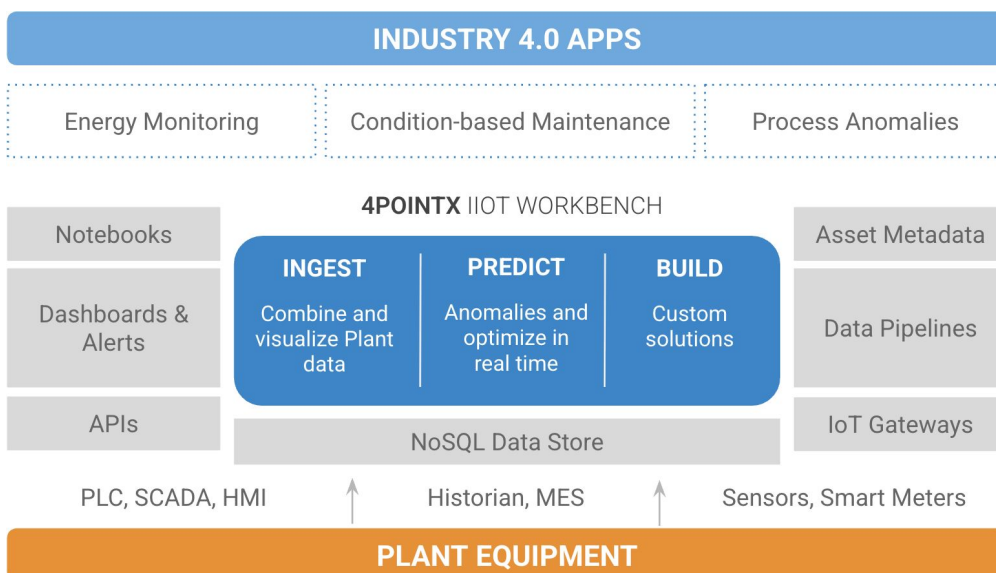
4POINTX

## CBM Maturity Levels



## 4PointX IIoT Workbench

4PointX IIoT Workbench simplifies industrial analytics by bridging the IT/OT gap and enabling manufacturers to implement data-driven solutions to optimize the production lines. The Workbench integrates with SCADA and provides a scalable analytics layer for building custom IIoT solutions.



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