Solution Proposal for Realtime Vibration Condition Monitoring
Project Background

• Vibration Condition Monitoring (VCM) system for real-time and continuous monitoring the health of elevators.

• Integration of Predictive Maintenance (PdM) strategy and the concept of Industrial Internet of Things (IIoT), vibration data of the machines will be collected and analyzed by the online system.

• Set up early-stage fault detection algorithm and alarm triggering program based on the vast data collected:
  ✓ maintenance cost $\downarrow$
  ✓ plant's asset reliability $\uparrow$
Vibration Diagnosis

- Coupling misalignment
- Mass imbalance
- Roller element bearing fault
- Sleeve bearing problem
- Mechanical looseness
- Electrical line problem
- Gear problem

- Impeller problem
- Belt and pulley problem
- Structural issues
- Flow problems
Big Data

• Large amount of historical data / big data for better trending and diagnosis

• Data sharing between plants for similar machine models to predict failure rate
Predictive Maintenance

- Vibration Condition Monitoring (VCM) → a kind of machinery Predictive Maintenance (PdM) technique
- Fault(s) → abnormal noise and vibration
- VCM can identify machine fault(s) & severity
- Cost-effective Asset Reliability strategy
Online

- Remote access real-time vibration data
- User-friendly and custom-made interface
- Instant alarm system to the management if excessive vibration is detected (by email / sms)
Trending

- **V-Sensing VCM program** will trend the entire machine life cycle
Specification

- Wireless tri-axial accelerometer + temperature sensor
- Sampling rate: 25,600 Hz
- 10 kHz Fmax
- Max. 6,400 lines of resolution
- Full waveform & spectrum data
- Programmable internal RMS trigger

- Battery type: 3.6 V Li - TL-5935
- Battery life: 2 - 4 years
- Wireless Data transmission: 2.4 GHz BLE 5.0
- IP67 - dust & water-proof
- Operating temperature: -40°C - 85°C
Specification (cont’)

Weight: 100 grams

1/4-28 UNF - 2A
Monitoring Points

Section View

Top View
Thank You!

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