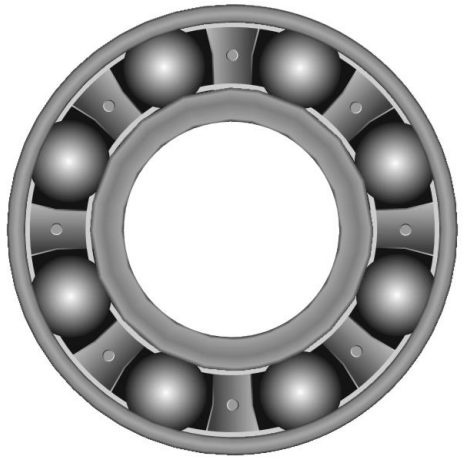
DISTENCE™
DISTRIBUTED INTELLIGENCE

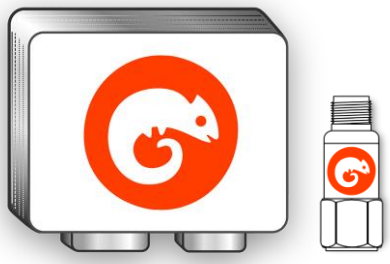
Condence concept: Bearings

CONDENCE

Condence concept: Bearing

Richest health metric: Vibration





Accuracy = time
Uses IEPE sensing technology to capture high frequency vibration
Wide frequency bandwidth translates into time, time to react

Enveloped acceleration
Condence edge computing capability captures earliest possible symptoms of bearing failure by enveloping acceleration. Failure stages 1-4.

Continuous & online
Based on continuous sampling (e.g. every 5 min) and edge computing technology
Maximised time to react even with fast evolving failures

Eliminating surprise / risk
- Unplanned work is more expensive
- Unplanned downtime is expensive

Enable condition based maintenance
- Decisions and maintenance based on actual asset condition
- Know when you need to add lubricant to bearings
- Know when you need to change the bearing
- Remove unnecessary manual work (inspection & repairs)
- Minimise human error via automatic alarms and data availability

Condence concept: Bearings

Condence technology

3

Terminal makes the analysis: enveloped acceleration

2

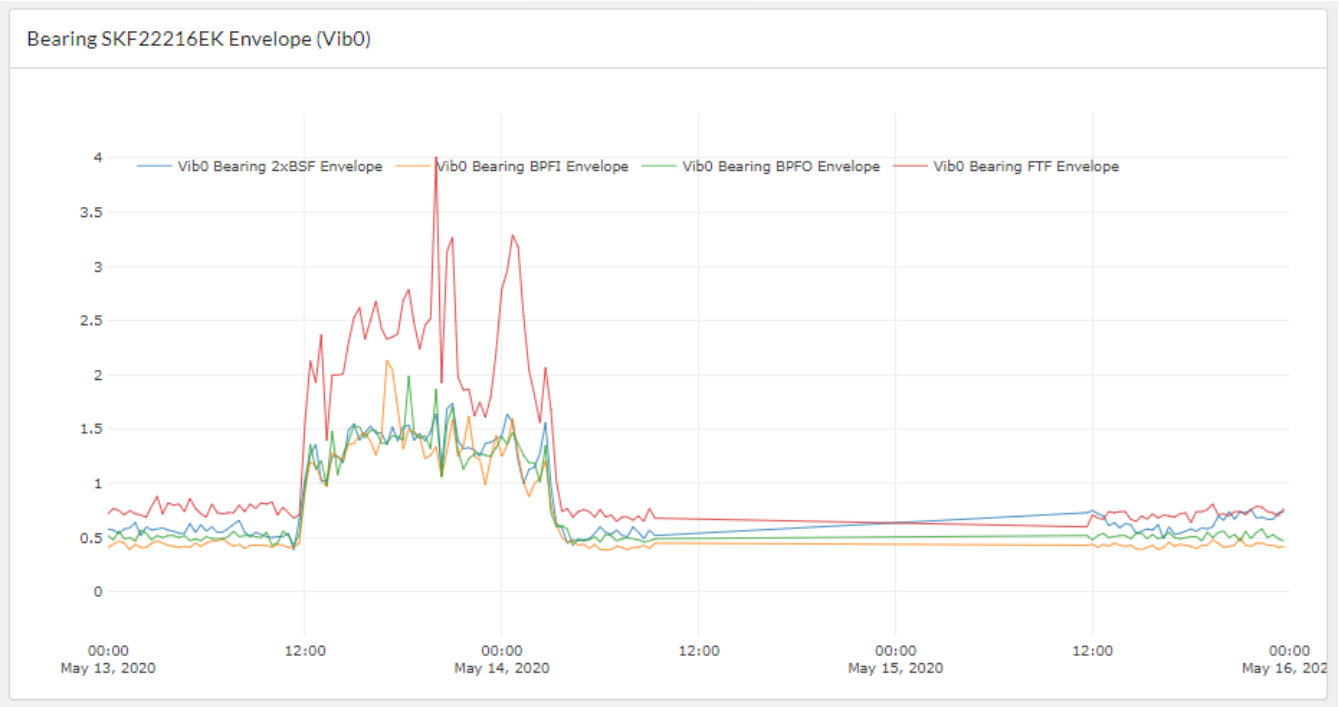
High frequency vibration sensor (IEPE)

1

Calculated failure frequencies are monitored

- Ball Pass Frequency of Outer Ring (BPFO)
- Ball Pass Frequency of Inner Ring (BPFI)
- Fundamental Train Frequency (FTF)
- Ball Spin Frequency (BSF)

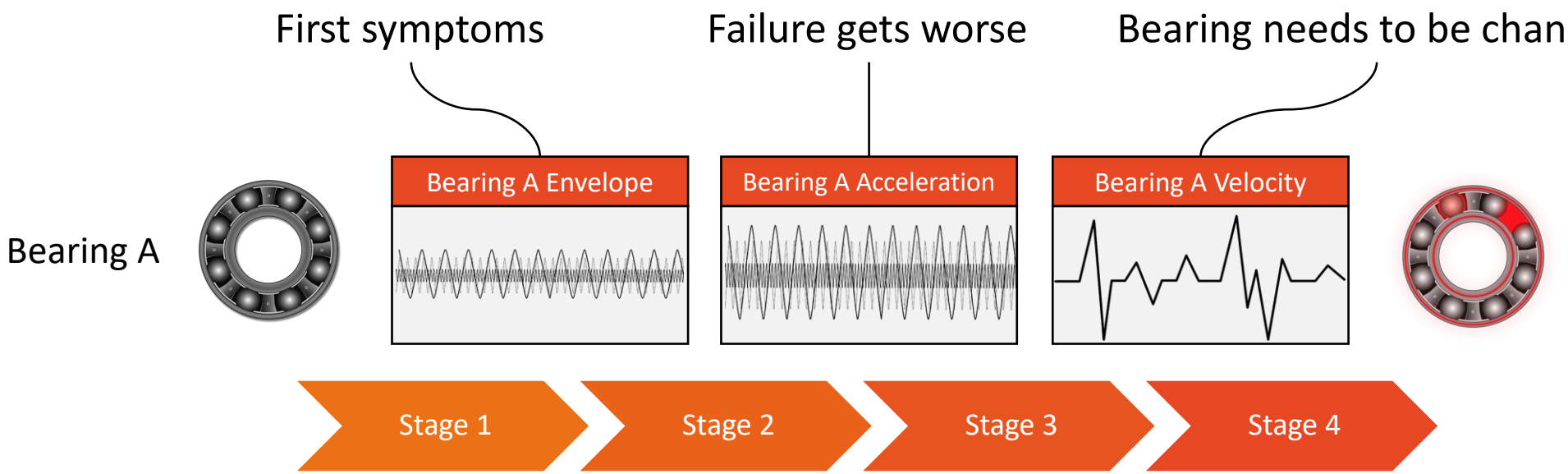
4



Measured and calculated datapoints are visualised in the cloud UI

Bearing failure stages

Bearing monitoring



Stages 1 & 2

Bearing status:
The first signs of lack of lubrication or minor bearing damage appear on very high frequency levels, over 10 kHz

Failure capture:
Only high frequency techniques such as enveloping acceleration will reveal the fault

Stage 3

Bearing status:
When the bearing fault reaches stage three the damage is more severe and will be visible if the bearing is removed

Failure capture:
The velocity spectrum (low frequency) can be used to detect the fault

Stage 4

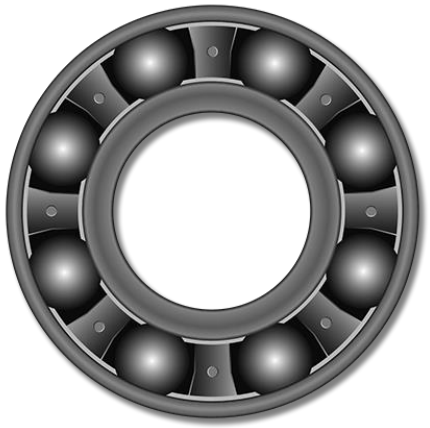
Bearing status:
When the bearing fault reaches stage four the bearing has significant damage and should be replaced

Failure capture:
Overall levels will increase, and the velocity spectrum (low frequency) will show the fault clearly.

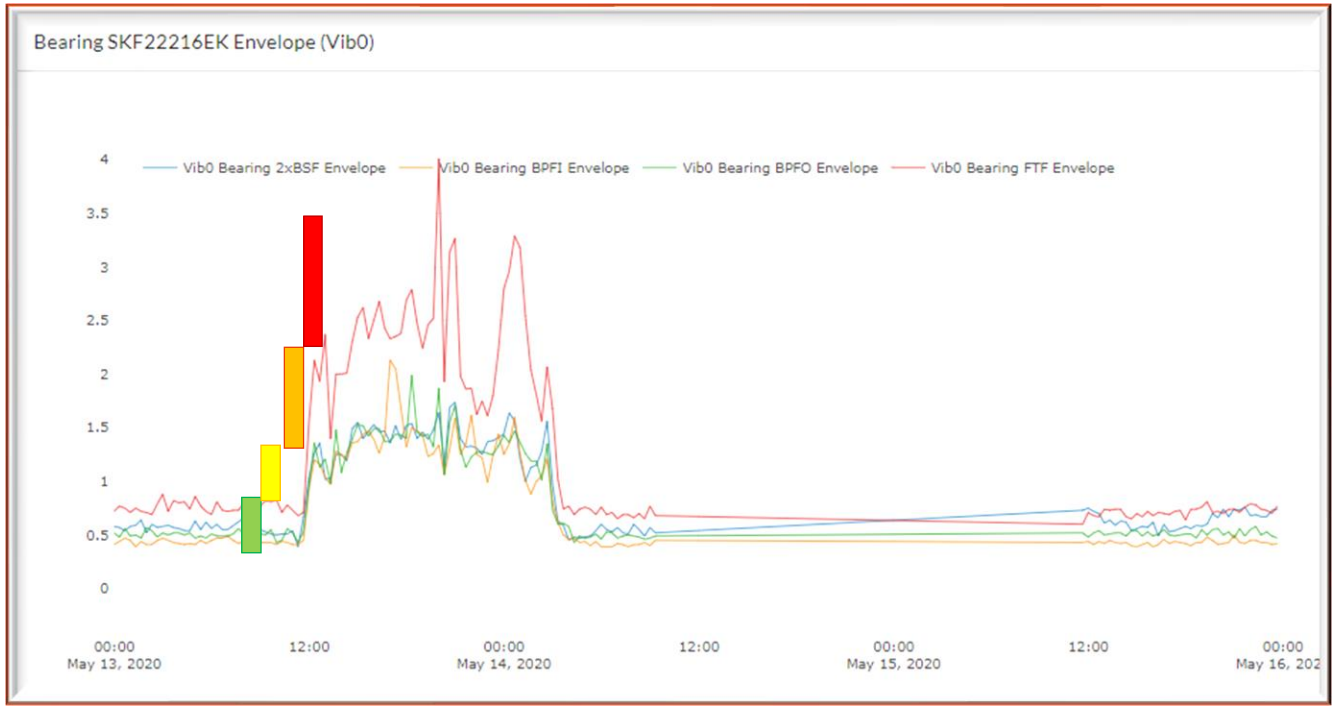
Condition based maintenance

Create suggestive notifications

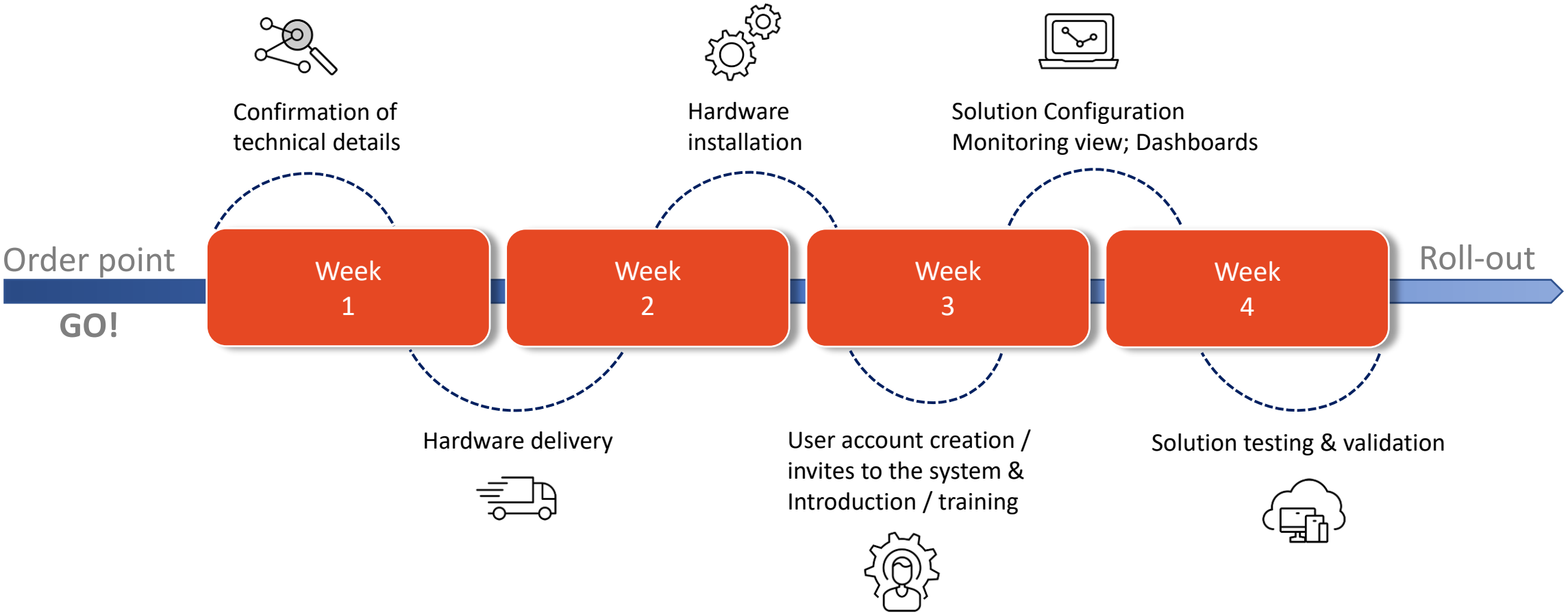
1. Set suggestive severities and thresholds for them
2. Automatic system notifications to trigger workflows
3. Notifications based on actual asset condition
4. Condition based maintenance (CBM)



- Maintenance action needed
- Plan for bearing check and lubrication
- Follow elevated vibration levels
- Normal vibration range



Delivery timeline



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Read more at:
https://condence.io/applications/condence-bearing/

Condence is a product of Distence Oy

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