VEHICLE LIFTER

MACHINE HEALTH SOLUTION FOR AUTOMOTIVE

THE PROBLEM:

The lifter is a multi-shop, A-rank piece of equipment. The function of the lifter is to lift or lower a vehicle onto conveyor systems that move the vehicle throughout the shop. The lifter uses chains that run sprockets to raise and lower the load, pushed by a motor running two large pillow block bearings. Any disruption to the operation of the lifter can slow down and even stop production.

COST OF ASSET FAILURES

$25,000/hour
Downtime Cost

8 hours
Downtime

Other
Safety & Environmental

INDUSTRY SAVINGS POTENTIAL

1 Hour of Downtime per Asset per Year
$25,000

About 100 hours of downtime per shop
$2,500,000

ASSET BLIND SPOTS:

There are several inherent challenges related to monitoring lifters.

Challenge #1: Time based maintenance causes unplanned downtime since there is a lack of visibility into the machine health

Challenge #2. Under greasing or over greasing can lead to premature bearing failure

Challenge #3. The maintenance is often in high, hard to reach places causing dangerous situations and a long time to perform maintenance

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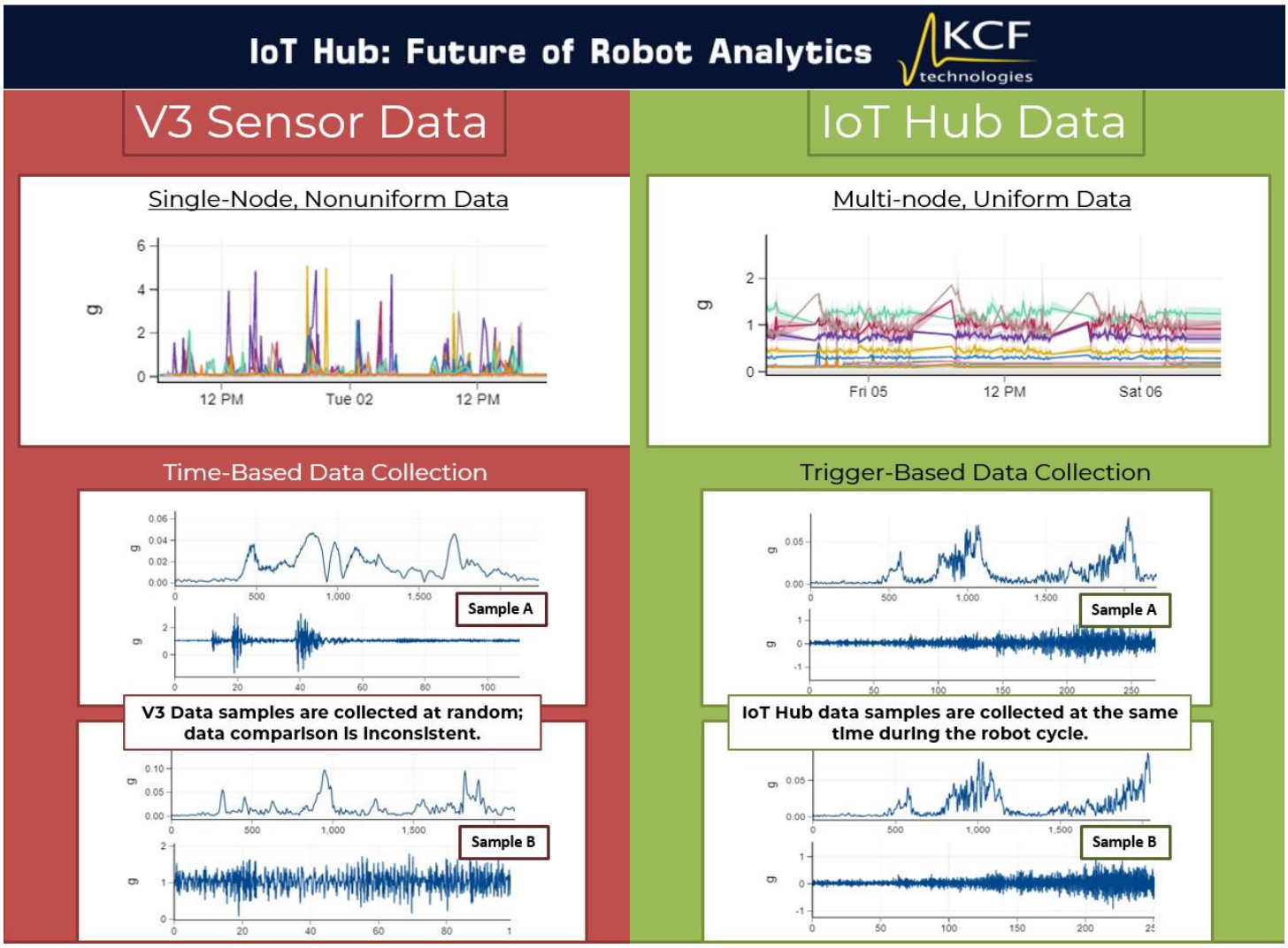
A NEW APPROACH TO LIFTERS

Above: IoT Hub with triggering capabilities

Typically, time-based maintenance is used. This results in maintenance being done on assets that don't need it and over greasing bearings that causes more damage.

Our solution, using IoT Hub and SMARTdiagnostics allows for continuous machine health monitoring. It gives the capabilities to trigger data samples when the asset begins its movement. This paves the way for automated callouts directly through Maximo using advanced analytics and create dashboards to increase visibility into the plant.



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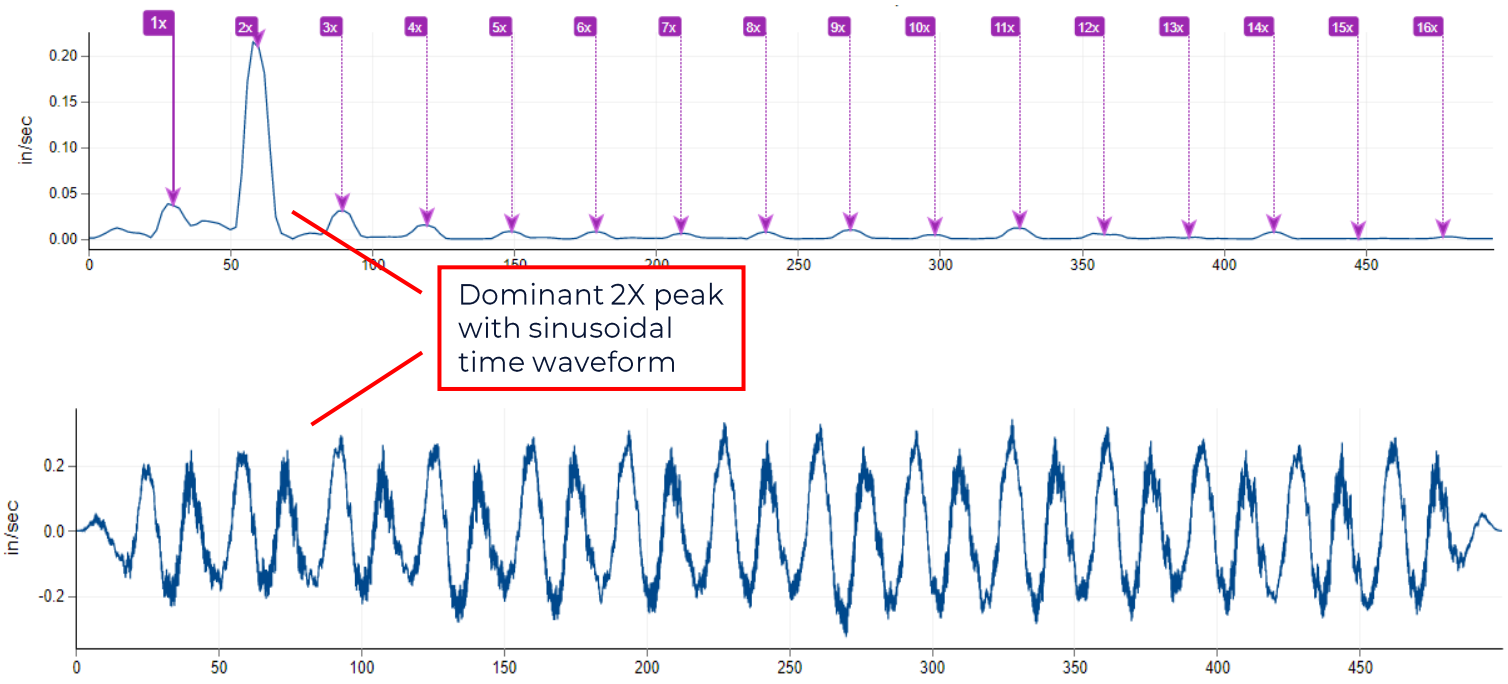
CONTINUOUS MACHINE HEALTH MONITORING

Most automotive manufacturers in the U.S. use time-based data collection to monitor their assets. This type of monitoring can not only be time consuming, but it is often an expensive process. With a time-based cycle, samples are collected at random making data comparison inconsistent. On the other hand, the use of trigger-based data collection will result in new insight into shops - helping to eliminate needless work, wasted budgets, and prevent new issues from arising due to unnecessary maintenance.



Above is the frequency spectrum and time waveform obtained for a motor on a lifter. The data was collected using an IoT HUB. There is a dominant 2X peak that stands out in the frequency spectrum and a sinusoidal time waveform. This motor appears to be in the early stages of wear, showing signs of imbalance and coupling misalignment.

Trigger-Based Monitoring Solution:

- Trigger-based maintenance helps to reduce costs by eliminating unnecessary repairs and downtime
- The samples are collected at the same exact time during the robot's cycle making comparison of data consistent and reliable
- This type of data collection is multi-node, resulting in uniform data

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