



CMT
monitoring systems

Why can Condition Monitoring fail?

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How to avoid unexp. breakdowns?

We need to avoid unexpected breakdowns of our machinery, let's apply vibration diagnostics for the evaluation of machinery condition.

BREAKDOWNS		
week 26	9	!
week 27	13	!
28	15	!
9	18	!



Advantages



- Lowers disruptions to normal operations
- Reduces the cost and time associated with asset failures
- Improves equipment reliability
- Minimizes unscheduled downtime due to catastrophic failure
- Minimizes requirement for emergency spare parts
- Optimized maintenance intervals
- Reduces the chances of collateral damage to the system

Disadvantages

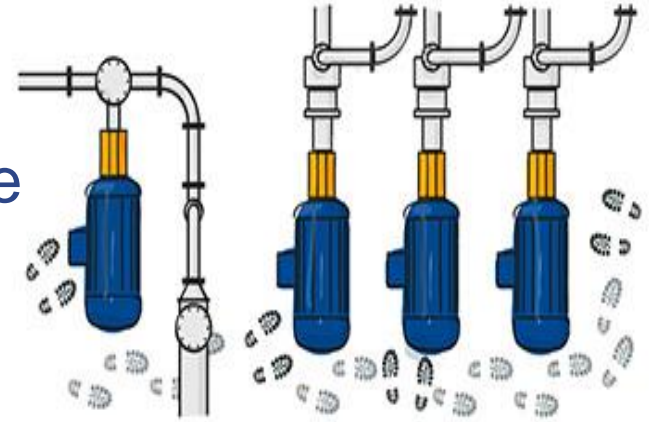


- Condition monitoring test equipment can be expensive
- Databases cost money and time to analyze
- Cost to train staff – you need a knowledgeable professional to analyze the data and perform the tasks
- May require asset modifications to retrofit the system with sensors
- Unpredictable maintenance periods

Where can CM fail?

What Equipment is monitored?

- Expensive equipment
- High consequential cost after failure
- Relevant for health and safety
- No redundancy



What is needed to avoid CM to fail?

- Clear definition for above category!
- Condition monitoring strategy for all equipment not falling into above category.

Where can CM fail?

Who does the Condition Monitoring?

- Internal maintenance people
- External experts



What is needed to avoid CM to fail?

- Condition monitoring strategy simple enough to monitor equipment with internal maintenance guys without any special knowledge.



Where can CM fail?

What Information are required?

- velocity, acceleration
- RMS or peak
- FFT / enveloping
- Time waveforms
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What is needed to avoid CM to fail?

- Condition monitoring information easy to understand for internal maintenance guys without any special knowledge.

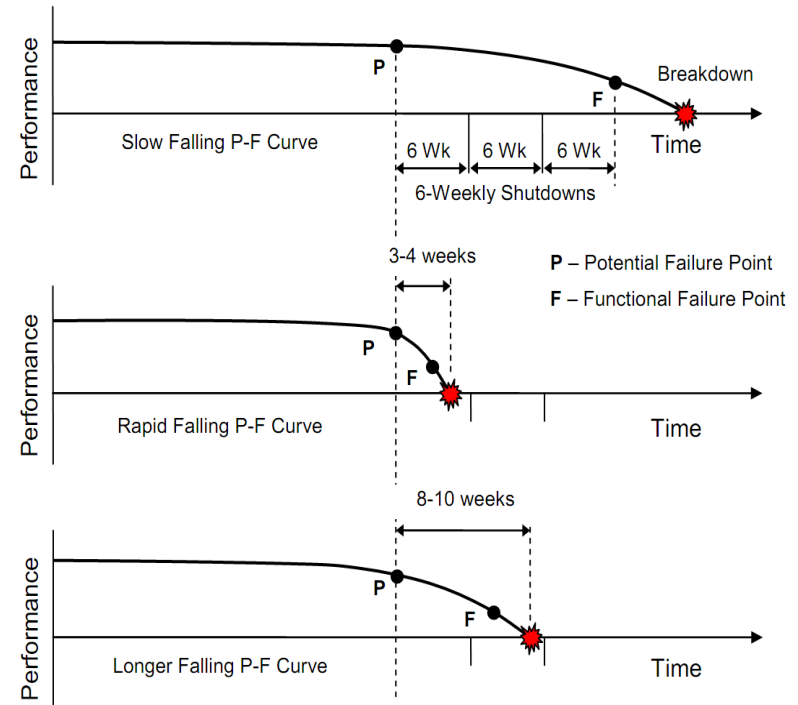
Where can CM fail?

How often is it applied?

- Quarterly
- Monthly
- Weekly
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What is needed to avoid CM to fail?

- Condition monitoring strategy quick enough to monitor equipment fast and reliable allowing a frequent check without annoying the staff.



What avoids CM to fail?

Equipment that is:

- Simple enough to be used internally
- Easy enough to be understood by unqualified people.
- Quick enough to be used frequently
- Reliable enough to be fit for purpose
- Clever enough to give the information needed to make a qualified decision.



Watch the fault severity trend

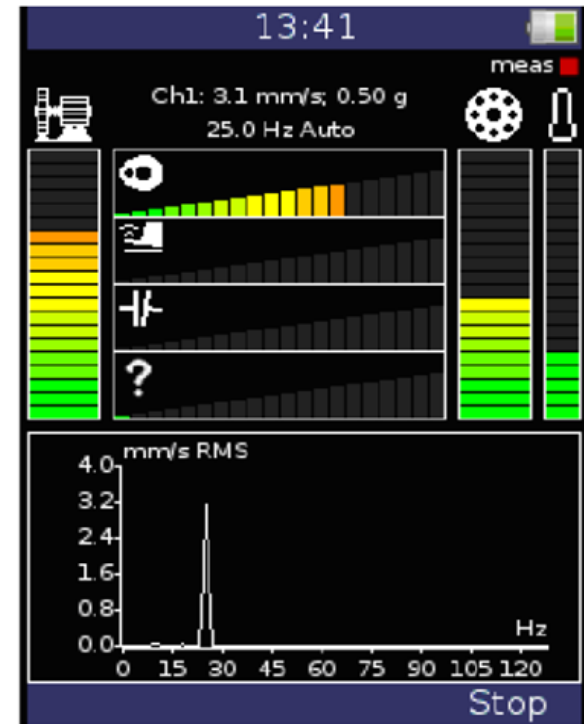
- All of us in the vibration world uses the same concept for fault detection (overall measurements, spectra, time waveforms etc.)
- After that the severity of the faults is derived.
- This does not seem the right approach to monitor machinery covering all in operation by internal service people.
- A new approach to vibration analysis is needed



One solution avoiding CM to fail?

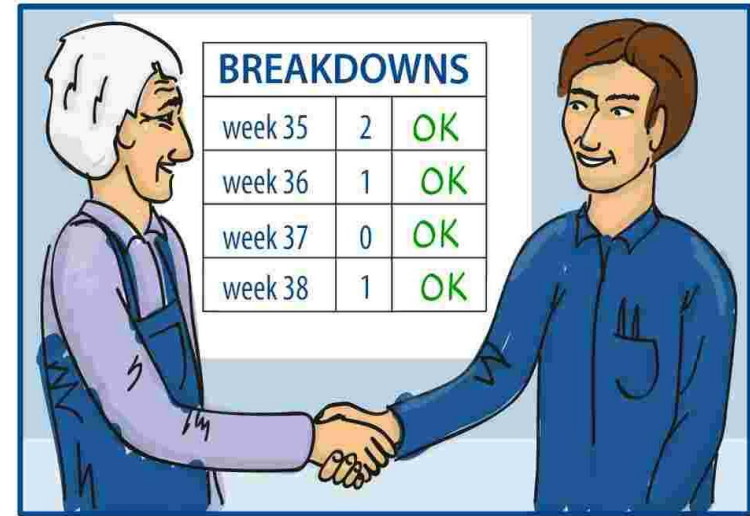
FASIT (Fault Source Identification Tool)

- Enables the user to directly measure fault severity based on vibration.
- The vibration data is the input, and fault severity diagnosis is the output.
- Takes the speed from the FFT to classify the severity.
- Shows the severity of Bearing Faults, Unbalance, Misalignment and Looseness



One solution avoiding CM to fail?

- The FASIT system has been developed over many years.
- It uses speed, FFT, FFT_{env} and time waveform to evaluate the source and the severity of the fault.



- This new approach opens vibration monitoring for a much larger group of users.
- It might detect some not typical special faults not correctly to avoid that vibration experts will become obsolete.