

Industrial Applications of Infrared Thermography

How Infrared Analysis Can be Used to Improve Equipment Inspection

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**INDUSTRIAL APPLICATIONS OF INFRARED
THERMOGRAPHY: HOW INFRARED
ANALYSIS CAN BE USED TO IMPROVE
EQUIPMENT INSPECTION**

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Written by Mohammed Hamed Ahmed Soliman.

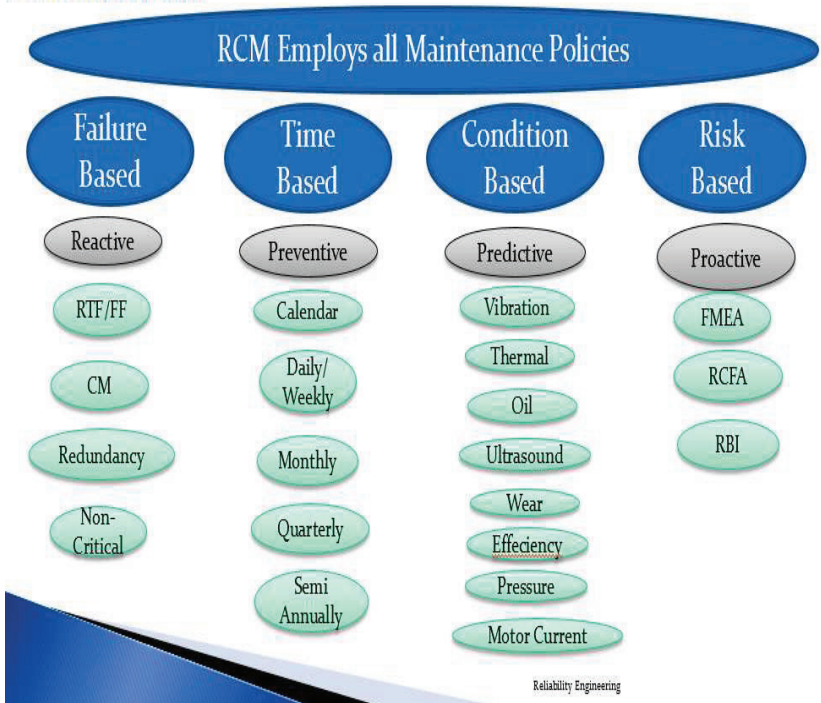
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Overview on Condition Monitoring

Maintenance Policies and Strategies

Maintenance Policies

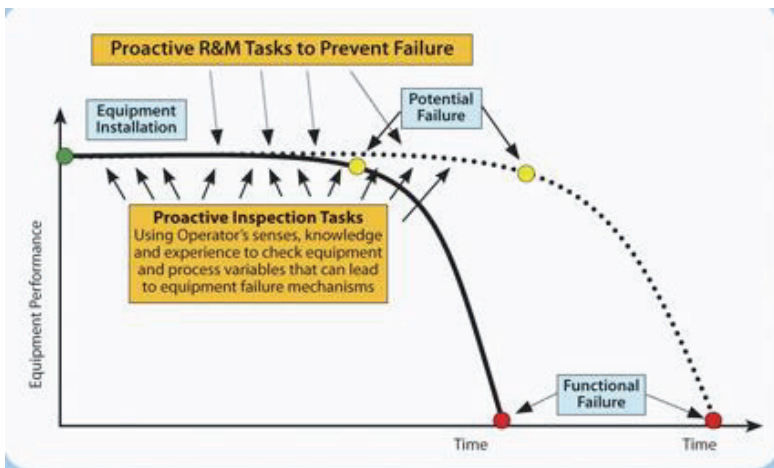


Reliability centered maintenance promotes the use of Predictive and Risk Maintenance policies for identified critical equipment

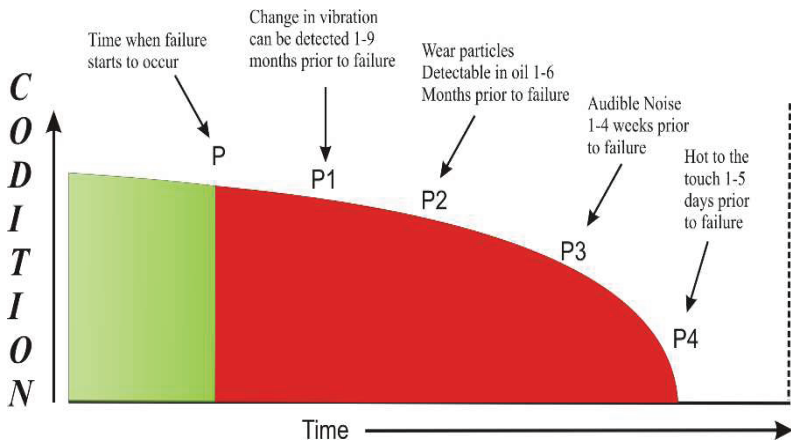
Predictive Maintenance Techniques

Predictive Maintenance Embraced by Plant Maintenance

Technique	Application	Pumps	Electric Motors	Diesel Generators	Condensers	Heavy Equipment/ Crane	Circuit Breakers	Valves	Heat Exchangers	Electrical Systems	Transformers	Tank Piping
VIB Analysis		•	•	•		•						
Oil Analysis		•	•	•		•					•	
Wear Analysis		•	•	•		•						
IR Analysis		•	•	•	•	•	•	•	•	•	•	
Ultrasound		•	•	•	•		•	•	•	•	•	
Non-Destructive testing (Thickness)					•			•			•	
Visual Inspection		•	•	•	•	•	•	•	•	•	•	•
Motor Current Analysis			•									



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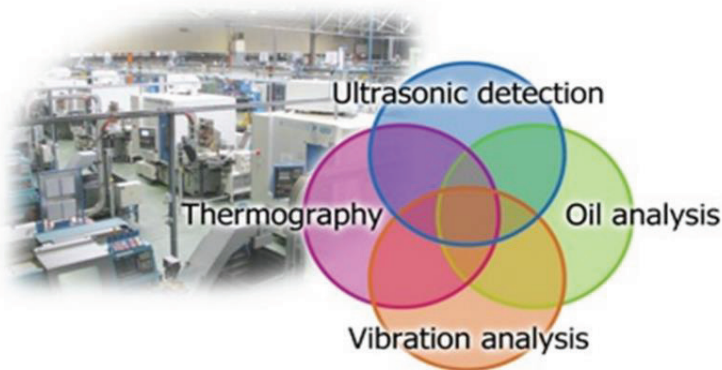
Reliability KPIs

KPI	Description
MTBF	Mean Time Between Failure
No of failures addressed by root cause analysis	>75%
Ratio of PM work orders to CM work orders generated by PdM inspection	
OEE (Overall Equipment Effectiveness)	Availability x Reliability x Quality (85%)
Percent of Faults Found in Predictive maintenance Survey (Vib, IR, UT, OA)	No of faults found/ No of devices checked (target <3%
Percent of equipment covered by condition monitoring	Target= 100%
Reliability of critical equipment	99%
Facility Availability	>98%
Availability of critical equipment	>98%
Percent emergency maintenance	<5%
Percent planned maintenance	90%

Why using Condition Monitoring programs (predictive maintenance)?

Benefits of setting up a Predictive Maintenance (PdM) program:

1. To detect what is out of the human sense.
2. To discover hidden failures.
3. To Detect early failures & monitor the machine health condition.
4. To reduce Maintenance Costs.
5. As a useful tool to improve the machine reliability.



Four tools make up 85% of any PdM program