Risk Assessment Using FMEA

A Case of Reliable Improvement

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RISK ASSESSMENT USING FMEA: A CASE OF RELIABLE IMPROVEMENT

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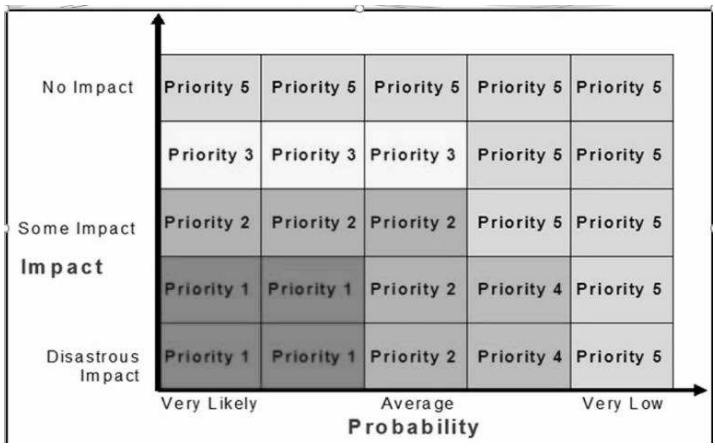
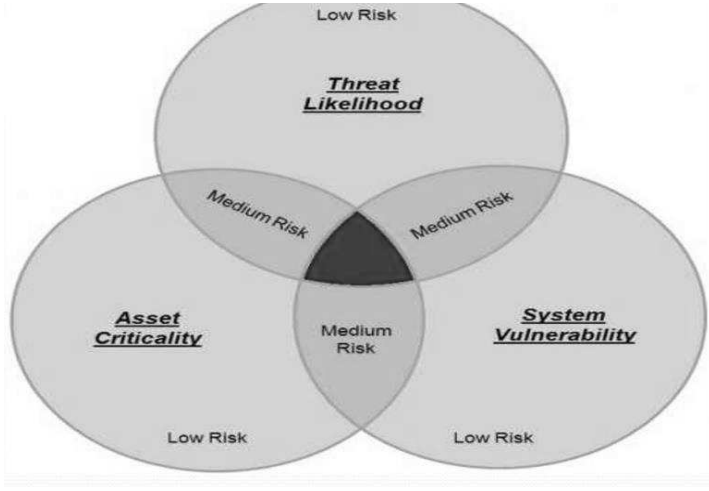
INTRODUCTION TO RISK MANAGEMENT

What is risk management?
Is the way toward recognizing, evaluating and controlling dangers to an association's capital and profit. These dangers, or threats, could come from a wide assortment of sources, including monetary vulnerability, legitimate liabilities, vital administration mistakes, mishaps and catastrophic events.

Determination of risk level
The probability is the likelihood of an event occurring and the consequences, to which extent the project is affected by an event, are the impacts of risk. By combining the probability and impact, the Level of Risk can be determined.



You can always design this matrix for your system components to determine the risk priority value for each component.



Knowing which component of the system is likelihood to fail is very useful in determining which strategy to use to prevent this failure. But first, you need to identify your priorities, which system component is likelihood to fail and need attention first, and if this component is critical to your business, your process or not.

Here are some few questions that help define the criticality of the system components:

The RCM analysis carefully considers the following questions:

• What does the system or equipment do; what is its function?

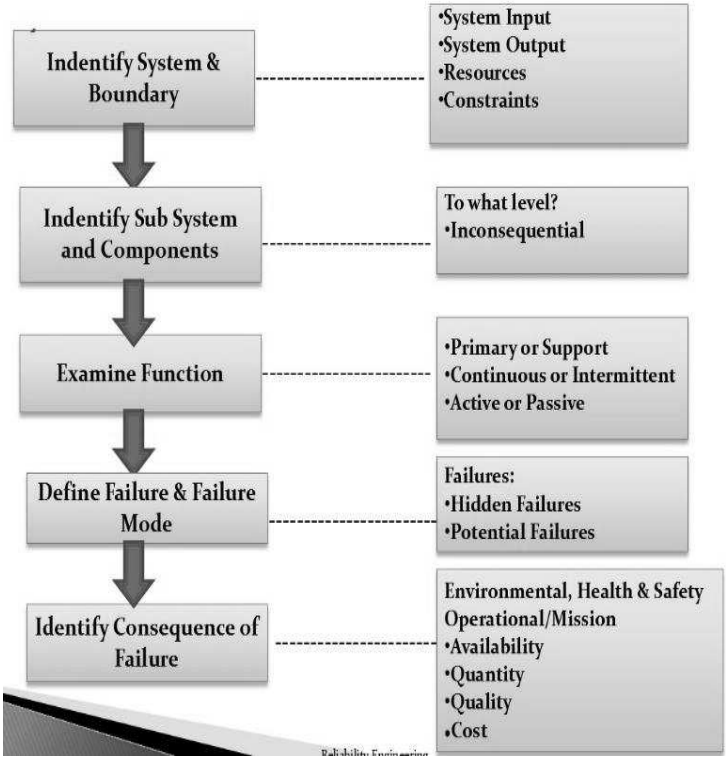
• What functional failures are likely to occur?

• What are the likely consequences of these functional failures?

• What can be done to reduce the probability of the failure, identify the onset of failure, or reduce the consequences of the failure?

In performing a risk analysis, the risk team uses a structured decision process to develop

mitigating tasks for each failure mode identified during the analysis:



ASSET CRITICALITY ASSESSMENT

Importance of Equipment Criticality Analysis:

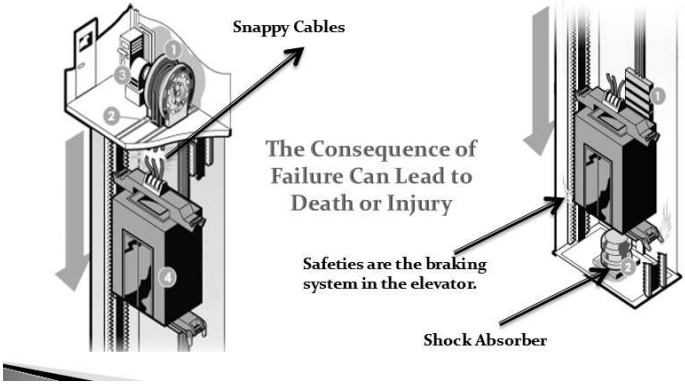
1. Influence the priority assignment of the Work Orders.
2. Influence the Work Orders execution speed.
3. Determine which Maintenance Class should come first.
4. Effect the scheduling of the preventive maintenance program.
5. Influence the priority of the preventive maintenance work.
6. Help in determining which maintenance approach to be used (corrective, preventive, condition based, proactive, risk based...etc.).

Criticality Measuring Principles

1. Safety

- ✓ Safety equipment (equipment carrying peoples, firefighting system, and alike).

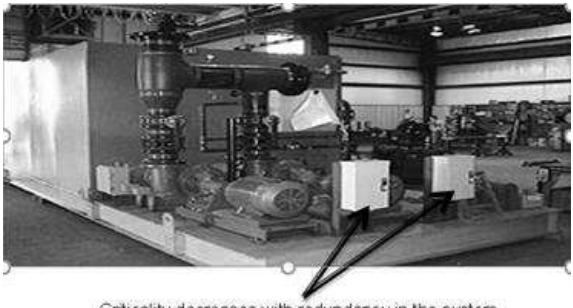
- ✓ Consequence of parts failure effect safety (elevator ropes broken, firefighting generator stopped…etc.).
- ✓ Gas piping leakage at any point poses a risk.



2. Production, Process

- ✓ Equipment breakdown affect the whole production line.
- ✓ Equipment breakdown affect partially the production line.
- ✓ Equipment failure has native effect on production quality.

The Consequence of Failure Can Lead to Process Shutdown, Major Losses, or Quality Problem.



Criticality decreases with redundancy in the system.

Criticality is influenced by the availability of standby equipment in a system but how much time does it take for the standby equipment to operate? And what is the effect of this on the production?

3. **Time (Time=Money)**

1 min production=How much?
1 Hr. production =How much?

If your equipment is classified as critical, ask yourself the following questions:

- What is the preventive maintenance program I have for it? Enough? Or not?