EPICENTRAL

A Newsletter from Epicenter Development Group highlighting ideas that improve organizations

Welcome to Epicenter Development Group's newsletter, EPICentral. The purpose of this newsletter is to highlight fundamental ideas that have helped organizations develop and maintain great manufacturing and service operations. We hope that you find our EPICentral newsletter helpful, and we would welcome your comments on its content.

FMEA - Preventing Potential Issues BEFORE They Happen - Part II

In the last newsletter, we introduced the Failure Modes and Effects Analysis tool (FMEA). FMEA is a systematic approach for identifying and preventing potential issues BEFORE they happen. Part of the approach involves a review of your operations and the generation of Risk Priority Numbers or RPNs for each process step. A higher RPN represents a situation where there is a higher likelihood of a serious issue. In this article, we will discuss how to use the RPN values to identify an action plan for improving your operations.

Using RPNs

As was covered in the previous newsletter, the RPN is the product of the Severity x Frequency of Occurrence x Rate of Detection for each item considered. To reduce the potential for serious issues, therefore, it is necessary to attack one or more of these three areas. The listing below offers a starting point for discussing how to reduce the RPN for your largest potential issues:

Severity - *How can we reduce the severity of the issue if it happens?*

- **Isolate the issue so that it only affects a limited part of the system**. Ex: If flooding occurs, it is limited to a specific area.
- **Create a backup**. If there is a failure, then a redundant system kicks in. Ex: If the electrical system fails then a backup unit restores power quickly.
- **Create buffers between the failure and the rest of the system**. Ex: If a machine breaks down, then there is time to fix it before the rest of the operations are halted.
- **Create procedures for the best way to handle a failure.** Ex: Create and communicate standard safety protocols on how to handle an accident in the plant.

Frequency of Occurrence - *How can we reduce the likelihood that there will be an issue?*

- **Establish standard procedures that will reduce the likelihood of an issue occurring**. Ex: Lock-Out/Tag-Out Procedures to improve safety when working on equipment.
- **Use Poke-Yoke systems that make it difficult for an issue to occur**. Ex: A light curtain that shuts down the machine if the operator's hands are under the press.
- **Use preventative maintenance procedures.** Ex: Regular maintenance of equipment reduces the chances of machine breakdowns.
- **Use predictive maintenance procedures**. Ex: Vibration analysis can be used to predict when the bearings on a machine are more likely to fail.
- **Establish feedback mechanisms to gage the health of the system**. Ex: Regular meetings to "check-in" on how things are going in the office or the plant.
- **Simplify, Simplify, Simplify**. Ex: Whenever possible use the K.I.S.S. principle to keep things as simple as possible. It is more likely that a complicated system will have issues.

Rate of Detection - *How can we increase the likelihood that we will detect an issue once it has occurred?*

- **Use visual systems so that it is easier to detect when something is wrong**. Ex: Color-coded carts, flashing lights, sounds or colored labels to "see" when something is not correct.
- **Build detection into the process**. Ex: Operators are not allowed to send their parts to the next station until they have been checked.
- **Train people to question**: Ex: Create a culture where people feel comfortable stopping the process if something does not look right.

Finishing Up the Process

The final steps of the process are as follows:

1. Identify action items that can be completed to reduce the RPN rating for your process steps.
2. Prioritize those action items that will have the highest benefit with the lowest cost to implement. Implement the prioritized action items.
3. Document the processes put in place to reduce the risk (new standard procedure, new gage, new control mechanism) for each Failure Mode.
4. As action items are completed, recalculate the RPN ratings and reprioritize the remaining action items to address.
5. On a regular basis, readdress the FMEA to identify potential new Failure Modes and reevaluate the RPN scores.

Considerations:

- Although this article only covers the use of FMEA for processes, the tool can also be used to evaluate product designs and organizational issues.

- As always, practice makes perfect. Try the tool and, if it is of value to your organization, incorporate it into your standard processes for developing products, designing operations and/or improving operations.
- The FMEA process should be part of a continuous improvement process. As actions are taken to reduce risk, the team should revisit the FMEA analysis to identify new processes to focus upon.
- More information on the FMEA process is available at Wikipedia with the following LINK.
- For more information on Epicenter's capabilities in the area of process design and improvement, please visit us at www.epicentergroup.com.

Next Steps

If you would like more information on this topic or other similar types of tools, please contact Bill Proctor with your request at wproctor@epicentergroup.com or 216-702-0952. You can also find previous issues of EPICentral at Newsletters.

Mr. Proctor also speaks on a variety of problem-solving and system design topics that can help companies significantly increase the success and profitability of their businesses. If you are interested in having Bill speak at one of your upcoming meetings/events or would like more information on any of the speaking topics, please visit Speaker Services or you can email sales@epicentergroup.com.

Epicenter Development Group is a unique consulting firm that seamlessly integrates the disciplines of Systems Engineering and Organizational Analysis & Development to create practical design solutions to your toughest challenges. It is on the cutting edge of problem-solving solutions and the creator of a unique process called GreenRoom Engineering. This process adds greater value and cost savings for clients as compared to traditional engineering methods.

William Proctor, Epicenter's founder and president, has provided services around the country to more than 100 companies consisting of a variety of organizations; and Epicenter continues to grow as a resource for firms of all sizes.

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