

Are your MI and reliability programs competing for resources?

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A number of refineries and chemical processing facilities have not yet realized the potential synergy between regulatory-driven mechanical integrity (MI) programs and facility-wide reliability programs. The tendency at many facilities is to keep these two initiatives separate, which typically results in a competition for precious maintenance and inspection resources as well as management attention and budgets. This is not necessary and is potentially wasteful. An integrated, holistic approach to a facility's MI and reliability programs can capture the natural synergy between these two efforts.

A major incentive for U.S. chemical process industries to implement MI programs has been OSHA's process safety management (PSM) regulation (29 Code of Federal Regulations [CFR] 1910.119). This was followed by EPA's risk management program rule (40 CFR 68). These regulations have been in place since 1992 and 1996, respectively.

The implementation of MI programs required by these two regulations has proved a challenge to many facilities. This is evident by the fact that the Center for Chemical Process Safety (CCPS) commissioned the development of a recently released new text entitled "Guidelines for Mechanical Integrity Systems" some 14 years after the regulation was promulgated.

Why is MI so challenging? Relative to other process safety element programs, the MI effort is gigantic. Some facilities simply struggle to identify all of the equipment (in hazardous service) that must be functional and reliable enough to prevent catastrophic events. An effective MI program requires much more. Equipment can fail for multiple reasons, and the effective MI program as well as the reliability program, must understand the impacts of failure, the applicable failure mechanisms, and the appropriate MI tasks to prevent, detect and/or mitigate the failures.

Plus, an MI program that only complies with regulations is likely to fall short of performance objectives and will not obtain full value from the efforts put into the program. Effective MI programs must go beyond compliance. Specifically, facilities with the most effective programs adopt an approach that realizes MI is not just a compliance issue, but rather MI is part of normal

business culture.

Typical areas in which MI and reliability programs can be combined are:

- > Use of risk and reliability analysis methodologies to identify 1) Critical equipment, 2) Equipment failures to be prevented, and 3) Appropriate maintenance and inspection activities.

- > Application of common management systems.

- > Dedication to continuous improvement via management system audits, performance measurements and root cause analyses.

Some facilities have combined the PSM-required process hazard analyses and reliability-centered maintenance analyses into a single analysis approach. This combination allows facilities to utilize the same resources to make safety, MI and reliability decisions.

Also, facilities have found that many of the management systems required for MI are needed for a reliability program. For example, MI requires facilities to establish and implement procedures needed to ensure the ongoing integrity of equipment and train affected personnel on these procedures. Many times, the MI procedures and associated training can be used or slightly modified to support the proper execution of reliability activities.

The MI equipment deficiency management process can be used to help make sure equipment issues affecting reliability are appropriately managed. In addition, periodic audits of the MI and reliability programs can be combined into a single effort. There are common performance measurements that can be used to monitor the ongoing performance of both the MI and reliability programs. Finally, root cause analyses can be used to investigate equipment failures, and the results of these analyses can be used to improve both the MI and reliability programs.

In addition to the examples provided above, the CCPS "Guidelines for Mechanical Integrity Systems" offers additional practical advice on how to combine a facility's MI and reliability programs.

By combining MI and reliability program resources, a facility can begin to integrate its MI and reliability programs into a single asset integrity program, and thus begin to reduce the competition between precious maintenance and inspection resources.

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