Effective Process Equipment Inspection & Testing

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ABSTRACT

Inspection and testing of process equipment must be effective or the effort and money expended is wasted. The end result of an effective mechanical integrity (MI) program is a safe, reliable process. Determining how and when to monitor process equipment should be based on the consequences of equipment failure. Monitoring process equipment by effective inspections and tests can significantly lower the likelihood of a failure. With achieving an acceptable risk level in mind, the MI program should be implemented using risk-based methodology. Inspection and testing should be targeted based on anticipated damage mechanisms involved with the process chemistry, operating parameters and equipment materials of construction. Equipment inspection and testing methodology should be fully evaluated and understood. Inspection methods that are effective in detecting the anticipated damage mechanisms should be selected. In many cases, the use of multiple inspection and test methodology is needed to fully and effectively evaluate the process. Process operational parameters have a significant influence on damage mechanisms, damage rates and anticipated life of process equipment. Monitoring the process windows and evaluating the effect of process changes should be a significant part of equipment inspection and testing plans. Analyzing and re-evaluating the effectiveness of the MI program to keep it evergreen should be an integral part of the process to have safe and reliable process equipment.