



## SURVEY for API 670, 4<sup>th</sup> Edition Machinery Protection Systems

TOTAL RESPONSES = 30

1) When you API 670-class equipment for purchase, do you require adherence to this standard?

YES 29                      NO 1

2) If you require adherence to this standard, do you also use an overlay?

YES 12                      NO 17

4) Should this document be opened up for updating/modifications? (alternative is to reaffirm the existing document "as is")

YES 21                      NO 9

5) Are there any technical changes, improvements, or upgrades that need to be implemented, such as for reciprocating compressor, wireless technology or overspeed applications?

- A. Yes, that is the reason that it needs to be refreshed. It does not address recip compressors very well and the technology improvements (e.g. wireless) need to be included.
- B. Not currently aware of a specific need.
- C. More information regarding the application and interaction of overspeed trip systems with machinery control systems; or include this in a separate RP document.
- D. Addition of more instrument standard information. Addition of more transmitter, wireless, etc detail.
- E. Para. 5.4.1.5 d) Time delay - A delay of 3 sec shall be standard for vibration.(exception for O2-Compressor and axial compressor =0,1 sec. ), 0,1 sec. for position .  
Para. 5.4.2.4 - Radial Shaft vibration - Substitution Dual (2oo2) voting logic to "Single" Logic (1oo2).  
Para. 5.4.2.4 - Radial Shaft vibration - Substitution of "True AND" Logic to "Normal-And Logic".
- F. The standard should be updated to expand requirements for reciprocating compressors monitoring systems.
- G. All three.
- H. Having participated in all the editions, I believe the standard is still valid and provides adequate flexibility for alternative methods of implementation.
- I. All of the above.
- J. More info on recip compressors, communication interface with external control (DCS) systems.
- K. Yes, recips, wireless, and overspeed.
- L. Existing materials are OK. Consider adding recip monitoring,& wireless systems in future.
- M. I would agree with all of your suggestions.

- N. Consider "Functional Safety" Standards (IEC 61508/61511; ISO 13849).
- O. Specify the use/acceptance of "Trip Override Switches".
- P. Reciprocating compressors - pressures, temperatures, etc.; wireless - especially with the on-line monitoring ( should on-line monitoring be included?) SIL application for shutdown. Use of low pressure seals and consistent installation. Use of barriers.
- Q. The standard needs to be updated to reflect advances in technology that have taken place over the last few years. No it doesn't need to be ISOized.
- R. Implement new proven electronic techniques, like f.i. in aeropath of diffusors/return channels tes. of monitoring built-up deposits or fouling.
- S. Does the current standard reflect what the manufacturer's see people asking for. Are there new devices available from instrument suppliers to look at frame vibration and rod drop motion?
- T. Yes, the communication technologies including wireless are changing.
- U. Is there a need to address or comment on "SIL" as it may relate to OSP systems?
- V. Require the use of OPC for data transfer.
- W. Improvements need to be made to address online data acquisition systems, wireless technology, online PV (cylinder pressure) monitoring of recipis, monitoring fin fans and cooling towers.

**6) Would supplemental content in the form of Recommended Practice (RP) documents be valuable for activities related to Machinery Protection Systems, such as condition monitoring/diagnostic software and/or interface to control systems?**

- A. More discussion of how to determine appropriate voting logic for machine trips. Factors include process safety, machinery safety, how certain failure modes exhibit themselves in vibration, probe gap, thrust position, and bearing temperature. Users need to adequately understand the dynamics of each rotor and failure modes to avoid imposing unrealistic voting logic demands which may degrade or invalidate interlock protection.
- B. Not sure. Need to understand if there is enough common ground on technology to develop an RP.
- C. Yes.
- D. Yes.
- E. Possibly an annex to the standard.
- F. Yes, a supplemental RP document would be valuable for Machinery Control and Protection Systems.
- G. Yes, I think this would be quite valuable.
- H. Supplementation of a risk assessment for protection and add. documents ethernet bus/ interfaces to control system.
- I. Yes.
- J. Yes, with the retirement of the baby boom the industry badly needs RP's and guidelines to help the new engineers coming on board.
- K. The whole area of diagnostic systems and system interface is complex and evolving. I am not sure that it is time to try to do an RP. Each company and even plant has a different strategy.
- L. If resources allow.
- M. Yes, suggest a separate RP for equipment condition monitoring, diagnostic software, and interface to plant historian and DCS.
- N. These are generally helpful, so yes. However such information is already readily available.

- O. No. I feel this is scope better covered in Control Systems/Instrumentation specifications rather than machinery specifications. We should concentrate on the machine mounted components of the systems. To include these would require very extensive scope and detail to cover adequately and is outside the expertise of most machinery specialists, beyond understanding the parameters to be monitored.
- P. A planning guide of sorts could prove to be helpful. Equipment monitoring really needs to be a corporate philosophy (and not a train by train occurrence) to be effective. An overall guide that can assist that philosophy is more helpful than a how-to-guide.
- Q. Yes.I
- R. Some sites have had a machinery incident requiring them to put together a 'Best Practice' guide and some instrumentation details for equipment installation. They have also had some issues with installation due to responsibilities between machinist & instrument techs. Need procedures and split points. Need to work how machines get disconnected for overhaul, what the overhaul vendor is responsible for and who repairs/ installs and checks what upon recommissioning.
- S. Yes.
- T. No.
- U. What is going on with MMI to central control rooms? Does this need to be addressed by this standard as it impacts equipment packages?
- V. Yes, API 670 4th edition addresses machine condition monitoring, though, the guidelines of analysis and diagnosis systems and interface for network systems should be considered as the 5th edition.
- W. An RP would be helpful, especially if it is decided not to revise. Diagnostic systems need to be addressed in some way.