

## **Nuclear Qualified Proximity Position Sensors – Benefits to Existing Nuclear Power Plants Post Fukushima**

*Greg Merrifield*

*Global Nuclear Sales Director*

*TopWorx, Emerson Process Management*

*502.969.8000*

[Greg.Merrifield@Emerson.com](mailto:Greg.Merrifield@Emerson.com)

This will be an overview of the general qualification levels and expectations for newer qualifications and the ability to meet or exceed Post Fukushima conditions. It will also encompass the benefits of using this higher qualified Position Sensor technology, instead of traditional mechanical switches that are qualified to lower accident conditions. As of today, this nuclear qualified technology is one-of-a kind in the world.

Mechanical switches have been the standard for the nuclear industry for years, but that is only because of lack of any new technology. Because of multiple moving parts, three-piece design, and new low current control systems, mechanical switches are susceptible to a host of environmental factors that cause them to malfunction, lose their set-point and/or fail.

AOV's are being highly scrutinized as plants try to extend their operating life and upgrades in Hardened Vent Valves and Spent Fuel Areas are mandatory in Mark I and II units.

The Nuclear Qualified Proximity Position Sensor is a smaller, more robust, dependable, one-piece Stainless Steel proximity position sensor that exceeds existing IEEE qualification standards as well as AP 1000, IEEE, CANDU, KHNP, RCC-E Severe Accident and other Global Qualification Levels, easily replacing mechanical switches in existing plants increasing safety levels. In addition, this type sensor reduces maintenance to almost zero over the 100 year qualified life of the switch and is fully submersible.

In closing, nuclear facilities save money in maintenance reductions, extended PM's and reduction in Man REM" Exposure Time while increasing the Safety Factor of their valve indication. This is achieved by not having to service and replace Nuclear Qualified Proximity Position Sensors as often as mechanical switches since the Qualified Life is at least 5 times longer than most mechanical switches. Plant safety is increased due to less switch failure, higher qualification testing levels and longer qualified.