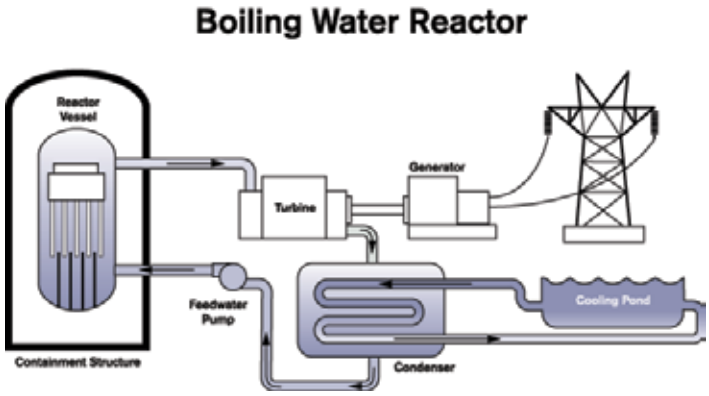
Application Case Study

131 Differential Pressure Switch

Product 131 Differential Pressure Switch

Application Nuclear Steam Line Isolation

The Application



The main steam lines in a Boiling Water Reactor (BWR) take the steam generated in the nuclear core and pass it along to the main generator. If a rupture occurs in one of these lines outside of the isolation valves, the depressurization of the reactor core could cause an unstable transient in the reactor core.

To prevent this from happening, BWR power plants employ flow limiters in each line that will minimize the excess flow on a line rupture. Each flow limiter has four differential pressure switches that constantly monitor the differential pressure (DP) across the flow limiter. If the switches sense an increase in DP due to line break, it actuates and causes the main steam line isolation vales to close and the reactor core to immediately shut down.

Critical to the selection of differential pressure switches for this purpose is to choose a high quality instrument in order to minimize the uncertainty that must be accounted for in selecting the set point. In addition, the repeatability (drift) must be as low as possible for the same reason.

The Solution

The Series 131 differential pressure switch is well-suited for medium DP applications such as main steam line and high-flow MSIV isolation. Features include:

- 1E qualified
- Long-term stability
- Narrow dead band
- Negligible temperature effect
- High repeatability (± 1% FS as defined by ANSI/ISA S51.1)
- Rigid quality standards maintained from raw material through finished product
- Field adjustable - excellent resolution of set points – no special tools required
- 1-Year warranty

The Results

SOR Series 131 differential pressure switches have been employed as steam line monitors in a Midwestern U.S. nuclear power generating facility since 2005. They have successfully passed routine checks and held their set points.

Standard Series131 models are available with many options to cover pressure ranges from 20-275 psid. Site installations are available upon request.

Form 1408 (04.08)

Contact the factory for more information or alternate product options.
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