Application Case Study

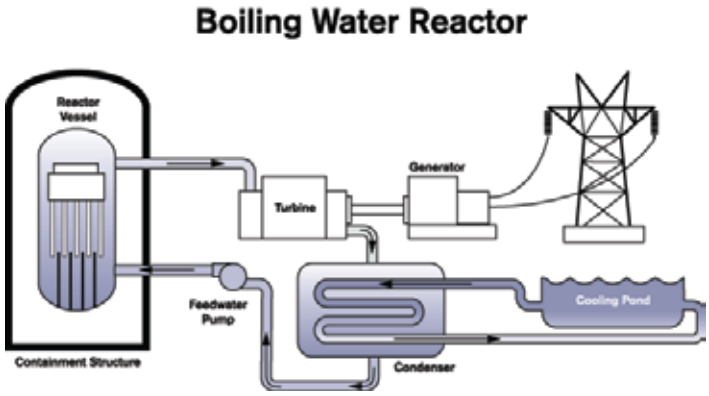
141 Differential Pressure Switch

Product 141 Differential Pressure Switch

Application Nuclear Water Injection Pump Minimum Flow Valve Control

The Application

Water injection systems in nuclear power plants deliver water into the rector core to ensure adequate cooling should an accident occur. Systems differ slightly in design, but many start the pumps prior to actual injection. In these designs, the large pumps require minimum flow paths for cooling until the actual system flow is achieved. Once the flow has been established, the minimum lines must be closed to assure maximum flow to the reactor core.



The orifice or venture flow elements on the discharge side of the pumps generate differential pressure(s) indicative of the flow. Because the required minimum flow is low in the range of the expected flow, there is a need for a highly accurate differential pressure switch. The DP switch must identify when the flow is below the minimum flow path, but will also be able to shut off as soon as possible after the actual system flow is established to the reactor vessel.

The Solution

The Series 141 differential pressure switch is well-suited for low DP applications such as water injection pump minimum flow valve control applications. 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 141 differential pressure switches have been employed in a Midwestern U.S. nuclear power generating facility as a water injection minimum flow valve control since 2005. They have successfully passed routine checks and held their set points.

Standard Series141 models may also be used in LPCS minimum bypass, high-pressure core spray minimum bypass and RCIC steam line high-flow isolation applications.

Contact the factory for more information or alternate product options.
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