

Industry: Power Generation

- Nuclear Power Plant

SONARtrac[®] SOLUTIONS

A sonar array-based, non-invasive flow meter that provides accurate and repeatable flow measurements to test pump performance

Challenge

The ASME O&M code dictates that nuclear power plants must periodically conduct tests on pumps to ensure the pumps meet regulatory criteria. The ASME O&M code states that flow rate performance must be within a specific range of pump design. Pump flow rate instrumentation (flow meters) must have a stated accuracy of +/- 2%. A nuclear plant in the United States needed to test six of its secondary salt water pumps by measuring the flow rate to evaluate the pump's performance, and determine whether or not maintenance was required. In the past, the plant conducted the tests a considerable distance downstream of the pumps due to the complex pipe configuration and because other meters did not work given the turbulence within the pipes closer to the pump. Previous non-intrusive technology also failed due to the rubber lining of the pipes.

SONARtrac Solution

After other meters failed to provide an accurate reading, the plant chose the SONARtrac[®] VF100. The SONARtrac system is a non-ultrasonic flow meter that uses sonar array-based processing technology to provide a highly repeatable and stable flow rate measurement. Upon request, CiDRA carried out a series of tests on a section of pipe that was identical to those within the plant with regard to material and size. Based on those tests, CiDRA technicians developed a specific set of calibration coefficients for this particular application at the plant. These calibration coefficients were then validated on all sensor bands to ensure the reported flow rate accuracy is within $\pm 2\%$.

Benefits

By combining the non-intrusive design and non-ultrasonic properties, the SONARtrac system allowed the plant to achieve highly accurate flow measurements and repeatable results. These results allowed the plant to determine each pump's performance to ensure compliance with regulatory codes. The meter also reduces testing time since it easily clamps on to the outside of the pipe and requires no maintenance. In addition, the SONARtrac system requires no recalibration.



Product Used

SONARtrac[®] VF-100

- Entirely non-invasive technology
- Measures flow rate of liquids and slurries
- No moving or process wetted parts
- Works with multiple pipe materials such as metallic, non-metallic, HDPE, FRP, and lined pipe
- Transmitter has multiple data output options including: 4-20 mA, PROFIBUS[®], MODBUS[®], FOUNDATION Fieldbus[™]
- Transmitter equipped with USB port which provides data output to be used for system set-up and trouble shooting

SONARtrac[®] Technology

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