Water Reclamation Plant Effluent Monitoring

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Secondary Clarifier

ChannelMag PM2 Series

36 inch effluent line

The EMCO PM2 ChannelMag is coupled with a DSM11 Transmitter to monitor the flow of effluent at a Reclamation Plant Facility

Customer Profile

A southern California WRP plant has a maximum effluent flow of 33mgd and an average flow of 25 mgd.

Treatment process includes screening, grit removal, primary clarification, activated sludge with nitrification and denitrification and secondary clarification.

The effluent is split via two 36-inch pipes leading to a river and gravity fed eight miles for aquifer refilling.

Application Challenge

Finding the proper location for installation of a flow meter to accurately monitor the flow.

The Clarifier has an unequal flow in the side channels going around the clarifier and the bends are very short. The effluent channel is too short and the vane provides high turbulence.

The non-full pipe allows for a few possible solution technologies; electromagnetic, doppler, ultrasonic cross correlation, surface radar and magnetic combination.

Measurement Choice

The PM2 series is provided with a NIST traceable Calibration Certificate in terms of volumetric flow for a particular pipe size. This is unique for a partially filled pipes flowmeter. The PM2 generates a powerful magnetic field, which completely covers the cross sectional area of the pipe. As such, true volumetric flow is measured, not point velocity.

Other technologies are a single line angular and multi-angular, surface waves mag surcharge, local velocity to infer mean, or an average of 3 or 4 lines.

Maintenance Considerations

The PM2 series provides guaranteed unaffected maintenance free measurement. All other technologies require cleaning.

Solution

Use two single sensor PM2 ChannelMag meters in each of the 36-inch pipe. Compression straps allowed for easy installation. Location of the meter is 200 inches downstream from the entry to the pipe. This allows for proper flow profiling to allow for high accuracy sensing.

Features

- Solid state sensors; no moving parts
- Patented Hybrid coil excitation (high coil current and high pulsation frequency)
- Suitable for existing pipes of any material; no restrictions, gradients or spool piece required
- Ideal for use in full or partially full concrete pipes; no holes or fixtures are required for installation
- Accuracy unaffected by media coatings such as chlorine, calcium carbonate, raw sewage, grease, alge, and similar
- No sensor cleaning necessary
- High signal-to-noise ratio for immunity to media noise.

Instrumentation Sales, Engineering and Service

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