



Magmeters help increase gravity filter output at water treatment plant

Situation

A municipal water purification plant in the Southwestern United States provides 350 MGD (millions of gallons per day) of clean water for drinking and industry

The plant receives raw water that is pumped from a nearby lake and conveyed via a canal system. The raw water enters the forebay where preliminary treatment takes place. The water is then pumped into a series of large clarifiers, settling tanks, and sedimentation basins. The sludge is thickened and pumped out to a landfill nearby. The water is then sent through gravity filters before further treatment.

Challenge

When the plant was originally constructed in the 1960s, flow tubes were used with dP transmitters to measure the flow from the filters. The technology was probably the

best at the time, however, the extremely tight piping constraints did not provide the adequate straight pipe approach for the venturi primary flow elements, making accurate, reliable, and repeatable flow measurement a challenge. The drift of the dP transmitters added to the difficulty.

The plant manager wanted a more accurate and repeatable flow measurement, particularly at low flows. The head loss through the old flow tubes limited the flow from the filters. The use of magmeters in place of the existing flow tubes would eliminate virtually all head loss and increase the filter output.

The customer had used magmeters in other applications, but not for the filter effluent. They tried a V-Cone meter, but found that the meter needed (2) dP transmitters to handle the wide range of flows. They had also tried an insertion-type magmeter with limited success.

Process Instrumentation

Answers for industry.

SIEMENS



Solution

The local Siemens sales partner and a Siemens manager met with the customer to discuss the application and their expectations. The customer agreed to evaluate a Siemens Magflo magmeter for this application. Other competitors were also invited to participate in the trial, however, Siemens was the only manufacturer that agreed to provide a 20" meter for evaluation purposes.

A Siemens SITRANS FM Magflo 5100W was installed in place of the existing flow tube and dP transmitter.

After the trial period, the customer contracted with a local consultant for a plant upgrade which included the

replacement of 16 filter effluent flow tubes with magmeters, as well as the replacement of the four existing raw water intake flow tubes with new 48" magmeters. Siemens was listed as an "Approved Manufacturer".

Benefits

The new Siemens magmeters do not require the routine calibration that was required of the dP transmitters. There is also zero head loss through the magmeters which increases the plant's gravity filter throughput.

The customer now sees greater accuracy than before, especially at the lower flow rates. They also received startup and training by the local sales partner.



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