Wastewater Treatment Aeration System Case Study Shows How to Reduce Compressed Air Energy Costs

San Marcos, CA — Fluid Components International (FCI) has released a new Wastewater Treatment Aeration System Case Study, which offers valuable tips on how operators can reduce their compressed air energy costs by installing precision air/gas flow measurement instrumentation.

This helpful Case Study is entitled, "Air/Gas Mass Flow Meter Improves Wastewater Treatment Processing Efficiency," and is available on the FCI web site. It profiles a city in the U.S. with a rapidly growing demand for municipal water and wastewater services.

As the wastewater treatment plant expanded, the engineers operating the facility wanted to minimize aeration basin compressed air energy costs. By outfitting the plant's aeration system with FCI's ST98 Thermal Mass Flow Meters and Vortab Model VIP Flow Conditioners, the plant was able to optimize the aeration process and cut energy costs.

FCI's precision ST98 Flow Meter, combined with the Vortab Model VIP Flow Conditioner, provides an accurate, economical solution for air/gas flow measurement in aeration basins systems. This precision thermal dispersion technology flow meter and tab-type flow conditioner have proven themselves in hundreds of water applications worldwide.

The activated sludge aeration method of treatment is employed in wastewater plants to eliminate organic pollutants from water. It requires the pumping of compressed air into aeration basins where a diffuser system ensures the air is distributed evenly for optimum treatment. Large amounts of compressed air are required to ensure the aeration process operates effectively.

Precisely controlling air flow reduces compressed air energy costs, one of the largest expenses in the treatment process. The ST98 Flow Meter, combined with the VIP Flow Conditioner, is ideal for this task because of the meter's accurate performance over a wide flow range, ease of installation and low maintenance requirements. It features a no-moving

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parts thermal dispersion mass flow sensing element, providing excellent accuracy and reliability in harsh environments. The ST98 also includes an integral 2-way HART interface, allowing engineers to receive multiple process variables and configure the meter remotely.

The ST98 Flow Meter offers high accuracy to ±1% of reading, 0.5% of full scale. Repeatability is ±0.5% of reading. This insertion style flow meter can be installed without shutting down the process by using a simple NPT fitting. The ST98 operates over a wide flow range from 0.75 to 600 SFPS (0.21 to 172 NMPS), and the turndown ratio is factory preset from 10:1 up to 100:1. It operates at pressures up to 250 psig [17 bar (g)].

The Vortab Insertion Panel (VIP) Flow Conditioner compensates for flow disturbances caused by elbows, valves and shorter than optimum upstream straight-pipe runs in wastewater treatment aeration basin compressed air piping systems. The flow conditioner removes both swirl and distorted velocity flow profiles under challenging pipe layout conditions, blending the proven performance and low pressure drop of tab-type flow conditioning technology with the low cost and ease-of-installation of an insertion panel type flow conditioner. Vortab technology greatly reduces pressure drop compared to alternative technologies, helping minimize plant energy consumption and energy costs.

The Model VIP Flow Conditioner reduces the amount of straight pipe run required by many flow meter technologies require to meet accuracy specifications. A VIP installed at just 3 pipe diameters downstream from the flow disturbance, with the flow meter installed at just 3 pipe diameters downstream of the VIP, neutralizes flow disturbance and produces a symmetrical, swirl-free repeatable flow profile. The thin, lightweight panel design of VIP is easily installed between flanges or can be welded in place.

Easy to order and specify, the standard Model VIP Flow Conditioner is manufactured of 316L stainless steel in sizes for installation in pipes from 2 to 40 inch diameters (50 to 999.9 mm). Other materials and larger line sizes are available upon request. They are available in both ANSI and DIN flange-mount or weld-in-place configurations.

Fluid Components International is a global company committed to meeting the needs of its customers through innovative solutions to the most challenging requirements for sensing, measuring and controlling flow, level and temperature of air, gases, and liquids.

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