Peristaltic Metering Pump Solves Biological Build-up Challenge in Industrial Water Reuse Application

The CHEM-FEED® Dual Peristaltic Pump Engineered Skid System manufactured by Blue-White® Industries consists of two FLEXFLO® A3 peristaltic pumps, a calibration cylinder and *Plast-O–Matic* components, (e.g., eight *True Blue* manual ball valves, two diaphragm check valves, a gauge with gauge guard, and a relief valve.) Skid Model Number: **CFS-2AA-AAAXBA**. Pump Model Number: **A3V24-MNJ.**

LOCATION: An Energy Center located in Orlando, FL is a natural gas-fueled, combined-cycle electric-generating unit with a capacity to generate 656 megawatts. The combined-cycle plant includes two natural gas-fired combustion turbines, two heat-recovery steam generators and a steam turbine.

APPLICATION: Injecting 12.5% Sodium Hypochlorite (250 – 300 GPD) into the reuse water to prevent biological build-up within the water tubes of the condenser. Any buildup within the condenser would greatly reduce the efficiency to produce steam, hence less mechanical power. In a condensing turbine, the thermal energy of steam is converted into mechanical power, which is converted into electric power by a generator.

PREVIOUS METHOD: The Energy Center elected to implement the changeover from Chlorine gas to Sodium Hypochlorite due to cost reducing measures. Maintaining the liquid gas on site required the full- time support of an Emergency Management Team. Eliminating the EMT would reduce operating expenses.

REASON FOR SELECTING THE PERISTALTIC PUMP TECHNOLOGY: The peristaltic pump has proven to be far superior to that of any diaphragm pump when injecting gaseous chemicals against moderate to low pressures. The peristaltic pump maintains a smooth, constant flow rate while eliminating the potential for a vapor lock. The diaphragm pump is adversely affected by off gassing, hence the potential to lose prime. However, the peristaltic pump technology allows any excess gas build-up to be pumped through the tubing while maintaining a highly accurate and continual flow.

REASON FOR SELECTING THE "CHEM-FEED" ENGINEERED SKID SYSTEM: The CHEM-FEED® Skid System is a quality engineered; compact, efficient design, incorporating a high quality, proven FLEXFLO® peristaltic pump and *Plast-O-Matic* components that will maintain the integrity of the skid system's performance. The skid encompasses a full chemical feed design that is less expensive and easy to install as opposed

to purchasing the components separately and using an in-house engineering team to design and assemble. In addition, the dual pump CHEM-FEED® model offered an excellent option to an emergency back-up in case down time was required on the primary pump. Lastly, the local chemical feed skid manufacturers proposed out- dated technology of a diaphragm pump-based skid system as well as using components that were far less inferior to the *Plast–O-Matic* components used with the CHEM-FEED® System.

RESULTS: The Energy Center is extremely pleased with the CHEM-FEED® performance since it has been installed. The ease of installation of a UPS delivered chemical feed skid system was a remarkable feature, far exceeding their expectations. The CHEM-FEED® Skid System comprised of the A3 peristaltic pumps should expect to see a minimum of 7000 – 7500 hours of tube life based on previous applications with similar chemicals and pressure ranges of less the 20 PSI.