DAF upgrade for regulatory compliance in Costa Rica

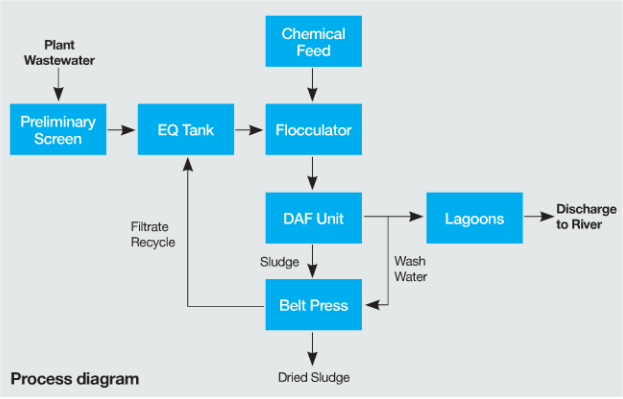
The food production industry is growing in Central and South America, prompting environmentally responsible companies to upgrade wastewater treatment plants to comply with water quality regulations. Adriaan van der Beek of FRC Systems International reports.

Central America's largest poultry producer, DIP-CMI, re-vamped its existing wastewater treatment infrastructure with modern, space-saving technologies to meet strict water quality regulations for discharging effluent into the local waterway. The upgraded facility, located in San Jose, Costa Rica, processes more than 100,000 birds per day, preparing them for distribution to local markets.

As part of their continuous improvement process, DIP-CMI hired FRC Systems International to design and construct a 1.9-million-liters-per-day wastewater treatment facility, which includes a new dissolved air flotation system and sludge dewatering belt press.

Common among poultry processing plants, the facility's wastewater is heavily laden with organic contaminants which contribute to elevated levels of total suspended solids (TSS); fat, oil and grease (FOG); and chemical oxygen demand (COD) – all of which are regulated water quality parameters. To comply with the direct discharge permit, the facility was required to meet the following concentrations: less than 30 milligrams per liter (mg/L) of TSS, less than 10 mg/L of FOG, and less than 100 mg/L of COD. FRC designed a process that included preliminary screens, chemical and physical separation equipment, aeration lagoons, and sludge management systems to effectively meet these requirements.

The allotted space for the new wastewater treatment infrastructure was unusually small for the volume



Process diagram

of wastewater to be processed. As such, the design of the equipment, as well as the layout of all the components in the building, needed to be pieced together in as tight a configuration as possible.

FRC opted for a plate-pack design to accommodate higher flow rates by building taller tanks, rather than longer and wider ones. Floor space is limited, so the design took advantage of available vertical space. FRC's belt press also employs this design characteristic – stacking each of the dewatering and pressing zones on top of one another – as opposed to arranging them in a lateral configuration like other comparable systems. With these technologies and the help of three-dimensional modeling, FRC designed a two-story system that fits the allotted space and contains the process equipment necessary to meet the facility's water quality requirements.

Sampling data from the first six months of operation show sufficient reduction in TSS, FOG, and COD concentrations to safely comply with discharge requirements.

Going forward

Dissolved air flotation is an economical and efficient technology used to treat wastewater with elevated levels of solids or oils. Beyond poultry processing, the technology can be used in any animal rendering application, as well as in the general manufacturing and oil and gas industries.

DIP-CMI continues to grow in Central America, so the wastewater treatment technologies employed at the San Jose facility will be used elsewhere – helping maintain the company's environmental-sustainability goals. The outlook of the food production market in Central and South America is bright, and as other companies continue to expand throughout the region, water quality regulations will require them to make the same efforts in environmental stewardship.

Author's Note

Adriaan van der Beek is the president of FRC Systems International. The company has designed and built more than 500 wastewater treatment installations in more than 20 countries, and is based in Atlanta, Georgia, United States. Learn more at www.frcsystems.com.

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Lagoons on the DIP-CMI facility site. Photo by FRC

Krausz USA launches HYMAX GRIP

Krausz USA's HYMAX GRIP pipe coupling and flange adaptor features patented technology that uses universal teeth to restrain all types of connecting plastic and metal pipes. As pressure is applied to the connecting pipes, the HYMAX GRIP increases its hold on the pipe.

"The HYMAX GRIP helps ensure pipes stay securely connected under extreme conditions, such as those caused by weather changes," said Krausz USA President Tom Gwynn. "The HYMAX GRIP is based on the game-changing HYMAX technology that has been field proven in more than one million installations in the United States and Canada," he added.

Like the HYMAX, the HYMAX GRIP has a unique hydraulic sealing that allows joining pipes to move up to four degrees on each end of the coupling and still maintain a tight, durable seal. Through this ability of dynamic deflection the HYMAX GRIP absorbs a wide variety of fluctuating stresses, making it a durable and secure coupling.

Ready to use out of the box, the HYMAX GRIP comes as a restraint coupling and as a flange adapter, both with a pipe diameter range of 4 to 12 inches. It has a stab-fit design with a top-facing 2-bolt closure for the coupling and 1-bolt closure for the flange adaptor version. These features make it simple for installers to connect pipes and complete jobs quickly.


HYMAX GRIP coupling

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