

Case Study

City of Palm Coast, FL

KRÜGER



Palm Coast Wastewater Treatment and Reuse Facility

Plant Highlights

General information

Project Location: Palm Coast, FL
Client: City of Palm Coast
Operational Since: Summer of 2006

Challenge

To meet demand of growth within the city and to achieve production of reclaimed reuse water. The facility was also challenged to meet tertiary effluent limits of CBOD 5 mg/L, TSS < 5 mg/L and TN 10 mg/L.

Solution

Install an additional AE-DENITRO single ditch system and four Hydrotech Discfilter units.

Conclusion

Kruger's AE-DENITRO system, followed by the Kruger Hydrotech Discfilter, achieved the goal of producing reclaimed reuse water for the growing community.

The Challenge

The City of Palm Coast, located on the east coast of Florida, expanded their existing Wastewater Treatment Plant (WWTP) to increase capacity to 6.83 MGD due to population growth, as well as add the production of reclaimed reuse water for use within the City. The existing facility disposed effluent wastewater at rapid infiltration basin sites, spray fields, and a wet weather discharge site. With the addition of tertiary filtration, the plant added disposal of effluent to reclaimed reuse customers, which use the high quality water for golf course and lawn irrigation; therefore, providing the benefit of preventing the wasting of potable or surface water.

In conjunction with the expansion of mechanical equipment for the plant improvements, the City of Palm Coast upgraded the plant's automation. The plant desired to expand their existing instrumentation and control for additional ease of operation.

Plant Overview

The Palm Coast WWTP consists of 6.83 MGD primary, secondary, and tertiary treatment. The primary treatment includes automatic, continuous self-cleaning mechanical barscreens, biofilter odor control and grit removal.

The existing secondary treatment system consists of two identical process trains, each inclusive of a single oxidation ditch and two secondary clarifiers. The plant expansion added one process train comprised of a Kruger AE-DENITRO single ditch system followed by two new circular clarifiers.

Tertiary treatment consists of Kruger Hydrotech Discfilters and high level disinfection ("bulk" NaOCl).

Treatment of the biosolids includes aerobic digestion and sludge thickening. After which, the sludge is hauled offsite for final treatment at a residuals management facility.

For the plant automation, Kruger provided PLC control panels for the Kruger supplied equipment, as well as additional equipment added during the expansion. Kruger also provided a plant wide control/SCADA system, instrumentation, motor control centers (MCC) and variable frequency drives (VFD).



Kruger's Hydrotech Discfilters

VEOLIA
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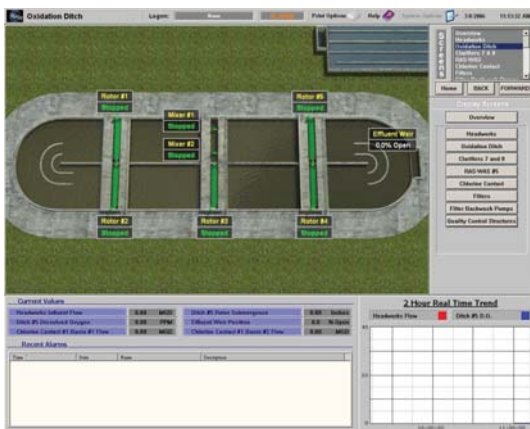
Process Solution

To meet the challenges identified by the City of Palm Coast, the WWTP incorporated an additional process train to the existing two, inclusive of Kruger's AE-DENITRO single ditch system to treat an additional design flow of 2.275 MGD for biological treatment.

The AE-DENITRO ditch system at Palm Coast consists of five (5) 40 hp brush aerators, two (2) 4.4 hp submersible mixers and one (1) effluent weir. The AE-DENITRO process uses Phased Isolation Ditch (PID) technology by alternating between aerobic (for nitrification) and anoxic (for denitrification) phases to help reduce the effluent TN. The phases work by separating aeration and mixing in the different ditches, as well as incorporating automated dissolved oxygen (DO) control.

The Kruger Hydrotech Discfilter system consists of four (4) HSF2218-2F Discfilter units, installed below ground in concrete basins, for tertiary treatment to meet the entire plant's TSS effluent requirements. The Discfilters use cloth filter media panels mounted onto vertical disc segments to separate solids from water.

The Kruger controls system upgrade consisted of an "open solution" utilizing Ethernet technology to protect the city's ability to utilize tomorrow's technologies. The Ethernet –based process control system implemented the open Modbus TCP protocol. System components include "intelligent" MCCs that communicate directly with the plant programmable automation controllers.



SCADA Screen Shot

Conclusion

The effectiveness of Kruger's AE-DENITRO system, followed by the Kruger Hydrotech Discfilter for tertiary treatment, allowed the Palm Coast WWTP to expand its capacity to accommodate the City's population growth and add the production of reclaimed reuse water for distribution to customers. In addition, Kruger automation system, instrumentation and MCC allowed the City to effectively and efficiently operate the plant on and offsite. Overall, the City gained the value and ease of working with one supplier, Kruger, for providing the central equipment for the upgrade, as well as the main portion of the plant controls.



Kruger's AE-DENITRO System



Motor Operated Effluent Weir