

Food & Beverage

Case Studies



CONTENTS



The Hershey Company Pennsylvania (USA)

- Wastewater Treatment Project



Dairy-Free Yogurt Manufacturer Pennsylvania (USA)

- Wastewater Treatment Project
- Onsite Services
- Hydrex Chemical Services



MadTree Brewing Cincinnati, Ohio (USA)

- Ingredient Water
- Hydrex Chemical Services



American Crystal Sugar Moorhead, Minnesota (USA)

- Product Filtration



Leading Soft-Drink Company Ontario (Canada)

- Wastewater Treatment Project
- Digital Services



Multi-National Candy Manufacturer Ontario (Canada)

- Wastewater Treatment
- Maintenance & Digital Services



Global Dairy Processor (USA)

- Utility Water Treatment
- Onsite Services
- Hydrex Chemical Services

Food & Beverage Capabilities

Ingredient (Production) Water

Production facilities need a continuous and safe supply of water. Veolia's technologies ensure that the production of ingredient water is reliable, cost effective, and meets the highest quality standards that your operation demands.

Utility Water

Food and Beverage manufacturers rely upon their utility operations to provide reliable steam and cooling water to support production needs. Veolia's equipment and chemical technologies effectively produce the type of water your utilities need to ensure steam quality, heat exchange efficiency and environmental compliance.

Product Filtration

Ensure product quality and clarity with Veolia's fine filtration technologies. These systems are a safe and economical method to remove suspended solids and other unwanted particles from your product.

Wastewater

Veolia is experienced in helping clients reduce their financial exposure and comply with discharge requirements and stringent environmental regulations.

Anaerobic Treatment Convert Waste & Wastewater to Energy

Anaerobic treatment technologies offer a dual benefit for food and beverage facilities. They simultaneously treat a wide range of waste and wastewater streams while creating energy-rich biogas as a by-product that can be used to produce "green" electricity or heat.

Water Recycling & Reuse

Food production is a water-intensive industry. Veolia understands this and is able to help clients meet water reduction goals and minimize their environmental impact by implementing technologies that convert wastewater into water that can be reused elsewhere.

Nutrient Recovery

Veolia's sustainable approach to water can transform waste into valuable by-products, such as fertilizer, that can be reused or sold.

For More Information

water.info@veolia.com

+1 800.337.0777

www.veoliawatertech.com

The Hershey Company

Location: Hershey, PA

Challenge

The Hershey Company was in need of a new wastewater treatment facility with increased capacity to replace its existing 100 year old treatment plant.

In addition to increasing treatment capacity, Hershey wanted to significantly enhance the quality of its wastewater effluent prior to discharge to the municipality. Hershey was also looking for the new facility to be an environmentally sustainable facility that incorporates advanced energy and byproduct recovery technologies to reduce energy needs.

Key Project Drivers

- > Replace Existing Wastewater Facility
- > Future-Proof Wastewater Facility
- > Ensure Regulatory Compliance

Influent Parameters

Flow: 500-850 gpm
COD: 20,000-35,000 lb/day
TSS: 200-500 mg/l
FOG: 25-75 mg/l
Temp.: 85-95° F

Effluent Parameters

BOD₅: <10 ppm
TSS: <10 ppm
NH₃: <5 ppm
TP: <2 ppm
pH: 6-9

Solution

Veolia Water Technologies partnered with Hershey to develop a “first-of-its-kind” advanced wastewater treatment process to secure the manufacturer’s current and future wastewater treatment needs.

After lab studies and analysis, Veolia engineers designed a high performance wastewater treatment process. The design for this facility includes a variety of advanced biological, physical, chemical, and tertiary wastewater treatment technologies.

Wastewater Treatment Process Overview

- > Screening and Equalization
- > Biothane® UASB (Anaerobic Digestion)
- > 2 Stage AnoxKaldnes™ MBBR (Aerobic)
- > IDRAFLOT® DAF (Dissolved Air Flotation)
- > Hydrotech Discfiltration
- > Sulfothane™ Biogas Cleaning
- > CHP (Combined Heat & Power Electrical Generator)
- > Ultra-Violet Disinfection

Results

Specifically, the facility is able to reduce BOD consistently below 10 mg/l and can treat up to 34,570 lb/day. Additionally, it is able to remove TSS below 10 mg/l. In summary, the project achieved its goals of producing a high quality effluent before being discharged to the municipal sewer system and secured the current and future wastewater treatment needs of the client.



Non-Dairy Yogurt Manufacturer

Location: Pennsylvania

Challenge

A multi-national food manufacturer was looking to significantly expand its manufacturing in Pennsylvania. The multi-million dollar investment would make this production site the largest plant-based yogurt manufacturing site in the United States.

It was identified that a pretreatment facility was needed to accommodate the increased flows and loads. Additionally, this project will also support the company in achieving its aggressive corporate sustainability goals related to waste, water, and the environment.

Solution

Veolia was contracted to engineer and install a complete wastewater treatment solution. This scope of work included all aspects of the wastewater treatment facility, with the exception of civil and building construction. The key purpose of the facility was to treat the wastewater onsite to remove FOG (Fats, Oils, & Grease), BOD (Biological Oxygen Demand), and TSS (Total Suspended Solids).



Results

The wastewater treatment facility is now an easy-to-operate facility that can easily adapt to varying wastewater characteristics and provide robust treatment. Additionally, the combined support of Veolia's various projects, service, and chemical teams allowed the client to not only meet the wastewater treatment specifications, it was also able to minimize the operational, energy, and sludge handling costs.

Key Project Drivers

> Plant Expansion

> Regulatory Compliance

Influent Parameters

Flow: 100,000 - 230,000 gpd
BOD: 900 - 1,800 mg/l
TSS: 300 - 1,300 mg/l
FOG: 100 - 300 mg/l
Temp.: 24°C - 34°C
pH: 5 - 11

Effluent Parameters

BOD: <300 mg/l
TSS: <300 mg/l
TP: <12 mg/l
FOG: <300 mg/l



Onsite Services and Support

Veolia Optimizes Wastewater System Using Hydrex Chemical Solutions

Shortly after commissioning, Veolia was also tasked with providing a chemical service program for the wastewater treatment system to minimize both sludge volume and handling costs at the site. After performing a comprehensive analysis and tests, Veolia identified that it can reduce sludge production by using a Hydrex specialty coagulant, while significantly reducing coagulant chemical consumption.

Veolia AquaService™ Team Supports Commissioning of New Facility

To ensure the wastewater treatment plant was commissioned and operating efficiently, a Veolia AquaService team operated the new plant for the first four months to assist with fine tuning the chemistry and equipment operation, set up the lab & testing procedures, collect data for the process guarantee, and train the permanent operator. Additional value was also created for the client by developing a plan for the continuous feed of concentrated dumps to treat this waste onsite instead of hauling it off for disposal.



MadTree Brewing

Location: Cincinnati, OH

Challenge

With water being the main ingredient in beer, there is a direct correlation between the incoming water quality provided by municipal water treatment facilities and the potential flavor profile of the end-product. The water provided by local municipal treatment facilities has the potential to vary greatly depending on its source and treatment process. These chemistry fluctuations can result in variances in the end-product. To have greater control over the end-product, MadTree was looking for a solution that would provide them the flexibility to ensure the water they use is optimized for each batch of beer they produce.



"Controlling the incoming water for our brewing process is critical to ensuring we maintain consistent quality and taste."

Matt Rowe, MadTree Director of Brewing Operations

Solution

Veolia's solution at MadTree includes a 100-gallon-per-minute SIRION™ Mega Reverse Osmosis (RO) technology to remove up to 97% of dissolved inorganic and more than 99% of large dissolved organic material, colloids and particles.

Prior to the RO, the incoming water is first dechlorinated with sodium bisulfite and softened with an anti-scalant. After passing through the RO, the water undergoes ultraviolet sterilization treatment to remove any residual bacteria before going into a 20,000 gallon permeate storage tank. The water is moving all the time, either being sent to the brewing process, as needed, or recirculated in the tank and UV system. Any excess output from the RO is used as water make-up for boilers, increasing the operation's water and energy efficiency.

Results

The SIRION RO System is able to provide a consistent supply of ultra-high purity ingredient water at the brewery. Since the water chemistry is virtually the same at any given time, MadTree can custom-tailor the water for each specific recipe by adding desired quantities of calcium, magnesium, sulfates, chlorides and bicarbonate. This gives MadTree the freedom and flexibility to create individual water profiles for each beer.



Key Project Drivers

- > Plant Expansion
- > Consistent Product Quality

Ingredient Water Parameters

Flow: 100 gpm
Removal Rates: 97% Dissolved Inorganics
99% Dissolved Organics



An Integrated Approach

MadTree Brewing has partnered with Veolia for integrated water treatment equipment and services.

In addition to providing the RO technology, Veolia regularly performs a comprehensive service checklist on their entire water infrastructure. The program includes maintenance and testing of the SIRION Mega RO system, as well as boiler water chemistry services. With this integrated approach, Veolia is able to maximize the operational efficiency and lifespan of their systems.

American Crystal Sugar

Location: Moorhead, MN

Challenge

The production process of producing sugar from beets requires product filtration at various steps to remove unwanted material to produce a high quality end product. In this particular case study, a leading sugar manufacturer wanted to expand plant capacity and increase operational efficiency.

Solution

To meet the manufacturer's production capacity and product quality, Veolia installed 5 larger capacity Whittier Auto-Jet® Pressure Leaf Filters as a replacement to the facility's aged carbonation filters. In addition to providing the filters, Veolia partnered with the client to provide the interconnected piping design so the new filtration system would fit in the available space and work seamlessly within the overall production process.

Results

The client was able to meet production goals through the increased filtration capacity provided by the Auto-Jet filters. In addition to the increased capacity, the installed precoat filters were able to consistently remove particles down to 1 micron.

Key Project Drivers

- > Increased Capacity
- > Consistent Product Quality

Influent Design Basis

Flow: 1,920 gpm
TSS: 100-200 mg/l
Temp.: 220°F
pH: 8.8

Effluent Parameters

TSS: <1 mg/l
Particle Size: <1 micron





Soft Drink Company

Location: Ontario, Canada

Challenge

In 2015, Veolia Water Technologies installed a new pH neutralization system to treat wastewater from a beverage manufacturing facility. The system was able to successfully treat the wastewater; however, variability in the flow and characteristics made it very operationally intensive to be able to maintain a consistent effluent. The client needed a solution that would be more flexible and easier to operate and safeguard against non-compliance.

Solution

After an extensive field evaluation, it was proposed to the client to retrofit the existing wastewater system with Veolia's advanced digital service tool, **Hubgrade™**. The upgraded "smart" wastewater treatment system is engineered with an advanced control system that is able to adapt to the variabilities of the wastewater flows, temperature, and pH.

In addition to the retrofit, the system is paired with "Hubgrade™ Assist," an advanced service offering that allows Veolia's experts to remotely access the system in real-time and support the client's onsite wastewater operations staff, while continually optimizing the system's functionality.

Results

The retrofit was commissioned in December 2018 and has been operating efficiently to ensure that the wastewater's pH is within appropriate limits prior to being discharged to the municipal sewer system.

With the Hubgrade™ Assist service agreement, the system is remotely monitored by process engineers to ensure it is operating as expected. This will allow the client to focus less on wastewater management and more on their core business.

Key Project Drivers

- > Regulatory Compliance
- > Operational Efficiency

Facility Information

Beverage filling operation
3 production lines

Influent Parameters

Flow: 200 m³/d
Temp: 10° - 85° C (50° - 185° F)
pH: Wide pH range (3 to 12.5)
FOG: High concentration of fat, oil, grease (FOG)



Hubgrade

Powered by **VEOLIA**



The Power of Veolia by Your Side, 24/7

To enhance water and wastewater treatment at your facility, Veolia Water Technologies has developed an all-in-one digital service called HUBGRADE.

HUBGRADE combines artificial intelligence and water treatment expertise to make your system smarter, safer, and more sustainable. Using HUBGRADE, Veolia can also perform a virtual site visit to a facility to more efficiently provide troubleshooting and emergency support.

Candy Manufacturer

Location: Ontario, Canada

Challenge

A multinational leader in confectionery products was looking to reduce the wastewater disposal costs at their candy and gum production facility in Canada. The wastewater stream from the washing of their production equipment was high in BOD/ COD (Biological and Chemical Oxygen Demand), which incurred significant transportation and disposal costs.

Solution

Veolia Water Technologies partnered with the client and installed an EVALED® RVF-Series Evaporator, along with a pH pretreatment system. The system treated the segregated wastewater stream from the cleaning of the candy production equipment.

About the EVALED® RV F Series Evaporator

The RV F series evaporators have a heating system based on the mechanical vapor recompression (MVR) principle, and operate under a small vacuum at 70 kPa and around 90°C (194°F). The evaporators require only an electrical power supply. The RV F series does not require any external heating and cooling system.

Heat exchange occurs within an external shell and tube exchanger where the hot vapor coming from the compressor increases circulating wastewater temperature. Subsequently, in the boiling chamber, boiling wastewater produces new vapor that is compressed by the compressor before flowing to the shell side of the heat exchanger.

Results

The system is able to recover up to 90% of the water from the distillate. The concentration factor is approximately 10 times the influent solids percentage. This liquid wastewater reduction resulted in operational savings from reduced transportation and disposal costs. In addition to the sustainable advantages of the high quality distillate, the client has the ability to recover sugar as a byproduct from the concentrate, which can be sold as animal feed.

Key Project Drivers

- > Reduced Wastewater Costs
- > Byproduct Recovery

Influent Parameters

Flow:	60 m ³ /day (11 gpm)
BOD:	18,000 mg/l
COD:	<50,000 mg/l
Temp:	105°C
Solids :	2-4%
pH:	3
Conductivity:	<500 µS/cm

Distillate Characteristics

Volume:	54 m ³ /day (9.9 gpm)
BOD:	600 mg/l
COD:	<1,500 mg/l
pH:	<5.5
Conductivity:	<50 µS/cm

Concentrate Characteristics

Volume:	6 m ³ /day (1.1 gpm)
COD:	350 mg/l
Solids :	30%





Dairy Processor

Location: USA

Challenge

The facility was running near capacity, and its utility systems were in need of attention. Inconsistent steam and cooling demand, coupled with rising water treatment costs and poorly operating water treatment equipment were creating problems.

Returning condensate was contributing to a very high feedwater iron level and resulted in a significant amount of iron deposit in the plant's steam boilers. The Sodium Zeolite softeners used for boiler makeup were not operating correctly and the plant's Reverse Osmosis unit was not operating near its design capacity. As well, the plant's cooling systems were experiencing higher than acceptable corrosion and microbiological fouling rates.

Solution

After a series of plant visits to complete a comprehensive water audit and gain an understanding of the water problems and their impact on plant operations, Veolia Water Technologies proposed a comprehensive water management program that was designed to improve water treatment costs and utility performance.

After the audit, Veolia Water Technologies focused their efforts on a list of water related projects that the client had agreed were the highest priority to achieving the plant's overall production and budgetary goals.

Veolia's began to improve make-up water quality by rebuilding the water softeners and establishing a preventative maintenance program for the plant's reverse osmosis unit, filters and softeners.

Results

Due to the changes made by the Veolia team, immediate improvements are being seen in both the boiler and cooling systems:

- Make-up water quality has improved substantially due to the Softener rebuild, removing hardness more effectively and consistently.
- The reverse osmosis unit's performance was restored back to the originally specified flow rate.
- Cooling water system corrosion rates are all now < 1 MPY on Mild Steel and < 0.5 MPY on Copper. Additionally, the bacterial slimes that were prevalent in the systems are now under control.
- Boiler inspection has revealed the removal of old iron deposits and re-establishment of a gun-black magnetite iron surface.

Key Project Drivers

- > Reduce Water Treatment Costs
- > Improve Utility Performance
- > Protect Utility Equipment



