The Hershey Company Advanced Sustainable Wastewater Treatment Facility

A SCREENING & EQUALIZATION

Wastewater from the Hershey facility first passes through a rotary screen to remove large solids and fibrous material.

The solids from the screen will be removed, while the screened wastewater will enter into the influent sump. From the sump, the water will be pumped into the wastewater treatment plant's Equalization Tank (EQ). As a precaution, the system has a "calamity tank" to collect non-compliant wastewater that could potentially overload or harm the biological systems.

The EQ tank is designed and sized to buffer the flow and loading prior to feeding Veolia's Biothane® UASB system. The wastewater in the EQ Tank is controlled by level, flow and/or TOC/COD. The EQ tank has mechanical mixing to ensure a homogeneous forward feed to the anaerobic process.

B BIOTHANE® ADVANCED UASB
HIGH-RATE ANAEROBIC DIGESTION

Wastewater from the EQ tank passes through mixing valves and then flows through the feed distribution headers into the bottom of the anaerobic reactor. As the wastewater flows up through the granular sludge bed in the reactor, the biodegradable components are converted into biogas as well as a small amount of new biomass. The treated wastewater passes up through the Biothane Advanced settlers at the top of the reactor where sequentially the biogas is separated from the biomass and anaerobic effluent.

The anaerobic effluent is apportioned into two streams, a recycle stream back to the Rapid Mix Tank or feed forward effluent to the next treatment step, the AnoxKaldnes MBBR aerobic system.

C ANOXKALDNES™ MBBR

The water flows from the UASB reactor to the two-stage AnoxKaldnes Moving Bed Biological Reactors (MBBR). This aerobic system utilizes patented non-clogging bio-film "carriers" to protect the biofilm and maximize its surface area within the reactor. The MBBR process is a continuous flow, two-stage process. The first MBBR stage completes the BOD removal and the second stage completes nitrification of the ammonia to meet the discharge requirements.

D IDRAFLOT® - DISSOLVED AIR FLOTATION

In order to meet the discharge requirements, the DAF unit provides solids separation of the aerobic MBBR effluent to reduce the TSS and associated COD/BOD. The DAF float is removed continuously and pumped to a DAF solids tank for storage before disposal. The DAF "solids free" effluent overflows into the Hydrotech Discfilter.

E HYDROTECH DISCFILTER

Following the DAF, the effluent will be treated by the Hydrotech Discfilter for tertiary TSS filtration. The Hydrotech Discfilter is a fully-automated system that utilizes woven cloth filter media to remove TSS that are ≥10µm. Collected solids are backwashed from the media and will be recirculated upstream of the DAF. Filtered water will flow by gravity for final UV disinfection.

F UV DISINFECTION

After the Hydrotech Discfilter polishing step, the water is disinfected using short-wavelength ultraviolet light to inactivate microorganisms prior to discharging to a nearby stream.

G BIOGAS HANDLING & GREEN ENERGY

A byproduct of anaerobic digestion is the creation of biogas (methane). The bigas produced inside the Biothane anaerobic reactor is collected and sent to Veolia's patented H_2S biogas scrubbing technology, Sulfothane™.

After the hydrogen sulfide is removed, the biogas will be dried, pressurized, and stored prior to being valorized in the Combined Heat and Power generator system (CHP).

In the CHP, biogas will be supplemented with natural gas and burned to create both electricity and hot water. The CHP generator is equipped with a full waste heat recovery system that will be used to heat the influent wastewater.

The system is estimated to create 750 kW/h. This energy can offset >100% of the total electric power requirements needed to operate the system, making it a sustainable wastewater treatment facility.

INFLUENT DESIGN BASIS

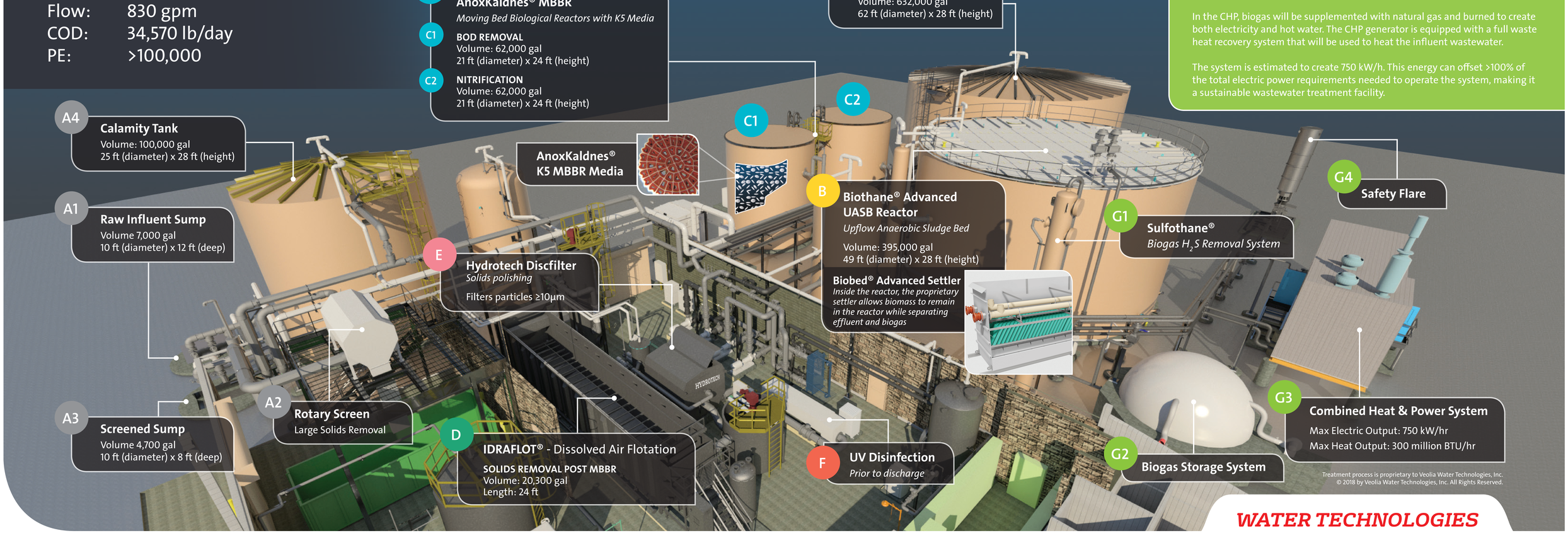
Flow:	830 gpm
COD:	34,570 lb/day
PE:	>100,000

C AnoxKaldnes® MBBR
Moving Bed Biological Reactors with K5 Media

C1 BOD REMOVAL
Volume: 62,000 gal
21 ft (diameter) x 24 ft (height)

C2 NITRIFICATION
Volume: 62,000 gal
21 ft (diameter) x 24 ft (height)

A5 Equalization Tank
Volume: 632,000 gal
62 ft (diameter) x 28 ft (height)



WATER TECHNOLOGIES