CASE STUDY

Wastewater Treatment Plant for Confectionary

- **Client**: Dolcissimo Srl, Andros-Novandie Group
- **Location**: Ossona (MI), Italy
- **Capacity**: 600 m³/d
- **Solution**: Anaerobic Digestion Plant (200 kW)
- **Technologies**: EFC Anaerobic Digester, CSTR Digester for primary sludge

Background

"Dolcissimo" is a traditional Italian confectionary producer, owned by the French industrial group Novandie. The plant, located in Ossona in the province of Milan, was established in 1997 and presently has a production capacity of 30,000 tons.

The company continuously updates to the newest technologies to ensure the most rigorous hygiene and safety parameters and to guarantee a complete production cycle. With this goal in mind, Dolcissimo began research to design and build an enhanced wastewater treatment plant that also produced biogas.

Challenges

Wastewater has high concentrations of both soluble COD (essentially sugars) and fats. To minimize sludge production and obtain maximum biogas, both of these fractions should be digested anaerobically. The use of a classic CSTR sludge digester would not allow for enhanced sugars. Additionally, the use of a quick granular sludge digester would not have been possible, because the fat interferes with the sludge, making it very light and causing it to escape from the digester itself. Fluence was able to effectively combine these two technologies, using the solution described here.

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Project Data

	COD (mg/L)	Nitrogen (mg/L)
Inlet Wastewater	9600	115
Outlet Wastewater	<80	<10

Solution

To treat the company's wastewater, Fluence installed an initial flotator, to separate the fats in the wastewater and concentrate them in a sludge with a much smaller volume than the inlet wastewater. The clarified wastewater coming out of the flotator, containing the sugary part of the COD, is then treated in a proprietary Fluence technology, a granular sludge rapid digester (EFC), which allows for treatment of the wastewater with very short retention times (18 hours) and with purification yields above 85%. A biological aerobic section with activated sludge, equipped with a denitrification section, is installed downstream of the EFC rapid digester, to reduce the concentrations of COD and nitrogen below the limits for discharge into surface waters. Due to the lack of space, the separation between treated water and aerobic activated sludge was not achieved by a clarifier, but with a secondary flotator. The last phase, before the treated water is discharged, consists of a final safety filtration through a quartz filter. The fat sludge originating from the primary flotator, as well as the biological excess sludge, are instead treated in a CSTR digester. The latter, in addition to producing other biogas, reduces the solid sludge content to be disposed of by 70%. The digestate remaining from the sludge digester is sent to a centrifugal separation system. The liquid part is combined with the waste leaving the rapid digester and the aerobic phase. The solid part is instead disposed of by third parties, for example, in agriculture or in composting.

Project Flow