Alfa Laval BlueVap system

Thermal separation system for treating black water to reduce disposal costs

Introduction

The BlueVap “plug and play” system turns black water into clear water that can safely be discharged to the local sewage plant, and a concentrate that can be mixed with husk. The process eliminates the need for storage or spreading in farmlands, and significantly reduces the amount of wastewater as well as disposal costs.

Application

The Alfa Laval BlueVap thermal separation system has been developed for continuous treatment of black water, typically from three-phase olive oil extraction. It is suitable for individual olive oil mills as well as for co-operatives and is available in capacities up to 1,000 litres/hour or 2,500 litres/hour.

Benefits

- Proven, reliable solution
- Low treatment costs
- Complete pre-assembled unit with compact design
- No steam or cooling water required
- High resistance to fouling
- Automatic, user-friendly operation - minimum supervision

Design

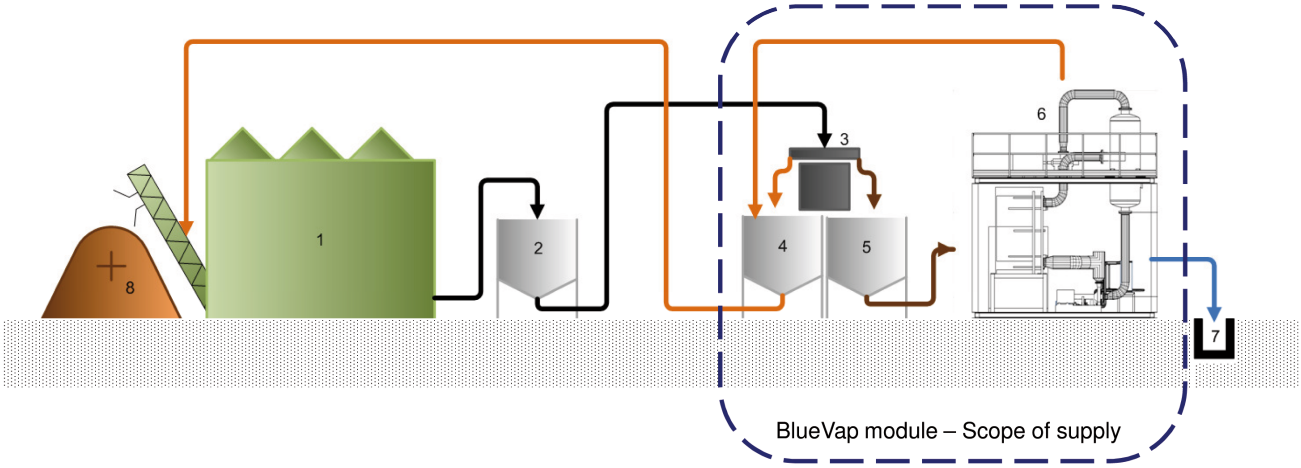
The design and operation of the pre-assembled, fully automatic BlueVap treatment system takes into consideration the fact that many olive oil producers do not have steam or cooling water available in their mills. This is typically required for other types of black water treatment. BlueVap features the most resilient evaporator technology available on the market, building upon Alfa Laval's world-leading experience in heat exchanger technology. The system offers high thermal efficiency with very low electricity consumption per kg of treated black water.

Working principle

After filtration of the black water, the BlueVap closed-loop thermal separation system, based on evaporation, splits the wastewater into two fractions: Clear water and concentrate. Approximately 80% of the treated, separated black water ends up as clear water that can be used to irrigate fields or safely be discharged to the municipal sewage system. The remaining 20% is a highly biodegradable concentrate that is typically added to the husk from the decanter in the olive oil mill or burned for cogeneration.

Black water (100%) before treatment with BlueVap	Clear water (80%) after treatment	Concentrate (20%) after treatment

Standard configuration



The equipment inside the dotted area is supplied as part of the BlueVap thermal separation plant.

1 = Olive oil mill	5 = Tank for filtered black water	Black Water
2 = Black water tank	6 = BlueVap thermal separation module	Filtered black water
3 = Black water filtration unit	7 = Sewage	Filtered and concentrated solids
4 = Tank for filtered and concentrated solids	8 = Husk	Clear water

Technical data

	Black water capacity (l/h)	Clear water production (l/h)	Concentrate solids production (l/h)	Absorbed power (kW)	Overall dimension L x W x H (mm)
BlueVap 1000	1,000	800	200	30	5,000 x 2,300 x 5,633
BlueVap 2500	2,500	2,000	500	75	6,105 x 2,400 x 6,210
Tanks and filtration unit for BlueVap					3,045 x 2,024 x 3,740

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How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com