

Winery effluent treatment

Aeration upgrade quickly copes with growing production

The aeration upgrade of a winery's wastewater treatment plant was successful in every aspect:

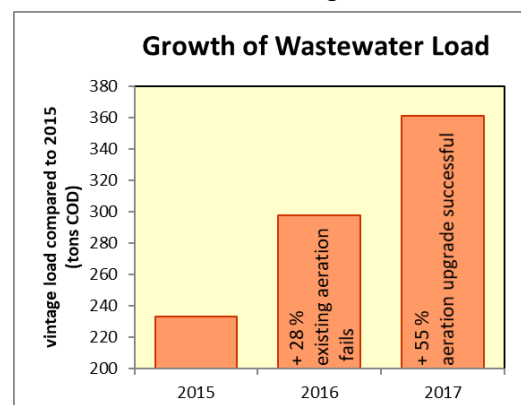
- aeration upgrade without additional power requirement
- 50% increase in treatment capacity
- improved COD removal (effluent COD reduced by 20%)
- complete elimination of foul odours



Initial situation

An Australian winemaker of high international reputation processes over 10,000 tons of grapes per year. Effluent from production is being treated in an aerated lagoon and a secondary facultative lagoon. In the vintage season of 2016, the wastewater treatment lagoons began emitting strong and intense odours. Well aware of their environmental responsibility, the company immediately searched for professional advice.

An aeration upgrade was planned and implemented before start of vintage in 2017.



The solution

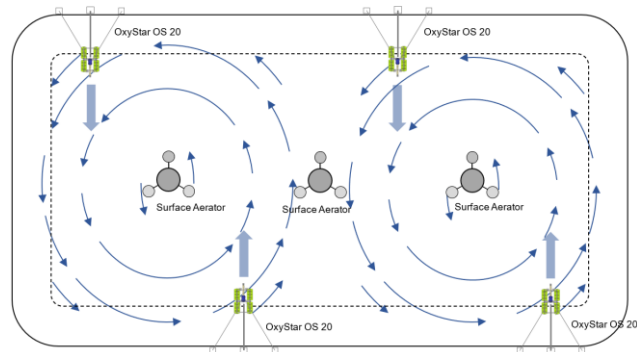
In 2016, growth of production lead to 28% additional COD load and the existing aeration failed. At that time, 3 x 37kW slow-speed surface aerators and 2 x 30kW aspirating aerators made in the USA were in service.

FUCHS experts analysed the situation and recommended a bundle of changes:

- 1) More oxygen:
4 x 15kW OxyStar Aerators instead of the existing, inefficient 2 x 30kW aspirators



- 2) Improved mixing and circulation:
aerators positioned such as to form a 2-loop configuration



- 3) Load-adjusted aeration: enhanced process-specific DO control

In operation, the aeration upgrade exceeded expectations. Thanks to a record-breaking grape yield in 2017, there was an additional increase in production. The treatment plant was able to handle the additional load without trouble.

At the end of the vintage period, the customer reported: "We have achieved a 40% increase in aeration and a 10% reduction in power. We are very satisfied."

Contact:

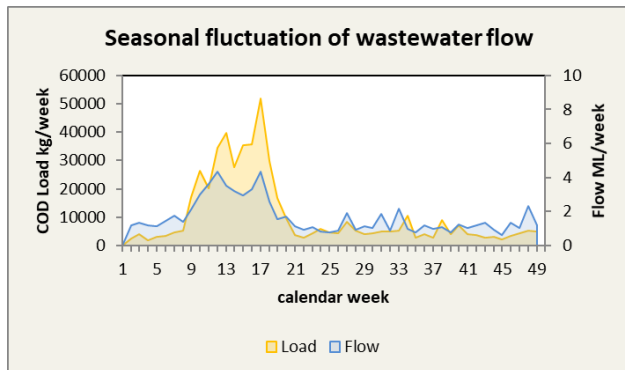


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Some facts about winery wastewater



The greatest quantity of winery wastewater is being produced in a few weeks in and shortly after vintage as the fresh grapes have to be processed immediately.

Destemming, crushing, pressing, fermentation and primary decanting are the main sources of wastewater.

Juice, wine and yeast residues, cleaning and sanitation agents are the main constituents. Typically, the concentration of organic pollutants is high. Biological treatment can remove them easily. With insufficient aeration however, anaerobic bacteria quickly start emitting bad odours.



Grape crushing in the Middle Ages
De Grey Book of Hours
Llyfrgell Genedlaethol Cymru
– The National Library of Wales

Equipment and winemaking practices are of major influence on the quantity of wastewater and its degree of pollution. “Dry cleaning before rinsing” should be applied in each step of production.

Reuse for irrigation is usually possible, but may be influenced by the type of cleaning and sanitation agents in use, the quality of the process water and the soil quality in the area of irrigation.

Effluent treatment typically consists of mechanical pre-treatment - screens or sieves - and biological treatment with liquid/solid separation. Although winery wastewater contains organic acids and the pH is as low as 4 - 5, neutralization is generally not required. The organic acids are biologically degradable and they are removed in the biological treatment process.



A smaller winery's effluent treatment plant