Constructed Wetlands for wastewater treatment

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Case study

Pant Glas Micro-Brewery, near Alcester, West Midlands

We had been recommended to this client by Purity Brewing, located near Alcester in the West Midlands. Some 8 years ago we designed a large passive wetland treatment system for them that is comprised of a number of swales and two large oxidation ponds to treat the wastewater from a small brewery that they were setting up. Our new client was setting up a micro-brewery on a small remote property he owned in the hills of North Wales not far from Lake Bala and wanted to use something similar. Unusually, he was planning to be brewing real lagers. His first brew tasted delicious.

Unfortunately, there was nowhere near enough space on the small steep slopes of our new client's property for a large passive wetland system to be installed. Brewery effluent is much stronger than most people and many breweries themselves realise. Based on our experience with a number of other small breweries the system needed to be designed to treat an effluent from initially two brews/week with an average BOD (Biochemical Oxygen Demand) of approximately 5,500 mg/litre and an initial pH of 4.5. To solve the dual problems of treating a strong effluent in a limited space we were fortunately in position to offer a relatively new reed-bed technology – Forced Bed Aeration – that is the only one that is able to treat such strong wastewaters. Under our Licence Agreement with ARM Ltd, we designed a Forced Bed Aeration (FBA) System to suit and then later installed it. Installation was completed in February 2013.

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The system is comprised of two aerated flooded reed-beds in series with the first being of the vertical down-flow type, and the second of the horizontal flow type. Although FBA systems have a continuous power requirement to run an air pump or two, they are highly efficient and have a much smaller footprint making them a viable alternative solution where space is limiting.

Our client required the system to be built on a modular basis so that it could be built in two phases to match the development of his brewery. The Business Plan is for the business to expand and production to double to a maximum in 3-4 years. With quite a bit of re-shaping of the site we completed the installation of Phase 1 of the Project with just enough room left to fit Phase 2 into the remaining space when the time comes. We are looking forward to returning and completing the whole system in 2-3 years time, and to tasting some more of that delicious lager.

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