

Success Story from Australia



Züllig Dissolved Oxygen Probe S-14

Dissolved Oxygen Control in Industrial Waste Water Treatment

Our representative in Australia, Rob Dexter from DCM, sent us the following success story:

Many biological industrial waste treatment plants deal with very variable carbon and nutrient loads. The type and concentration of waste can shift dramatically in a short time.

The usual way of dealing with this in Australia has been to build large aerated lagoons with long retention times. Low land cost and simplicity of design being major factors.

The aeration system is usually controlled by a series of dissolved oxygen (DO) probes mounted in different locations around the lagoon. The intention being to obtain an average DO for the lagoon.

A system such as this was installed at Bonlac Foods Ltd. - Darnum Park. The plant is a Dairy which

produces significant amounts of waste water.

The design of the control system is very flexible allowing aeration to be controlled in a way which produced very even DO levels over the vast majority of the treatment lagoon.

Unfortunately, the system proved very hard to commission. The problem was in the sensing systems used for determining the DO.

The set point for control was 2 mg/L, however whenever the DO level was checked manually, the lagoon DO was well above that figure. Power cost for aeration was far higher than expected. The sensors were being cleaned and checked every few days and seemed to be reading accurately when air calibrated.

It was then recognized that the process of checking the calibration involved wiping the sensor clean first.

The problem lay in the biological growth and fat deposition on the membrane sensors. Various opti-

ons for in situ cleaning were investigated with little gain achieved. The system went on to manual control as the automated system just would not achieve the necessary accuracy.

Fortunately the Consultant heard of the Züllig non membrane sensor and a trial unit was obtained to see if it could handle the application. Since it had no membrane and a rotating grindstone to keep the exposed electrodes clean, those involved had high hopes. The unit worked perfectly and 2 new units were purchased. They were put in control of the lagoon automated control part way into the Dairy season. Raj Manihar, the plant engineer, immediately began

optimizing the system to utilize the maximum amount of off peak power at night.

The accurate information from the sensors allowed the use of higher set points at night to allow the aerators to be turned off for significant parts of the day.

The cost of aeration reduced substantially on the cost of the manual control they had been using until then. The cost of buying the Züllig sensors was paid back in 10 weeks. In fact the plant now achieves an oxygen usage efficiency for the Kg BOD treated which exceeds the design criteria.

No doubt the design criteria is based on using membrane probes!! Maybe higher expectations may be made in the future!

Subject to change without notice.

1234e 25/10/2000



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and waste water control**

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