



- The BioTector® 970 gives Virtual On-Line COD with six installations in Glanbia.

- ISO 14001 AWARDED TO GLANBIA PLC FOR ENVIRONMENTAL EXCELLENCE
- APPLICATION RANGES FROM 50MG COD TO OVER 50000MG COD
- ON-LINE TIME >99% FOR ALL APPLICATIONS
- LOW MAINTENANCE REQUIREMENTS EVEN ON HIGH FAT LINES

General Background

The traditional methods for measuring dairy effluent strength have been the Biochemical Oxygen Demand (BOD) and the Chemical Oxygen Demand (COD). Both methods, however, require time to give their results. BOD analysis requires 5 days and COD analysis at best takes a few hours. A further disadvantage of the COD method is that every COD sample results in hazardous waste.

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At Glanbia plc, the need for continuous on-line monitoring to control the level of losses due to spillage in their dairy plant prompted the decision to replace the traditional methods with TOC analysis.

Application Description

Six BioTector® 970's are currently installed in the Glanbia dairy plant: Three units are used to monitor the fallout from the milk processing plants, one unit to measure the waste loading of the bio-tower and two units are used to monitor final effluent.

Excellent COD correlations have been obtained from each of the four waste monitoring BioTectors® installed at Glanbia plc. On average, the COD to TOC correlation factor for untreated dairy waste is 2.99. (Details on following page).

To quote Eamon Ryan, Asst. Environmental Manager at Glanbia plc: "Having established the conversion factor to bring TOC to COD **we virtually had on-line COD** and this information could be fed back to a PC in the central control room...Operators would monitor spillage rates and set a target in line with acceptable losses... At the whey processing plant alone, reductions were above expectations with an average decrease of 37% being achieved".

"While the benefits include better solids recovery, energy savings and reduction of waste, it has also relieved pressure on the treatment plant".

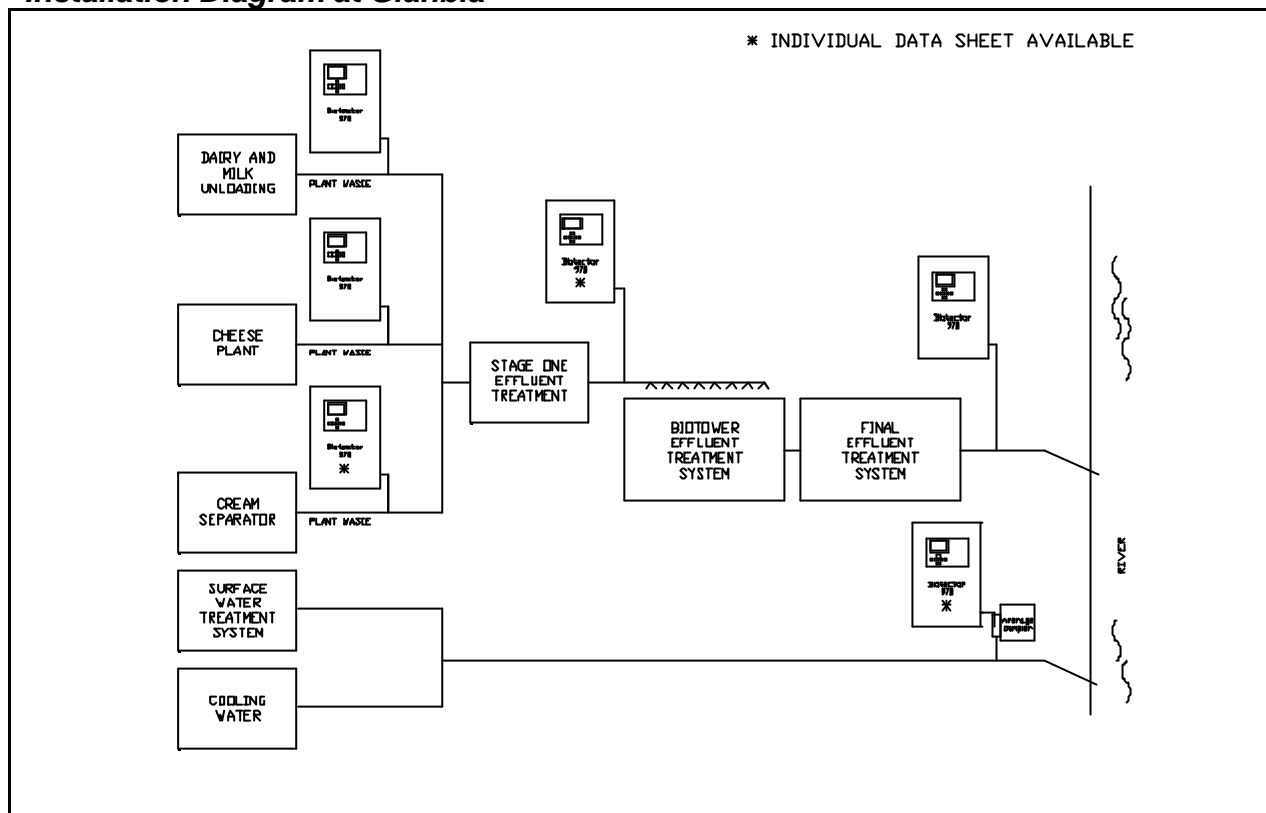
View of the WWT plant in Glanbia, with the Bio-tower in the background.



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Installation Diagram at Glanbia



COD:TOC correlation factors obtained by the waste monitoring BioTectors® at Glanbia:

Influent COD:TOC correlation factors.

Dairy and Milk unloading: 3.00
Cheese plant: 3.00
Cream Separator: 3.25
Bio-tower inlet: 2.72
Average for influent, 2.99

Final effluent COD:TOC correlation factor.

Final effluent: 4.00

In addition to COD values, BOD tests were also carried out in Glanbia. These resulted in the following factors:

Influent BOD:COD correlation factor.

Bio-tower inlet, 0.67.

Final effluent BOD:COD correlation factor.

Final effluent: 0.25.

The large difference between the influent and the final effluent BOD factors is due to the relative ease by which the bacteria can digest the influent waste compared to the treated final effluent waste.

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Virtual on-line COD and BOD measurement is therefore possible with the BioTector® TOC analyser, which gives reliable results using a non-problematic and non-toxic method.

The substantial improvement in compliance with statutory and legal emission requirements from the effluent plant resulted in the awarding of ISO 14001 to Glanbia plc for environmental excellence. So effective is the effluent treatment system at Glanbia, that the water returned to the river Nore has a lower COD than that initially taken. This gives excellent protection to this environmentally sensitive class A Salmonid river (EPA classification).

Note: additional data sheets are available for the following BioTector® installations at Glanbia:

Data sheet 1, Glanbia Bio-tower.

Data sheet 6, Cream separator.

Data sheet 7, Final effluent monitoring.