



## FOAM CONTROL IN MUNICIPAL WASTE WATER TREATMENT

### Introduction

Waste water in the UK is treated by using Anaerobic Biodigesters which are essentially very large fermenters. The effect is to reduce the volume and mass of the inflow. Methane is produced as part of the process which is a flammable gas. The digesters are classified as hazardous areas and require equipment to ATEX rules. The organism which is used is prone in some cases to generate foam which can cause problems in the digester including "foam-overs" which require a lot of work to deal with. Charis has been supplying the waste water industry in the UK with sensors and controls particularly to Southern Water who have a program to fit them on all digesters. Southern Water is a privatised public utility who supply and treat water to the south of England. ([www.southernwater.co.uk](http://www.southernwater.co.uk)).

### Charis System

The system which we have been using for Southern water is as follows:

Sensor: FP401/20/2100 Foam/Liquid Sensor installed in the top of the digester via a gas tight connection. Typical length 2.1m

Controller: FLCW2/Z Foam/Liquid Controller, wall mounting IP65 installed with MTL zener barriers. Outputs 4-20 ma and volt-free contacts for foam & sludge detection.

Fittings: FF10/BSP/20 adjustable gas tight fitting for 1" BSP process entry, ball valve welded to pipe flange suitable for digester.

The fitting allows the sensor position to be adjusted at commissioning to set the operating level while retaining the gas pressure. The fitting is screwed into a ball valve with a bore of <20mm diameter, this is turn is fitted to a pipe flange. The sensor can be removed and the valve closed to prevent gas leaking should it be necessary.

## System Operation.

The sensor detects either foam or sludge. When the foam is detected the controller signals to the site SCADA system via volt-free contacts and then antifoam is added to the digester. The antifoam is only added when required which optimises its use and also prevents over dosing.

If the digester outflow blocks or some other event causes the sludge level to rise too high the sensor then signals sludge to the SCADA via a second output and the inflow to the digester is inhibited.

## Benefits

There are several benefits to the system for Southern Water.

- Reduce antifoam usage
- Improved throughput to digester
- Better overall process control
- Reduced operator time in climbing to top of digester to monitor levels.

## Cost saving example : Millbrook water treatment works, Southampton.

No of digesters :	3
Capacity:	2000 cu m each
Throughput:	12000 tonne /year
Antifoam saving:	\$53,000 per year
Increased thru put	~ 6%

## Southern Water Sites with Charis Installations:-

Millbrook , Southampton  
 Ford, Sussex  
 Worthing, Sussex  
 Budds Farm. Portsmouth  
 Ashford, Kent  
 Snodland, Kent  
 Gillingham, Kent  
 Goddards Green, Brighton  
 Aylesford, Kent

## Anglian Water Sites with Charis Installations

Basildon, Essex  
 Colchester Essex

