

**Case Study**

*Reduction in effluent charges for the food industry*



### Roberts Food Group

Roberts Group operations are one of the UK's largest suppliers of frozen Yorkshire Puddings and desserts. The company is also part of the larger Greencore Group of companies.

The manufacturing facility is based on the outskirts of Leeds and has recently undergone a major refurbishment after fire damage.

The new manufacturing facility is a state of the art production environment that complies with latest UK and EU guidelines for the production of food for human consumption.

### The Challenge

Throughout 2003, Roberts Kitchens Foods, Leeds, were experiencing increasing failures of their consent with trade effluent discharge. Failures arose in a number of areas from oil and grease, settleable solids, PH and C.O.D. Roberts contacted Pulsonic Technologies in late December 2003 with an urgent request for assistance to address this problem.

Initial discussions and site surveys identified 3 major areas requiring urgent attention:

**Accurate Flow Data** – non-was available

(Yorkshire water billing was based on estimates of 70.5M<sup>3</sup> per day)

**Retention Time of Effluent** – non-was available and solids were discharged straight to drain.

**Oils and grease** – this was a major problem with no fat removal system was in place.

Following consultations, Pulsonic Technologies were instructed to undertake a flow survey to provide accurate flow volume on which a proposal for a min treatment works would be based.

Being aware of the exposure with the water authority and their own budgetary requirements, Pulsonic technologies aims were to improve the effluent quality with the most cost effective solutions available.



Waste treatment tank



Monitoring station and weir

### The Solution

By the beginning of February 2004 recommendations were made by Pulsonic Technologies to Roberts for a system comprising the following:

-  68M<sup>3</sup> settlement tank with multiple settlement chambers and weirs.
-  Trade effluent monitoring comprising of a V-notch weir tank, ultrasonic flow meter, twin bottle sampler and pH meter.
-  Screen system for debris removal
-  Float tube for oil and fat skimmer
-  pH dosing system.

This system would allow for up to 3 days retention time to enable oil and grease removal, solids to settle and pH balance to occur, which combined together would reduce all chargeable parameters of Roberts trade effluent consent. Following capital approval and cost justification, Roberts instructed Pulsonic Technologies on the 6<sup>th</sup> February to commence implementation of the trade effluent system with emphasis placed on speed of delivery and instillation.

Pre-planning formed an important part of the operation and much fabrication was done offside prior to installation. Delivery of settlement tank (20m x 5m x 2m) by haulers and craning into place was performed on the 11<sup>th</sup> and the 12<sup>th</sup> February Pulsonic commenced the instillation of the system. Within 24 hours the system was fully operational and recorded data only 2 weeks after the order was placed.

### Benefits and Results

Within weeks actual daily average discharge was accurately measured to be 52.68M<sup>3</sup>, compared with the figure of 70.5M<sup>3</sup> estimated by Yorkshire Water for previous charging periods. In addition to the accurate flow data, both Pulsonic Technologies and Yorkshire water took effluent samples during March with the results showing a significant drop in billing parameters:

C.O.D 3400mg/l	Previously 22,000mg/L	(Chemical oxygen demand)
F.O.G 217mg/l	previously as high as 66,000mg/l	(Fats, oils and greases)
Solids 285mg/l	previously as high as 23,000mg/l	

The cost implications of these results proved extensive. For the five months periods up to the 13<sup>th</sup> February 2004 the poor effluent quality discharged by the company gave rise to a charge of £9.97 per M<sup>3</sup>. With the improved effluent test results the effluent charges was recalculated to £1.96 per M<sup>3</sup>. As a result Yorkshire water reduced the Roberts bill for the 6 months ending 31<sup>st</sup> March from £114,000 to £75,000 a saving of £39,000 against the investment of £30,000, in under 2 months of the new system running. Clearly the Roberts Group are delighted with the solution by Pulsonic Technologies, as not only did they recoup their investment within weeks but will now enjoy year on year cost savings.

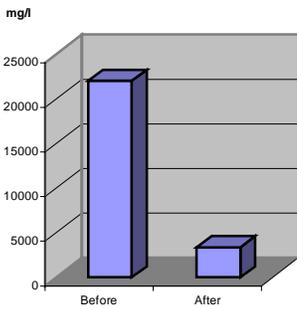


Environmental monitoring station

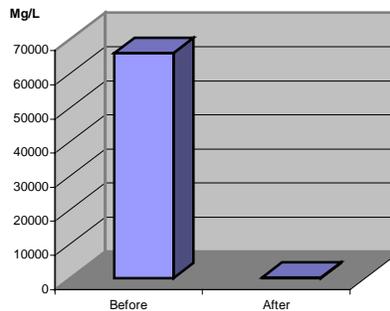
Mr. Ian Robinson, Roberts Director of Engineering:

***“ The back up service has been superb from Pulsonic Technologies with involvement with all parties being no problem for them. The Roberts Group is extremely happy with the service, equipment provided and the results achieved.”***

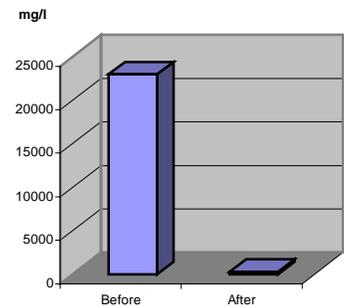
COD Levels



Fats, Oils and Grease



Solids



### Continued Work

Greencore Leeds have since taken out a bacterial dosing program with Pulsonic Technologies and COD levels are now down to under 1500mg/l

With the introduction of Pulsonic Technologies BCL 4000 product the odour emanating from the collection tanks has dropped significantly. It was noticeable that during the period of high temperatures 28-29°C in early June the presence of odour was only slightly distinguishable. It is Pulsonic Technologies view that the odour reduction as “value added” to Roberts, although it is becoming increasingly regulated. Pulsonic Technologies are currently working with Greencore, Leeds to achieve further reductions to their effluent discharge levels, drain blockages and odour control.