

Effluent Treatment and Management

We have particular expertise in:

Equalisation, neutralisation and metals removal

Oil removal by gravity and induced air flotation

Coagulation, flocculation and microfiltration

Fixed and dispersed biological systems

Solvent recovery by distillation and pervaporation

Sludge dewatering, drying and incineration

Foster Wheeler is able to offer a comprehensive range of environmental services for the management and treatment of effluent. We contribute to the conceptual plant design with techniques that minimise water consumption and effluent production; then progress to treatment technology selection and onto system design.

For existing plants, we undertake waste audits, identify any cost savings generated by possible alternative effluent schemes and justify the capital investment involved.

The full range of Foster Wheeler effluent management services includes:

- Identification of cost savings to be gained from improved effluent management
- Review of the legal liabilities and discharge consent levels of a particular site or operation; advice on the likely regulatory conditions for new projects and/or trends in stricter consent levels
- Site/plant auditing by chemical analysis, flow measurement and mass balancing
- Use of waste minimisation and water management techniques to ensure effluent production and its cost of treatment is the minimum practicable.
- Establishment of an effluent management system which complies with BS 7750/ISO 14001, the EMAS, or client specified standard
- Provision of regulatory documentation: EIA and planning application, IPC or discharge consent application
- Treatment technology evaluations using a combination of in-house data, outside laboratory tests and plant trials.
- Determination of BPEO/BAT/BATNEEC. Advice on the recycle of treated water and ultimate disposal of wastes from treatment plant
- Provision of capital and operating cost estimates to an agreed level of accuracy



- Assessment of environmental impact on the quality and ecology of receiving waters, including dispersion modelling; determination of the Best Practicable Environmental Option (BPEO) where there is a choice of receiving media.
- Risk analysis and capture of untreated effluent due to contingencies such as fire-fighting
- Production of front end design package for new plant and process modifications



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Appreciation of the Manufacturing Process

Foster Wheeler has many years experience of designing and analysing manufacturing processes in the oil refining, chemical, pharmaceutical, utility and power generation sectors.

We are therefore in a strong position to appreciate how water is used and effluent is created and to devise ways of minimising and treating effluent that are practical and cost effective.

Reducing the Cost of Effluent Treatment

One method is the systematic waste minimisation method for reducing effluent at source. This may involve techniques such as solvent recovery and specifying certain types of equipment which we know from experience produce low quantities of effluent. Effluent may also be reduced or made less hazardous by adding, or tuning, an advanced control system, or using a different catalyst.

Another method is 'pinch analysis' which optimises the distribution of water over a site. We use a technique developed by UMIST for designing distribution networks. Monsanto and Unilever, for example, have reported reductions in water consumption and wastewater production by 20-50% using this method.

A combination of analysis and experience allows us to optimise drainage segregation, local vs central treatment, and on-site vs public treatment; all this with the aim of minimum cost.

Technology to Conserve and to Treat Water

Foster Wheeler has a comprehensive and independent database covering effluent treatment technology. A major activity on most of our projects is technology selection, and its integration into an efficient overall process. We design the main processing scheme to create minimum effluent, using equipment such as high efficiency scrubbers and dry vacuum pumps. We are experienced in recent techniques such as pervaporation and wet air oxidation as well as the complete range of more conventional ones.

Where appropriate, technology choice is backed up by outside laboratory tests and/or equipment trials.

Foster Wheeler's companies in Italy and the US have specialist experience in several other technologies; in particular, anaerobic treatment and liquid-liquid extraction.

International Practice and Recognition

Foster Wheeler undertakes project execution and consultancy globally. We have offices in the UK and the USA as well as in France, Italy, Spain, Thailand and in a number of Latin American countries.

Major effluent management projects have recently been undertaken by Foster Wheeler Reading in Singapore, Malaysia, Thailand and Abu Dhabi. In the UK, small and large projects have been completed for BP Chemicals and Polymers, Mobil, SmithKline Beecham and Zeneca.

