



Chemical Oxygen Demand

Chemical Oxygen Demand (COD) is a measure of the amount of oxidisable organic compounds in waste water. When COD outstrips the maximum oxygen transfer rates achieved by mechanical aerators and diffusers, wastewater treatment works are faced with an extremely challenging situation. They are forced to either employ expensive and often inefficient solutions to contain COD or pay hefty fines, face bad press and sometimes legal action and plant closures.

Such situations occur when the plant has a mechanical breakdown, planned plant maintenance, power failure or load shedding. Seasonal and industrial trade effluents also contribute to plant overload and breakdown.

BOC's Emergency Oxygenation Service has been designed specially for these circumstances faced by municipal and industrial wastewater treatment works. The system includes a skid mounted liquid oxygen vessel, BOC's Solvox oxygen diffuser system and a control system. Using 99.5 percent pure oxygen and with more than five times the oxygen transfer rates of mechanical aerators and diffusers, BOC's Emergency Oxygenation Service is an efficient and cost effective solution for plant overload situations.

Built on an easily transportable skid, the service is a plug and play solution that could be deployed at most locations in the UK in 24 hours. It requires no power to operate and hence can be deployed in even inaccessible sections of rivers and lakes.

The service is offered at an all inclusive monthly charge, saving you from capital investments, equipment and generator hire and power costs.

- High oxygen transfer rates
- 5X oxygen transfer rate of aerators and diffusers
- Deployed in 24 hours
- No power requirement
- No capital investment

Prevent

- Plant overload
- Increased trade effluent charges
- Bad press and litigation
- Plant closure

Emergency Oxygenation Service and other market solutions

Existing solutions in the market such as air based mechanical aerators and diffusers are deployed to contain such emergency situations. However, their performance is limited to oxygen transfer rates of up to 200 gm per cubic meter per hour. When COD reaches beyond this point, wastewater works are forced to use other solutions such as hydrogen peroxide.

Although hydrogen peroxide is an effective solution, it is expensive. Hydrogen peroxide breaks down to water and oxygen to provide the oxygen necessary for COD reduction. The stoichiometry of this chemical reaction shows that only 32/68th of the hydrogen peroxide is converted to oxygen. Add to it that industrial hydrogen peroxide is only a 30 – 50 percent solution; you will soon discover that less than 250 kg of a tonne of hydrogen peroxide solution is oxygen.

BOC’s Emergency Oxygenation Service is not only cost effective but also delivers 99.5 percent pure oxygen. Its portable design and BOC’s national coverage means that the service could be deployed in 24 hours in most locations in the UK.

Whether it is plant overload or a power failure, call BOC at 0800 111 333 to ask for the Emergency Oxygenation Service.

	Air Based Mechanical Aerator/Diffuser	Hydrogen Peroxide (H ₂ O ₂)	BOC Emergency Oxygenation Service
Oxygen Transfer Rate	1 x	> 5 x	> 5 x
O ₂ % per tonne input	21%	23.5%**	99.5%
Power Source Required	Yes	Dosing pump	No
Cost	<ul style="list-style-type: none"> • Aerator / diffuser purchase or rent • Power cost • Generator purchase or rent 	<ul style="list-style-type: none"> • Product cost 	<ul style="list-style-type: none"> • All inclusive monthly cost • Less than 50% of the cost of H₂O₂

* All figures are approximate only
 ** Based on a 50% hydrogen peroxide solution

Schematic diagram

