

Ozone Flotation Environmentally Safe Cleansing of Waste Water

JIMCO A/S has advanced the development of a new technology for pre-cleansing organically loaded waste water. The technology is called Ozone Flotation and no form of chemical treatment is required in the process.

When producing ozone we use pure oxygen, produced by an oxygen generator, as shown in the picture, or supplied from an external tank.



At high pressure the ozone is added using a specially developed system of injectors. The injection of ozone breaks up the organic chains so that flocculation takes place. At the same time atmospheric air is added causing the organic components to be elevated to the surface where they form a layer of sludge. A scraper continuously removes this layer.

The JIMCO Ozone Flotation Systems are supplied with electronic control. The controller continuously measures pH values, flow per hour and pressure. Level sensors control pump operation via PLC control. Ozone sensors control ozone injection. The combined effect of this close control is optimum operating efficiency. The controller will initiate alarms when water level or thermo failure occurs. Jimco has developed safe operating procedures for our systems. Oxygen and ozone levels are continuously measured in the plant-room. If oxygen or ozone levels exceed specified levels, an alarm in the form of a siren and flashlights mounted at all entrances will give the necessary warning if a fault occurs. The system is also mounted with a safety switch, which cuts the power to all technical installations.



Pre-cleansing System for Waste Water

Type of system:

For the pre-cleansing of waste water an Ozone Flotation System with the following qualities is recommended:

- The cleansing system is a mechanical/chemical system capable of treating varying waste water loads. The system can operate continuously for peak demand or to pre-programmed settings when treating smaller water quantities. Maximum system efficiency is achieved, as operating costs are proportional to the quantity of waste water treated. This compares favourably to conventional biological waste water systems where efficiency can fluctuate dramatically, depending on load.
- The sludge will not contain environment polluting agents, chemical residues etc., but will primarily consist of biodegradable sludge/compost, which can be used in a biogas system or as manure, thus promoting ecological farming practices.
- The degree of cleansing can be adjusted to meet the requirements of direct recipient or subsequent biological treatment.
- Subsequent biological cleansing is easier.
- The system can be expanded using ultraviolet light treatment of the cleansed waste water. This will sterilise the waste water and it can be recycled for washing processes in the company.
- Operation of the system does not require specially trained staff (often required for biological waste water treatment plant) but can be managed by personnel with limited technical skills combined with our client-training program.

Cleaning effect on pre-cleansing:

Parameters	Reduction (%)
COD	70 – 90
BI 5	60 – 80
Tot – N	40 – 70
SS	90 – 95
Grease/oil	90 – 95

Ozone Flotation is a known process. There are many cases detailing the use of ozone in flotation systems. The efficiency of the process depends on the chemical/pollutant composition of the waste water being treated.

When designing an Ozone Flotation System, the interaction between ozone and the organic matter to be treated is examined to determine the most efficient dosage levels to float the material. The loading to achieve flotation is made through a mix of ozone and air.

The pre-cleansing system can be modularly enlarged as flow from the process increases.

The system is supplied with PLC control via modem/phone.



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