

ADOXPOL

Advantages:

The ADOXPOL system has the following advantages compared to conventional DAF system.

- Eliminates compressor, pressure tank and attendant piping.
- Small bubble size, 10-30 μm , that increases treatment efficiency.
- Higher micro-bubble density due to the use of ozone.
- Oxidation.
- Disinfection.
- Surface overflow rate up to 20 m/h.
- Small footprint.
- Integrated sludge tank and sludge pump.
- Available both in PE and Stainless steel, 316L and 304.
- Automatic system designed for maximum operational efficiency.
- Integrated control system, automatic with PLC.

Treatment advantages

- Excellent performance in removing fat, SS, COD, color, microbial agents in wastewater.
- Excellent removal performance of THMFP, algae, color, taste and odor in drinking water.
- High removal rate of non-biodegradable organic matter in tanning, textile and livestock wastewater as well as leachate from landfill sites.
- Improves wastewater biodegradability.
- 92 - 100% ozone utilization degree.
- Pathogen removal.

Dissolved Ozone/Air Flotation System

The **ADOXPOL** solid separation & oxidation system has been developed and funded through the Eco-innovation scheme as an initiative of the EU's Entrepreneurship and Innovation Program (EIP).

The Adoxpol flotation process continually separates particles and oxidizes organic compounds from all types of flowing liquids. Its unique hydraulic design and patented dispersion system produces a maximum flotation effect. It results in a hydraulic action that influences the velocity and direction of the liquid. Particle matter will be separated at the surface. It is designed to handle a large flow of liquid in a small foot-print, it can separate particle matter at a surface overflow rate of up to 20 m/h, resulting in a product that is compact, efficient and very cost efficient.

By taking advantage of the oxidation as well as micro-flocculation effect of ozone and the improved density of the "white water" through the patented dispersion system we have achieved an impressive improvement of the conventional flotation process.

Dispersion system

Normex has developed a unique dispersion system, the system is patented and needs no tank or compressor creating micro-bubbles in the range of 10-30 μm .

The micro-bubbles attach themselves to particles and lift them to the surface for separation. The use of ozone in the process increases the flotation effect, resulting in a higher separation effect, hence cleaner water.

The environment

Traditional dissolved air flotation (DAF) systems normally use flocculants and coagulants in the treatment process, sometimes including chemicals (polymers) that may have a negative effect on the environment. Use of flocculants and coagulants may also prevent the sludge to be reused. The Adoxpol process uses ozone in the flotation process. Ozone has a micro-flocculation effect that helps bind particles for better flotation. In addition, the ozone provides oxidation and disinfection.



Stordalen WWT Overøyet



Co-funded by the Eco-innovation
Initiative of the European Union

Some Applications

Algae Removal:

The DOF method was tested by YA-LING et. al (2010) for checking the ability of algae removal from freshwater. Small amounts of ozone in the feeding gas gave positive effects on algae cells agglomeration and better flotation.

Livestock wastewater:

Livestock wastewater is known to be very difficult to treat because of its high content of non-biodegradable organic material.

High concentrations of ozone applied to treat the livestock wastewater through the DOF (Dissolved Ozone Flotation) system has been tested. A high concentration of ozone provides a high potential of ozone oxidation and a high volume of micro-bubbles and is a promising method for treatment of livestock wastewater.

Ozone effect on wastewater biodegradability:

Ozone pretreatment is known to have a good effect on the biodegradability of wastewater or wastewater sludge. Ozone can also oxidize organic compounds in wastewater into smaller organic compounds allowing tertiary treatment processes such as activated carbon or biological treatment to remove the organics.

The use of Adoxpol system as pretreatment before a biological system will result in a breakdown in non-biodegradable substances to make them more biodegradable. The benefits are :

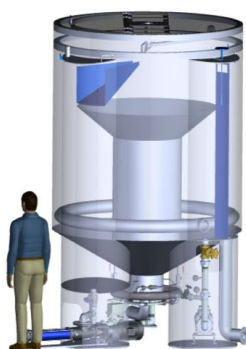
- Less non-biodegradable material
- High removal of SS before the bio-system
- Less load on the bio system, hence reductions in bioreactor volume
- Improvement of existing bio system performance



To the left flotation chamber in PE, above Adoxpol Ozone system

Normex AS
Borgundfjordveien 80
NO-6017 Ålesund
NORWAY

Tel.: +47 70 12 11 03
mail@normex.no
www.normex.no



Adoxpol applications

Wastewater from food preparation, slaughter houses, fish oil/vegetable oil processing, meat and poultry processing, seafood processing, milk and dairy, petrochemical, textile, tanneries and any other industry where flotation is a preferred technology. It may also be used for sewage treatment.

Adoxpol standard system sizing

The Adoxpol separation system can be delivered in five different standard configurations.

Besides these standard configurations, one container unit can be delivered for wastewater that needs further oxidation/polishing after the first solids removal step, i.e water for reuse. The other configurations are shown in the table below.

Type	Dia (m)	Height (m)	*Flow Capacity (m3/h)
Adoxpol 10	1,50	2,0	10
Adoxpol 15	1,80	2,5	15
Adoxpol 30	2,20	3,2	30
Adoxpol 60	2,55	3,2	60
Adoxpol 100	3,20	3,2	100

* Flow Capacity dependent on wastewater composition

Dissolved ozone flotation (DOF)

Dissolved Ozone Flotation (DOF) removes fats, oils and grease (FOG) as well as total suspended solids (TSS), biochemical oxygen demand (BOD) and chemical oxygen demand (COD) including also soluble organic matter. High pressure ozone is pumped into a stream where it forms micro bubbles that entrain organic material. The micro bubbles rise to the surface of the tank where they are skimmed off, while settleable sludge falls to the bottom and can be easily removed. In addition to flotation, oxidation and disinfection/sanitation is achieved.

It can be useful as a pretreatment prior to discharge to sewer to reduce trade waste charges and is easy to install and operate. A well considered design with the use of filtration, balancing tanks and regulation, can allow small compact robust flotation systems to deal with high rates of operation and variations in flow quality.

Member of::



Smart Water Cluster



Clean Water Norway
 The Norwegian Watercluster