

# DynaOxy

## Ammonia Removal with Tertiary Filtration

### Cost-effective, Continuous Filtration with Ammonia Removal

A continuous sand filtration system with air addition to facilitate removal of ammonia from wastewater.

#### Applications

- Wastewater treatment works.
- Industrial effluent treatment.

#### How it Works

The DynaOxy filter, like the DynaSand® filter, is based on the counter flow principle. The water to be treated (red arrow) is admitted through the **inlet distributor (1)** in the lower section of the unit and is cleaned as it flows upwards through the media bed, prior to discharge (blue arrow) through the **filtrate outlet (2)** at the top.

To ensure that the autotrophic nitrifying bacteria have sufficient oxygen and carbon dioxide to convert ammonia to nitrates, aeration hoods fed by process air (green arrow) are sited within the upper layer of media to provide sufficient aeration. The resultant nitrates remain dissolved in the water.

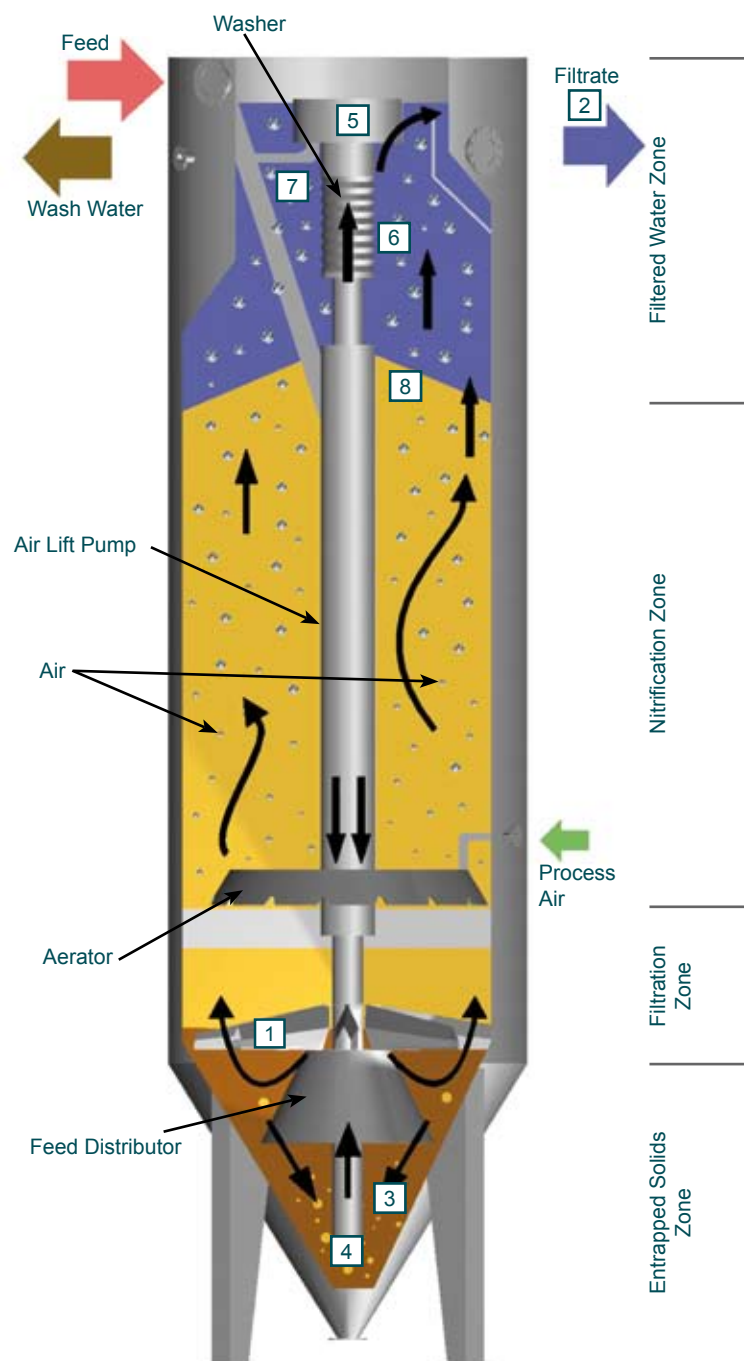
The media containing the entrapped solids is conveyed from the tapered bottom section of the unit (3), by means of an **airlift pump (4)**, to the **media washer (5)** at the top.

Cleaning of the media commences in the pump itself where impurities are separated from the media grains by the turbulent mixing action. The contaminated media spills from the pump outlet into the **washer labyrinth (6)** in which it is washed by a small counter current flow of clean water. The separated solids and sloughed biomass (brown arrow) are discharged through the **wash water outlet (7)**, while the grains of clean media (which are heavier) are returned to the media bed (8). As a result, the bed is in slow, constant downward motion through the unit. Compressed air for the air lift pump is provided via the air distribution panel.

Thus, water purification and media washing both take place continuously enabling the filter to remain in service without interruption.

#### Advantages

- Continuous process as DynaSand® with the addition of ammonia removal.
- Ammonia, suspended solids and BOD removal in a single stage.
- Low ammonia consents achieved.
- Peak inlet concentrations handled.
- Efficient, easy operation.
- Stand alone addition to the works.



# DynaDeni

## Nitrate Removal with Tertiary Filtration

### Cost-effective, Continuous Filtration with Nitrate Removal

A continuous sand filtration system with carbon addition to facilitate removal of nitrates from wastewater.

#### Applications

- Wastewater treatment works.
- Industrial effluent treatment.

#### How it Works

The DynaDeni filter, like the DynaSand® filter, is based on the counter flow principle. To provide optimum conditions for the denitrifying bacteria a carbon source such as methanol is added to the waste water stream prior to the filter. The water to be treated (red arrow) is admitted through the **inlet distributor (1)** in the lower section of the unit and is cleaned as it flows upwards through the media bed, prior to discharge (blue arrow) through the **filtrate outlet (2)** at the top. The carbon source encourages the growth of heterotrophic denitrifying bacteria within the filter media bed.

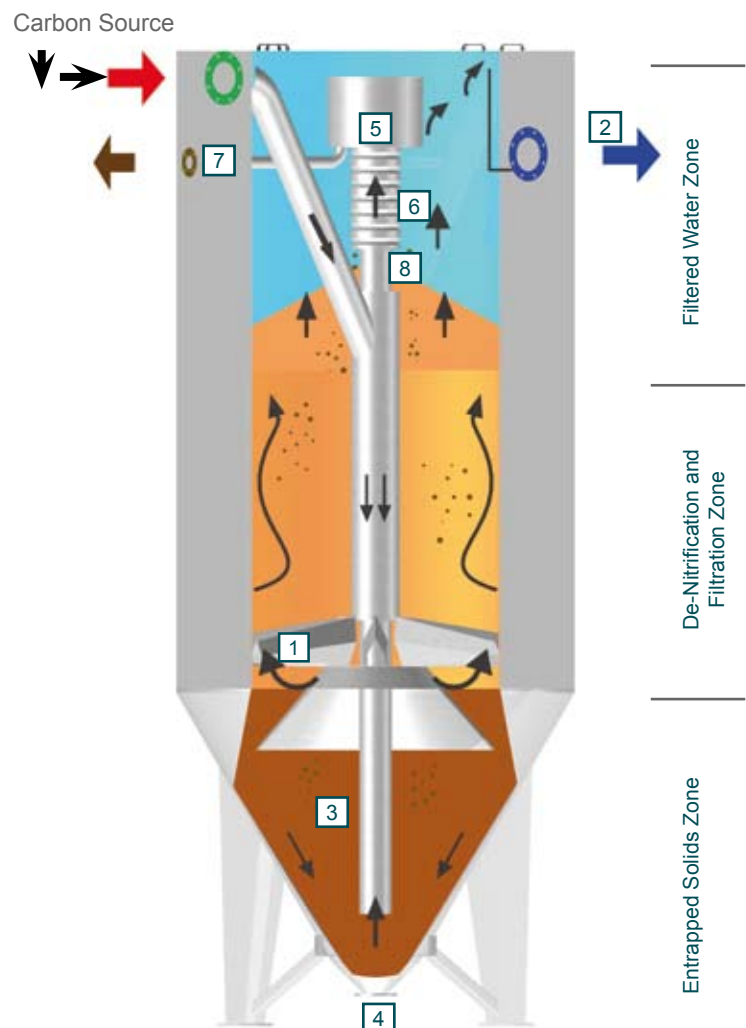
The media containing the entrapped solids is conveyed from the tapered bottom section of the unit (3), by means of an **airlift pump (4)**, to the **media washer (5)** at the top.

Cleaning of the media commences in the pump itself where impurities are separated from the media grains by the turbulent mixing action. The contaminated media spills from the pump outlet into the **washer labyrinth (6)** in which it is washed by a small counter current flow of clean water. The separated solids and sloughed biomass (brown arrow) are discharged through the **wash water outlet (7)**, while the grains of clean media (which are heavier) are returned to the media bed (8). As a result, the bed is in slow, constant downward motion through the unit. Compressed air for the air lift pump is provided via the air distribution panel.

Thus, water purification and media washing both take place continuously enabling the filter to remain in service without interruption.

#### Advantages

- Continuous process as DynaSand® with the addition of nitrate removal.
- Nitrate, suspended solids and BOD removal in a single stage.
- Low total N consents achieved.
- Peak inlet concentrations handled.
- Efficient, easy operation.
- Stand alone addition to the works.



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