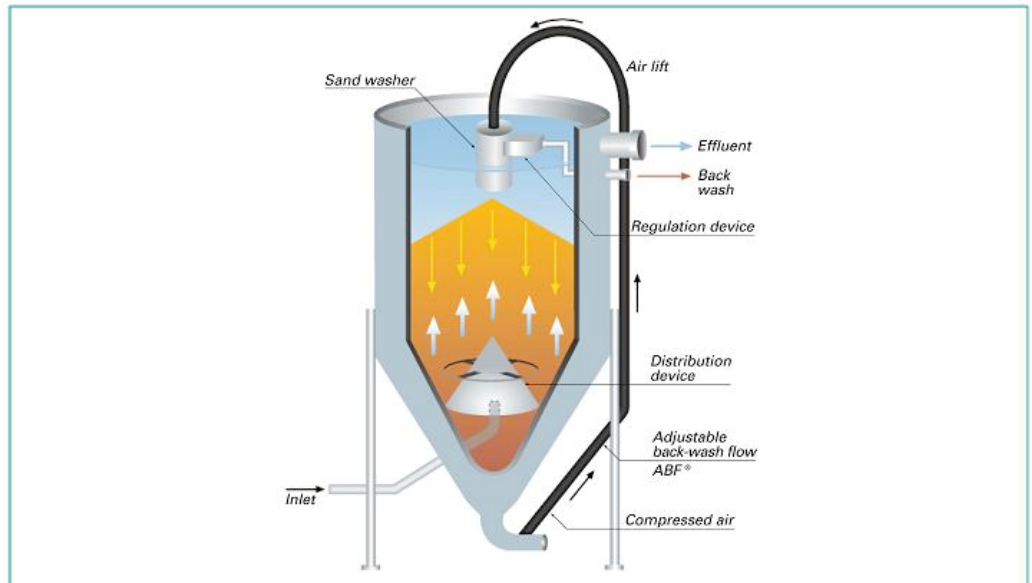




Tecnology

Dynamic Denitrification

Often occurs that WWTP with high nitrate concentration in their effluent have to be upgraded. This is a real problem especially in sensible areas, where nitrogen discharge limits are very low or for WWTP where de-nitrification was not included in the original design. **Austep** applies a convenient solution, based on its own scientific and technical know-how, that can easily solve the problem with low investment costs and reliability. This solution is the dynamic denitrification, based on continuous sand filtration, that moreover provides a filtered effluent.



PROCESS DESCRIPTION

Dynamic Post denitrification on sandfilters consists in the growth of bacteria on the surface of the granular filtering media, that are able to transform nitrates and nitrites under anoxic condition and with the addition of organic substrate, into N₂ molecular and water. In AQUA-FILTER® HR raw inlet water, added with a nutritive, easily degradable organic substrate (typically methanol) is equally distributed at the base of the activated sand bed (D), flows up-wards through the filtering media and exists the system after filtration and denitrification (E). Sand, covered with biomass, is continuously removed from the system thanks to an air-lift (C), that brings the sand up to the top of the filter in a special washing chamber. Excess attached biomass and impurities are there removed; back wash water leaves the filter through a separate pipe.



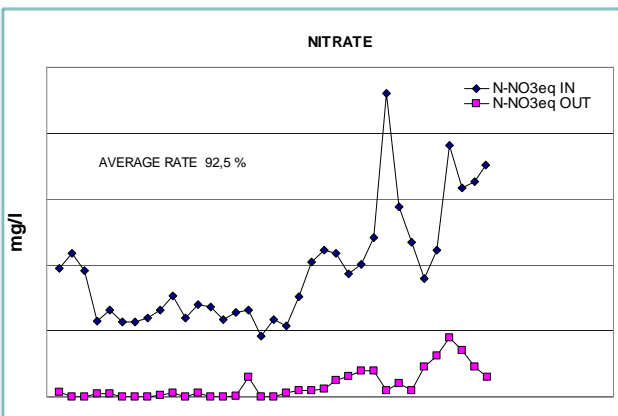
Applications

- For municipal and industrial WWTP who have to reduce nitrogen in the effluent wastewater
- For WWTP discharging in sensible areas
- For water re-use in agriculture
- WWTP up-grading with low space and low cost solutions
- For restrictive discharge limits
- For waste water reuse (e.g. make-up of cooling towers)



Advantages

- Easy up-grading of existing plants
- Low space demand
- Flexible and efficient
- Rapid acclimation and steady-state operation
- Synergic effect with filtration properties
- High quality water production for re-use



Results

The present figure shows nitrate reduction obtained on **AQUA-FILTER® HR** with different operating conditions; Nitrate removal efficiency depends mostly on the substrate to nitrate rate.

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