

Advanced Nano Oxidation Technology

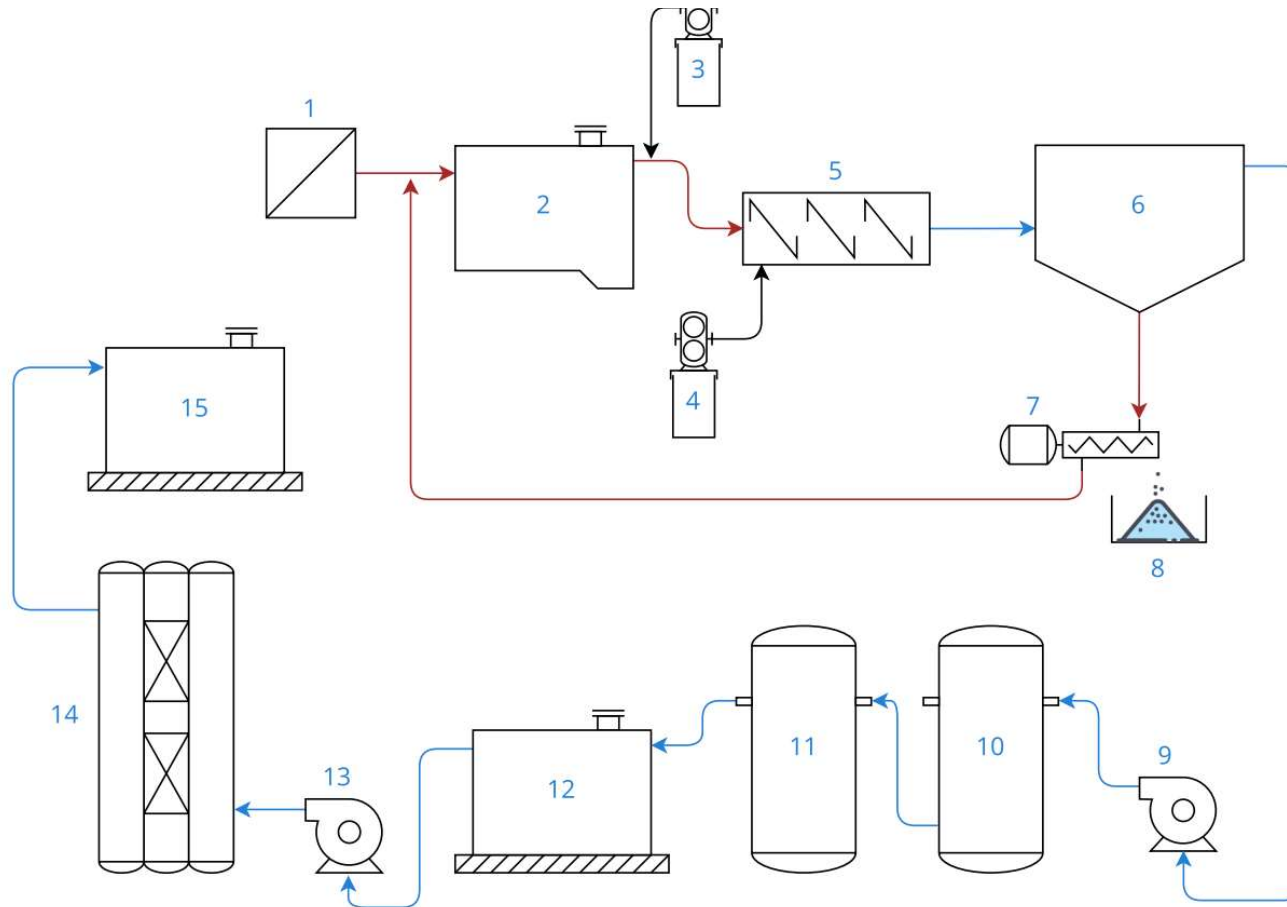
By M-Sciences, Bangalore, India.

Advanced Nano Oxidation Process

Advanced Nano Oxidation Process (ANOT®) developed by M-SCIENCES, Bangalore, India, refers to increasing the reaction of formulated oxidant + contaminants + catalysts in effluents. Compels to react via free radical path to perform and is effectively used to decompose organic and many hazardous chemical compounds to acceptable levels, producing least sludge which requires handling and proper disposal.

Hydroxyl radicals are extremely reactive: react on pathogens/ germs/ bacterial contaminated media by two ways; they first kill these by an oxidative degradation reaction (ODR). Secondly they blow up / blast the dead biomass (beyond reproduction levels) converting to water and oxygen. Hydroxyl radicals are oxidation substance – they attack any particle in their surrounding in order to stabilize their unpaired electron pattern. Hydroxyl radicals are capable of breaking double bonds (C=C, N=N) and degrade hydrocarbons. Hydroxyl radicals break the double bond that form fatty acids, chains which create FOG (FAT OIL AND GREASE) decrease capacity. While odor control is often of primary concern, these hydroxyl radicals are effective methods of preventing grease build up.

Flow Diagram



1. Bar Screen.
2. Raw Water Buffer Tank.
3. pH Adjustment Unit.
4. ANOT Dosing Unit.
5. Venturi Baffle Mixing Unit.
6. ANOT Reactor.
7. Disk Filter for sludge dewatering (Optional).
8. Sludge Collection Tank.
9. Media Filter Feed Pump.
10. Media Filter I.
11. Media Filter II.
12. Filtered Water Buffer Tank.
13. Feed Pump for Ultra Filter (Optional).
14. Ultra Filter (Optional).
15. Final Water Buffer Tank.

Pictures says a lot!



Raw and treated water from Oil and Gas industry using ANOT. The treated water being filtered using media filter only.



Truck mounted mobile treatment unit can treat 50 to 100 KLD. Same concept can be installed in larger containers too.

Advantage

1. Wide range of parameters can be treated to discharge norms.
2. Arrests algae growth and formation.
3. No Aerators. No Noise.
4. No Odor.
5. Smaller foot print. Can be installed on roof tops or underground. Can be fitted inside containers also.
6. Can be retrofitted to existing biological treatment plant and existing treatment capacity can be increased 1.5 times.
7. Effective on a variety of pathogens, even at high concentration.
8. Over 90% of treated water available for reuses / safe discharge.
9. Sludge generation is minimal or zero.
10. Need based operation. No need to operate continuously. Instant treatment as and when required.
11. Filtration system / downstream units will not be affected by biological fouling.
12. The treated water quality meets recycle standards and treated water can be used for various purposes.
13. No need of chlorination for disinfection.

Comparison

	<u>Conventional</u>	<u>Advanced Oxidation</u>
Process:	Biological	Chemical
Capability:	Can not treat drug residue, chemicals, hormones present in sewage.	Can treat and destroy residual drugs, hormones etc.
Power Foot Print:	Requires huge blowers for constant aeration.	Limited to filtration process only.
Space Requirement:	Needs huge space.	Requires half space. Can be installed on the roof / underground.
Quality of treated water:	Not consistent.	Constantly meets potable limits.
Temperature:	Biological activity depends of ambient temperature.	Works in any temperature.
Operation time:	Needs continuous operation for minimum MLSS count.	On demand instant start stop operation.
Sludge:	Generates huge sludge which needs to be disinfected before disposal.	Generates minimum sludge which is inert in nature.
Adaptability:	Single effluent/ sewage can be treated.	Wide verity of effluent / sewage accepted.

Clients



Thank You



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AdStock Global Technologies Private Limited
shailesh@adstockglobal.com, +91-8197746701

