
Four (4) Stages of Operation

1) Anaerobic Stage

- Raw waste enters. Concentrated, denitrified biological solids transferred from Pre-Anoxic reactor
- Volatile Fatty Acids (VFAs) enhanced under anaerobic conditions
- Turbulent, efficient mixing keeps particle turnover periods < 5% of reactor's hydraulic retention time
- Elevated VFA-enriched mixed liquor conveyed to Staged Aeration / Anoxic Reactor

2) Staged Aeration Reactor

- Anaerobically conditioned bio-solids enter
- Multi-variable Dissolved Oxygen (D.O.) control manages discreet aerobic and anoxic intervals. Anoxic stages produce completely mixed biomass near-zero D.O. levels
- Time based or instrument feedback control
- Efficient oxygen delivery via proportional aeration management

3) Phase Separator Conditioning Stage

- Receives Return Activated Sludge (RAS) from final clarifiers
- Enhanced solids concentration promoted in low-energy environment
- Supernatant returned to Staged Aeration Reactors; concentrated sludge fed to Pre-Anoxic reactor

4. Pre-Anoxic Stage

- Conditions sludge from Phase Separator for further nitrate reduction. Denitrified sludge is conveyed to Anaerobic stage
- Aggressive mixing in absence of D.O. prepares bio-solids prior to anaerobic treatment. Elevated solids result in reduced pumping requirements. Variable frequency control of pumps manages retention times in anaerobic / anoxic stages