Grit Chamber Aeration

Wastewater usually contains a relatively large amount of inorganic solids called grit (e.g. sand, cinders and gravel). This material will damage pumps by abrasion and cause serious operation difficulties in sedimentation tanks and sludge digesters. Thus, it is common practice to remove this material in grit chambers.

There are three types of grit chambers:

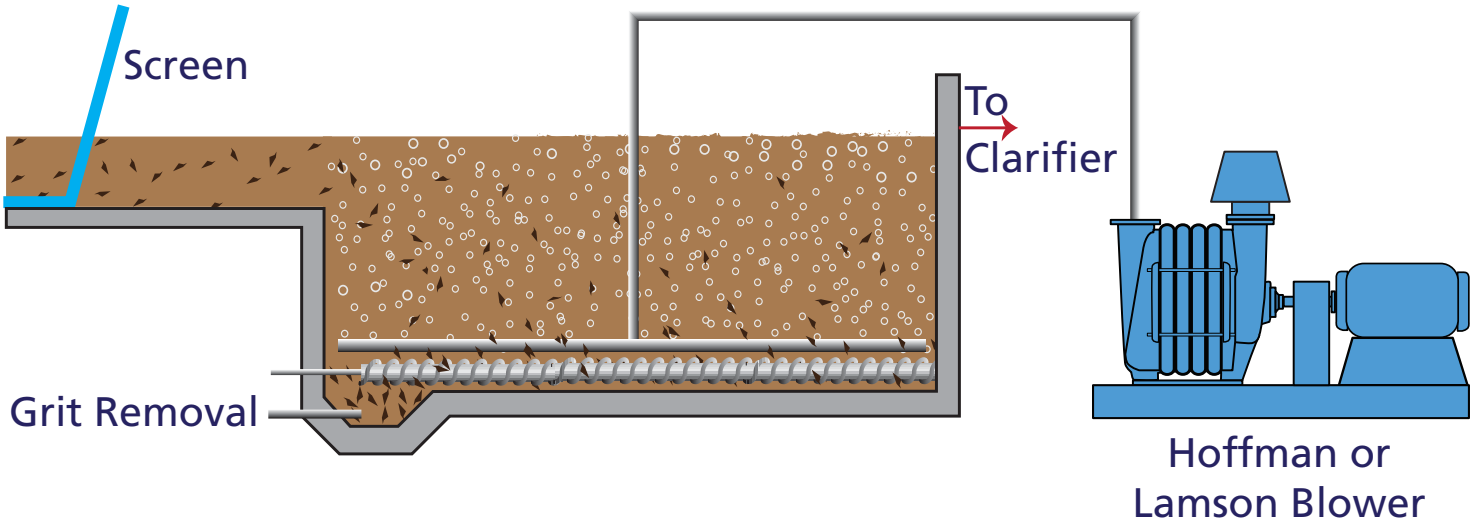
- **Horizontal** flow chambers are the oldest design and they work by controlling the flow vortices to settle as much particulate as possible.
- **Vortex** chambers have a rotating turbine with variable pitch blades that can control the size of grit allowed to settle.
- **Aerated** grit chambers use flow vortices and aeration to remove inorganic materials and are popular because they greatly reduce the excessive wear on grit chamber handling equipment and frequently eliminate the need for separate grit washing equipment.

Aerated Grit Chambers

An aerated grit removal system removes particles by forcing water that has passed through bar screens into a grit chamber, which has air pumped into it. The air causes a spiral of water to flow through the tank and heavier particles are thrown out of the water's streamline. Eventually, after hitting the wall, the heavier particles settle to the bottom of the tank, while the lighter organic particles are suspended and eventually passed through the tank.

Excessive quantities of air can cause the roll velocity to be too high resulting in poor grit removal. Insufficient quantities of air result in low roll velocities and excessive organic matter will settle with the grit.

The grit chamber and microorganism processes are often combined in one process. When this happens, the grit basin is dedicated to removing solids and activated sludge is added to a separate aeration operation.



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