

CLARIFIER

Circular and Rectangular Designs for Municipal and Industrial Waste Treatment



Concrete clarifier tank

The Clarifier is a compact, inclined plate type clarifier used for clarification of water & waste water having higher suspended and colloidal particles. This is based on settlement of colloidal particles by providing a larger surface area. The Clarifier provides a means of water clarification at a large saving of surface area. (Up to 90 %).

Operating principle

Our clarifier with a series of inclined plates are arranged to form a separate sedimentation chamber between adjacent plates. Raw water is first fed to Static Mixer and chemicals such as alum, poly electrolyte are added prior to static Mixer for proper mixing of chemicals in water. Water from Static mixer enters in Flocculator in which paddle type agitator is provided for gentle mixing. Polymer is added for flocculation of coagulated particles.

The flocculated water enters Clarifier near the bottom section of the plates and flows upward between them. As the water moves upwards, solids settle downward by the plates onto the surface area provided by the plates. Solids continue to slide down the plate surfaces to the collection hopper.

Near the top of each plate, water leaves through a pair of circular openings in the adjustable weir plate located along both the sides of the clarifier. The weir plate is set horizontally to provide proper distribution of liquid through each circular opening. Sludge is periodically drained by opening the drain valve at the hopper bottom.

Advantages

- Stable flow and excellent effluent quality
- Occupies 1/10th of space required by conventional clarifiers
- No moving parts, thereby minimizing the maintenance problems
- Sludge thickener zone having four slopped hopper bottom completely replaces the extra thickness
- Maximum effective settling area per m² of the plate area due to better hydraulic distribution and collection arrangement
- Easy drainage
- Corrosion resistant metal plates
- Does not build up deposits

Application areas

- Water Clarification
- Sewage Treatment
- Effluent Treatment

There are some kinds of clarifiers in which are applied in Waste Water Treatment.

1. Steel tank of Clarifier with out Scraper (Simple Type):



- | | |
|-------------------------|-------------------------|
| • Construction | : Made of mild steel |
| • Diameter of clarifier | : From 1.5m to 3m |
| • Capacity | : Requirement of Design |

2. Steel tank of Clarifier with Scraper:

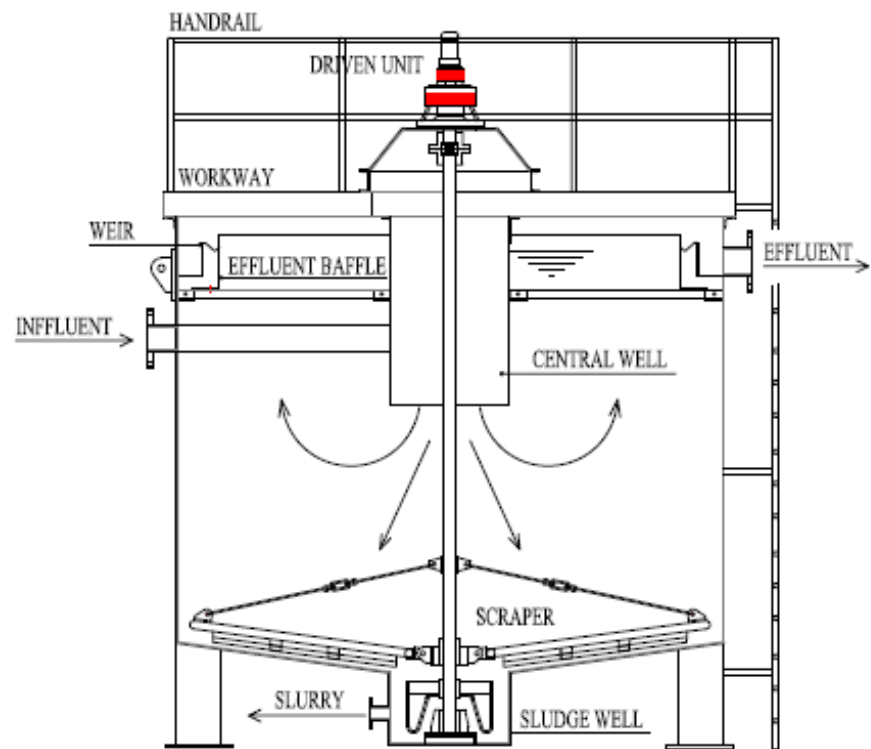
Principle

Flow enters through the center stilling well and is forced downward, ensuring a proper settling time before it rises and exits through the wall-mounted weir troughs. The skimmer covers the surface of the clarifier between the center stilling well and the scum baffle.

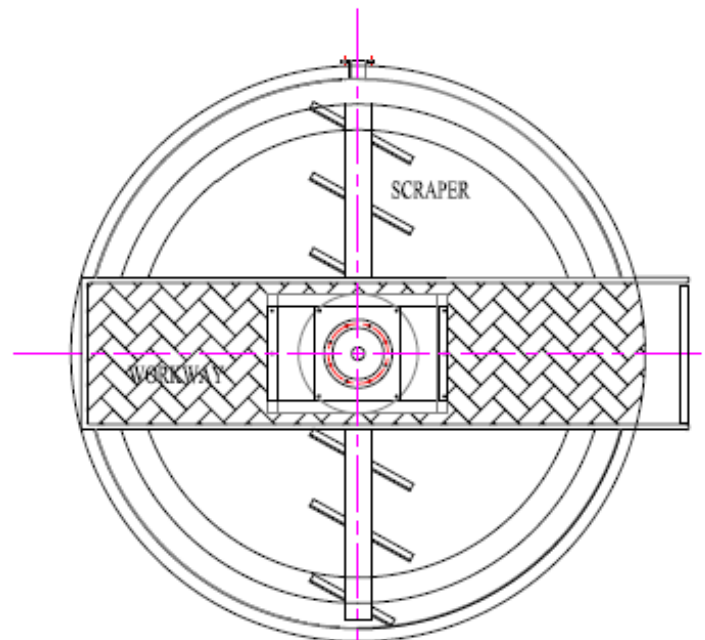
Construction:

The clarifier vessel wall shall be fabricated of structural carbon steel plates joined by arc welding with fillets of adequate section for the joint involved. All walls shall be continuous and watertight and shall be supported by structural reinforcing members where required.

The sludge scraper assembly shall consist of two scraping arms fabricated of steel channels and a steel pipe torque tube. The scraper arm assembly can be adjusted vertically and horizontally using the threaded rods with turnbuckles attached to the torque tube. Each scraper arm shall be fabricated from steel channels and angles and have an adjustable neoprene squeegee blade attached to allow for sufficient movement of sludge into the center sludge collector pit.



SECTION VIEW



TOP VIEW

3. Concrete tank of Clarifier with Scraper:

Principle

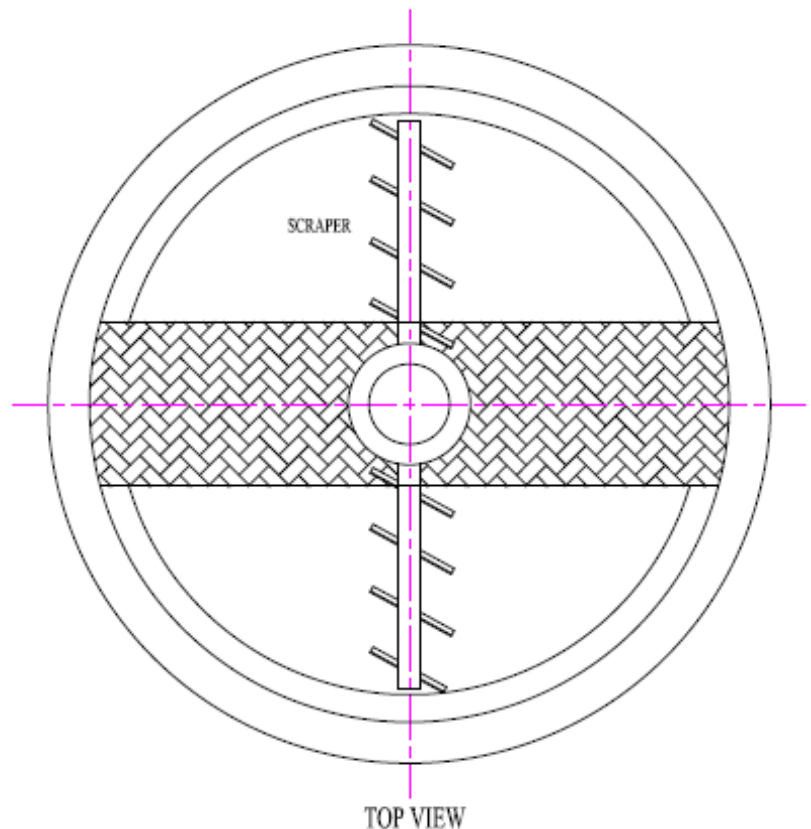
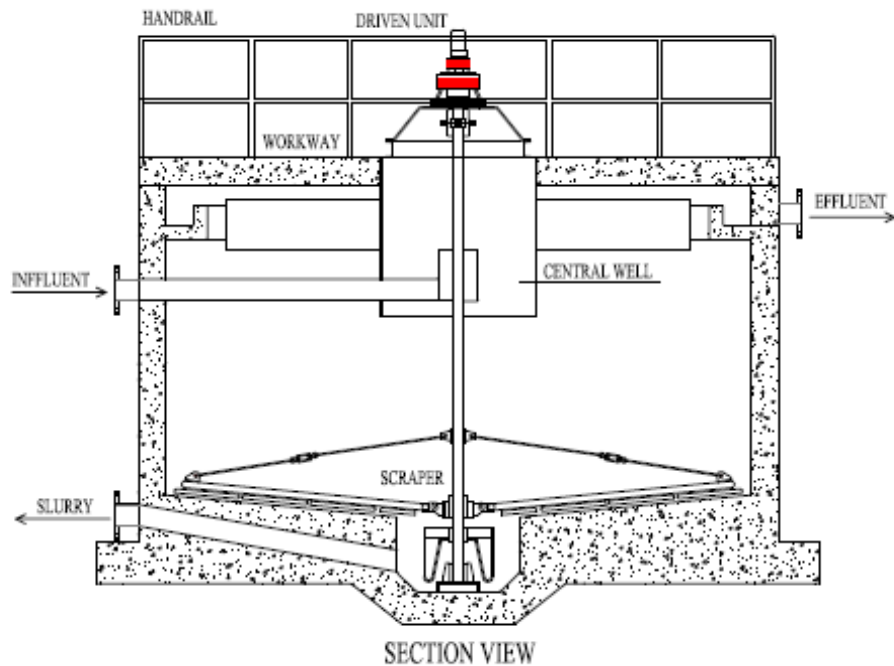
Flow enters through the center stilling well and is forced downward, ensuring a proper settling time before it rises and exits through the wall-mounted weir troughs. The skimmer covers the surface of the clarifier between the center stilling well and the scum baffle.

Construction:

The clarifier vessel wall shall be fabricated of concrete at site. Combination with handrail, ladder, workway, weir, slurry pipe also built by concrete.

Central well, Scum baffle, Scraper made of carbon steel and installed at site.

The sludge scraper assembly shall consist of two scraping arms fabricated of steel channels and a steel pipe torque tube. The scraper arm assembly can be adjusted vertically and horizontally using the threaded rods with turnbuckles attached to the torque tube. Each scraper arm shall be fabricated from steel channels and angles and have an adjustable neoprene squeegee blade attached to allow for sufficient movement of sludge into the center sludge collector pit.



Dimensions of clarifier concrete tank:



No	Concrete Tank Diameter (mm)	Capacity (m3/h)
1	5,000	70
2	6,000	100
3	7,000	140
4	8,000	180
5	9,000	230
6	10,000	280
7	11,000	340
8	12,000	400
9	13,000	480
10	14,000	555
11	15,000	635