ION EXCHANGE
Refreshing the Planet

INDION®

High Rate Solids Contact Clarifier (HRSCC)

The INDION® High Rate Solids Contact Clarifier (HRSCC) is a high performance clarifier that incorporates the design of internal solid recirculation, thereby optimizing the chemical consumption and making it more economical than conventional clarifiers.

HRSCC is widely used both in India and abroad for treating raw water and wastewater, producing the highest quality of clarified water.

Features

- In-built flash mixer, flocculation and thickener mechanism
- Intimate and prolonged contact with large quantities of previously formed flocs which act as seed or nuclei
- Uniform internal re-circulation from 5 to 15 times of inlet flow
- Inbuilt thickening pickets concentrate the settled sludge

Advantages

- Space-saving, compact design and easy operation
- Reduction in chemical requirement
- Consistent treated water quality even with fluctuations in influent water quality
- Minimizes dewatering cost of downstream equipment

Applications

- Clarification of surface water
- Lime soda softening
- Reduction of Colloidal & Reactive Silica
- Removal of heavy metals
- Color removal
- Primary (Physico-chemical) treatment of wastewater
- White water recycling

Process Parameters

- Handles high inlet suspended solids load up to 3000 ppm while offering treated water quality of less than 10 ppm consistently for raw water and less than 30 ppm for wastewater with efficient flocculent & coagulant dosing
- Wide flow rate and size range – design with flow rates up to 3000 m^3/h are standardized. Equipment with flow rates as high as 5000 m^3/hr and above can be offered with customized design
- Rise rates are higher than conventional clarifiers and depending on the type of application, can be as high as 3.6 m/h
- Sludge consistency up to 2 – 5 % is achieved depending on the application

Operating Principles

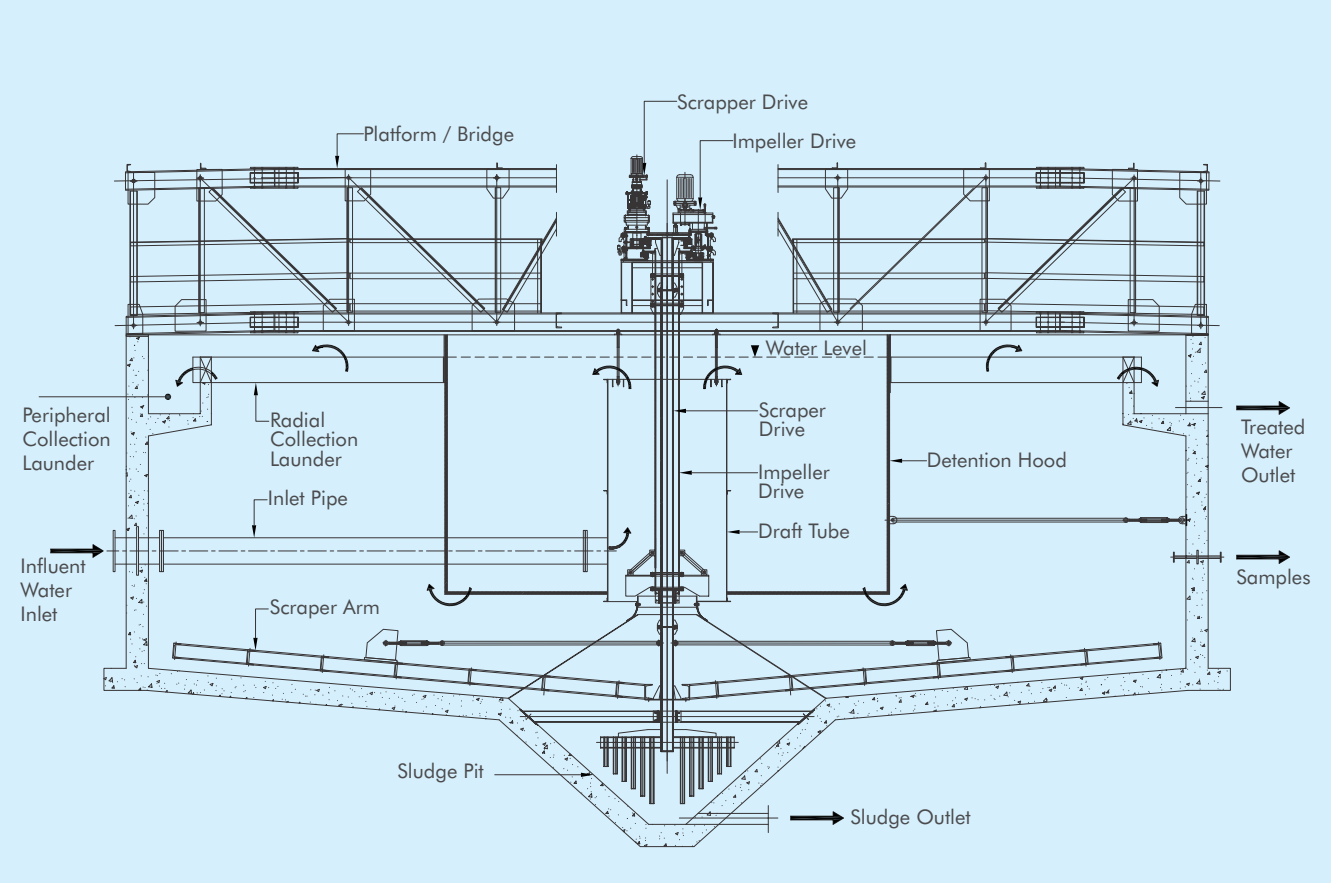
- HRSCC works on two basic principles of Coagulation/Flocculation and Hydraulic Separation
- Coagulation and Flocculation occur in the draft tube and flocculation zone respectively when the feed stream comes in intimate contact with chemicals added as per the process requirement and suspended sludge to enhance the efficiency of HRSCC from previously treated water. This contact also promotes floc growth as smaller particles agglomerate into larger heavier particles*
- The hydraulic separation takes place based on the principle of Stoke's law to settle down the sludge

Working

Influent water enters the central draft tube above the re-circulation impeller where it is mixed with treatment chemicals & re-circulated sludge. Sludge re-circulation is accomplished by the impeller in a draft tube which acts as a pump.

* Ion Exchange also provides INDION & INDFLOC range of products such as speciality coagulants, flocculants, colour precipitants and other specialilty chemicals for softening, silica reduction and heavy metal precipitation.

Sectional View of HRSCC



The mixture of influent water and sludge rises through the draft tube and enters into the flocculation zone.

With gentle hydraulic turbulence, the mixture flows from flocculation zone to clarification zone.

Part of the water (equivalent to the instantaneous influent flow rate) enters the clarification zone and rises towards the uniform clarified water collector of HRSCC.

Settled precipitates (sludge) move continuously along the floor towards central sludge pit by rotating scrappers where it is further concentrated by thickening pickets.

Excess sludge that builds up in the central pit is discarded through sludge discharge valve either by manual or automatic operation.

Specifications

The equipment is complete with all required components including accessories and conforms to the following specifications:

- The system is designed for operating at atmospheric pressure
- Sidewalls of the HRSCC can be Reinforced Cement Concrete (RCC), mild steel or stainless steel coated depending upon flow rates and applications
- The material of construction of components such as scrapers, inlet/outlet pipes, platforms, handrail, ladders and other wetted parts can be in mild steel, coated steel or of stainless steel construction conforming to International standards
- Rotating parts like gearboxes, drive shafts, electrical motors are as per Indian standards

Technical Specifications

Model	Flow m^3/h (Surface Water, TSS < 3000 mg/l)	Unit Size Diameter (m)
HRSCC - 5	50	5.5
HRSCC - 10	100	8.0
HRSCC - 20	200	11.0
HRSCC - 30	300	14.0
HRSCC - 50	500	18.0
HRSCC - 80	800	22.0
HRSCC - 100	1000	25.0
HRSCC - 125	1250	28.0
HRSCC - 150	1500	30.0
HRSCC - 175	1750	32.0
HRSCC - 200	2000	34.5
HRSCC - 225	2250	36.5
HRSCC - 250	2500	38.0
HRSCC - 275	2750	40.0
HRSCC - 300	3000	41.5

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