



GRIT AND GREASE REMOVAL TECHNOLOGY

Common practice for treatment plant design require an effective grit separation in order to reduce the seriously wearing effect caused by grit on the process pumps and other mechanical equipment, to minimize the maintenance costs. Grit and other in-organics can be separated by longitudinal or circular grit removal systems. Grease can also be floated and separated from the stream by aeration, whilst the organics are retained in suspension for subsequent treatment.

ASTiM provides manufacturing and installation services in a wide equipment range for removal of grit and grease in industrial and municipal waste water treatment plants. Astim grit and grease removal equipment are specially designed to fit in every type of concrete or steel tanks. Designed to work automatically by local control panels using PLC or conventional systems which can be controlled locally, or remote from main control cabinet, they require less operator attention.

The grit removal equipment can be designed in different styles. Main systems are;

- Travelling Scraper for Longitudinal Tanks
- Central Driven Rotating Scrapers for Circular or Square Tanks



TRAVELLING GRIT SCRAPERS

The oldest and still mostly used valid design of grit removal tanks is longitudinal grit chamber where the flow is horizontal and velocity controlled. The basis of design of longitudinal grit chamber is that, under the most adverse conditions, the lightest of grit will reach the bed of channel prior to its outlet end. Nevertheless aerated grit chamber design has improved this approach. Air is introduced along one side of the rectangular tank to create a spiral flow pattern perpendicular to the flow through the tank. By this the heavier particles that have higher settling velocity easily settle to the bottom while the lighter organic matter is kept in suspension.

Travelling Grit Scrapers for single, twin or triple type basins manufactured as full wall, half wall, steel profile or truss beam according to static calculations and requirements.

The system consists of a travelling gantry over the channel which carries the grit and grease removal systems. Bridge is mounted on end carriages at both sides which have two polyurethane tired wheels with two guiding wheels or steel wheels driven on rails with or without pinion rack. Speed reducing unit includes a gearbox for required gentle slow movement and optionally a torque limiter. The settled grit can be either scraped to the collection pit or extracted by means of airlifts or submersible pumps. Also floated grease is scraped towards the removal channel by means of straight skimmers.

Astim Travelling Grit Scrapers are manufactured in epoxy coated or hot dip galvanized carbon steel, stainless steel or aluminium according to requirements or process conditions. Optional mechanical or electrical overload security systems can be adapted to avoid damages under high blade loads.



Travelling Grit Scrapers with grease skimmer blades



Installation of Travelling Grit Scrapers for twin tanks



Grit & Grease Removal Scraper with Aluminium Truss Bridge

CENTRAL DRIVEN GRIT SCRAPERS

Central Driven Grit Scraper with two, three or four scraper arms are manufactured for installation at pier supported or peripheral carried concrete or steel structure bridges. The scraper blades are mounted on arms which are connected to a rotating shaft.

Central Driven Grit scrapers are generally used in cross flow square concrete tanks which has flat or inclined bottom structure. The water is generally fed from one edge of the tank. As it flows through the overflow edge which is located at the opposite of the water entrance, the grit is settled at the bottom. The scraper blades push the settled grit towards the removal pit which is located at the periphery in the flat bottom tanks, or to the central collection cone in the inclined bottom tanks. The settled grit may be removed by submersible pumps, airlifts or mechanical grit separators.

According to process conditions and requirements Astim Central Driven Grit Scrapers are manufactured in epoxy coated or hot dip galvanized carbon steel, or stainless steel. Optionally they can be equipped with mechanical or electrical overload security systems to avoid damages under high blade loads.

GREASE REMOVAL EQUIPMENT

Astim Travelling and Central Driven Grit Scrapers have capability for addition of grease skimmer as well. For industrial installations Astim produce a range of dedicated Grease Removal Equipment which consist of grease trap surface scrapers. Constructed for maximum strength and durability, industrial grease removal equipment will retain and separate oil, fat and grease in the waste water, coming from food processing operations and various processing plants. By effectively containing and separating grease, fat and oil contamination from the waste water, silting and blockages within the drainage systems is prevented.

Chain driven scraper provides an effective and economical skimming of oils from wastewater in scale pits, oily waste sumps of refineries, petrochemical plants and metal working units. It is mainly consisting of repeatedly skimming multi-scrappers in straight form driven by endless chains at both ends of the scrapers working between drive and idler sprockets.



Central Driven Grit Scraper during installation



Central Driven Grit Scraper



Chain Driven Surface Skimmer for Grease Removal



Central Driven Grease Removal System



Grit Separator during operation



Grit Separators with inclined shaftless spiral

GRIT TREATMENT SYSTEMS

High organic content in the grit shall be a problem for recycling and disposal of grit. Reduction of the organic content is the primary aim in order to make a secure disposal or recycling. To reach this aim in an economic way, the treatment process must be tailored to meet the requirements. A suitable process must be selected and modified relative to the conditions. Grit Treatment Systems are used to reduce the water content inside the collected grit-water mixture. Also the organic matter is kept in suspension to avoid to be discharged with grit.

Astim offers different equipment used for this purpose;

Grit Separators

Grit Separators remove precipitates and heavy matter in municipal and industrial clarification plants by an inclined rotating shaftless spiral. Turbulence is avoided by special construction of the hopper.

Degritters

Degritters are mostly used after central driven grit removal systems. It is consisting of a reciprocating multi rake mechanism which is working in an inclined narrow channel. Here reciprocating rakes move the grit up the tank incline with a rolling action that releases entrained organics.

Grit Cyclones

Grit Cyclones are used for washing out the organic matter. As the grit water mixture enters the tank tangentially, circular flow is obtained and the grit content therein is separated and settled at the bottom of the tank. The settled grit is transferred into a container or lorry. Grit Cyclone can be either mounted on the travelling bridge or near the concrete tank.



Grit Cyclone with Travelling Grit Scraper Bridge



Double Degritter during installation

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