GN®

SEPARATION & CONVEYING

SEPARATION & CONVEYING EQUIPMENT

Hebei GN Separation & Conveying Equipment Co.,Ltd.

Content

Part 1: Company Profile

1.1 Company Introduction

Hebei GN Separation & Conveying Equipment Co.,Ltd manufacture industrial separation equipment and conveying equipment. The GN Brand has been in the industry since 2007. Our manufacture plant is close to Beijing, China. But our products have been exported to over 70 countries in the world. Over 70% of our products are made for international customers. GN have branch in Houston, USA and Moscow, Russia for support to our local customer. GN separation and conveying equipment are widely used for Environmental & Waste Water Treatment, Mining & Construction Industry, Chemicals & Pharmaceuticals Industry, Food & Beverage Industry, Beverage Production Industry, Edible Oil Industry etc.

GN Separation Product Lines:

- **GN Decanter centrifuge**
  GN make different size of decanter centrifuge include: 9 inch, 14 inch, 18 inch , 22 inch, 30 inch. The types of decanter centrifuge include: Clarifying Centrifuge, Classifying Centrifuge, Thickening Centrifuge, Dewatering Centrifuge.
- **GN Conveying Equipment**
  GN make conveying equipment for bulk material handling include: Screw Conveyor, Bucket Elevator, and Belt Conveyor
- **GN Transfer Pumps**
  GN make industrial transfer pump include: Solids Vacuum Pump, Centrifugal Pump, Progressive Cavity pump.
- **Other Separation Equipment**
  GN also make Slant Plate Clarifier and Oil Water Separator for solids water, and oil separation. GN also manufacture vertical screen scroll centrifuge for extraction liquid from solids.

1.2 GN No.1 Factory

GN No.1 factory is located in Chaobai River Development Area, which is close to Beijing. The function for No.1 factory include: Headquarter administration, steel construction, complete system assembly. GN have automatically ball blasting machine, dust free painting and heating room, powder coating production line, material cutting workshop, welding workshop, complete system assembly work shop, warehouse etc.

GN Headquarter Office

No.1 Warehouse

Ball Blasting Machine

Powder Coating Production Line

Material Cutting Workshop

Welding Workshop

System Assembly Workshop.

1.3 GN No.2 Factory

GN No.2 Factory is about 3KM from the No.1 Factory and located in the same industry Zone. The No.2 factory is for high technology equipment manufacture. GN has the No. Office Building, CNC machinery workshop, balancing workshop, centrifuge assembly and testing workshop, shale shaker screens workshop, electrical control equipment workshop, warehouse etc.

No.2 Office Building

CNC Machinery Workshop

CNC Machinery Workshop

High Speed and Low Speed Balancing

Shaker Screen Workshop

Electrical Control Equipment

Warehouse

1.4 GN Solids America

GN Solids America is the first USA based solids control company from China. GN America company is located in the oil center city – Houston, Texas. GN have 30,000 SF facility in Houston for stock, equipment assembly, maintenance and office.

GN America Company

America Warehouse

Workshop Area

1.5 GN Certificates

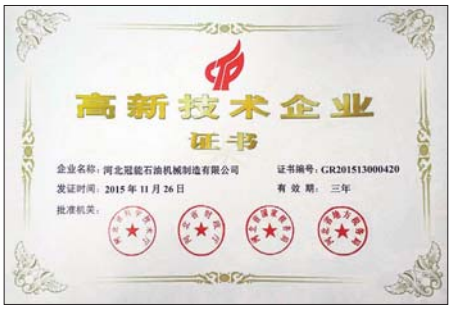
70% of GN products is made for export to international market, GN make high quality products according to international standard. We have almost all certificates available for export to high end market.

API Certificate:Q1-1003

ISO9001:2008 No.:1208

DNV CE for Europe

CU-TR For Russia



National High Tech Certificate

IEC Ex Certificate

HSE Certificate

ISO14001 Certificate

OHSAH18001 Certificate

Download Link：http://www.gnsolidscontrol.com/company/certificates

Part 2: Decanter Centrifuge

2.1 GN Industry Decanter Centrifuge

GN design and manufacture different size of decanter centrifuge a for industry separation. Solid bowl decanter centrifuges have been operating according to the same basic principle since the 19th Century. GN centrifuge production line is from 9inch (220mm) bowl to 30inch (760mm) bowl, with bowl length and diameter ration up to 4.2, and the adjustable G force is up to 3000G to meet different industry separation applications

GN design specific centrifuges according to specific separation tasks and the use of resilient, high-quality materials have improved the performance of the centrifuges.

Moreover, GN owns a branch for design PLC and electrical control system; this gives GN advantages in electrical components for measuring and control technology. The performance and availability of the decanter centrifuge or three-phase centrifuges are significantly improved by the control system.

Main Function of GN Industry Centrifuges

- Dewatering sludge / mud and suspensions
- Thickening sludge or mud
- Clarifying different type liquids
- Separating 3-phase mixtures, i.e. two immiscible fluid phases and a solid phase
- Classifying solids in a wet suspension by grain size
- Separation of solids according to various densities

Different Series of GN Centrifuge Features

Series	Beach Angle	Type	Features	Main Application
T Series	8.5°	Dewatering Type	Dewatering Decanters are continuously operating for maximum dewatering requirements	Drilling mud, environmental protection sewage, oily sludge, chip fluid, sand washing water, mineral water, soda white mud, salt mud dewatering, etc.
Y Series	15°	Separation Type	Separation of two phase material and also fit for material with viscosity	Mineral oil, chemical viscous materials, fruit juice, coffee, tea, wine, soybean milk, rubber treatment in leather factories, biodiesel, starch and so on.
C Series	20°	Clarifying Type	Clarifying decanters are designed for the continuous separation of suspensions into solids and clarified liquid	Edible oil, Protein, Cheese, Casein ,Lactose, Beverage, Fish By-Products ,oil and water clarifying etc.

2.2 GN Centrifuge VFD Control Panel

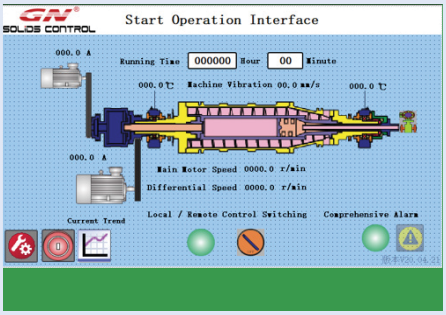
GN VFD decanter centrifuge adopts stainless steel frequency conversion control cabinet, which meets the protection level above IP55. Through high-end frequency converter and PLC, as well as GN many years accumulated intelligent control technology of decanter centrifuge. This makes GN decanter centrifuge to have optimal performance, convenient maintenance, and safe and reliable operation. According to the application conditions, GN can also provide domestic and international standard explosion-proof VFD control cabinets.

Stainless Steel VFD Control Panel

- VFD from Yaskawa, ABB or Siemens series.
- PLC and touch screen from Siemens or other famous brands.
- Circuit breakers and other components from Schneider or other famous.
- Common DC (Direct Current) bus energy feedback braking is ad opted to achieve the purpose of energy saving

Stainless Steel VFD Control Panel

- Excellent corrosion resistance and long service life.
- Minimum IP55 protection level meets outdoor use demand.
- The positive pressurized explosion-proof control panel can be made according to requirement.



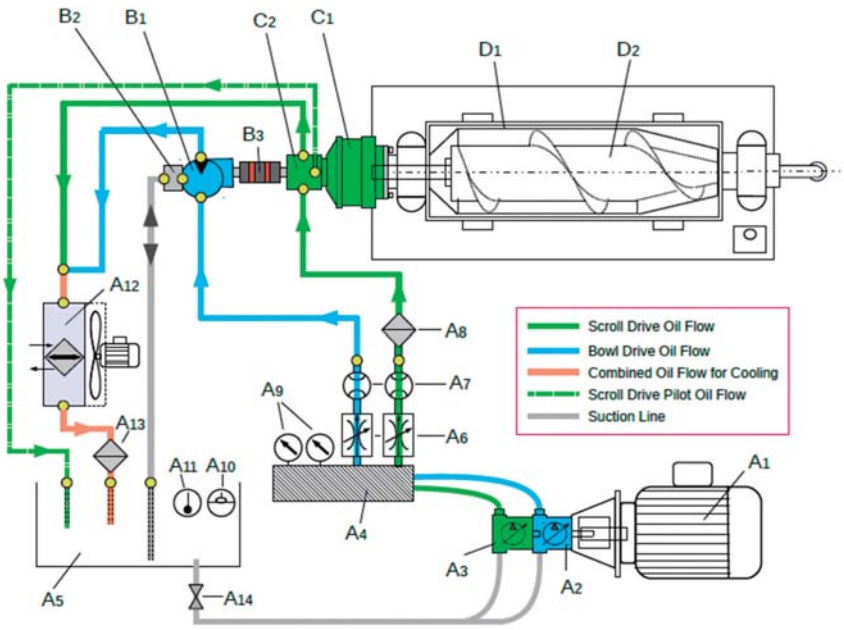
Automation and intelligence

- The Constant Torque control system can be realized according to the demand.
- The complete monitoring and alarm system can meet the requirements of bearing temperature rise protection, vibration monitoring and protection, overload protection, etc.
- Control and display bowl speed and differential speed. Monitor the current of main motor and back motor.
- Automatic flushing and dosing control can be equipped according to customer requirements.

2.3 Fully Hydraulic Drive Centrifuge

GN Solids Control is a leading decanter centrifuge manufacturer. And Viscotherm and ROTODIFF® from Switzerland are leading brand for centrifuge hydraulic driving system. GN and Viscotherm has been jointly working together to develop the Full hydraulic drive centrifuge for international clients to meet the highest standard.
The advantage of the FHD centrifuge is for use in high temperature ambient for heavy mud with flexible bowl and differential speed. The compact one skid design makes it easier for rig up.

The full hydraulic system consists of A the Hydraulic Pump Unit, B the Bowl drive hydraulic motor, and C the Scroll drive (Rotodiff).The hydraulic pump unit A feeds hydraulic oil to the scroll drive C and the bowl drive B by means of two separate and individually independent operating circuits. An electric motor A1 drives the combined pumps A2 and A3. Each operating circuit is equipped with its own
hydraulic pump and its own controls. The pump unit contains all setting devices and safety valves, as well as pressure gauges. With this system, the bowl's rotational speed as well as the scroll's differential speed maybe manually adjusted independently from one another, continuously and infinitely variable during the centrifuge's operation.



A Hydraulic Pump Unit :
A1 EEx Electric Motor
A2 Variable Displacement Hydraulic Piston Pump, Bowl Drive
A3 Variable Displacement Hydraulic Piston Pump, Scroll Drive
A4 Controls
A5 Oil Tank
A6 Variable Scroll Speed, Variable Bowl Speed
A7 Flow Meters
A8 High Pressure Oil Filter
A9 Pressure Gauges
A10 Oil Level Gauge A11 Oil Temperature Gauge
A12 Oil-Air Cooler A13 Return Line Oil Filter
A14 Shut Off Valve

B Bowl Drive:
B1 High Speed Hydraulic Piston Motor
B2 Anti Cavitation Device
B3 Semi-Flexible Coupling

C Scroll Drive:
C1 Rotodiff Hydraulic Motor
C2 Connection Block

D Centrifuge:
D1 Centrifuge Bowl
D2 Centrifuge Scroll

2.4 T Series Decanter Centrifuge

T Series of GN Decanter centrifuge is the dewatering type centrifuge. The beach Angle of T Series centrifuge is 8.5 degree. T Series Dewatering Decanters are continuously operating horizontal solid-wall bowl centrifuges for maximum dewatering requirements of municipal and industrial wastewater sludge.

T Series Dewatering Centrifuge main applications: Drilling mud, environmental protection sewage, oily sludge, chip fluid, sand washing water, mineral water, soda white mud, salt mud dewatering, municipal and industrial wastewater sludge etc.

T Series Decanter Centrifuge Specs

Model	GN-LW-224ET	GN-LW-364ET	GN-LW-454ET	GN-LW-554ET	GN-LW-654ET	GNLW-764ET
Bowl Diameter	220 mm (9 Inch)	360 mm (14 Inch)	450 mm (18 Inch)	550 mm (22 Inch)	650 mm (25.6 Inch)	760 mm (30 Inch)
Bowl Length	924 mm (36.4 Inch)	1512 mm (59.5 Inch)	1890 mm (74.5 Inch)	2310 mm (91 Inch)	2730 mm (82 Inch)	3328 mm (131 Inch)
Bowl Speed	4500 RPM	3900 RPM	3500 RPM	3150 RPM	2900 RPM	2650 RPM
Max G Force	2492 G	3063 G	3084 G	3051 G	3058 G	3000 G
L/D Ration	4.2	4.2	4.2	4.2	4.2	4.4
Main Motor	11 KW	20/30/37 KW	37/45/55 KW	55/90 KW	90/110 KW	110/132/160 KW
Back Motor	5.5 KW	7.5/11 KW	11/15/22 KW	15/37/45 KW	18.5/22/37/55 KW	22/37/75/90 KW
Beach Angle	8.5 Degree					
Drive Type	VFD+PLC+ HMI					
Bowl Material	Duplex Stainless Steel SS2205 from centrifugal casting					
Screw Material	Duplex Stainless SS2205 / SS316					
Wear Protection	Tungsten Carbide Tiles					
Remarks	Above specification is for reference only, final specifications should be based on contract.					

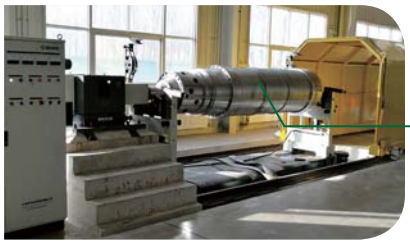
2.4.1 T Series Decanter Centrifuge Features

The bowl of T Series centrifuge is made from Duplex Stainless Steel SS2205 by centrifugal casting which is better than SS304 or SS316.

The solids discharge port is made from Tungsten carbide inserts, the anti-abrasion will extend the life.

Flexible pond depth adjustment for different material separation.

The air-operated spring for assisting open of the cover with safety locking system.

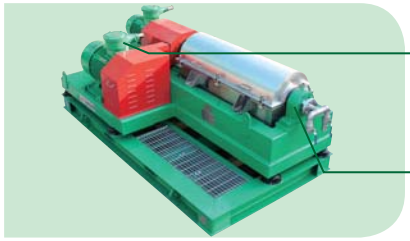


3 Stage balancing process to maximize the balance of the centrifuge include 1800RPM low speed balancing and real operation high speed balancing as well as the assembly balancing.

The Screw is protected by interchangeable Tungsten Carbide Tiles for longer life and easy maintenance.

The mud distribution port is made from Tungsten carbide inserts, the anti-abrasion will extend the life for heavy mud.

The screw is made from stainless steel with heat treatment, and the opening impeller will improve the centrifuge capacity. Single Lead or double lead screw is optional



Two motors in one side to give more space for the operator to do maintenance.

The bearings is premium SKF bearing for reliable and longer operation. The automatically lubrication system is available for option.

2.5 Y Series Decanter Centrifuge

Y Series of GN Decanter centrifuge is the separation type centrifuge. The beach Angle of Y Series centrifuge is 15 degree. Y Series separation type centrifuge mainly used for separation of two phase material and also fit for material with viscosity.

Main Application of Y Series Centrifuge: Mineral oil, chemical viscous materials, fruit juice, coffee, tea, wine, soybean milk, rubber treatment in leather factories, biodiesel, starch and so on.

Y Series Decanter Centrifuge Specs

Model	GN-LW-224EY	GN-LW-364EY	GN-LW-454EY	GN-LW-554EY	GN-LW-654EY	GNLW-764EY
Bowl Diameter	220 mm (9 Inch)	360 mm (14 Inch)	450 mm (18 Inch)	550 mm (22 Inch)	650 mm (25.6 Inch)	760 mm (30 Inch)
Bowl Length	924 mm (36.4 Inch)	1512 mm (59.5 Inch)	1890 mm (74.5 Inch)	2310 mm (91 Inch)	2730 mm (82 Inch)	3328 mm (131 Inch)
Bowl Speed	5600 RPM	4600 RPM	4000 RPM	3500 RPM	3200 RPM	2800 RPM
Max G Force	3863 G	4265 G	4032 G	3773 G	3670 G	3336 G
L/D Ration	4.2	4.2	4.2	4.2	4.2	4.4
Main Motor	11 KW	22 KW	37/45 KW	55 KW	75/90 KW	90/110 KW
Back Motor	5.5 KW	7.5 KW	7.5/11 KW	11/15 KW	15/18.5 KW	18.5/22 KW
Beach Angle	15 Degree					
Drive Type	VFD+PLC+ HMI					
Bowl Material	Duplex Stainless Steel SS2205 from centrifugal casting					
Screw Material	Duplex Stainless SS2205 / SS316					
Remarks	Above specification is for reference only, final specifications should be based on contract.					

2.6 C Series Decanter Centrifuge

C Series of GN Decanter centrifuge is the Clarifying type centrifuge. The beach Angle of C Series centrifuge is 20 degree. C Series Clarifying decanters are designed for the continuous separation of suspensions into solids and clarified liquid, without interrupting the feed of the suspension.

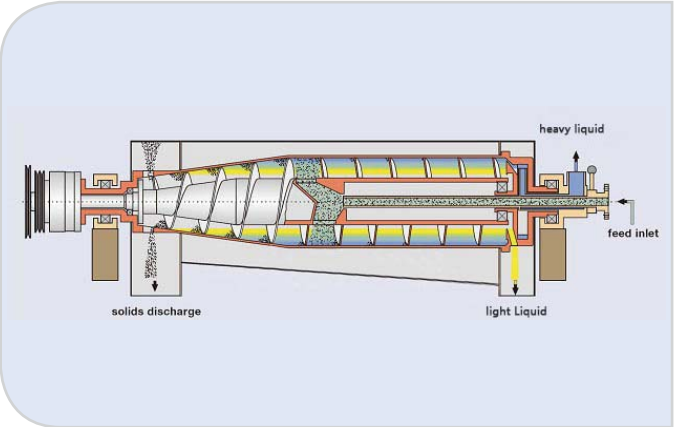
Main Application of C Series Centrifuge: Edible oil, Protein, Cheese, Casein ,Lactose， Beverage, Fish By-Products ,oil and water clarifying etc.

C Series Decanter Centrifuge Specs

Model	GN-LW-224EC	GN-LW-364EC	GNLW-454EC	GN-LW-554EC	GN-LW-654EC	GN-LW-764EC
Bowl Diameter	220 mm (9 Inch)	360 mm (14 Inch)	450 mm (18 Inch)	550 mm (22 Inch)	650 mm (25.6 Inch)	760 mm (30 Inch)
Bowl Length	924 mm (36.4 Inch)	1512 mm (59.5 Inch)	1890 mm (74.5 Inch)	2310 mm (91 Inch)	2730 mm (82 Inch)	3328 mm (131 Inch)
Bowl Speed	5600 RPM	4600 RPM	4000 RPM	3500 RPM	3200 RPM	2800 RPM
Max G Force	3863 G	4265 G	4032 G	3773 G	3670 G	3336 G
L/D Ration	4.2	4.2	4.2	4.2	4.2	4.4
Main Motor	11 KW	22/30 KW	37/45 KW	55 KW	90/110 KW	110/132 KW
Back Motor	5.5 KW	7.5 KW	11/15/18.5 KW	15/18.5 KW	18.5/22/30 KW	22/30/37 KW
Beach Angle	20 Degree					
Drive Type	VFD+PLC+ HMI					
Bowl Material	Duplex Stainless Steel SS2205 from centrifugal casting					
Screw Material	Duplex Stainless SS2205 / SS316					
Remarks	Above specification is for reference only, final specifications should be based on contract.					

2.7 3 Phase Decanter Centrifuge

The three-phase decanter centrifuge operation is based on the principle of sedimentation, that is, solid particles with specific liquid weight precipitate in a predetermined time. This principle can also be applied to two immiscible liquids with different specific gravity. When the material enters the high-speed rotating drum, the material rotates synchronously with the drum. Because of the different specific gravity, the centrifugal force is different. The solid particles with the larger specific gravity are subjected to the greatest centrifugal force, followed by the heavy phase liquid (such as water) and the light phase liquid (such as oil). So the centrifugal force is becoming less from outside to inside according to the magnitude of centrifugal force. A concentric solid layer and two liquid layers are formed. Solids are pushed out by the screw conveyor, and liquids are removed from their respective nozzles. Therefore, the application of three-phase decanter centrifuge can not only separate the solid in the material, but also separate the two-phase liquid with different specific gravity in the material, that is, Solid-liquid-liquid separation can be achieved.



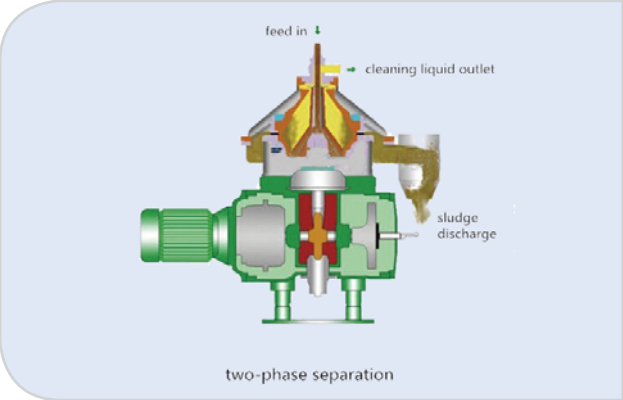
3 Phase Decanter Centrifuge

Model	GNSX-350	GNSX-450	GNSX-520
Type	Continues Oil / Water / Solids Separation		
Bowl Dia.	350mm	450mm	520mm
Bowl Length	1540mm	1800mm	2132mm
Capacity	5 m^3/h	10 m^3/h	15m^3/h
Max Speed	4000 RPM	3600 RPM	3000 RPM
Max G Force	3136 G	3260 G	2620 G
Diff. Speed	2-25 RPM	5-25 RPM	5-25 RPM
Main Drive	22 KW	37 KW	55KW
Back Drive	5.5 KW	15 KW	15KW
Lubrication	Grease/Oil	Oil Pump	
Oil Pump Size	N/A or 0.37KW	0.37 KW	0.37 KW
Feed Material	Solids Less 10% and Particle Size less than 2mm		

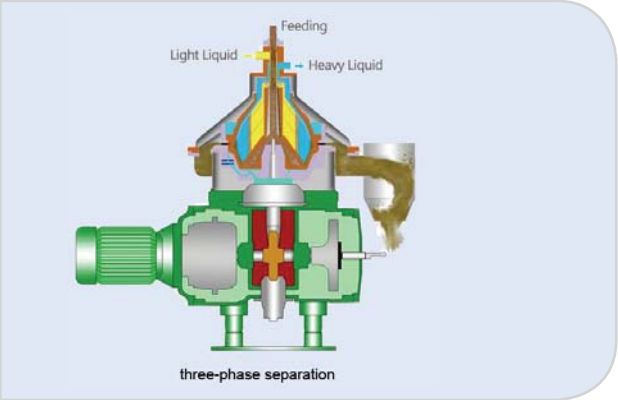
Part 3: Disc Stack Separator

3.1 Disc Stack Separator Introduction

The disc stack separator is also called disc separator, disc centrifuge or conical plate centrifuge, which belongs to a type of vertical centrifuge. The disc separator is driven by a motor and rotates at high speed. In the bowl of the disc separator, there is a set of disc-shaped parts nested with each other-commonly known as discs which are used for centrifugal sedimentation of materials. The suspension (or emulsion) to be processed enters the bowl of the disc separator through the feed pipe and flows through the gap between the discs, the solid particles (or droplets) settle on the disc under the action of the centrifuge to form a sediment (or liquid layer). The sludge slides along the surface of the disc to separate from the disc and accumulates in the inner bowl where the diameter is large, and the separated liquid is discharged from the bowl through the liquid outlet. By using the disc separator, solid-liquid-liquid 3-phase separation or solid-liquid separation is realized.



two-phase separation



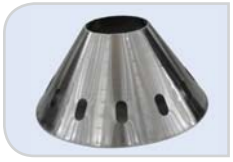
three-phase separation

Common Types of Disc Stack Separator

- Mineral, Biodiesel Oil Disc Separator Series
- Beer, Beverage Disc Separator Series
- Vegetable Oil, Animal Oil Disc Separator Series
- Biological, Pharmaceutical Disc Separator Series
- Marine Disc Separator Series
- Dairy Disc Separator Series
- Latex Disc Separator Series
- Starch Disc Separator Series
- Yeast Disc Separator Series
- Chemical Disc Separator Series

Disc Separator Application Features

- The key parts of the bowl are processed by CNC machine, and the dynamic balance test is carried out for all parts after precise assembly. The bowl is made of stainless steel with high strength and good corrosion resistance. It is forged under high pressure, tested four times and processed by numerical control. To ensure the separator in a long time, high load, high speed safe and reliable operation.



- All processes of disc processing are formed by a unified mold, and the surface finishing treatment has reached the international advanced level. All the discs are formed by one-time spinning, and the surface is precisely finished, so that the fluid is separated under the minimum friction resistance, and the best separation effect is obtained.

- The control system of the separator can control the start, stop, emergency stop, manual slag discharge and current monitoring in real time. Each separator is equipped with independent PLC control and independent touch screen. Four alarm functions ensure the safe and stable operation of the equipment: vibration alarm, speed alarm, insufficient slag discharge value alarm, and drum leakage alarm.

3.2 Disc Separator 2-Phase

The 2 phase disc stack separator is used to separate the fine particles from the liquid and discharge clarified liquid. Compared with decanter centrifuge, the G force of 2 phase disc stack separator is much higher than decanter centrifuge. The disc stack separator G force is up 12000g. Generally, the G force of the decanter centrifuge is about 3000G. The high speed and G force makes the disc stack separator to produce high clarified liquid. However, the materials separated by disc separator should not have high solid content or big particles. Usually the particles content should be less than 3%, it's better to be 1%. Therefore, in some application, pre-treatment will be carried out by decanter centrifuge or other separation equipment, and then clarification and separation will be carried out in the 2 phase disc stack separator.

The 2 phase disc stack separator is widely used in vegetable oil clarification, biological and chemical pharmaceutical industry, dairy and beverage industry, biofuel and marine oil clarification, etc.

Model	GNLD-40	GNLD-90	GNLD-125	GNLD-225
Type	Solid-Liquid Separation（Liquid Clarification）			
Bowl Diameter	440mm	580mm	620mm	800mm
Sliding Piston	380mm	500mm	550mm	700mm
Max Capacity	1-2 m^3/h	5-10m^3/h	10-15 m^3/h	20-25 m^3/h
Max Speed	7100RPM	6150RPM	6000RPM	4500RPM
Max G Force	12409G	12273G	12488G	9063G
Motor Power	11KW	18.5KW	30KW	45KW
Feeding Pressure	0-0.1Mpa			
Starting Time	10-15Minutes			
Feeding Material	小于 3%			

3.3 Disc Separator 3-Phase

Model	GNSD-40	GNSD-90	GNSD-125	GNSD-225
Type	3 Phase Disc Separator (Oil, Water & Solids)			
Bowl Diameter	440mm	580mm	620mm	800mm
Slide Piston	380mm	500mm	550mm	700mm
Theory Capacity	1-2 m^3/h	5-10m^3/h	10-15 m^3/h	20-25 m^3/h
Max. Speed	7100RPM	6150RPM	6000RPM	4500RPM
Max. Separation Factor (G)	12409G	12273G	12488G	9063G
Motor Power	11KW	18.5KW	22KW	45KW
Feeding Pressure	0-0.1Mpa			
Starting Time	10-15 minutes			
Feed Material	Solids<3%			
Application	Oil & Water & Solid Separation			

Product Features

GN Disc Separator is a high-speed, stable, airtight, high-efficiency and automatic slagging three-phase separation equipment, widely used for oil, solids and water separation. The high G force is capable to clarify the material to very clean liquid. All wearing parts are made of high-grade stainless steel, which effectively reduce the chemical action of the separated material and the surface of the wet-touch parts. The separated light and heavy phase materials are respectively output by two centripetal pumps of different sizes. The machine adopts the upper feeding form, and the inlet pressure for the material is low. The power transmission adopts hydraulic coupling and a pair of spiral speed increasing gears or belt driven, which can achieve stable speed increase and overload protection.

- The slagging action of the sliding piston is automatically controlled by a PLC automatic control cabinet, which is specially designed with safety protection device, which can achieve high level of automation, strong adaptability to craft adjustment and convenient adjustment.
- It has the advantages of high revolving speed, stable operation; complete sealing of the import and export system, low noise and good separation effect. The professionally designed centripetal pump system has the characteristics of stable output pressure, large adjustment range and convenient operation.

Part 4: Dewatering Screw Press

4.1 Dewatering Screw Press Introduction

GN screw press sludge dewatering machine is a kind of economic and environmental friendly sludge dewatering equipment. It is a new type of sludge extrusion dewatering equipment by using the principle of screw extrusion, through the strong squeezing force generated by the change of screw diameter and screw pitch, and the tiny gap between the floating ring and the fixed ring, to realize solid-liquid separation.

Dewatering Screw Press Working Principle

1. The main body of the screw press sludge dewatering machine is a filtration device composed of fixed ring and moving ring, in which the screw axis runs through. The front section is for concentration and the back section for dewatering.

2. The filtering gap formed between the fixed ring and the moving ring of the dewatering screw press and the pitch of the screw axis gradually decreased from the concentration section to the dewatering section.

3. The rotation of the screw press shaft not only pushes the sludge from the concentration section to the dewatering section, but also continuously drives the moving ring to clean the filtering gap to prevent clogging.

4. After gravity concentration in the concentration section, sludge is transported to the dewatering section. In the process of advance, with the gradual decrease of filtering gap and screw pitch, and the blocking effect of back pressure plate, a great internal pressure is generated; leading the volume is constantly reduced, so as to achieve the purpose of full dewatering.

5. Dewatering screw press is generally applicable to sludge concentration of 2000mg / L-50000mg / L.

Dewatering Screw Press Advantages

1. Suitable for wide range sludge dewatering and can be used for oily sludge treatment.
2. Operating continuously and automatically, not easy to block.
3. Low investment and operation cost, no secondary pollution.
4. Energy saving and environmental friendly, compact design with small footprint.
5. Sludge can be dewatered under aerobic conditions to avoid phosphorus release from anaerobic sludge dewatering.

4.2 Dewatering Screw Press Model Selection

Dewatering Screw Press Capacity Parameter

Model	Standard Capacity (For Dry Solids) (kg/h)	Capacity for Sludge with Different Concentration				
		10000mg/L (m^3/h)	20000mg/L (m^3/h)	30000mg/L (m^3/h)	40000mg/L (m^3/h)	50000mg/L (m^3/h)
GNDL101	5 ~ 7	~ 0.5	~ 0.25	~ 0.2	~ 0.15	~ 0.14
GNDL201	15 ~ 20	~ 1.5	~ 0.75	~ 0.6	~ 0.5	~ 0.4
GNDL202	30 ~ 40	~ 3	~ 1.5	~ 1.2	~ 1	~ 0.8
GNDL301	50 ~ 70	~ 5	~ 2.5	~ 2	~ 1.5	~ 1.4
GNDL302	100 ~ 140	~ 10	~ 5	~ 4	~ 3	~ 2.8
GNDL303	150 ~ 210	~ 15	~ 7.5	~ 6	~ 4.5	~ 4.2
GNDL401	130 ~ 160	~ 13	~ 6.5	~ 5	~ 4	~ 3.2
GNDL402	260 ~ 320	~ 26	~ 13	~ 10	~ 8	~ 6.4
GNDL403	390 ~ 480	~ 39	~ 19.5	~ 15	~ 12	~ 9.6
GNDL404	520 ~ 640	~ 52	~ 26	~ 20	~ 16	~ 12.8

Screw Press Dewatering Machine Configuration Parameter

Model	Screw Diameter	Screw Nos.	Screw Power	Agitator Power	Flushing Pressure	Flushing Water (L/H)	Weight (KG)
GNDL101	100mm	1	0.18KW	0.18KW	0.1Mpa-0.2Mpa (No high pressure flushing device is required)	24	220
GNDL201	200mm	1	0.37KW	0.18KW		32	420
GNDL202		2	0.74KW	0.55KW		64	550
GNDL301	300mm	1	0.75KW	0.55KW		40	900
GNDL302		2	1.5KW	0.75KW		80	1400
GNDL303		3	2.25KW	1.1KW		120	1900
GNDL401	400mm	1	1.5KW	1.1KW		80	2200
GNDL402		2	3KW	1.5KW		160	3500
GNDL403		3	4.5KW	2x1.1KW		240	5500
GNDL404		4	6KW	2x1.1KW		320	7000

Part 5: Conveying Equipment

5.1 Solids Vacuum Pump

Sludge vacuum pump, also named as solids transfer pump. It is a type of pneumatic pump that sucks the material with vacuum produced by air operation, and then converts to positive pressure for discharging.
Most of the solids, sludge and liquid could be transferred by using this pump. With special structure design of no rotating parts in the cavity, it can be used at tough environmental with high working performance and less maintenance. The pump can transfer material with high gravity and high density, solids content max. up to 80%. It has following features: the high efficiency venturi device can produce vacuum up to 25 inch HG (Mercury Column). This is equivalent to vacuum of 85Kpa to suck the material. The pump structure is simple and compact, almost none of wear parts. The transfer distance is up to 500-1000 meters.

Model	GNSP-40B	GNSP-20B	GNSP-10B
Max Capacity(m^3/h)	40m^3/h	20m^3/h	10m^3/h
Inlet/Outlet Size(Inch)	4" (114mm)		3" (89mm)
Vacuum Degree	85Kpa/25 inch HG (Mercury Columm)		
Max Suction Distance(m)	50m		
Max Discharge Distance(m)	1000m	500m	
Max Solids Size(mm)	75mm	50mm	
Pressure Request	550Kpa-785Kpa (80-114PSI)	550Kpa-690Kpa (80-100PSI)	
Air Demand	17m^3/min (600CFM)	8m^3/min(280CFM)	4.3 m^3/min(150CFM)
Weight(kg)	1690×1468×1983mm	1421×900×1448mm	1283×800×1370mm
Dimension: L×W×H(mm)	892kg	386kg	320kg

Video: http://www.gnseparation.com/solids-vacuum-pump

Material transfer applications

1) Waste mud and waste solids discharged from shale shaker, mud cleaner and centrifuge transfer
2) Drilling mud transfer
3) Waste pit cleaning
4) Hazardous waste recovery
5) Oil sludge, tank bottoms residual removal and transfer
6) Barge holdings and vessel bottom clean out
7) Bulk tank and silo transfer of material
8) Sand; Course, fine, conventional and frac sand
9) Diatomaceous earth
10) Animal waste etc.
12) Powder material

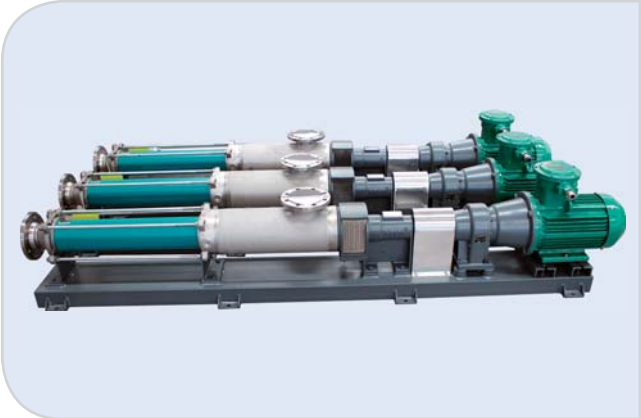
5.2 Centrifugal Sand Pump

Model	Flow(m^3/h)	Lift(m)	Power(Kw)	Motor Speed(RPM)	Impeller(Inch)
GNSB8×6C-14J	320m^3/h	35m	75kW	1450RPM（50Hz）	14in
GNSB8×6C-12J				1750RPM（60Hz）	12in
GNSB8×6C-13J	272m^3/h	35m	55kW	1450RPM（50Hz）	13in
GNSB8×6C-11J				1750RPM（60Hz）	11in
GNSB6×5C-13J	200m^3/h	35m	45kW	1450RPM（50Hz）	13in
GNSB6×5C-10J				1750RPM（60Hz）	10in
GNSB6×5C-12J	150m^3/h	30m	37kW	1450RPM（50Hz）	12in
GNSB6×5C-9.5J				1750RPM（60Hz）	9.5in
GNSB5×4C-13J	120m^3/h	35m	30kW	1450RPM（50Hz）	13in
GNSB5×4C-11J				1750RPM（60Hz）	11in
GNSB5×4C-12J	90m^3/h	30m	22kW	1450RPM（50Hz）	12in
GNSB5×4C-10J				1750RPM（60Hz）	10in
GNSB4×3C-13J	65m3/h	35m	18.5kW	1450RPM（50Hz）	13in
GNSB4×3C-12J				1750RPM（60Hz）	12in
GNSB4×3C-12J	55m3/h	28m	15kW	1450RPM（50Hz）	12in
GNSB4×3C-10J				1750RPM（60Hz）	10in
GNSB4×3C-11J	45m3/h	25m	11kW	1450RPM（50Hz）	11in
GNSB4×3C-9.5J				1750RPM（60Hz）	9.5in
GNSB3×2C-10J	35m3/h	35m	7.5kW	1450RPM（50Hz）	10in
GNSB3×2C-9J				1750RPM（60Hz）	9in

Product Features:

GNSB series centrifugal sand pumps are mainly used for flowing materials containing mud and sand. They can be used as slurry pumps for separating equipment and for transferring and transporting materials before and after separation. All types of sand pumps are mechanically sealed with long service life and reliable performance. All components can be exchanged with internationally renowned pumps to make it easier for users to find wearing spare parts. Compared with screw pump, GN centrifugal sand pump has the advantages of simple operation and maintenance, wear-resistant model and long service life.

5.3 Screw Pump



Model	Flow	Pressure	Motor	Max Speed	Inlet	Outlet	Ex Standard	Weight	Dimension (mm)
GNG10-040B	10m^3/h	0.3MPa	4kW	244RPM	DN80	DN80	EXdIIBt4/ IECEX/ A-TEX	245kg	2245x320x550mm
GNG20-055B	20m^3/h	0.3MPa	5.5kW	210RPM	DN80	DN80		323kg	2450x340x562mm
GNG30-075B	30m^3/h	0.3MPa	7.5kW	258RPM	DN100	DN100		386kg	2761x370x600mm
GNG40-110B	40m^3/h	0.3MPa	11kW	252RPM	DN100	DN100		454kg	3270x370x665mm
GNG50-110B	50m^3/h	0.3MPa	11kW	273RPM	DN125	DN125		608kg	3790x400x782mm
GNG60-150B	60m^3/h	0.3MPa	15kW	225RPM	DN125	DN125		649kg	3322x550x740mm
GNG70-220B	70m^3/h	0.3MPa	22kW	230RPM	DN150	DN150		875kg	3740x420x785mm
GNG80-220B	80m^3/h	0.3MPa	22kW	283RPM	DN150	DN150		875kg	3740x420x785mm
GNG90-220B	90m^3/h	0.3MPa	22kW	205RPM	DN150	DN150		875kg	3740x420x785mm

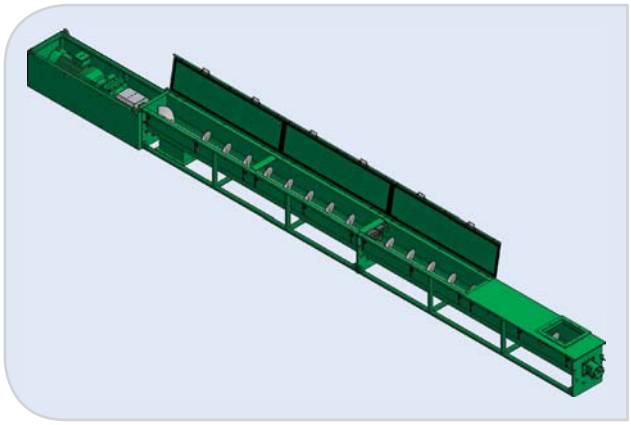
Product Features:

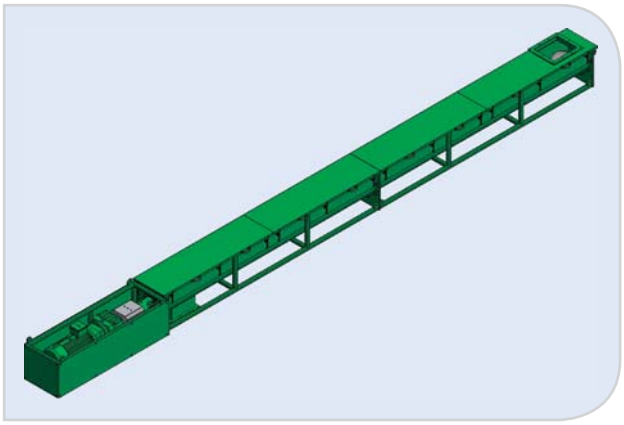
The GNG Series Positive Displacement Pump is a single screw pump .The pump is an ideal pump for feeding to decanter centrifuge without shearing or agitating the drilling mud. The main parts are screw shaft (rotor) and screw shaft bushing (stator). Because of the special geometry shape of the two parts, they form pressurize capacity separately. The fluids flow along with the shaft, inner flow speed is slow, capacity remains, pressure is steady, so it will not generate vortex and agitating. The shaft of the pump is made from Stainless steel, GNG series pump is available for option with complete stainless steel body,

It can drive by coupler, or adjust the speed by using variable speed motor, Triangle V-belt, gear box, etc G series positive displacement pump is with less accessories, compact structure, small volume, easy maintenance, rotor and stator are wear parts of this pump, it is convenient to replace.

The stator is made of elastomeric material, so it has particular advantages than other pump to transfer the fluids of high viscosity and hard suspended particles included.

5.4 U-Type Screw Conveyor





Model	Screw Diameter Inch/mm	Screw Length Ft/m	Capacity (Tons/Hour)	Motor Power (Kw)	Screw Speed (Rpm)
GNSC10-24B	10/250	24/7.3	15	5.5(7.5HP)	50-60
GNSC10-36B	10/250	36/11	15	5.5(7.5HP)	
GNSC10-48B	10/250	48/14.6	15	11(15HP)	
GNSC12-24B	12/315	24/7.3	20	5.5(7.5HP)	50-60
GNSC12-36B	12/315	36/11	20	7.5(10HP)	
GNSC12-48B	12/315	48/14.6	20	11(15HP)	
GNSC14-24B	14/350	24/7.3	30	7.5(10HP)	50-60
GNSC14-36B	14/350	36/11	30	11(15HP)	
GNSC14-48B	14/350	48/14.6	30	15(20HP)	
GNSC16-24B	16/400	24/7.3	45	11(15HP)	50-60
GNSC16-36B	16/400	36/11	45	15(20HP)	
GNSC16-48B	16/400	48/14.6	45	18.5(25HP)	
GNSC18-24B	18/450	24/7.3	55	11(15HP)	50-60
GNSC18-36B	18/450	36/11	55	15(20HP)	
GNSC18-48B	18/450	48/14.6	55	22 (25HP)	
Remarks：According to clients requirement, GN Provide customized equipment.					

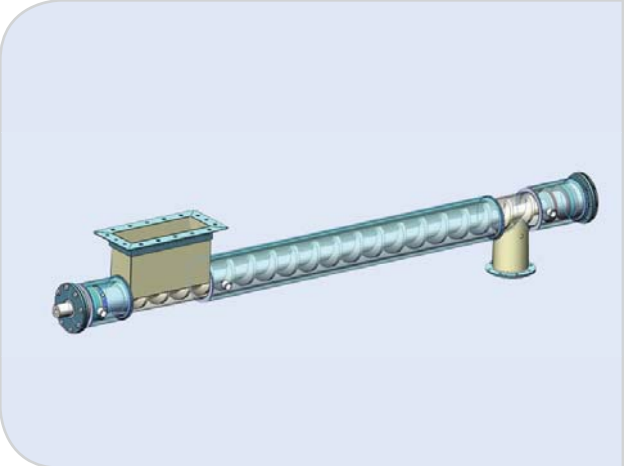
Product Features:

GNSC series U-type screw conveyor is continuous conveying equipment without flexible traction. It uses the rotating screw to move the conveyed material along the fixed casing for conveying work. Material can be feed in and discharge at any position in the length direction. And a better sealing effect can be achieved by using the cover case. Therefore, screw conveyor is widely used in food, medicine, chemical industry, paper making, environmental solutions, metallurgy, building materials, petroleum, electricity and other industrial sectors. GN Screw conveyors are used to transport a variety of powder, granular and small materials, such as coal ash, cement, sand, lump coal, cereals and so on. There are many types of screw conveyor, which can meet the conveying requirements of different working conditions and different materials.

5.5 Tube Type Screw Conveyor

GN Tube type screw conveyor mainly used for conveying powder and granular material on an incline or vertically. Normally the feed material diameter is less than 5mm. The Tube type screw conveyor is light weight, quiet and closed. GN Tube type screw conveyor can be customized into different diameters, different lengths and different inclining degrees according to the requirements of the users. Variable speed Tube type screw conveyor are optional by mechanical adjustment or VFD controlled.

The Tube type screw conveyer is used to transfer the material transported along the fixed shell with a rotating auger. The head and tail bearing are moved out of the shell. The hanging bearing adopts a sliding bearing with a dust proof sealing device. The tube type screw conveyor can installed horizontally or vertically. They are widely used in for building or construction materials, chemical industry, electricity, metallurgy, coal and grain



Tube Type Screw Conveyor Features and benefits

- Heavy duty and safe operation for wide material.
- Easy installation and minimized maintenance for saving operation cost.
- Small and light weight but continue high speed material conveying.
- The discharge end is equipped with a cleaning device for self cleaning.
- The tube type screw conveyor is with noise and strong adaptability, and the position of the inlet and outlet is flexible.
- Fully sealed, and the shell is made of seamless steel tubes, and the ends are connected with each other by flange or customized connection.

GN Tube Type Screw Conveyor Applications Industry

- Environmental Waste management industry.
- Construction bulk material handling
- Grain industry.
- Chemical and Pharmaceutical Engi neering Industry.
- Mining Industry
- Food & Beverage Industry
- Power and metallurgy Plant
- Coal & Oil Gas Industry

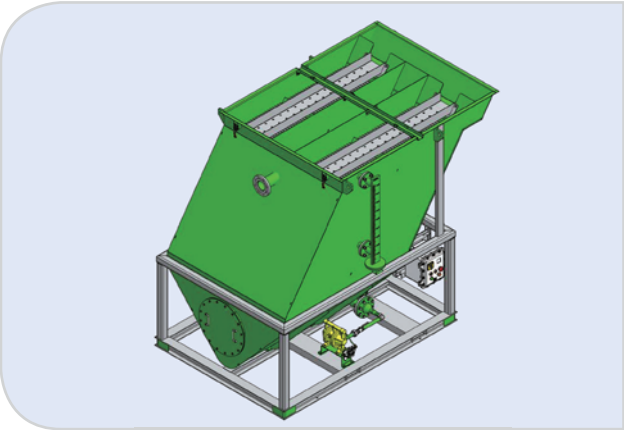
Part 6: Other Separators

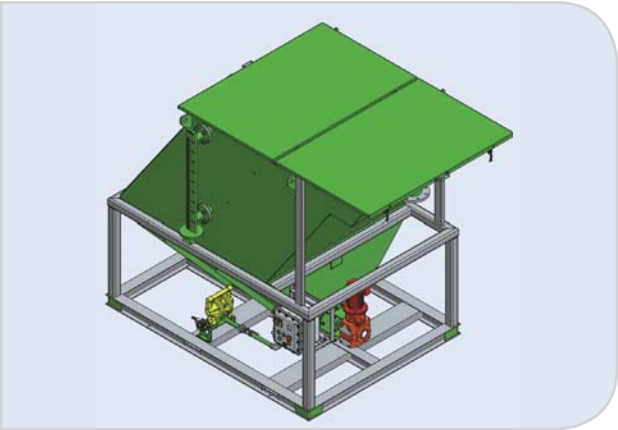
6.1 Vertical Screen Scroll Centrifuge

GN Vertical Screen Scroll Centrifuge is designed for solids and liquid separation. It is also called conveyor discharge centrifuge or worm screen centrifuge. GN build vertical screen scroll centrifuge for industrial separation. The main application is to dry the solid material like coal ,mining solids, construction mud or gravel, drilling cuttings , chemical material, environmental solids. Also it can be used for chemical, environmental, food industry for separation of crystalline, granular or fibrous materials from a solid-liquid mixture.

Model	GNCD930E-GP	GNCD930E-VFD
Capacity	40~60 Tons/H	
Surface Moisture	4 % - 10% Depends on Material	
Screen Max Diameter	930mm	
Screen Opening	0.25/0.35/0.5mm	
Rotation Speed	900RPM	0~900RPM
G Force	420 G	
Oil Tank Capacity	48L	
Air Knife Input Pressure	0.69Mpa	
Air Knife Input Capacity	1.8m³/m	
Main Motor	55Kw (75HP)	
Oil Pump	0.55Kw(0.75HP)	
Weight	4600Kg	4400Kg
Dimension	2640×1810×1650mm	

6.2 Inclined Plate Clarifier





Model	Max Flow (m^3/h)	Inlet	Outlet	Sludge Outlet	Sludge Volume (Liter)	Weight (KG)	Dimension(mm)
GNIPC-07B	7	4”	4”	4”	475	1460	1655x1655x1780
GNIPC-14B	14	4”	4”	4”	1025	2070	2495x1655x1780
GNIPC-21B	21	4”	4”	4”	770	2465	2465x1655x2315
GNIPC-35B	35	4”	4”	4”	1255	3320	3205x1655x2315
GNIPC-41B	41	6”	6”	4”	1580	3905	3685x1730x2315
GNIPC-55B	55	6”	6”	4”	2175	4865	4500x1730x2315
GNIPC-69B	69	8”x8”	8”	4”	3905	6555	4065x2595x2950
GNIPC-86B	86	8”x8”	8”	4”	4975	7880	4725x2595x2950
GNIPC-103B	103	8”x8”	8”	4”	2315	9070	5360x2595x2950
GNIPC-120B	120	8”x8”	8”	4”	3710	10340	6100x2595x2950
GNIPC-137B	137	12”x10”	10”	4”	3710	12295	4980x2695x4270
GNIPC-154B	154	12”x10”	10”	4”	3710	13350	5285x2695x4270
GNIPC-188B	188	12”x10”	10”	4”	3710	15740	5970x2695x4270
GNIPC-222B	222	12”x10”	10”	4”	3710	18385	6100x2695x4270
GNIPC-273B	273	12”x10”	10”	4”	3710	21390	6100x2695x4270

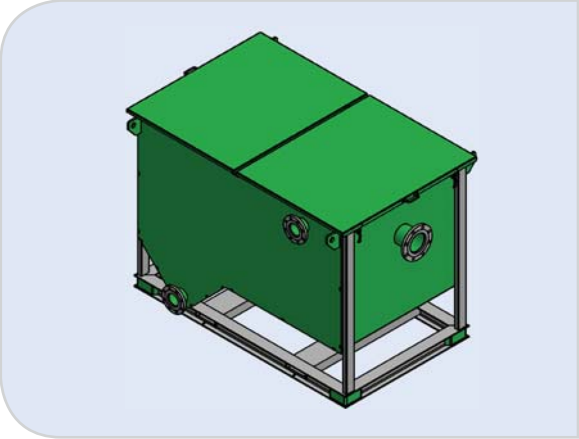
Product Features:

GN Inclined Plate Clarifiers (IPC)is a high performance, Lamella plate design for removal of settleable solids in a variety of waste streams. The lamella plate is made from stainless steel.

GN IPC design incorporates inclined plate settling surfaces pitched at a 55° angle from the horizontal with uniform plate spacing. Due to plate angle the solids slide down the plates into the sludge hopper below the plate pack. The simple, inexpensive design, combined with sludge conveyor Auger makes the GN IPC easy toinstall, operate and maintain.

Chemical like polymer pretreatment often improves solids removal efficiencies. The use of chemical flocculants with GNIPC is based on system efficiency, application contaminant characteristics and cost.

6.3 Oil Water Separator



Model	Capacity (m^3/h)	Inlet	Water Outlet	Oil Outlet	Equipment Weight (KG)	Loading Weight (KG)	Dimension (mm)
GNOWS-06B	6	2”	2”	2”	320	1270	1325x715x1095
GNOWS-12B	12	3”	3”	3”	890	2780	1325x1325x1095
GNOWS-23B	23	4”	4”	3”	1200	4720	2085x1020x1655
GNOWS-31B	31	6”	6”	3”	1510	5900	2085x1325x1655
GNOWS-41B	41	6”	6”	3”	1800	7075	2085x1325x1960
GNOWS-55B	55	6”	6”	3”	1845	9890	2085x1630x1960
GNOWS-66B	66	6”	6”	4”	1945	12135	2365x1925x2015
GNOWS-88B	88	6”	6”	4”	2090	13965	2365x1925x2015
GNOWS-110B	110	6”	6”	4”	5035	21835	4300x1770x2060
GNOWS-131B	131	6”	6”	6”	5630	25730	4300x2075x2060
GNOWS-153B	153	8”	8”	6”	6265	29675	4300x2380x2060
GNOWS-197B	197	8”	8”	6”	7860	37880	4300x2685x2060
GNOWS-219B	219	8”	6”	6”	10105	51350	5110x1770x3325
GNOWS-262B	262	8”	6”	6”	10885	59725	5110x2075x3325

Product Features:

GNOWS series oil water separator separates the oil and water by gravity stratification, its main application is the separation of oily waste water for refinery. The unit is composed of waste water inlet, clean water outlet, clean oil outlet, gas release ports 4pcs, waste discharge port. It is equipped with a detachable coalescer, the oily waste enters into the coalescer, separates the oil and water, then the oil flows to the oil chamber, the water flows to the water chamber. The tank design allowed the fluids to stay in the tank for a reasonable time to ensure the complete separation of oil and water. The Tank equipped with level meter to watch the level of oil and water conveniently.

SEPARATION & CONVEYING

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