



Separation Equipment

Centrifuge / Solids Control / Shaker Screen



GN General Brochure (2017)

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Part 1: **Company Profile**

1.1 **Company Introduction**

GN Solids Control focus on separation equipment manufacture. After research and development for over 10 years, GN Solids Control has become the leading brand for separation equipment. And GN is honored to be the National High Tech company, which means we pay 15% income tax instead of 25%, this will give benefit to our customer for buying cost effective product from GN.



- GN is the first API Certified separation equipment manufacturer in China.
- GN Solids America is the first USA based solids control company from China.
- GN own two facilities of total area of 40,000 SM(430,000 SF) close to Beijing.
- GN products have been exported to over 70 countries, and GN have branch or distribution center in America, Russia, Australia, Latin America, Middle East.
- GN own a specialized factory for making shale shaker screens.
- GN owns over 10 patents for separation equipment.
- GN products are CE certified for Europe market and CU-TR Certified for Russia.
- GN management system also comply with ISO9001, ISO14001, OHSAS18001 standard

Our Vision: Build a world-class Brand for the separation industry: GN Solids Control

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. 2 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



No.2 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. GN Explosion proof standard can be IEC Ex, Europe ATEX. And the lifting certification can meet DNV2.7-1 for offshore operation.



API Certificate:Q1-1003



ISO9001:2008 No.:1208



DNV CE for Europe



CU-TR For Russia



National High Tech Certificate



CN Ex Certificate



HSE Certificate



ISO14001 Certificate



OHSAS18001 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 centrifuges 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.



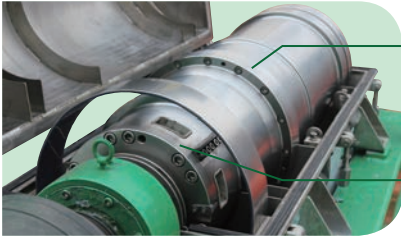
Main Function of GN Industry Centrifuges

- 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

GN Centrifuge Main Application Industry

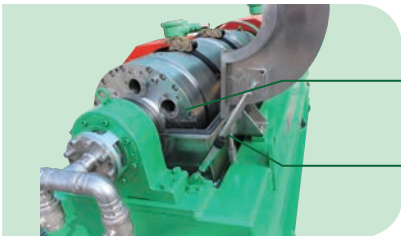
- Oil Gas Drilling Mud Solids Control
- Drilling Waste Management
- Oil Sludge Treatment
- HDD trenchless mud cleaning
- Bored Pile and TBM mud dewatering
- Waste water treatment
- Chemical and Pharmaceutical separation
- Mining industry separation
- Food and Beverage industry separation

2.2 GN Centrifuge Features



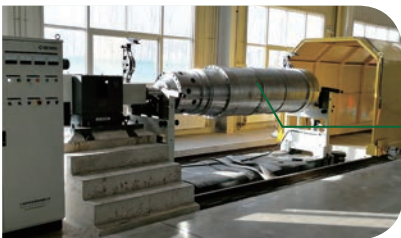
The bowl of GN centrifuge is made from Duplex Stainless Steel SS2205 or SS2304 by centrifugal casting which is better than SS304 or SS316.

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

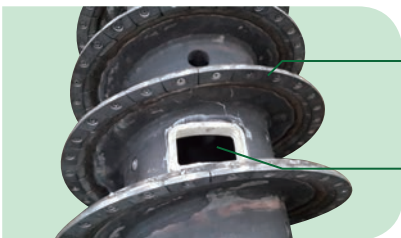


Flexible pond depth adjustment for different material separation.

The air spring assist the opening of the centrifuge cover and give more safety.

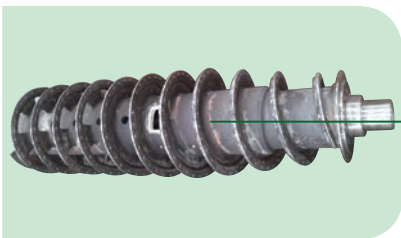


3 Stage balancing process to maximize the balance of the centrifuge include 1800RPM low speed balancing and real operation high speed balancing as well as the assembly balancing.



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

The mud distribution port is made from special ceramic or 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 are premium SKF bearings for reliable and longer operation. The automatically lubrication system is available for option.

2.3 GN Centrifuge VFD Control Panel

For the oil gas industry and mining industry, most of the time, the client need to use Explosion proof VFD control panel for hazardous area. GN Developed the pressurized explosion proof VFD control panel to meet the IEC Ex, ATEX, and CNEX zone 1 and zone 2 applications.



	<ul style="list-style-type: none"> • 3 VFD for bowl speed, differential speed, and pump capacity. • The VFD brand is ABB or SIEMENS.
	<ul style="list-style-type: none"> • The positive pressurized VFD panel can be cooling by vertex tube or air conditioner to work for ambient Temp. up to +55 C degree. • The VFD panel is optional for IEC Ex or ATEX or CNEX zone 1 or Zone 2 application.
	<ul style="list-style-type: none"> • The HMI and PLC system for user-friendly operation and smart control and protection. • It's optional for client to choose bearing temperature protection, vibration switch.

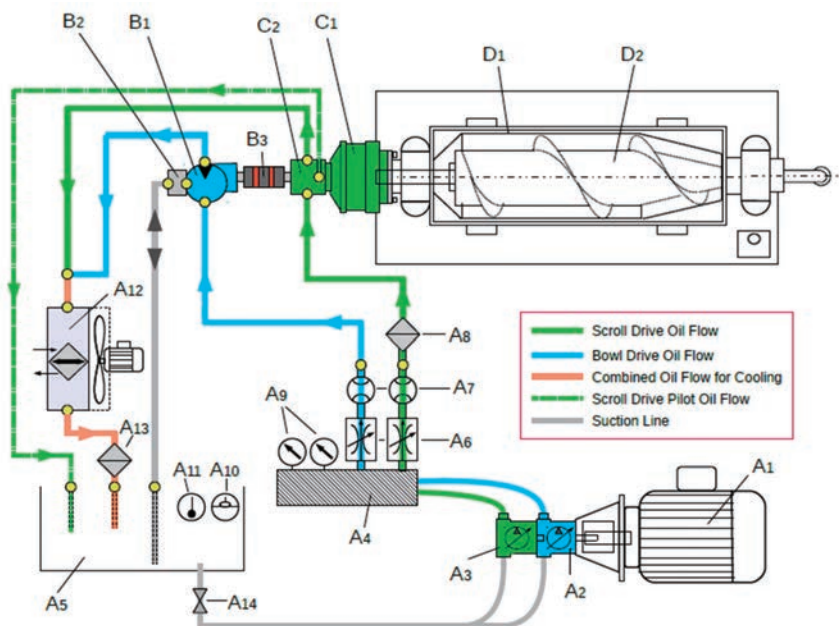
2.4 Fully Hydraulic Drive Centrifuge

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 may be 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 A7 Flow Meters
- A6 Variable Scroll Speed, Variable Bowl Speed
- 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

2.5 9 inch (220mm) Decanter Centrifuge

The 9 Inch Decanter Centrifuge is a baby centrifuge which is the one of the world smallest industry decanter. The bowl of the centrifuge is 9 inch (220mm). As the compact design, it is popular for client to use it in small capacity or limited space application for solids and liquid separation. It is also considered to be the best choice for experiment testing with decanter centrifuge. GN 9 inch decanter centrifuge is optional in three types includes: fixed gear box drive, fully hydraulic drive, and variable frequency drive.



Model	GNLW223D	GNLW224D
Max Capacity	130 l/min	130 l/min
Effective Capacity	100 l/min	100 l/min
Bowl Diameter	9inch(220mm)	9inch(220mm)
Bowl Length	20inch(670mm)	35inch(890mm)
Max Bowl Speed	4500RPM	4500RPM
Typical Bowl Speed	3800RPM	3800/4500RPM
Max G Force	2492G	2492G
Typical G Force	1777G	1777G
Main Motor	15HP(11KW)	15HP(11KW)
Pump Size	5.5HP(4KW)	5.5HP(4KW)
Gearbox Ratio	35:1	35:1
Gearbox Torch(N·M)	500N·M	500N·M

2.6 14inch (360mm) Decanter Centrifuge

GN 14inch (360mm)decanter centrifuge is the most popular centrifuge for oil gas industry, it is popular for drilling mud treatment, and also it can be used for industry waste water treatment, oil sludge treatment, mining water treatment, chemical industry separation.GN 14 inch decanter centrifuge is optional in three types includes: fixed gear box drive, fully hydraulic drive, and variable frequency drive.

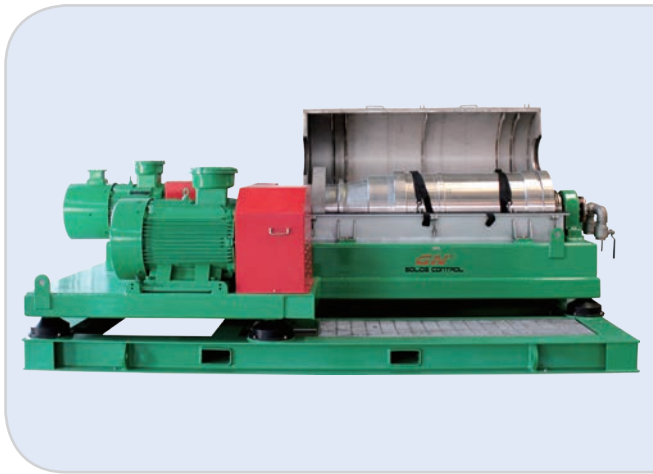


Model	GNLW363D	GNLW363D-VFD	GNLW363D-FHD	GNLW364D-VFD
Dive Mode	Fixed Speed	VFD	FHD	VFD
Bowl Diameter	14inch(360mm)	14inch(360mm)	14inch(360mm)	14inch(360mm)
Bowl Length	50inch(1271mm)	50inch(1271mm)	50inch(1271mm)	59.5inch(1512mm)
Max Capacity	200GPM(45m ³ /h)	200GPM(45m ³ /h)	200GPM(45m ³ /h)	242GPM(55m ³ /h)
Typical Capacity	132GPM(30m ³ /h)	132GPM(30m ³ /h)	132GPM(30m ³ /h)	154GPM(35m ³ /h)
Max Bowl Speed	3900RPM	3900RPM	3900RPM	3900RPM
Typical Bowl Speed	3200RPM	0~3200RPM	0~3200RPM	0~3200RPM
Max G Force	3063G	3063G	3063G	3063G
Typical G Force	2062G	0~2062G	0~2062G	0~2062G
Cut Point	2~5µm	2~5µm	2~5µm	2~5µm
Differential Speed	38RPM	0~45RPM	0~65RPM	0~65RPM
Gearbox Torch	3500 N·M	3500 N·M	3717 N·M	3500 N·M
Gearbox Ratio	57:1	57:1	Hydraulic Gearbox	57:1
Main Motor	37KW(50HP)	37KW(50HP)	45KW(60HP)	37KW(50HP)
Back Drive Motor	11KW(15HP)	11KW(15HP)	N/A	11KW(15HP)
Recommend Pump Motor	7.5KW(11HP)	7.5KW(11HP)	7.5KW(11HP)	7.5KW(11HP)
Remarks	Above Max capacity is for water, the treating capacity would be various as per different material conditions and customer required treating results.			

2.7 18inch (450mm) Decanter Centrifuge

GN 18inch(450mm) decanter centrifuge is optional with 3 different bowl length. GNLW452 is an economic centrifuge, popular for drilling mud treatment. To meet different applications, the GNLW453 and GNLW454 is designed with longer bowl.

GN 18 inch decanter centrifuge is optional in three types includes: fixed gear box drive, fully hydraulic drive, and variable frequency drive.



Model	GNLW452D	GNLW453C-VFD	GNLW454D-VFD
Bowl Diameter	18inch(450mm)	18inch(450mm)	18inch(450mm)
Bowl Length	43.5inch(1105mm)	61inch(1540mm)	74.5inch(1890mm)
Max Capacity	250GPM(57M ³ /h)	352GPM(80m ³ /h)	400GPM(90m ³ /h)
Typical Capacity	176GPM(40m ³ /h)	264GPM(60m ³ /h)	300GPM(68m ³ /h)
Max Bowl Speed	1800RPM	3200RPM	3500RPM
Typical Bowl Speed	1800RPM	0~2800RPM	0~3200RPM
Max G Force	815G	2578G	3084G
Typical G Force	815G	0~1973G	0~2578G
Cut Point	5-7μm	2~5μm	2~5μm
Differential Speed	32RPM	0~45RPM	0~45RPM
Gearbox Torch	3500 N·M	7500 N·M	7500 N·M
Gearbox Ratio	57:1	57:1	57:1
Main Motor	45KW(60HP)	55KW(75HP)	55KW(75HP)
Back Drive Motor	N/A	22KW(30HP)	22KW(30HP)
Recommend Pump Motor	11KW(15HP)	15KW(20HP)	15KW(20HP)
Remarks	Above Max capacity is for water, the treating capacity would be various as per different material conditions and customer required treating results.		

2.8 22inch(550mm) Decanter Centrifuge

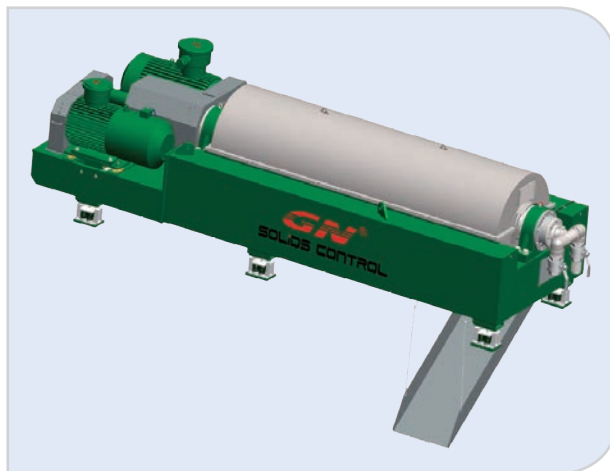
GN 22inch(550mm) decanter centrifuge is widely used for different industry .It is the medium size centrifuge which has the normal capacity requirement for most of the applications. It is popular for drilling mud treatment, and also it can be used for industry waste water treatment, oil sludge treatment, mining water treatment, chemical industry and food industry separation.



Model	GNLW553D-VFD	GNLW554D-VFD
Bowl Diameter	22inch(550mm)	22inch(550mm)
Bowl Length	71inch(1800mm)	91inch(2310mm)
Max Capacity	500GPM(114m ³ /h)	600GPM(136m ³ /h)
Typical Capacity	400GPM(90m ³ /h)	480GPM(108m ³ /h)
Max Bowl Speed	3000RPM	3150RPM
Typical Bowl Speed	0-2500RPM	0~2800RPM
Max G Force	2719G	3051G
Typical G Force	0~1888G	0~2412G
Cut Point	2-5μm	2~5μm
Differential Speed	0~45RPM	0~45RPM
Gearbox Torch	12000 N·M	12000 N·M
Gearbox Ratio	35:1	35:1
Main Motor	90KW(120HP)	90KW(120HP)
Back Drive Motor	37KW(50HP)	37KW(50HP)
Remarks	Above Max capacity is for water, the treating capacity would be various as per different material conditions and customer required treating results.	

2.9 30inch(760mm) Decanter Centrifuge

The GN 30 inch (760mm) bowl diameter decenter centrifuge is a big bowl centrifuge. GN 30inch centrifuge is with bowl length and diameter ration of 4.4:1. This bowl size allows client to handle big volume fluids with one single unit. Because of GN unique design for the screw and bowl, the GN 30 inch decenter centrifuge is design for best performance in Tunnel Boring Project Mud Cleaning, Dredging Slurry Separation, and Municipal Sewage Sludge in Purification Plants, Industry Waste Water Treatment. The tungsten carbide protection in the slurry distribution port or solids discharge port as well as the screw conveyor inside the bowl makes the GN 30 inch decenter centrifuge lasts longer.



Model	GNLW764A-VFD
Bowl Diameter	760mm
Bowl Length	3328mm
Designed Capacity	528GPM/120m ³ /h (Mud with 20% Solids Content)
Max Bowl Speed	2650RPM
Typical Bowl Speed	0-2200RPM
Max G Force	3000G
Typical G Force	0~2060G
Cut Point	2-5μm
Differential Speed	5~28RPM
Gearbox Torch	25000 N·M
Gearbox Ratio	38:1
Main Motor	132KW(180HP)
Back Drive Motor	90KW(120HP)
Remarks	Above Max capacity is for reference only, the treating capacity would be various as per different material conditions and customer required treating results.

Part 3: Shale Shaker Screen

3.1 GN Shaker Screen Factory

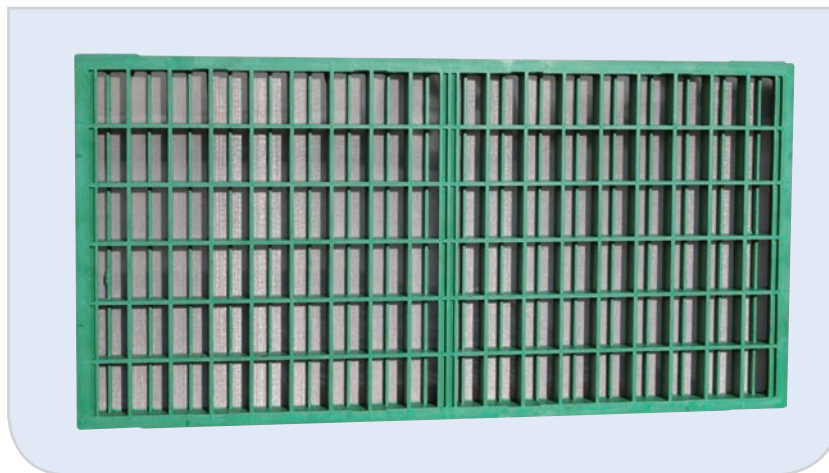
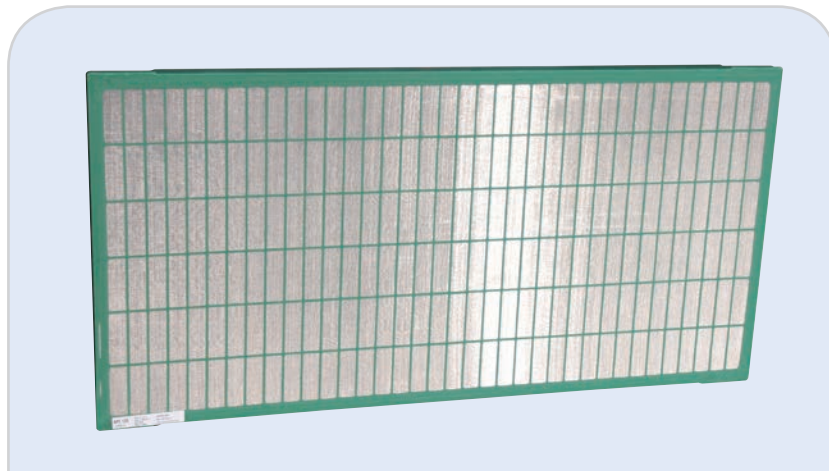
GN Shaker Screen is a division for GN Solids Control to provide high quality & cost effective GN OEM shaker screens, and replacement screens for different shale shaker manufacturers.

GN has the automatically production line for shale shaker screens, include CNC punching machine, robot welding, injection molding machine. This will help GN to make high quality screens with consistent quality.

With the worldwide network branches and partners, GN Solids Control provides technical support, consignment support, and fast delivery to the international drilling industry.



3.2 GN Shaker Screen Advantages



- Automatic Robot Welding of the steel frame to have better quality and consistency.
- High quality fiber glass to improve plastic quality and screen temperature resistant to 140 C degree.
- Four side tension of mesh during the heat press to minimize the gap between the top screen and support screens, in a result extending the screen life. Our competitors normally do not use any tension for heat press.
- GN 3 layer wire mesh for API 60 and above for longer screen life, our competitor normally use 3 layer only for API 120 and above.
- GN high performance wire mesh configuration is compliant to API RP 13C with normally longer screen life.
- GN comprehensive line composite frame replacement screen for GN shakers, MI-Swaco Mongoose, MI-Swaco MD-3/MD-2, Nov Brandt Cobra, Venom, VSM-300, FSI screen, Derrick FLC 2000 FLC 500 etc. And we can customize the In-jection mold for your screen dimension.
- The composite frame screen is repairable to save cost.
- Compared to metal frame, the composite frame useable area is 10% to 20 % larger.
- Since the composite frame is covered by plastic, it is rust resistant for long time storage up to over 5 years.

3.3 ASTM Mesh and API Cut Point

ASTM Mesh and Cut Point	
D100 Cut Point	ASTM Single Mesh
2000 microns	ASTM 10 Mesh
1000 microns	ASTM 18 Mesh
850 microns	ASTM 20 Mesh
710 microns	ASTM 25 Mesh
600 microns	ASTM 30 Mesh
500 microns	ASTM 35 Mesh
425 microns	ASTM 40 Mesh
355 microns	ASTM 45 Mesh
300 microns	ASTM 50 Mesh
250 microns	ASTM 60 Mesh
212 microns	ASTM 70 Mesh
180 microns	ASTM 80 Mesh
150 microns	ASTM 100 Mesh
125 microns	ASTM 120 Mesh
106 microns	ASTM 140 Mesh
90 microns	ASTM 170 Mesh
75 microns	ASTM 200 Mesh
63 microns	ASTM 230 Mesh
53 microns	ASTM 270 Mesh
45 microns	ASTM 325 Mesh
38 microns	ASTM 400 Mesh

API No. and Cut Point Table	
D100 Cut Point	API No.
> 1850.0 TO 2180.0	API 10
> 780.0 TO 925.0	API 20
> 462.5 TO 550.0	API 35
> 390.0 TO 462.5	API 40
> 275.0 TO 327.5	API 50
> 231.0 TO 275.0	API 60
> 196.0 TO 231.0	API 70
> 165.0 TO 196.0	API 80
> 137.5 TO 165.0	API 100
> 116.5 TO 137.5	API 120
> 98.0 TO 116.5	API 140
> 82.5 TO 98.0	API 170
> 69.0 TO 82.5	API 200
> 58.0 TO 69.0	API 230
> 49.0 TO 58.0	API 270
> 41.5 TO 49.0	API 325
>35.0 TO 41.5	API 400

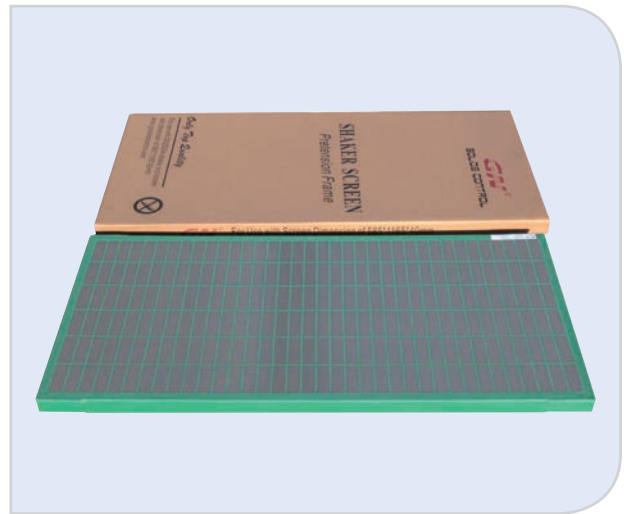
NOTE

- 1) ASTM is short for The American Society for Testing and Materials, ASTM E11:01 mesh equals to ISO 3310-1:2000 mesh. This method determines the cut point of single layer ASTM screen mesh size. For shaker screen mesh, normally means the surface screen mesh size. Whilst the shaker screen is usually a composition of 2 or 3 layers, the cut point of the first layer mesh is not equal to the final shaker screen cut point.
- 2) API is short for American Petroleum Institute, “API Number” is determined by API RP13C or ISO13501, the cut point is related to the combined 3 layer wiremesh test result. So before order, we will need API number, or the cut point, to define a more proper shaker screen configuration.

3.4 GN Shaker Screen Types

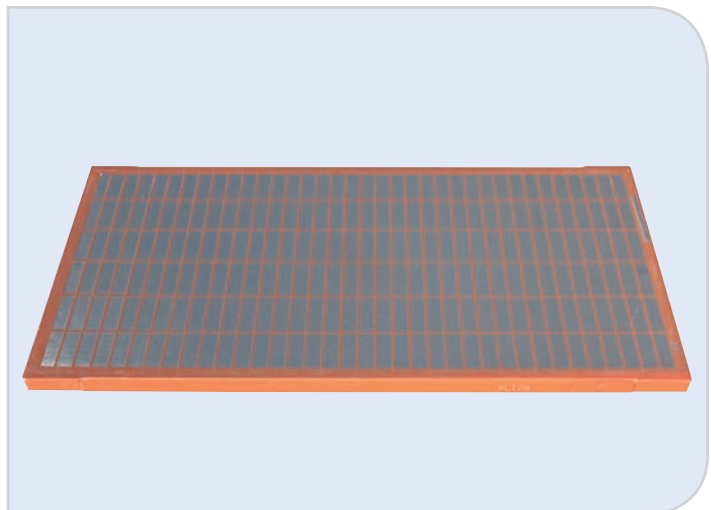
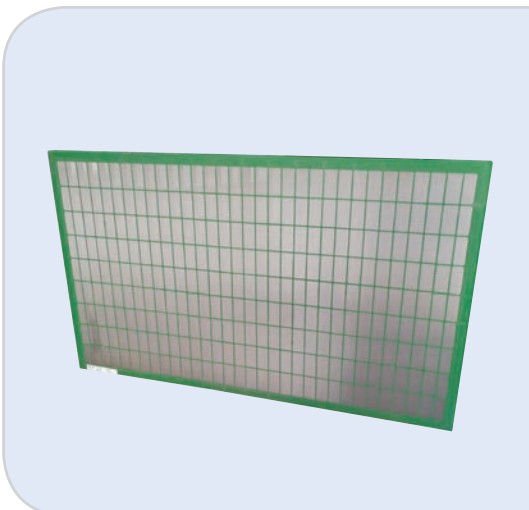
3.4.1 GN OEM Screen

GN Solids Control sells around 200 shale shakers a year, we have shale shakers operate around the world. To use GN OEM screen will improve your shaker performance and save your operational cost. OEM Shaker Screen for GNZS series shale shaker include screen for GNZS703, GNZS752, GNZS594 shale shaker and screen for GNZJ703, GNZJ752, GNZJ594 mud cleaners.



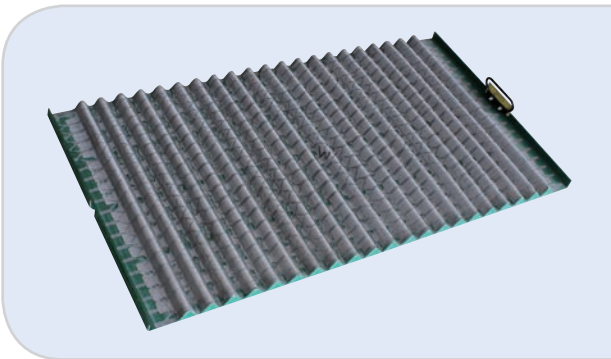
3.4.2 Replacement Screen for MI-Swaco Shaker

Replacement Shaker Screen for MI-Swaco MONGOOSE PRO, MONGOOSE PT & MEERKAT, ALS, BEM, MD-3 series shale shaker or mud cleaner. Available in Steel frame or composite frame.



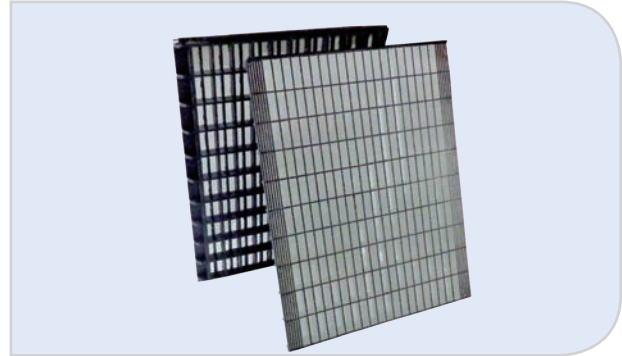
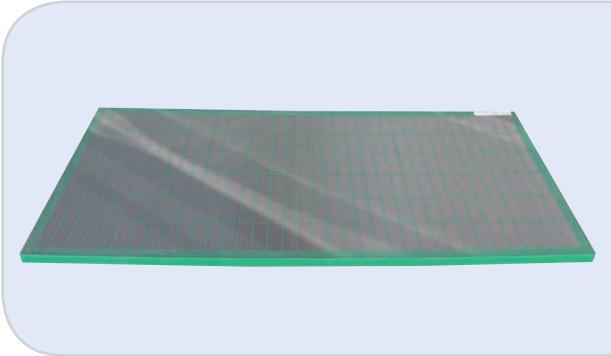
3.4.3 Replacement Screen for Derrick Shaker

Replacement Shaker Screen for Derrick FLC 2000, FLC 500 , DP 600 and Hyperpool series shale shaker and mud cleaner. The screens are available in flat screen or pyramid screen. Composite screen is available for high quality and longer screen life.



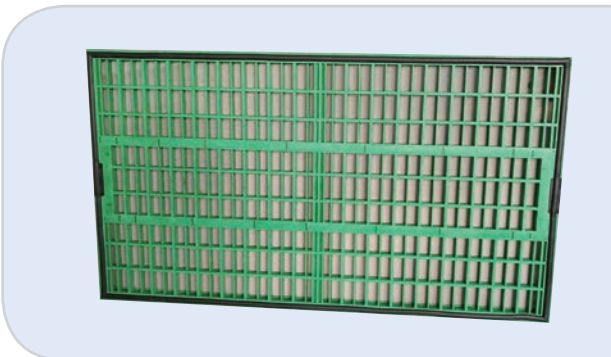
3.4.4 Replacement Screen for NOV Brandt

Replacement Shaker Screen for NOV Brandt Cobra, King Cobra, Mini Cobra, Venom, LCM-2D, LCM-3D, VSM 300 series and D380/D285P shale shaker and mud cleaner. Available in steel frame or composite frame.



3.4.5 Other shaker screen or customized screens.

Other replacement shaker screen for Fluids System 29×42, Kemtron/Elgin KPT series and other shale shaker manufacturer. Customized or OEM Shaker Screens are available.



Part 4: Solids Control Equipment

4.1 Shale Shaker

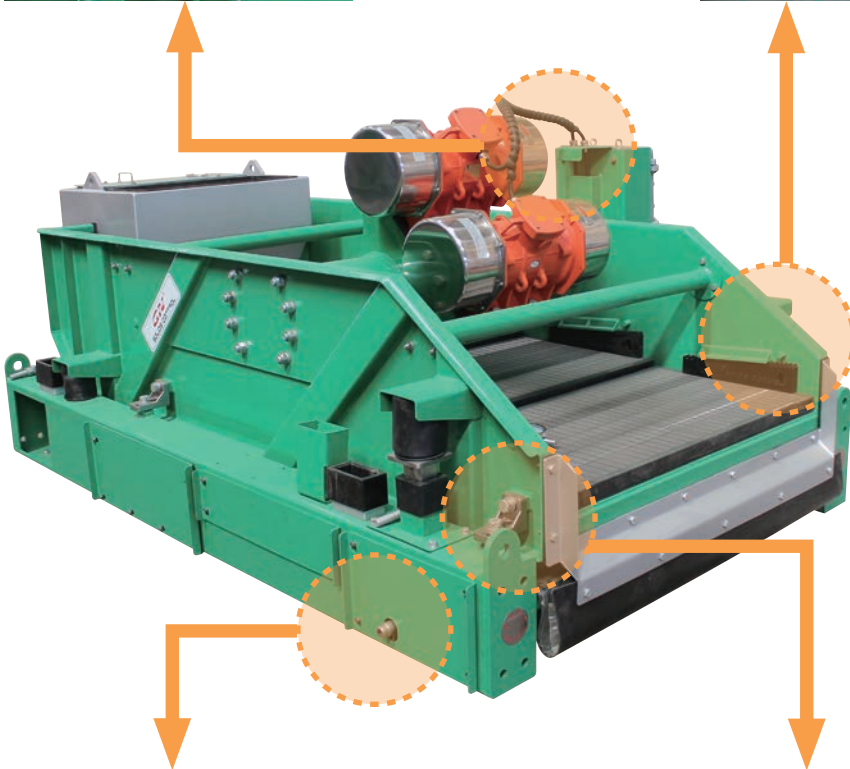
4.1.1 GN Shale Shaker Features



Italy OLI or US Martin Brand Vibration Motors
GN Ex Control panel with SIEMENS or Schneider Component



Pretentioned composite frame screen with Gear unit for fast screen change and longer screen life



- 1) Heavy Duty design and heat treatment for the shaker basket to get the adjustable G force up to 8.0G.
- 2) The shaker bed below the screen is made from stainless steel to have anti-corrosion features for longer life.
- 3) Patent shaker screen seal technology for avoiding fine solids bypass and to have easy maintenance.






Mechanical Deck angle adjustment while working system to work reliably for different drilling fluids



- 1) User friendly shaker locking system made from stainless steel.
- 2) The vibration spring is covered with rubber for safety and less noise.

4.1.2 GN Shale Shaker Specs

	<p>GNZS752 series Mini shakers have been widely used in trench-less HDD, water well drilling, diamond core drilling etc., best option for compact system and low flow rate.</p>
	<p>GNZS703 & GNZS594 series single deck shale shaker is popular in oil gas drilling, big trench-less HDD projects, or other industry separation demand.</p>
	<p>GNZS706 series double deck shaker is properly designed for piling, TBM, big oil gas rig, big trench-less project, or the industry separation for multi-phase separation.</p>

Model	GNZS752E-DM	GNZS703F-HB	GNZS703F-DZ	GNZS594F-HB	GNZS706E-HB
Vibration Mode	Linear Motion				
Capacity	45m ³ /h(200GPM)	120m ³ /h(528GPM)		140m ³ /h(616GPM)	120m ³ /h(528GPM)
Vibration Motor	2×0.75Kw	2×1.72Kw			2×1.94Kw
Screen Qty	2 Panels	3 Panels		4 Panels	6 Panels
Screen Size	750×900mm	700×1250mm		585×1165mm	Upper Layer: 2.0m ² Under Layer: 2.6 m ²
Screen Area	1.35 m ²	2.63 m ²		2.7 m ²	
Adjustable G Force	≤7.1G	≤7.5G			≤7.5G
Vibration Amplitude	3.92~5.62mm	4.14~5.96mm			4.14~5.96mm
Deck Angle Range	+2°	-1°~+5°			
Weir Height	710mm	735mm	1042mm	735mm	895mm
EX Standard	ExdIIBt4 / IEC EX/ ATEX				
Weight	907kg	1542kg	1685kg	1589kg	1864kg
Dimension:mm	1676×1728×1062	2727×1937×1263	2491×1980×1474	2932×1937×1263	2723×2025×1428
Remarks	Above capacity only for reference, actual capacity will be various as per screen API No. and mud conditions				

4.2 Desander & Desilter

4.2.1 Mud Cleaner



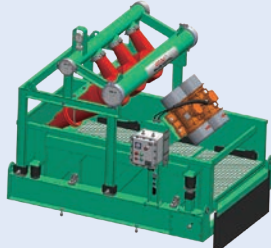


Model	GNZJ703F-D1S8N	GNZJ703F-2S12N	GNZJ594F-2S12N	GNZJ703F-3S16N	GNZJ594F-3S16N	
Capacity	120m ³ /h (528GPM)	240m ³ /h(1056GPM)		360m ³ /h(1584GPM)		
Desander Size	10"					
Desander Qty	1 Pc	2 Pcs		3 Pcs		
Desilter Size	4"					
Desilter Qty	8 Pcs	12 Pcs		16 Pcs		
Working Pressure	0.25 ~ 0.4Mpa					
Feeding Size	DN150					
Output Size	DN200					
Bottom Shaker Specs.	Shaker Model	GNZS703F	GNZS594F		GNZS703F	GNZS594F
	Vibration Mode	Linear Motion				
	Vibration Motor	2×1.72Kw				
	Screen Qty	3 Panels	4 Panels		3 Panels	4 Panels
	Screen Size	700×1250mm	585×1165mm		700×1250mm	585×1165mm
	Screen Area	2.63m ²	2.73m ²		2.63m ²	2.73m ²
	Adjust G Force	≤7.5G(Adjustable)				
	Vibration Amplitude(mm)	4.14 ~ 5.96mm				
	Deck Angle Range	-1 ~ +5°				
EX Standard	ExdIIBt4/IECEX/A-TEX					
Weight	2028kg	2283kg	2307kg	2349kg	2373kg	
Dimension(mm)	2419×2150×1848	2470×2012×2146	2676×2012×2146	2470×2012×2146	2676×2012×2146	

Features


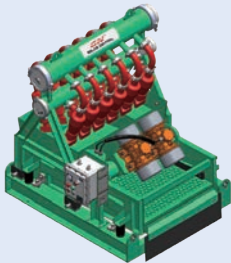
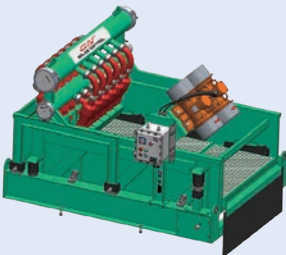
- Desander & Desilter & Shale Shaker 3 in one unit for compact footprint.
- Polyurethane Material hydro cyclone for long life.
- Removable hydro cyclone assembly for adjust to be a shale shaker.
- Mechanical shaker deck angle adjustment while working.
- Patent tighten rubber sealing for shaker deck and screen for fine screen
- Shaker bottom deck made from Stainless Steel for long service life.
- Heat treatment on complete shaker deck for High G force operation.
- Pretensioned Shaker screen for fast screen replacement.
- Famous Brand Vibration Motors : IEC Ex, ATEX and UL Certified

4.2.2 Desander

Desander Cut Point: + 40 Microns	Description
	<p>Type: Desander without downstream drying shale shaker Model: GNWS-2S / GNWS-3S Application: For oil gas drilling un-weighted drilling mud. Features: Small footprint, economic choice, no consumable screens. Result: Wet cuttings, not recommended for Weighted mud and drying solids.</p>
	<p>Type: Desander with GNZS752 Series Mini Shale Shaker Screen Area:1.4m² Model: GNZJ752E-1S / GNZJ752E-2S Application: For oil gas drilling small drilling rig, CBM drilling, HDD, Water Well drilling. Features: Small footprint, economic choice, acceptable drying solids.</p>
	<p>Type: Desander with GNZS703 Series 3 Panel Shale Shaker Screen Area:2.6m² Model: GNZJ703F-D2S / GNZJ703F-3S Application: For oil gas drilling big drilling rig , large HDD rig, Tunneling Boring Machine etc. Features: Big capacity,,drying solids.</p>

Model	GNZJ752E-1S/2S	GNZJ703F-D2S	GNZJ703F-3S	GNWSE-2S/3S
Capacity	120/240m ³ /h (528/1056GPM)	240m ³ /h (1056GPM)	360m ³ /h (1584GPM)	240/360m ³ /h (1056/1584GPM)
Desander Size(Inch)	10"			
Desander Qty	1/2 Pc	2 Pcs	3 Pcs	2/3 Pcs
Working Pressure	0.25~0.4Mpa			
Feeding Size	DN150			
Output Size	DN200			
Bottom Shaker Specs.	Shaker Model	GNZS752E	GNZS703F	
	Vibration Mode	Linear Motion		
	Vibration Motor	2×0.75Kw	2×1.72Kw	
	Screen Qty	2 Panels	3 Panels	
	Screen Size	750×900mm	700×1250mm	
	Screen Area	1.35m ²	2.63m ²	
	Adjust G Force	≤7.1G(Adjustable)	≤7.5G(Adjustable)	
	Vibration Amplitude	3.92~5.62mm	4.14~5.96mm	
	Deck Angle Range	+2°	-1~+5°	
EX Standard	ExdIIBt4/IECEX/A-TEX			
Weight(Kg)	1059/1114kg	1835kg	1924kg	502/559kg
Dimension:mm	1676×1754×1822	2419×2131×1656	2419×2135×2066	2177×1000×1901

4.2.3 Desilter

Desilter : Cut Point +20 Microns	Description
	<p>Type: Desilter without downstream drying shale shaker Model: GNWS-12N / GNWS-16N Application: For oil gas drilling un-weighted drilling mud. Features: Small footprint, economic choice, no consumable screens. Result: Wet cuttings, not recommended for Weighted mud and drying solids.</p>
	<p>Type: Desilter with GNZS752 Series Mini Shale Shaker Screen Area:1.4m² Model: GNZJ752E-8N / GNZJ752E-12N Application: For oil gas drilling small drilling rig , CBM drilling, HDD, Water Well drilling. Features: Small footprint, economic choice, acceptable drying solids.</p>
	<p>Type: Desilter with GNZS703 Series 3 Panel Shale Shaker Screen Area:2.6m² Model: GNZJ703F-D8N/ GNZJ703F-D12N/ GNZJ703F16N Application: For oil gas drilling big drilling rig , large HDD rig, Tunneling Boring Machine etc. Features: Big capacity,,drying solids.</p>

Model	GNZJ752E-8N/12N	GNZJ703F-D8N/D12N	GNZJ703F-16N	GNWSE-12N/16N
Capacity	120/240m ³ /h (528/1056GPM)		360m ³ /h (1584GPM)	240/360m ³ /h (1056/1584GPM)
Desilter Size	4"			
Desilter Qty	8/12 Pcs		16 Pcs	12/16 Pcs
Working Pressure	0.25~0.4Mpa			
Feeding Size	DN150			
Output Size	DN200			
Bottom Shaker Specs.	Shaker Model	GNZS752E	GNZS703F	
	Vibration Mode	Linear Motion		
	Vibration Motor	2×0.75Kw	2×1.72Kw	
	Screen Qty	2 Panels	3 Panels	
	Screen Size	750×900mm	700×1250mm	
	Screen Area	1.35m ²	2.63 m ²	
	Adjust G Force	≤7.1G(Adjustable)	≤7.5G(Adjustable)	
	Vibration Amplitude	3.92~5.62mm	4.14~5.96mm	
	Deck Angle Range	+2°	-1~+5°	
	EX Standard	ExdIIBt4/IECEX/A-TEX		
Weight	1057/1097kg	1813/1839kg	1974kg	504/539kg
Dimension: mm	1676×1745×1719	2419×2150×1608	2419×2150×2126	2189×900×1511

4.3 Degasser

4.3.1 Vacuum Degasser



Model	GNZCQ270A	GNZCQ360A
Tank Diameter	920mm	
Capacity	≤270m ³ /h	≤360m ³ /h
Vacuum Degree	-0.02 ~ -0.04Mpa	
Handling Efficiency	≥95%	
Main Motor Power	22Kw	37Kw
Pump Motor Power	7.5Kw	
Rotation Speed	700RPM	860RPM
Ex Standard	ExdIIBt4/IECEX/ATEX	
Suction Size	DN150	
Output Size	DN200	
Weight	1779kg	1815kg
Dimension: mm	2100×1605×1729	2100×1605×1729

Features

GNZCQ Series Vacuum Degassers that are able to service the needs of any application. It is usually installed after the shakers. Each degasser effectively and efficiently removes gases from gas-cut mud, thus ensuring that the proper mud weight is pumped downhole. In doing so, the degassers are able to aid in the prevention of potential blowouts. Unlike the traditional vacuum degasser, GNZCQ vacuum degasser is a self-contained unit, GN Vacuum Degasser is monitored by level sensor to protect over suction of the fluids. The gas-cut mud is drawn into the degasser by a vacuum created by a regenerative vacuum without needing centrifugal pump. GN degasser can act as a big agitator for the drilling mud, which helps the treatment for desander and desilter.

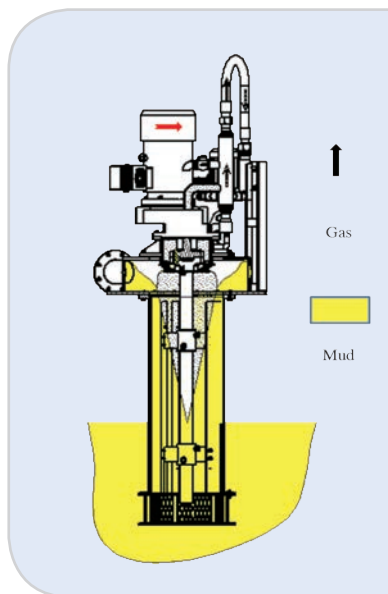
4.3.2 Centrifugal Degasser



Features

GNLCQ300A centrifugal degasser is a new type degasser, specialized in processing gas cut drilling fluid. Normally it is installed after shale shaker and widely used in various solids control system, and it is very important for recovering mud weight, stabilize mud viscosity performance, reduce drilling cost. Meantime it can be used as a big power blender. Its advantages are large capacity, high rate of degassing, less area required, low energy consumption, easy operation and maintenance.

Model	GNLCQ300A
Liquid Inlet Size	20"
Liquid Outlet Size	8"
Gas Outlet Size	2"
Max Liquid Throughput	300m ³ /h
Max Gas Removed	30m ³ /h
Main Motor	22Kw
Fan Motor	1.1Kw
Gearbox Ratio	1: 3.78
Weight	1375kg
Dimension	1150×1055×2885mm



Working Principle:

Via the rotating impeller, the degasser sucks the drilling fluid into the vessel. The fluids will stay at a level higher than the gas cut drilling fluid and then a cylindrical liquid layer with inverted cone shape space in the middle will be formed. Drilling fluid is discharged from discharge port along a tangent line. With the impeller rotating, bubble breaks, gas will be extracted from liquid, and finally accumulate in the cone shape space as the lower density. Pressurizing unit(similar to exhaust fan) will suck air through the narrow channel between the air distribution disk and air separation ring into the discharge cone, and then gas manifold, braided hose and pressurized device to pressurizing unit, finally discharge the gas out through pressurizing device with pressure.

4.3.3 Mud Gas Separator



Model	Tank Diameter	Capacity	Inlet	Outlet	Ventline	Weight	Dimension:
GNZYQ1000A	1000mm	200~280 m ³ /h	4"	10"	8"	2411kg	2265×2000×5681mm

Features

GN Mud Gas Separator is designed for continued drilling in underbalanced conditions where dramatic pressure surges are normal. The GN Mud Gas Separator is manufacturing according to API and ISO Standard.

In dangerous “kick” conditions, the Mud Gas Separator allows operators to circulate the drilling fluid by removing large pockets of gas. The gas cut mud enters the flow line of the unit, where it hits a series of baffle plates. These baffle plates provide surface area for the dispersion of the gas cut mud. The mud is routed to solids control equipment for further processing while the separated gas travels to the flare line at the top of the unit to be vented at a safe distance from the rig and rig personnel.

4.4 Mud Agitator, Mud Gun

Mud Agitator



Model	Motor	Speed	Impeller	Impeller Qty	Ratio	EX Standard	Weight	Dimension:mm
GNJBQ030D	3kW	60/72RPM (50Hz/60Hz)	650mm	1	25:1	EXdIIBt4/ IECEX/ A-TEX	154kg	717×560×472
GNJBQ055D	5.5kW		850mm	1			280kg	892×700×600
GNJBQ075D	7.5kW		950mm	1			287kg	980×750×608
GNJBQ075DD			800mm	2			297kg	
GNJBQ110D	11kW		1050mm	1			402kg	1130×840×655
GNJBQ110DD			850mm	2			419kg	
GNJBQ150D	15kW		1100mm	1			423kg	1158×840×655
GNJBQ150DD			950mm	2			441kg	
GNJBQ185DD	18.5kW		1050mm	2			746kg	1270×1000×730
GNJBQ220DD	22kW		1100	2			820kg	1270×1000×730

Remarks: Shaft and impeller will be provided by GN, but not including in the weight & dimension. Shaft is 15 Kg per meter.

Mud Gun



Model	GNNJQ50A-3G	GNNJQ50A-3X	GNNJQ80A-3G	GNNJQ80A-3X
Working Pressure	≤6.4MPa			
Rotation Angle	0°	360°	0°	360°
Nozzle Qty	3 Pcs			
Gun Diameter	2 Inch(DN50)		3inch (DN80)	
Connection Size	2 inch	2 inch	3 inch	3 inch

4.5 Jet Mud Mixer

Mud Hopper



Model	Pressure	Inlet	Outlet	Weight	Dimension
GNSLS45A	0.25 ~ 0.4Mpa	DN150	DN150	174kg	1100×680×949mm
GNSLS35A		DN150	DN150	174kg	1100×680×949mm
GNSLM25A		DN100	DN100	113kg	850×570×851mm
GNSLM20A		DN100	DN100	113kg	850×570×851mm

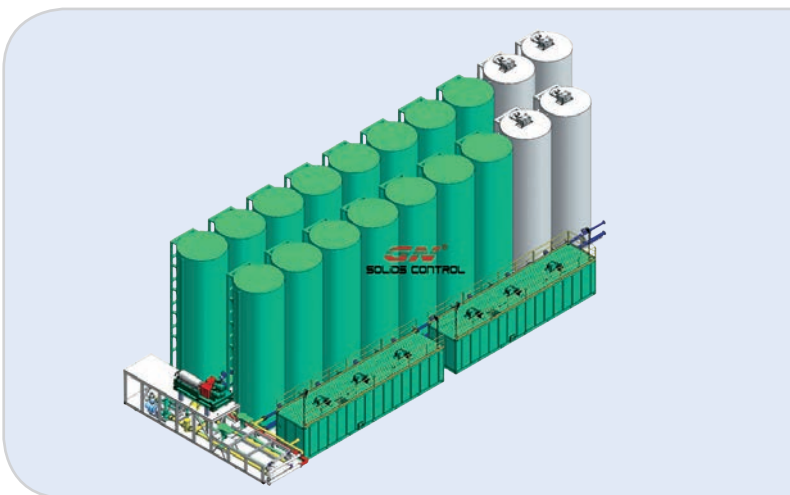
Jet Mud Mixer



Model	Capacity	Pressure	Motor	Inlet	Outlet	EX Standard	Weight	Dimension(mm)
GNSLS45A-750(D)	320m ³ /h	0.25~0.4Mpa	75kW	DN200	DN150	EXdIIBt4/ IECEX/A-TEX	1785kg	2200×1840×1150
GNSLS45A-550(D)	272m ³ /h		55kW	DN200	DN150		1675kg	2200×1840×1100
GNSLS35A-450(D)	200m ³ /h		45kW	DN150	DN150		1475kg	2200×1840×1135
GNSLS35A-370(D)	150m ³ /h		37kW	DN150	DN150		1460kg	2200×1840×1135
GNSLS35A-300(D)	120m ³ /h		30kW	DN125	DN150		1380kg	2200×1840×1100
GNSLM25A-220(D)	90m ³ /h		22kW	DN125	DN100		1167kg	1850×1540×1000
GNSLM25A-185(D)	65m ³ /h		18.5kW	DN100	DN100		1147kg	1850×1540×1030
GNSLM20A-150(D)	55m ³ /h		15kW	DN100	DN100		970kg	1850×1540×1030
GNSLM20A-110(D)	45m ³ /h		11kW	DN100	DN100		950kg	1850×1540×1030

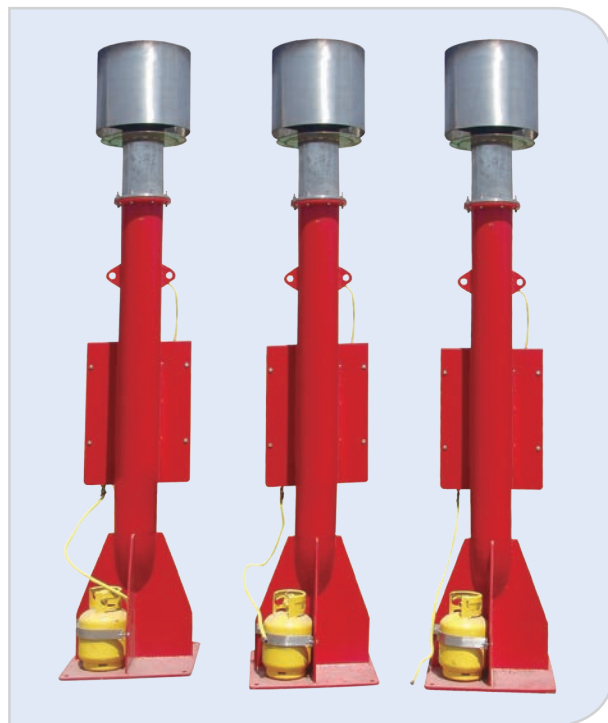
Remarks: "D" means the electric control cabinet, weight and dimension not including for "D" Model.

4.6 Mud Tank



GN solids control designs and manufactures various types of tank including mud tank, water tank, oil tank, etc. GN solid control mud tanks are usually used to install solids control equipment, storage mud, mixing mud, etc. It meets utility request of the drilling solid control system, mud plant and solid-liquid separation system. According to different working conditions, mud tanks can be customized into horizontal mud tank, vertical mud tank and trailer mounted mud tank.

4.7 Flare Ignition Device



Model	GNYD200A
Main body Diameter	DN200
Charging Power	100V-240V ~ 50/60Hz
Ignition Voltage	16KV
Ignition Media	LPG/LNG
Weight	520kg
Dimension	650×1232×3211mm

Features

The GN Flare Igniters used for connecting to the gas discharge line of Mud Gas Separator, which fire the dangerous gas from the drilling mud like H₂S. GN Flare Igniters have options for electrical power charge or Solar Energy charged. The upper part of the flare ignition system is stainless steel, and it is designed for rain proof in the oilfield. The major components for the electrics are from famous Brand like SIEMENS or Schneider. The power for the electric can be directly from industry normal power, or users can charge the battery and take the unit for remote areas application. GN flare device is with remote control, and PLC is optional available for less manpower notice for continually and automatically working.

Part 5: Waste Management Equipment

5.1 Vertical Cuttings Dryer

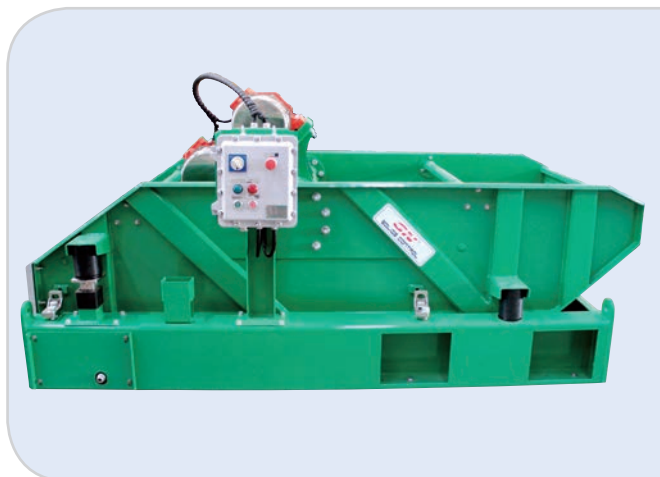


Model	GNCD930E	GNCD930E-VFD
Capacity	30 ~ 50Ton/h	
Drying Efficiency	OOC≤5%	
Max Screen Basket Diameter	930mm	
Screen Opening	0.25 ~ 0.5mm	
Rotation Speed	900RPM	0 ~ 1200RPM
Oil Tank Capacity	48L	
Air Knife Input Pressure	0.41Mpa	
Air Knife Input Capacity	4.8m ³ /min	
Flushing Pump Qty	1 pc	
Main Motor	55Kw(75HP)	
Oil Pump	0.55Kw(0.75HP)	
Flushing Pump Power	4Kw(5.5HP)	
EX Standard	ExdIIBt4/IECEX/A-TEX	
Electric Cabinet	Exd	Positive Pressurized
Weight(Kg)	4200kg	4200kg
Dimension:L×W×H (mm)	2650×1720×1630mm	

Features

- More Application: Working for OBM, WBM, and SBM.
- High G Force: Normal 420G @ 900RPM, super high speed with 750G @ 1200RPM
- FAG Brand premium bearing.
- The Flights on the rotor is hard facing to HRC 65, longer life than our competitors.
- Special high pressure air knife design to clean the basket screen automatically to avoid the screen blinding especially for high viscosity mud and water based mud.

5.2 High G Drying Shaker

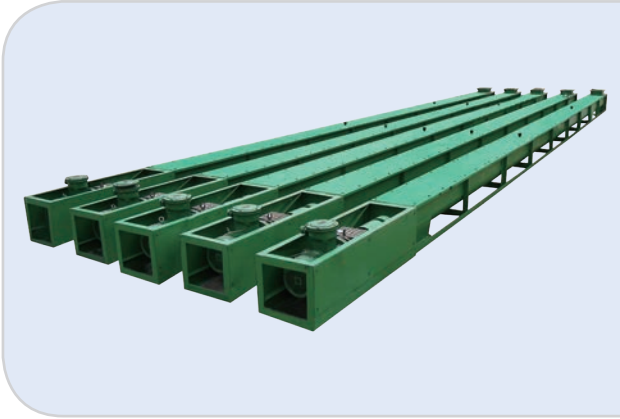


Model	GNZS594F-LD
Vibration Mode	Linear Motion
Capacity	140m ³ /h
Vibration Motor	2×1.94Kw
Screen Qty	4 Panels
Screen Size	585×1165mm
Screen Area	2.73m ²
G Force	≤8.0G(Adjustable)
Vibration Amplitude	4.4~6.34mm
Deck Angle Range	-1~+5°
Feeding Type	Hopper Feeder
Feeding Height	765mm
EX Standard	ExdIIbt4/IECEX/ATEX
Weight	1471kg
Dimension	2836×1937×1263mm

Features

- G force up to 8.0 adjustable for drying solids discharge.
- Mechanical shaker deck angle adjustable while working
- Patent tighten rubber sealing for shaker deck and screen, long life and easy replacement.
- Shaker bottom deck made from Stainless Steel for long service life.
- Heat treatment on complete shaker deck for High G force operation.
- 4 Panel Pretensioned Shaker screen for fast screen replacement.
- Famous Brand Vibration Motors : IEC Ex, ATEX and UL Certified
- Low Profile Feeder for easier cuttings transfer.

5.3 Screw Conveyor



Model	Screw Dia.	Screw Length	Capacity	Motor	Speed	EX Standard	Weight	Dimension (mm)
GNSC12A-24	12in	24ft	20t/h	5.5kW	60RPM	EXdIIBt4/ IECEX/A-TEX	1426kg	9150×450×600
GNSC12A-36	12in	36ft	20t/h	7.5kW	60RPM		1855kg	12950×450×600
GNSC12A-48	12in	48ft	20t/h	11kW	60Rpm		2318kg	16750×450×600
GNSC14A-24	14in	24ft	30t/h	7.5kW	60RPM		1515kg	9200×485×650
GNSC14A-36	14in	36ft	30t/h	11kW	60RPM		2028kg	13000×485×650
GNSC14A-48	14in	48ft	30t/h	15kW	60RPM		2549kg	16800×485×650
GNSC16A-24	16in	24ft	45t/h	11kW	60RPM		1668kg	9200×545×680
GNSC16A-36	16in	36ft	45t/h	15kW	60RPM		2269kg	13050×545×680
GNSC16A-48	16in	48ft	45t/h	18.5kW	60RPM		3344kg	16950×545×680

Remarks: Capacity is for horizontal layout at 60RPM material specific gravity 1:1.

Features

GN Solids utilize a custom designed and constructed Screw Conveyor (Auger) as part of drilling waste management system. The Auger is designed with 12 feet per section which makes it to be standard spare parts for exchange with each other. The screw material utilized by GN is abrasive material which lasts longer than our competitors. The Screw Conveyor (Auger) is designed to offer an efficient, low cost, cuttings transport system for offshore and onshore drilling installations. The screw conveyor are manufactured to the highest safety standards and are fitted with protective grating or cover to prevent foreign bodies entering the conveyor system, and to offer enhanced safety for all personnel.

5.4 Inclined Plate Clarifier



Model	Max Flow Rate	Inlet Size	Outlet Size	Sludge Chamber Volume	Discharged Liquid Chamber	Dimension(mm)
GNIPC-06A	6m ³ /h	3in	3in	136L	9L	1905×1041×1930
GNIPC-12A	12m ³ /h	4in	4in	218L	18L	2006×1346×2210
GNIPC-18A	18m ³ /h	4in	4in	245L	18L	2311×1346×2464
GNIPC-25A	25m ³ /h	4in	4in	377L	68L	2489×1956×2489
GNIPC-35A	35m ³ /h	4in	4in	509L	77L	2489×2565×2489
GNIPC-40A	40m ³ /h	6in	6in	636L	90L	2489×3226×2489
GNIPC-60A	60m ³ /h	6in	6in	881L	136L	2489×4445×2489
GNIPC-80A	80m ³ /h	6in	6in	1250L	213L	2489×5664×2489
GNIPC-120A	120m ³ /h	8in	8in	886L	318L	2997×4496×3581

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 to install, 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.

5.5 Oil Water Separator



Model	Max Flow Rate	Inlet Size	Outlet Size	Oil Export Size	Sludge Chamber Volume	Oil Chamber	Dimension(mm)
GNOWS-05A	5m ³ /h	2in	2in	2in	57L	15L	1828×711×1219
GNOWS-08A	8m ³ /h	3in	3in	3in	113L	23L	1828×1016×1229
GNOWS-11A	11m ³ /h	3in	3in	3in	152L	30L	1828×1320×1229
GNOWS-16A	16m ³ /h	4in	4in	3in	250L	45L	2362×1016×1397
GNOWS-24A	24m ³ /h	4in	4in	3in	250L	45L	2362×1016×1711
GNOWS-32A	32m ³ /h	4in	4in	3in	250L	57L	2362×1016×1956
GNOWS-43A	43m ³ /h	6in	6in	4in	345L	76L	2362×1320×1956
GNOWS-54A	54m ³ /h	6in	6in	4in	427L	95L	2362×1626×1956
GNOWS-65A	65m ³ /h	6in	6in	4in	514L	113L	2362×1936×1956
GNOWS-87A	87m ³ /h	6in	6in	4in	598L	151L	2362×2540×1956
GNOWS-98A	98m ³ /h	6in	6in	4in	768L	189L	2362×2845×1956

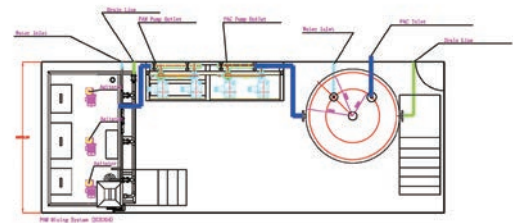
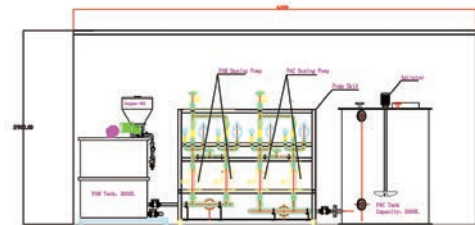
Products Features

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.

5.6 Chemical Dosing Equipment



GNDU2000 series 20ft container chemical dosing equipment is mainly used for mixing of flocculation, coagulation or de-emulsifier. It works together with dewatering centrifuge to separate the ultra-fine solids from the mud or waste water, to get clean water for industry applications; or support the separation of waste sludge.



Chemical Dosing System	Model: GNDU-2000A
<p>Three Chamber automatic Dosing Unit</p> <p>Model: GN-2000S</p>	<p>Include 20ft container with decoration, include electric control system, exhaust system, lighting system.</p> <p>Max powder adding capacity:1-6 Kg/Hr(Speed Adjustable)</p> <p>Tank Material: SS304</p> <p>Hopper Volume:45 L</p> <p>Tank Capacity:2000L</p> <p>Output for concentration 0.1%:2000L/Hr, if aging time is 45 Min.</p> <p>Mud agitator: 3 sets</p> <p>Dosing pump: 2 sets, single pump capacity:2000L/h(adjustable)</p> <p>Dimension:2000×1400×1500mm</p> <p>Including Ex liquid level meter, Ex electromagnetic flow meter, Ex solenoid valve, relief valve, buffer, filter and pressure gauge, etc accessories.</p>
<p>Single tank chemical Dosing Unit</p> <p>Model: GN-2000L</p>	<p>Tank Material: Outer material is carbon steel, inner material is PE</p> <p>Dissolving Tank Volume: 2000L</p> <p>Dissolving Tank Dimension 1400×2200mm(Agitator included)</p> <p>Mud agitator: 1 set</p> <p>Dosing pump: 2 sets, single pump capacity:530L/h(adjustable)</p> <p>Attached with Magnetism rolling board level meter, relief valve, buffer, filter and pressure gauge, etc accessories.</p>

5.7 Waste Solidification Unit

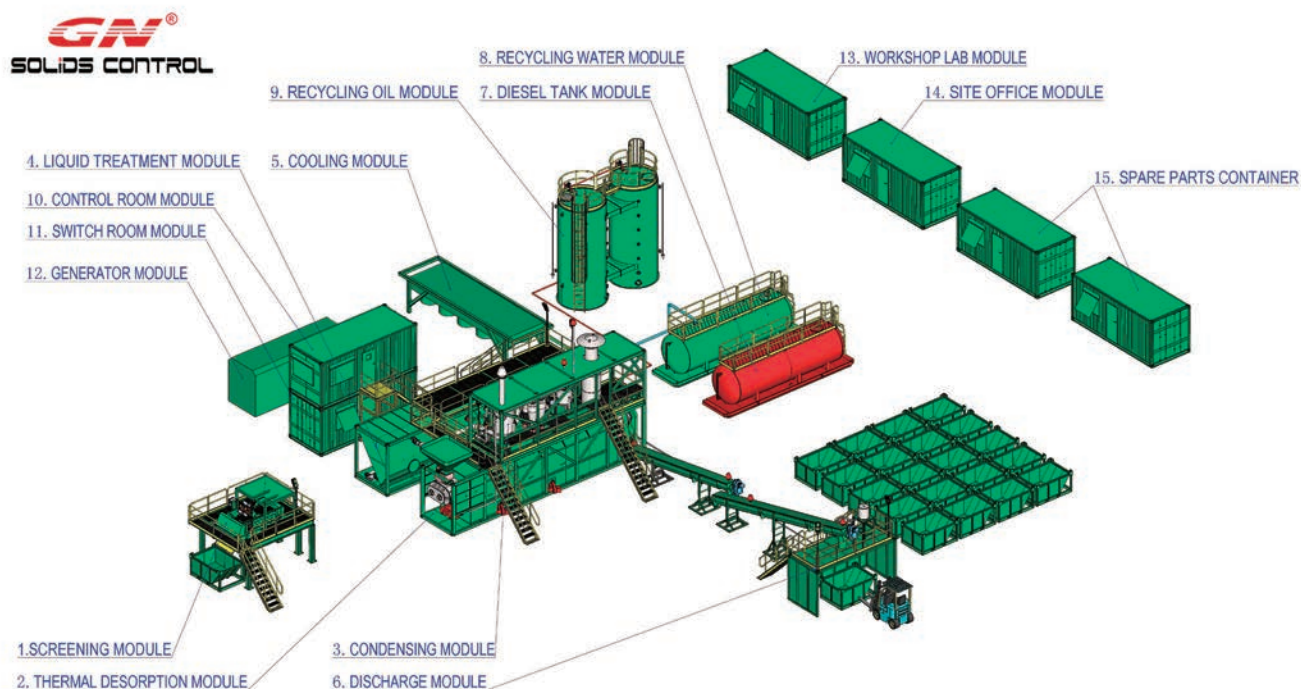


Model	GNGH-15C
Treating Capacity	15m ³ /h
Mixer Tank Volume	4000L
High-Shear Mixer Power	45KW
Sludge Storage Volume	5m ³
Sludge Conveyor Flow	≤15m ³ /h (VFD Adjustable)
Sludge Conveyor Power	7.5KW
Lime Storage Volume	2000L
Lime Conveyor	3Kw, 3m ³ /h (VFD Adjustable)
Absorber Storage Volume	2000L
Absorber Conveyor	3Kw, 3m ³ /h (VFD Adjustable)
Transportation Dimension:	11524×2200×2528mm
Remarks	2 pieces of 1.5inch liquid inlets located beside the mixer inlet for water feeding and liquid chemical feeding.

Features

- Cost can be relatively inexpensive for the treatment of both oil based and water based drilling cuttings and waste.
- The GN Solidification/Stabilization unit required is easily operated and maintained, also since its adjustable preset capacity, it works continuously and automatically, so it needs relatively few man hours, moreover, no chemical waste that requires further treatment is produced.
- The stabilization /solidification unit provide an effective method for processing oil- base waste and water based waste; in a result, it produces an environmentally safe, dry material that is acceptable for onsite, or land farming disposal at an approved waste facility.
- Solidification of wastes involves the production of a solid mass having sufficiently high structural integrity to allow transport and /or disposal of the solid without requiring secondary containment. This technology converts hydrologic sensitive liquid and semi-liquids waste in a physical form that can be stored safely.
- Stabilization involves the immobilization of constituents in wastes by chemical alteration to form insoluble compounds, or by entrapment within the solidified product.

5.8 Thermal Desorption Unit



Model	GNTDU-35A
Capacity (Ton/h)	3.5-5.0 Ton/h
Oil Content After Treatment	0.3%-1% As per request

Main Module

Screening Module, Thermal Desorption Module, Condensing Module, Liquid Treatment Module, Discharge Module, Diesel Tank Module, Recycling Water Module, Recycling Oil Module, Control Room Module, Switch Room Module

Features

GN Mobile TDU is an ex-situ, non-incineration technology designed to separate hydrocarbons from various matrices including oilfield waste, soil, sludge, sand, filter-cake, tank and tanker bottoms, organic-based hazardous waste and contaminated soil in a non-oxidizing atmosphere without destroying the hydrocarbons.

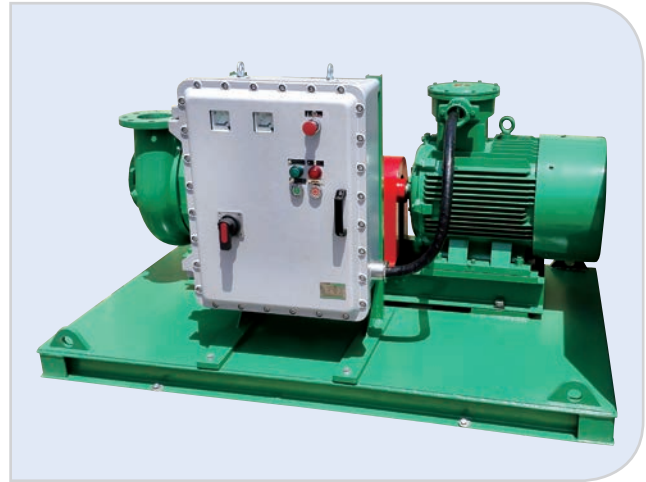
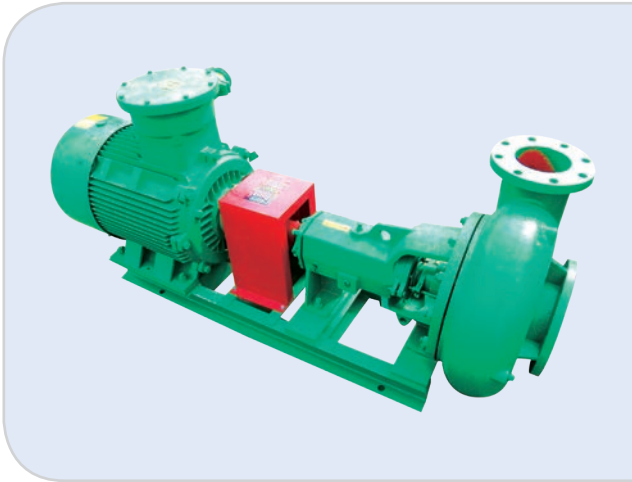
GN Mobile TDU is popular for treatment of different waste streams in particular oily sludge, drill cuttings, organic-based hazardous waste processing and contaminated soil remediation.

The TDU technology has been used extensively for waste management, and recovery of the oil from the waste material as a sellable product throughout the world.

Indirect heated treatment technology. oily waste will be heated firstly. The oil and moisture will be gasified, and gases will be quenched and condensed for oil/water separation.

Part 6: Transfer Pumps

6.1 Centrifugal Pump



Model	Flow	Lift	Motor	Speed	Impeller	EX Standard	Weight	Dimension(mm)
GNSB8×6B-14J	320m ³ /h	35m	75kW	1450RPM (50Hz)	14in	EXdIIBt4/ IECEX/ A-TEX	1096kg	1968×650×1017
GNSB8×6B-12J				1750RPM (60Hz)	12in			
GNSB8×6B-13J	272m ³ /h	35m	55kW	1450RPM (50Hz)	13in		987kg	1894×650×957
GNSB8×6B-11J				1750RPM (60Hz)	11in			
GNSB6×5B-13J	200m ³ /h	35m	45kW	1450RPM (50Hz)	13in		786kg	1811×558×858
GNSB6×5B-10J				1750RPM (60Hz)	10in			
GNSB6×5B-12J	150m ³ /h	30m	37kW	1450RPM (50Hz)	12in		771kg	1786×558×858
GNSB6×5B-9.5J				1750RPM (60Hz)	9.5in			
GNSB5×4B-13J	120m ³ /h	35m	30kW	1450RPM (50Hz)	13in		696kg	1696×568×805
GNSB5×4B-11J				1750RPM (60Hz)	11in			
GNSB5×4B-12J	90m ³ /h	30m	22kW	1450RPM (50Hz)	12in		583kg	1648×568×800
GNSB5×4B-10J				1750RPM (60Hz)	10in			
GNSB4×3B-13J	65m ³ /h	35m	18.5kW	1450RPM (50Hz)	13in		561kg	1595×505×800
GNSB4×3B-12J				1750RPM (60Hz)	12in			
GNSB4×3B-12J	55m ³ /h	28m	15kW	1450RPM (50Hz)	12in		482kg	1550×505×755
GNSB4×3B-10J				1750RPM (60Hz)	10in			
GNSB4×3B-11J	45m ³ /h	25m	11kW	1450RPM (50Hz)	11in	464kg	1510×505×755	
GNSB4×3B-9.5J				1750RPM (60Hz)	9.5in			

Remarks: Spare Parts Interchangeable with Mission Magnum pump.

Features:

GN SB Series Centrifugal pump is used for transferring drilling mud. It can be used as feeding pump for desander, desilter, or used as mixing pump for Jet Mud Mixer. Also it can be used as trip pump, and supercharging pump for rig mud pump. All GN model centrifugal pump use tungsten carbide mechanical seal, with famous brand Bearing. And spare parts interchangeable with most of the international Brand pump which helps customer to source spare parts easily. Open impeller design that lowers axial thrust loads, and make it easier for installation, repair and maintenance.

6.2 Shear Pump



Model	Flow	Lift	Motor	Speed	EX Standard	Weight	Dimension(mm)
GNJQB6x5A-550	155m ³ /h	32m	55kW	1900RPM	EXdIIBt4/ IECEX/A-TEX	965kg	1333×1000×870mm

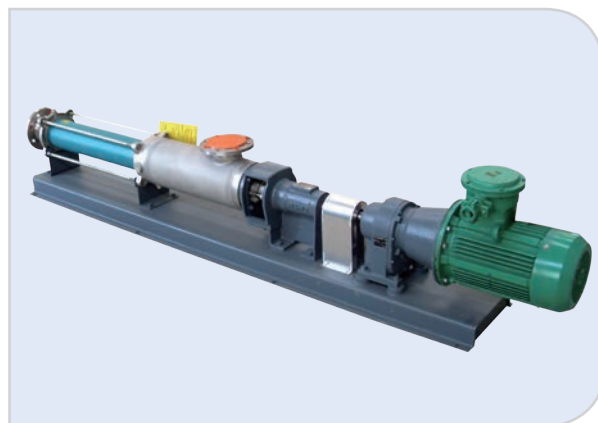
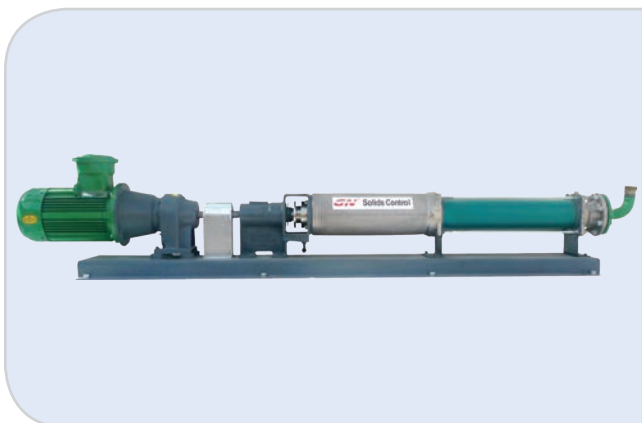
Features:

The GN shear pump reduces the cost of mixing polymers and clays while improving mud properties. Shearing the polymers eliminates fish eyes and prevents polymer chaining (long strings), which cannot pass through the shaker screens. The GN shear pump is available as a belt-driven or diesel-driven package including a hopper, mud gun, and transfer line orifice plate. A complete system with skid, tanks, and piping are also available.

GN Shear Pump impeller is specially designed to have a wider flow pass and smooth vanes, with larger flow area and smooth fluid pass, making the shear pump reach the internationally advanced level in shear pump efficiency and energy-saving, 10% higher than similar products. The shear pump has adopted a shell thicker than normal one, with rational pass and less turbulence.

GN Shear pump Impeller and shell are made of high wear resistant cast irons, with longer servicing life. The shear pump shaft has high strength that can bear certain load, reducing shafts deflection and extending seals service life; The shaft is lubricated with lubricants and lubricating grease and the oil seal is made of special structure and materials, suitable for high and low temperatures and complicated environment; Front opening structure is used for convenient installation, repair and maintenance.

6.3 Screw Pump



Model	Flow	Pressure	Motor	Max Speed	Inlet	Outlet	Ex Standard	Weight	Dimension (mm)
GNG10A-040	10m ³ /h	0.3MPa	4kW	244RPM	DN80	DN80	EXdIIBt4/ IECEX/ A-TEX	245kg	2245×320×550
GNG20A-055	20m ³ /h	0.3MPa	5.5kW	210RPM	DN80	DN80		323kg	2450×340×562
GNG30A-075	30m ³ /h	0.3MPa	7.5kW	258RPM	DN100	DN100		386kg	2761×370×600
GNG40A-110	40m ³ /h	0.3MPa	11kW	252RPM	DN100	DN100		454kg	3270×370×665
GNG50A-110	50m ³ /h	0.3MPa	11kW	273RPM	DN125	DN125		608kg	3790×400×782
GNG60A-150	60m ³ /h	0.3MPa	15kW	225RPM	DN125	DN125		649kg	3322×550×740
GNG70A-220	70m ³ /h	0.3MPa	22kW	230RPM	DN150	DN150		875kg	3740×420×785
GNG80A-220	80m ³ /h	0.3MPa	22kW	283RPM	DN150	DN150		875kg	3740×420×785
GNG90A-220	90m ³ /h	0.3MPa	22kW	205RPM	DN150	DN150	875kg	3740×420×785	

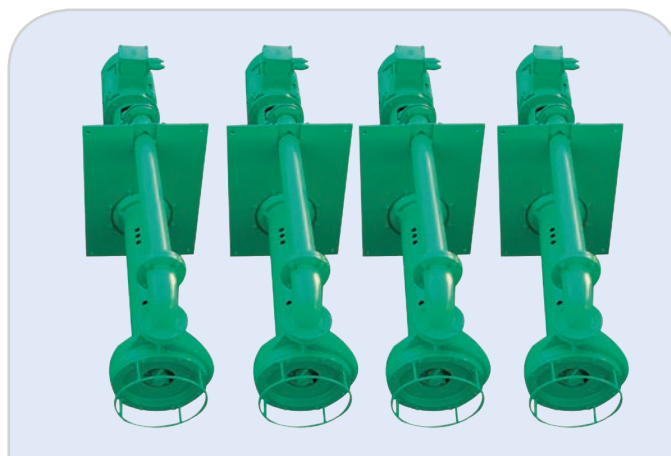
Features:

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.

6.4 Submersible Slurry Pump



Model	Flow	Lift	Motor	Speed	Outlet	EX Standard	Weight	Dimension (mm)
GN50YZ20A-18	30m ³ /h	10m	4kW	1450RPM (50Hz)	DN50	EXdIIBt4/ IECEX/ A-TEX	370kg	2620×500×720
				1750RPM (60Hz)				
GN50YZ40A-10	40m ³ /h	10m	5.5kW	1450RPM (50Hz)	DN50		600kg	2700×500×700
				1750RPM (60Hz)				
GN80YZ50A-20	60m ³ /h	18m	7.5kW	1450RPM(50Hz)	DN80		610kg	2650×500×700
				1750RPM (60Hz)				
GN80YZ80A-20	80m ³ /h	20m	11kW	1450RPM(50Hz)	DN80		718kg	2750×580×730
				1750RPM (60Hz)				
GN100YZ 100A-30A	110m ³ /h	24m	18.5kW	1450RPM(50Hz)	DN100		840kg	2900×600×900
				1750RPM (60Hz)				
GN100YZ 100A-30	120m ³ /h	28m	22kW	1450RPM(50Hz)	DN100		880kg	2950×600×900
				1750RPM (60Hz)				
GN100YZ1 60A-38B	164m ³ /h	26m	30kW	1450RPM(50Hz)	DN100	1300kg	3100×750×900	
				1750RPM (60Hz)				
GN150YZ 250A-40B	240m ³ /h	24m	37kW	1450RPM(50Hz)	DN150	1420kg	3160×700×1130	
				1750RPM (60Hz)				
GN150YZ 250A-40A	270m ³ /h	30m	45kW	1450RPM (50Hz)	DN150	1510kg	3190×700×1130	
				1750RPM (60Hz)				

Remarks: The Weight and dimension is for the standard submersible length pump: 1.3m.

Features:

GN YZ Series Submersible slurry pump is with structure of vertical single stage and single suction system overhung centrifugal pump, it is made of abrasion-resistant alloy, it can transfer medium with high concentration particle. The normal submersible length is 1.3m, customized length is available. There is no bearing and Gland Seal between impeller and pump body, so the slurry pump is maintenance-free and high temperature resistance, the slurry pump is the ideal centrifugal pump for feeding to decanter centrifuge, and feeding from mud pit for to the shale shakers on the mud system, it can also be used as feeding pump for desander and desilter.

6.5 Vacuum Pump

Waste vacuum pump, also named as solids transfer pump. With special structure design, it can be used at tough environmental for solids transfer, high working performance and less maintenance. The pump can transfer material with high gravity and high density, solids content max. up to 80%.



Model	GNSP-40A
Max Capacity(m ³ /h)	40m ³ /h (Adjustable)
Inlet/Outlet Size(Inch)	4"
Vacuum Degree	25"HG (Mercury Column)
Max Suction Distance(m)	50m
Suction Depth(m)	10m
Max Discharge Distance(m)	1000m
Max Solids Content	80%
Max Solids Size(mm)	75mm
Pressure Request	550Kpa-785Kpa (80-114PSI)
Air Demand	17m ³ /min (600CFM)
Dimension:L×W×H(mm)	1690×1400×1989mm

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.

Part 7: Explosion Proof Electrical Control

7.1 EX Proof Electrical control panel

GN Explosion proof electrical control panels are used in hazardous Location. It is accordance with the requirement of China CNEX Certificate, Europe ATEX certificate and International IEC Ex certificate.



Features of GN EX Proof Electrical control panel:

- 1) Different type control panel can meet different requirements with customized design, to provide complete electrical control solutions.
- 2) Flameproof or Positive pressurized control panel with different certificate, can meet the requirements of different countries.
- 3) Various electrical components can be attached in the control panels: buttons, lights, meters, switches, circuit breakers, contactors, relays, measuring instruments, PLC and other necessary electrical components.
- 4) Control panel enclosure is made of aluminum alloy, steel plate or stainless steel. EX proof Electrical control box applications.

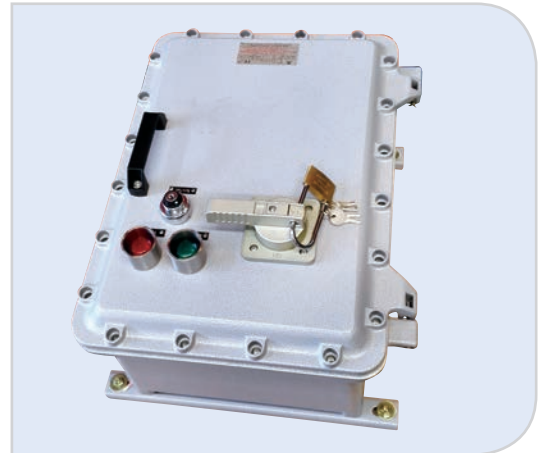
Application of GN EX Proof Electrical control panel:

- Suitable for Explosive gas environment Zone1 or Zone 2
- Suitable for IIB, IIC Explosive gas environment and Suitable for group T1-T4 temperature group.
- widely used in refinery, chemical plant, offshore oil drilling platform, oil exploitation, oil tanker and other flammable and explosive gas environment.

According to the requirement, we can offer solutions with electrical control design, EX proof box selection and installation.

7.2 Motor Ex proof starter

Motor Ex proof starter made by GN Solids Control is with strong and compact design; can meet the requirement of China CNEX Certificate, Europe ATEX certificate and International IEC Ex certificate; can be used for Division 1 or Division 2 hazardous areas. Motor Starter type including: Ex proof electromagnetic starter; Ex proof star delta starter and Ex proof soft starter.



Features of Ex-proof electromagnetic starter:

- Starter enclosure is made of Aluminum Alloy by casting, surface by high pressure electrostatic spraying process or powder coating.
- With thermal relay, self-settable conversion switch. If with main switch, high breaking miniature circuit breaker and AC contactor will be equipped.
- Various international EX proof certificates, to meet the requirements of EX proof environment all over the world.
- Can directly start and stop of AC three-phase asynchronous motor, and provide the motor from overload, phase failure and voltage loss.
- Remoter control available
- Steel pipe or cable wiring for option

Features of Ex soft starter:

- Torque Control the soft start and soft stop for motor, can improve the availability, security of equipment, to meet the communication function of the control system.
- With Altistart torque control function, linear control the motor torque.
- Various protection functions: pre heating protection, under load protection, over current protection, PTC thermal protection.
- PLC programming control available, to meet equipment adjustment and optimization.
- Set different starting parameters, select the conventional start or overload start.

EX proof star delta starter is a kind of reduce voltage start function for big power motors, simple operation and economical saving. Compared with soft starter, much cost saving for client.

7.3 Positive pressure EX proof electric control panel

GN Explosion Proof Pressurized Control Panel is popular used for VFD control and soft starter of motor, especially in high temperature ambient. The explosion proof pressurized control panel consists of main cavity and auxiliary cavity. GN Explosion Proof Pressurized Control Panel can meet the requirement of China CNEX Certificate, Europe ATEX certificate and International IEC Ex certificate.



Explosion Proof Pressurized Control applications:

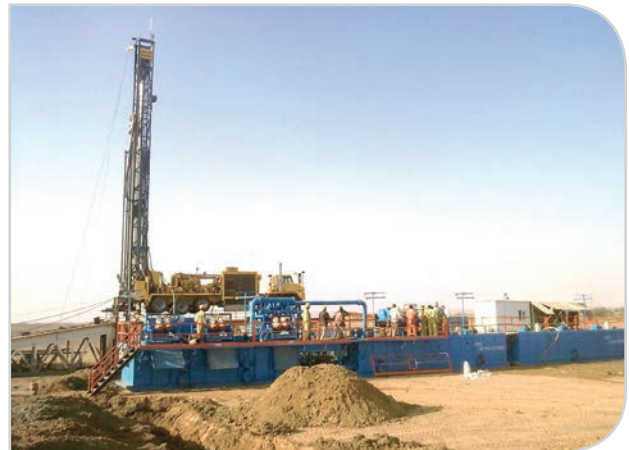
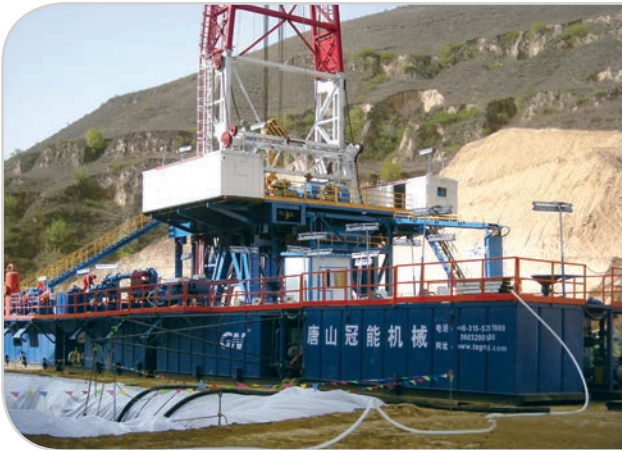
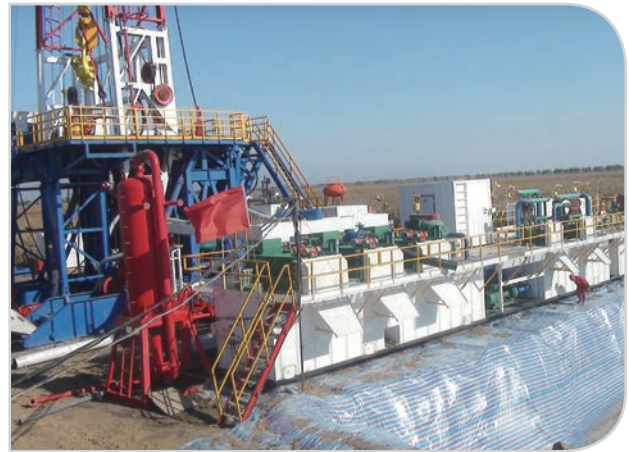
- Suitable for Explosive gas environment Division 1 or Division 2
- Suitable for IIB, IIC Explosive gas environment
- Suitable for combustible dust environment zone 21, zone 22.
- Suitable for group T1-T4 temperature group
- Protection level: IP65/IP66.

Positive pressure ventilation EX proof use principle of dielectric isolation ignition source, equivalent to all the electrical components installed in a positive pressurized clean medium shell, the mixed gas in the flammable and explosive substances outside of shell cannot come into contact with electrical components, not appear in normal electric studio spark or dangerous temperature, so as to achieve the purpose of electrical explosion proof. GN positive pressure ventilation ex proof control panel is divided into two categories: PZ and PX. PZ series meet the use of Ex-proof Zone 2, PX series of products to meet the use of explosion-proof area Zone 1.

Part 8: Industry Application

8.1 Oil & Gas Drilling Solids Control System

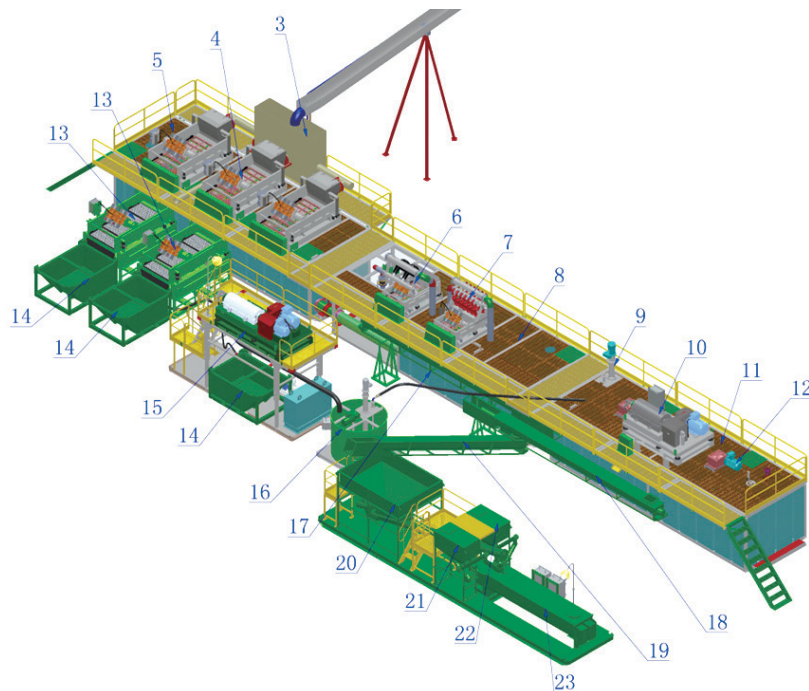
GN Solids Control manufactures all solids control equipment. Mud tanks are also designed and manufactured to compose whole mud systems to meet the demands of drilling rigs from 250HP to 3000HP. As a solids control manufacturer owns USA API and ISO certifications, GN Solids Control also certified by Europe CE for exporting to developed countries.



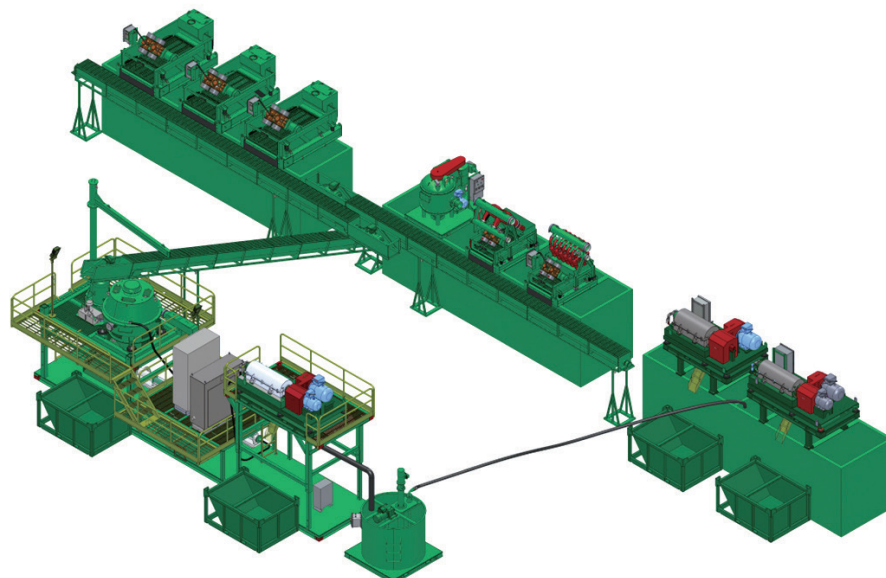
8.2 Drilling Waste Management System

GN Solids Control provides turnkey solutions for closed loop drilling mud and drilling waste management system. Key equipment includes Hi-G Shaker, Cuttings Dryer, Decanter Centrifuge, Flocculating Dosing Unit, Sludge Solidification Unit, and Thermal Desorption Unit. They can be used to treat WBM, OBM and SBM.

Typical WBM Treating System Layout



Typical OBM Treating System Layout



Drilling Waste Management Projects



European Treating Plant Project



Shell (Sichuan) Project



Siberia Russia Project



Africa OBM Treating Project



Inner Mongolia WBM Treating Project



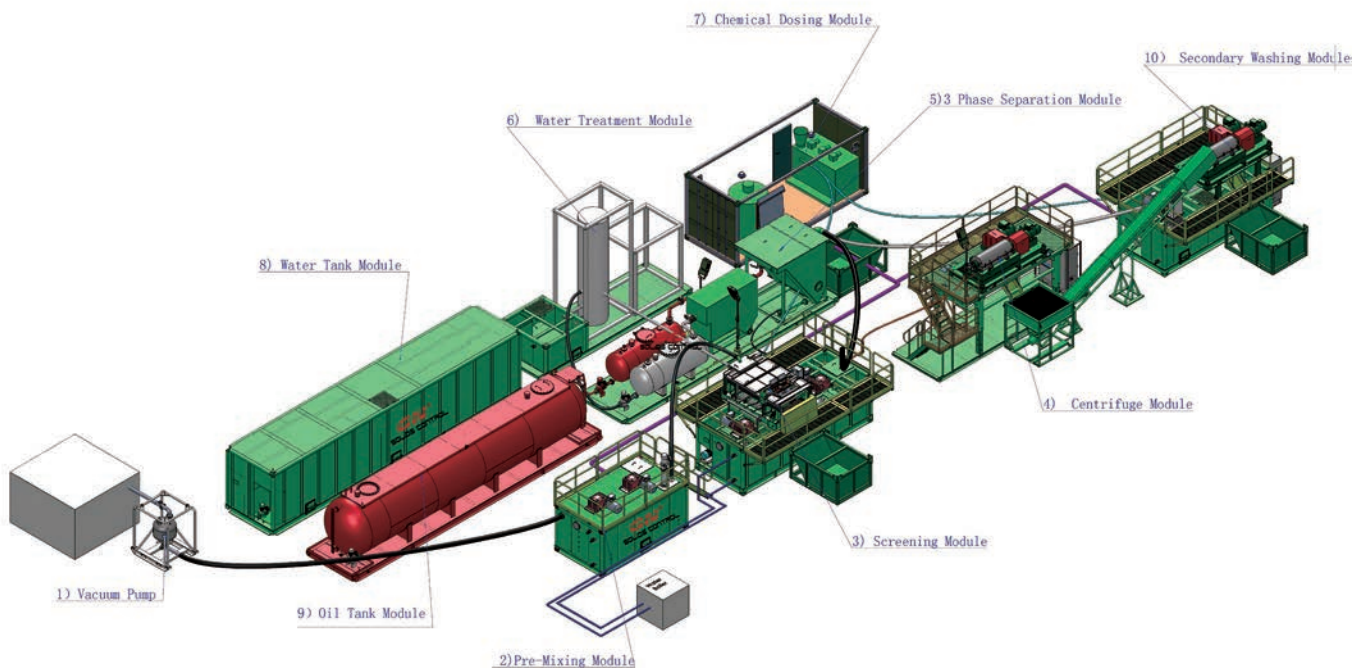
Argentina WBM Treating Project

8.3 Oil Sludge Treatment

Oily sludge is the mixture of oil, water and solids. In order to treat oily sludge and recycle oil and water, it's necessary to separate oil, water and solids. Meanwhile, it's pretty important to recycle oil as much as possible at a low cost. GN Decanter Centrifuge, Oil and Water Separator as well as Thermal Desorption Unit (TDU) are especially designed for oily sludge separation. Based on the capacity demands, GN Solids Control provides different models of oily sludge treating systems.

Typical Oily Sludge source:

- Waste oil sludge/sand in raw oil tank bottom
- Waste oil sludge/sand from refinery plant
- Waste oil sludge/sand from drilling rig



Main Module

- 1) Vacuum Pump Feeding Module
- 2) Pre-Mixing and Module
- 3) Screening Separation Module
- 4) Centrifuge Separation Module
- 5) 3 Phase Separation Module
- 6) Water Treatment Module
- 7) Chemical Dosing Module
- 8) Water Tank Module
- 9) Oil Tank Module
- 10) Secondary Washing Module

8.4 Trenchless/HDD Mud Recycling System

GN is committed to the research and development of trenchless mud recycling system, mud mixing system, decanter centrifuge etc. As a leading brand in the world, GN's products have been exported to over 60 countries and regions, and set up branches & services stations in 8 countries. GN Solids America is GN's USA brand.



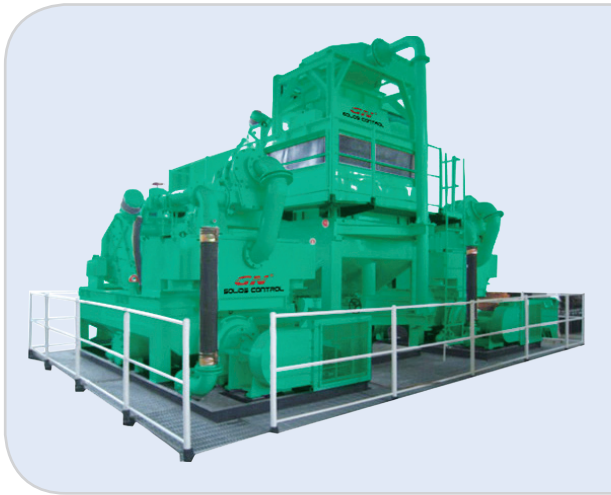
Configuration Type	High Configuration						
System Function	Mud Recycling/Mixing/Strage						
Model	GNMS-200G	GNMS-350G	GNMS-500B	GNMS-500G	GNMS-500GL	GNMS-1000G	GNMS-1000GL
Capacity	50m ³ /h	80m ³ /h	120m ³ /h	120m ³ /h	120m ³ /h	240m ³ /h	240m ³ /h
Cleaning Stage	2Stages	2Stages	2Stages	3Stages	3Stages	3Stages	3Stages
Treating Precision	20μm	20μm	20μm	20μm	20μm	20μm	20μm
System Volume	5m ³	9.5m ³	9.5m ³	15.5m ³	24.5m ³	30m ³	48m ³

Advantages of GN Recycling Equipment

- Preferred supplier of well-known rig manufacturers and contractors.
- Leading capabilities on both hardware and software, welcome for facility site visiting.
- Certified with US API, Europe CE and Russia CU-TR standard.
- High level material selected: stainless steel shaker deck bottom frame, Italy OLI vibration motor and Siemens electric components.
- Independent research and manufacturing on 4-Stage cleaning equipment: Shale Shaker, Desander, Desilter and Decanter Centrifuge.

8.5 TBM & Bored Piling Mud Cleaning

GN Solids Control is providing the assembled-type mud cleaning system for piling and TBM projects. The production line includes models with capacity of 120m³/h, 240m³/h, 360m³/h, 500m³/h, 1000m³/h, 1500m³/h, 2000m³/h, 3000m³/h. In addition, GN also provides big bowl decanter centrifuge and chemical dosing system for treating the mud to discharge-able water.



Bored Pile Desander



Configuration Type	Economic Configuration		
System Function	Mud Cleaning/Recycling		
Model	GNMS-200D	GNMS-500D	GNMS-1000D
Capacity	50m ³ /h	120m ³ /h	240m ³ /h
Cleaning Stage	2 Stages	2 Stages	2 Stages
Treating Precision	20μm	40μm	40μm
System Volume	1m ³	1.5m ³	1.5m ³

8.6 Industrial Solids & Liquid Separation System

As a professional manufacturer of solids and liquid separation equipment, GN Solids Control provides many kind of separation equipment including vibration screen equipment, horizontal decanter centrifuge, hydro cyclone separation equipment, gravity settlement separation equipment, and 3-Phase separation equipment. According to different separation request, GN is able to provide customized solution to maximize the treating result and reduce the cost for customers' biggest profit.



Mining & Core Drilling Mud Solids and Liquid Separation



Water Well Drilling Mud Recycling



Geothermal Well Drilling Mud Cleaning



Mining Slurry Solids and Liquid Separation



Dredging Slurry Solids and Liquid Separation



Chemical Industry Solids and Liquid Separation



SOLIDS CONTROL

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Equipment Separation Cut Point

Particle Size (Microns)	0-2	2-5	5-20	20-40	40-60	60-1000	1000-2000	>2000
Solids Control Stages	4 th Stage			3 rd Stage	2 nd Stage	1 st Stage		
Shale Shaker	No				API 270/325	≤API 230	API 10/20	≤API 10
Desander	No				Yes			No
Desilter	No			Yes			No	
Decanter Centrifuge	Flocculant	High Speed	Middle Speed	Middle Speed	Low Speed			No
Inclined Plate Clarifier	Flocculant	Flocculant	Yes					
Vertical Cuttings Dryer	No					Solids Should be above 250 microns		
Centrifugal Pump	Yes						No	

Remarks: The above table is for reference only.



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