

# 3 Phase Decanter Centrifuge

(Solids/Liquid/Liquid Separation)

28/Oct/2022



# Decanter Centrifuge

## 3 Phase Separation



### Introduction

GN 3 phase decanter centrifuge is mainly designed for Solid-liquid-liquid three-phase separation of materials.

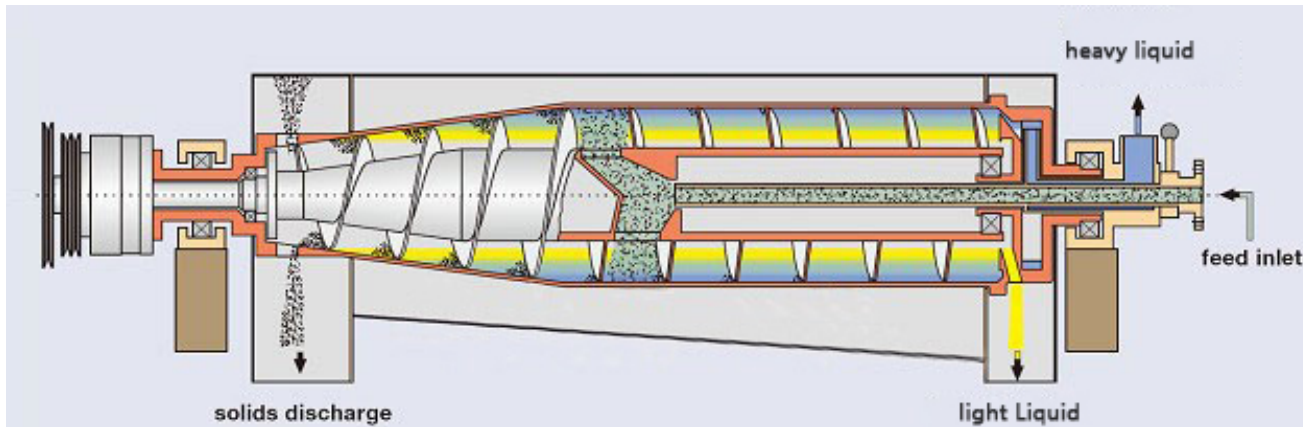
With our over 10 years of experience in the separation industry, it is the advanced type machine for 3 phase separation. It is designed for 24 hours continuous and smooth operation throughout the day. It is mainly composed of driving system, decanter bowl, screw conveyor inside the bowl, cover box, skid and VFD control panel.

To ensure that the separation process can take place, the solid phase must be the specifically heaviest phase and the two liquid phases must have different densities. The main difference between the 2 phase decanter and 3 phase decanter is that the 3 phase decanter not only separate the solids but also separate two phase of the liquid.

GN 3 phase decanter is widely used for oil , water, solids separation industry.

# 3 Phase Decanter

## Working Principle



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.

# Specifications

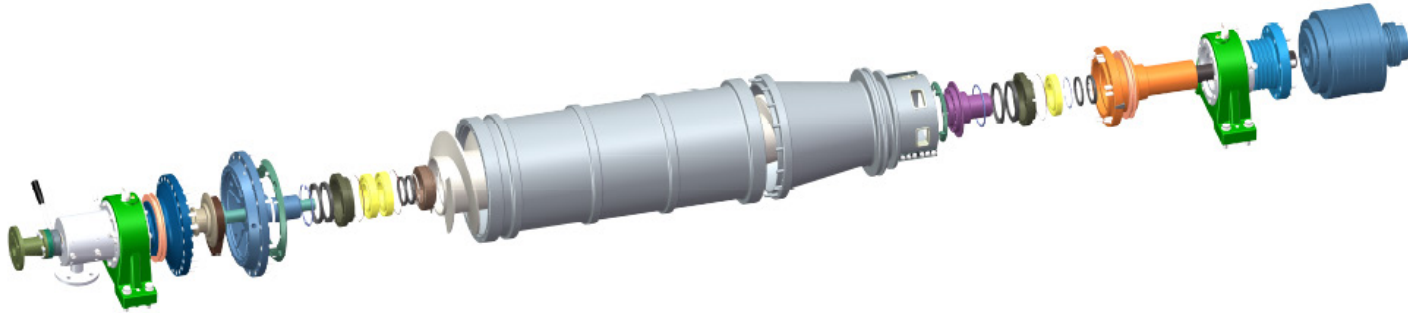
## 3 Phase Decanter

Model	GNLWS-364	GNLWS-454	GNLWS-554
Type	Solids Liquid Liquid Separation		
Bowl Dia	360mm	450mm	550mm
Bowl Length	1567mm	1947mm	2347mm
Capacity	5 m3/h	10 m3/h	15m3/h
Max Speed	4000 RPM	3600 RPM	3000 RPM
Max G Force	3225 G	3265 G	2772 G
Diff. Speed	0-30 RPM	0-30 RPM	0-30 RPM
Main Drive	30 KW/22KW	45KW/37 KW	75KW/55KW
Back Drive	7.5KW	15 KW/11KW	18.5KW/22KW
Lubrication	Grease type	Grease Type	Oil Lubrication
Oil Pump Size	N/A	N/A	0.37 KW
Feed Material	Solids Less 10% and Particle Size less than 2mm		



# Bowl Assembly

## Features

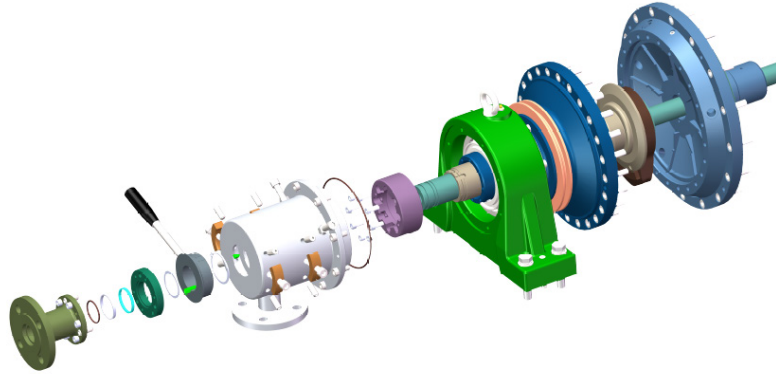


- Bowl Material: Duplex Stainless Steel SS2205
- Solids Discharge port: Tungsten Carbide insert
- Bearing: SKF or Japan NSK Brand
- Gearbox type: planetary wheel type

- Screw Conveyor Material: Duplex Stainless Steel SS2205
- Material Distribution Nozzle: : Tungsten Carbide insert
- Screw Conveyor Wear Protection: Tungsten Carbide Tiles
- Differential Speed: Adjustable according to conditions
- Bearing: SKF or Japan NSK Brand

# 3 Phase Decanter

## Adjustable Separation



### Flexible for different Liquid Phase Proportion

An adjustable impeller discharges the "heavy" liquid phase. Furthermore, the operator can use the adjustable impeller to adjust the pond depth of the heavy liquid without difficulty during ongoing operation. According to the Proportion of two different phase, An adjustment mechanism causes the position of the impeller to change, thus changing the separation line of the liquids. The process engineering results can thus be influenced so as to achieve the required separation result.

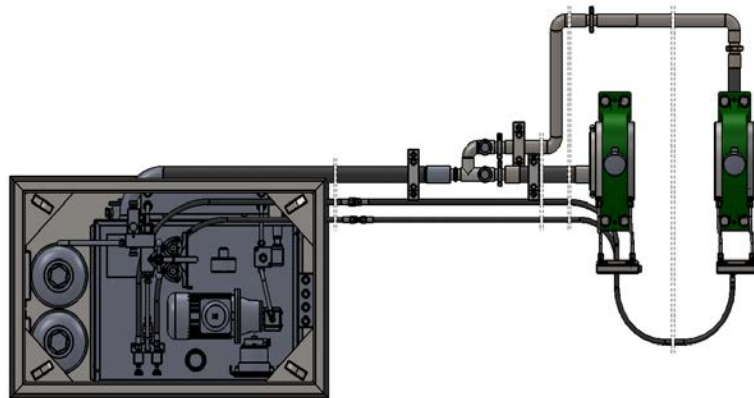
# Decanter Centrifuge

## 3 Phase Separation



### Planetary Gear Box

1. The planetary gear box is of large transmission torque, small size, stable operation and convenient maintenance.
2. The differential speed ratio can be selected according to different materials.



### Bearing Lubrication System

1. Grease lubrication is selected for small models, which can be equipped with automatic grease injection lubrication system.
2. The lubricating system of thin oil circulating oil station is adopted for large models, which can meet the requirements of heavy load and high speed operation. The effect of thin oil circulation lubrication on the cleaning and cooling of bearings is obvious, which greatly improves the service life of bearings.



### SKF High End Brand Bearing

1. Excellent stability and long service life.
2. Convenient for users to find and replace spare parts.



# Decanter Centrifuge

## 3 Phase Separation



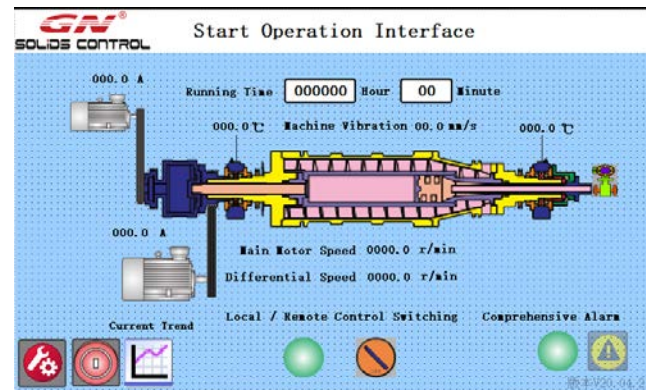
### Stainless Steel VFD Control Panel

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



### Famous brand electric components

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



### Automation and intelligence

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



# Decanter Centrifuge

## 3 Phase Separation



### Bowl Processing

The centrifugal casting bowl is processed by high-precision CNC lathe to ensure the concentricity of inside & outside of the bowl and the bearing positions at both ends.



### Bearing Seat Processing

The special processing tooling for bearing seat is made to ensure that the processing of bearing seat bottom surface, bearing seat hole and bearing seat end surface can be completed one-time installed in CNC machining center. And the parallelism between bearing seat bottom surface and bearing seat hole, as well as the vertical accuracy of bearing seat hole and bearing seat end surface can be strictly guaranteed.



### Screw Processing

The special processing tooling for processing the screw is made to ensure that the shaft holes at both ends of the screw can be processed once installed in the CNC machining center, and the rotary concentric accuracy of the screw is strictly guaranteed.

# Facilities



No. 1 Factory: Headquarter Office



No. 2 Factory: Centrifuge & Pumps Manufacture





# Facilities

## Pump & Centrifuges Workshop



# Facilities

## GN America Company

