



**CROWN**  
MACHINERY

2017 CATALOGUE



## Crown Machinery Enterprise Introduction

Crown Machinery Inc. is a modern innovative high-tech centrifuge R&D and manufacture enterprise with four main branches in global work located in USA , South Korea, Philippine and China. Adhering to the concept of quality is the enterprise life, innovation is the driving force for the development, Conform to the trend of the development of modern industry , Fusion concept of global economic integration , Creative thinking , Integrate liquid separation processing industry leading enterprise in the upstream and downstream resources; Gather technical force; Together with the power of the global enterprise for business purposes; Dedicated to supply the clients complete separation solution.

Our company assemble a number of skillful, talented professionals, introduction advanced of international centrifuge technology with 30 years experiences of the development and design, through adopting international advanced management method, we have developed very professional separator and centrifuge for edible oil , pharmaceutical , chemical , waste project and various liquid industry. Until now we have accumulated more than 500 clients in global world market and get wide good feedback for our products and service, as our enterprise name "Crown Machinery" described we would like to supply the products like the crown quality and service.

Nowadays, our USA branch mainly forwards the wastewater market; Manila branch mainly prompts the coconut products machinery in Asia-Pacific market; Our Korean branch also named the Hanil Science Medical Co.,Ltd. is focusing on the Bio-tech and Bio-pharmaceutical market; And Liaoyang Crown Machinery Co.,Ltd. in China works as the head-quarter of four branches to serve the machinery selection, sale, technology support and after-service job.

Up to now, we have successfully introduced many clients' final products such as coconut oil into Chinese market to achieve a mutually beneficial win-win situation. We do hope serving the client not only the products but also the wonderful experience to cooperate with us.

**Welcome to contact and visit us.**





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## **Used Lubricating Oil Re-Refining Centrifuges**

One of the main challenges of nowadays is to minimize natural resources consuming, in this sense, recycling processes are fundamental for the sustainability of the our currently way of life.

Recycling or Re-refining of used lubricating oil meets a double role: Eliminate a hazardous residue and reduce the necessity the extraction of higher quantities of petroleum to produce base lubricating oils.

Unlike other petroleum derivates (Diesel, Gasoline, and Kerosene) lubricating oils are not consumed during his application, however, during the life cycle lubricating oils are contaminated and suffer severe degradation, leading to the loss of chemical and physical properties.

Like others chemical processes, re-refining technologies was the target of intensive research aiming process improvement in the sense of cost reduction and mainly the environmental impact.



## Re-refining of Used Lubricating Oil

Lubricant oils have been used primarily for reducing friction between moving parts of various machinery or equipment, minimize material wear, and improve the efficiency of equipment /machinery and for fuel and energy savings. Access to lubricants is essential to any modern society and not only does lubrication reduce friction and wear by interposition of a thin liquid film between moving surfaces, but it also removes heat, keeps equipment clean, and prevents corrosion.

Contaminated lubricating Oil needs to have water and other impurities removed on a continuous basis. This is the only reliable way to prevent symptoms of wear appearing on engine components and thus a drop in performance or even failures.



## Considerable Symptoms of Wear by Contaminated oil

In daily operation, the lubricating Oils of diesel engines are continuously contaminated. All rotating or sliding parts deposit metal impurities. Added to this are residues of the combustion process, condensed water decomposition products which settle in the lubricating Oil sump. The oils themselves can also contain acids which, in combination with catalyzing foreign substances, can result in premature ageing of the oil. At the same time, on diesel engines, residues of the combustion process and incombustible constituents from the cylinder can also reach the lubricating Oil circuit. These residues can lead to considerable symptoms of wear at bearing points, pistons and cylinders.

## Solution: Self-cleaning Separators in Automatic Operation

It is therefore all the more important to separate all unwanted substances so that the service life of the oil is prolonged and engine components are not subjected to wear. Self-cleaning separators from Crown Machinery clean and dewater the lubricating Oil highly efficiently.





## Lubricating Oil Centrifuge from Crown Machinery

A Lubricating Oil Centrifuge is widely used in gas and steam power plants to keep the lubricating oil clean and dry. Lubricating Oil filtration and purification applications involving hi-efficiency separation of oil and water while also removing fine sediment.

The various parameters have a significant influence on separation efficiency. Knowing these parameters means increasing the efficiency and yield of your separation process.

We support our customers along the entire process chain based on our 30 years mature separation experience and technology.

### Features and Benefits of a Lubricating Oil Centrifuge:

- Simple, compact and robust design
- Constant efficiency in oil purification from water and solids
- Capable of separating high water contamination in emergency situations
- Environmental friendly – sludge disposal. (no filter cartridges)
- Automatic operation
- Comparatively low operating cost
- Easy maintenance
- Reliability with a long life span, proven with experience of an extensive installed base

The method of centrifugal refining of waste lubricants could result in both environmental and economic benefits. Refining of waste oil to manufacture base oil conserves more energy than reprocessing the waste oil for use as fuel. Therefore, refining is considered by many as a preferred option in terms of conserving resource as well as minimizing waste and reducing damage to the environment.





## Used Lubricating Oil Re-Refining via Centrifuges

The industrial process developed to recover the used lubricating oil is called acid-clay process. A basic process flow diagram for the Meiken process is presented in Figure.

The first step in the process is passing the used oil on grids to remove coarse solids next, the feed stream is sent for a disc centrifuge(DGC series, two phase separation)to promote separation of free water present in the oil.

Next step is the dehydration of the feed to remove the water that still remained in equilibrium with the oil.

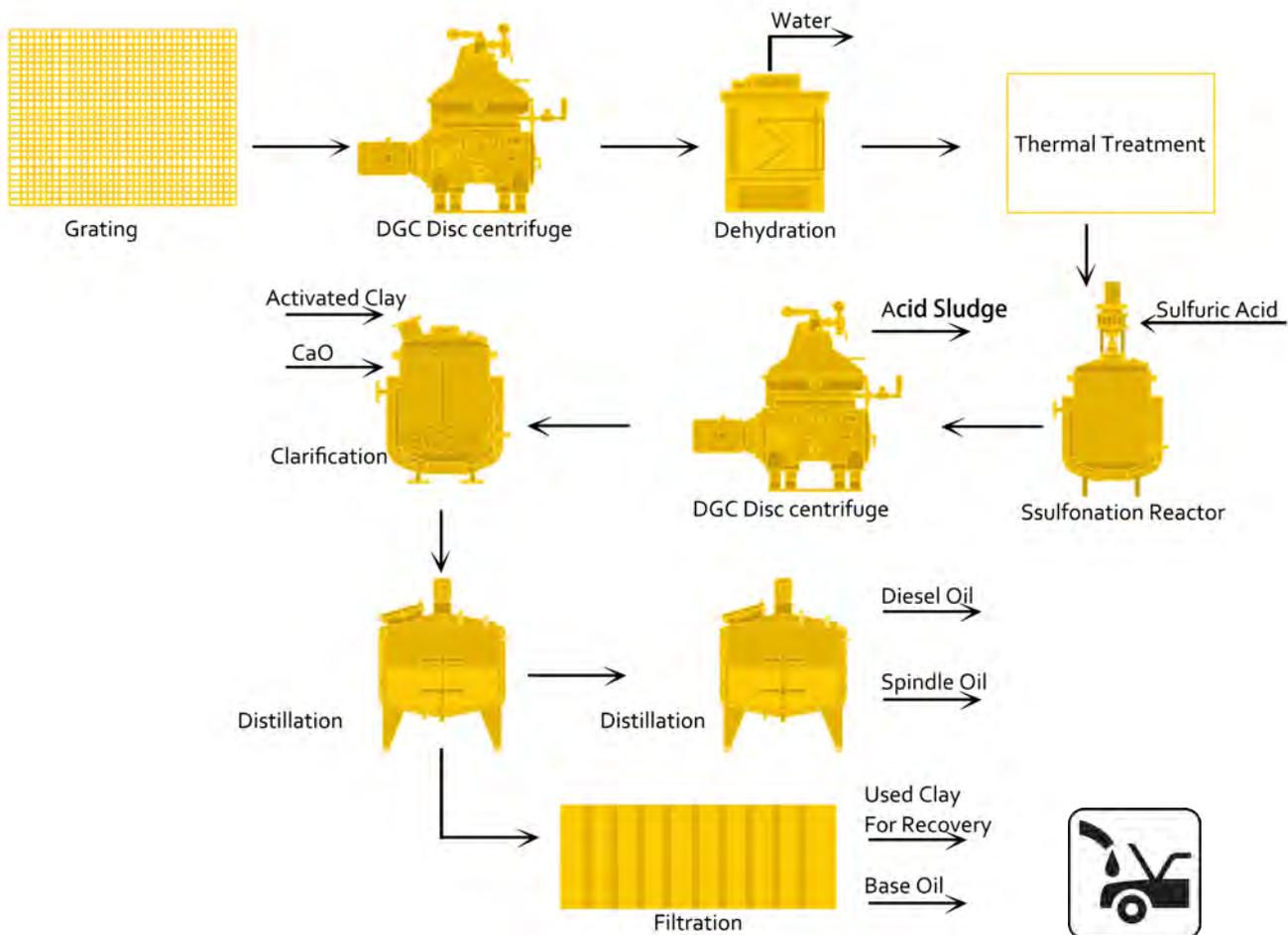
Posteriorly, the used oil is submitted to a thermal treatment at temperatures close to 340 °C that aim promote degradation of the additives used in the lubricating oil formulation and that no suffered chemical degradation during the lubricating life cycle.

In the following step, the used lubricating oil is directed to a reactor where is added sulfuric acid and, through sulfonation reactions the thermally and chemically degraded products are separated from the base oil.

The oil is sent to a new disc centrifuge(DGC series, two phase separation)where is performed the separation of base oil which is in a liquid phase and acid sludge (solid phase) that contain the degraded products during the lubricating life cycle.

In the clarifying step is added activated clay in the oil to remove compounds that can produce color to the base oil, in this step is controlled the acidity of the base oil through calcium oxide (CaO) addition next, the oil passes through distillation steps to remove the lighter compounds that can be produced by thermal cracking during the process or that contaminated the used lubricating oil during the life cycle.

The final process step is base oil filtration to separate the clay that is directed to recovery in the process, then, the base lubricating oil is pumped to storage tanks.



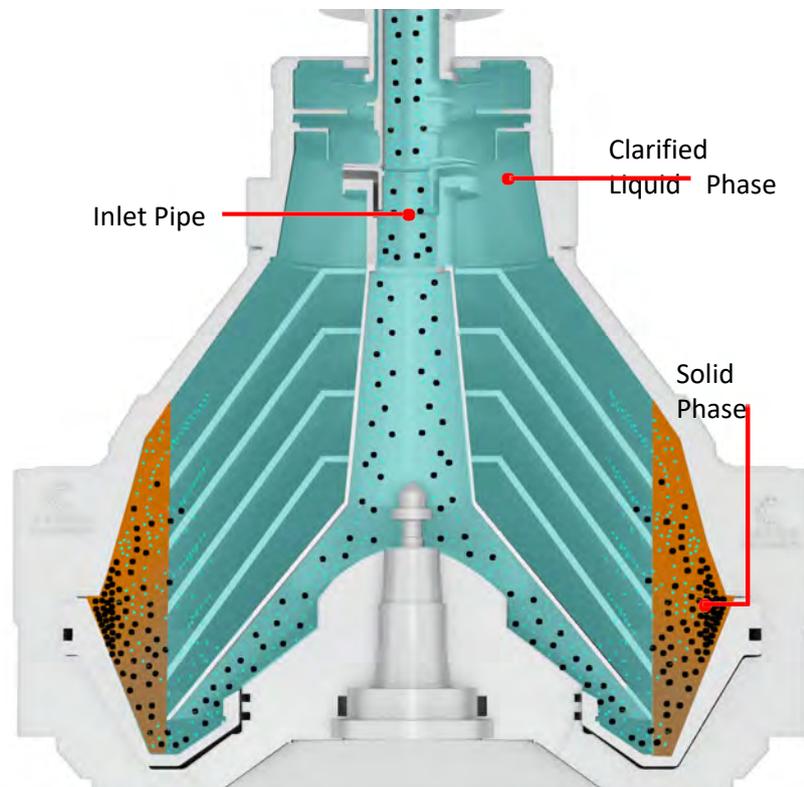


## DGC series Disc Centrifuge Operating principles

Whole separation process of a disc centrifuge accomplished through a rotating bowl, which is mounted on the top of the vertical axis driven by the motor at high-speed rotation. The bowl consist a paring of discs that are nestled together, and a small space between the disc.

Suspension is added by a inlet pipe located in the center of the bowl. When the suspension flows through the gap between the discs, the solid particles settle under the centrifugal force on the disc to form a sediment, then it slides out of the disc surface and accumulates in the largest diameter of the bowl, and the separated liquid discharges from the outlet of bowl. The solids phase will automatically discharged for batches.

\* A suspension is a heterogeneous mixture containing solid particles that are sufficiently large for sedimentation.



## DGC series Disc Centrifuge Main Parameter

Model	Bowl Speed (rpm)	Through-put Capacity (L/H)	Running Load (kw)	Dimensions (mm)		
				Width	Front-to-Back	Height
300	7302	300-500	4	950	950	1250
400	7070	1000-2000	7.5	1555	1130	1640
480	6600	3000	15	1780	1500	1900
500	6600	5000	18.5	1780	1500	1900
550	6000	10000	22	1800	1850	1900

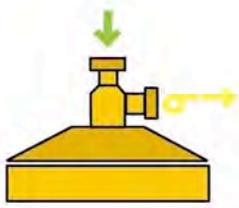
\*Actual production capacity base on the raw materials.





### Liquid Feeding/Discharging Configuration

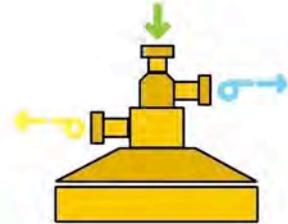
DGC series  
One liquid Phase



● Feeding Material

● Liquid Phase    ⚙️ Flow with Pressure

DGS series  
Two liquid Phase

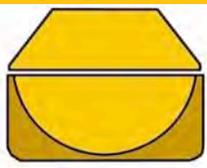


● Feeding Material

● Light Phase    ⚙️ Flow with Pressure

● Heavy Phase    ⚙️ Flow with Pressure

### Discharging Method



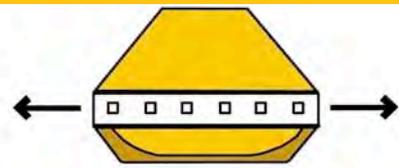
**Manual Discharging**

Shut down and open the bowl, manually remove the inside sediment by labor.



**Automatic Discharging**

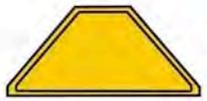
Through Intermittent open lower parts of the bowl, sludge discharged automatically.



**Continuous Discharging**

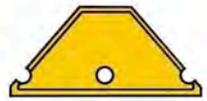
Sludge discharging achieve by the nozzles around the pericline.

### Disc Separation



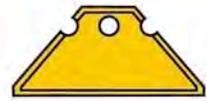
**Clarification**

Separate the solid particles form the liquid



**Separation**

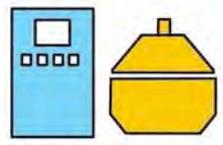
Separate a heavy liquid phase from major light liquid phase, meanwhile the suspended solid particles be separated as well. Maximum level of purified the light liquid phase.



**Concentration**

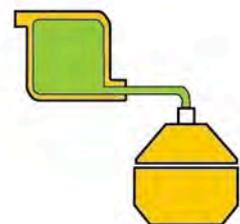
Separate a light liquid phase from major heavy liquid phase, meanwhile the suspended solid particles be separated as well. Maximum level of purified the heavy liquid phase.

### Optional Components and Systems



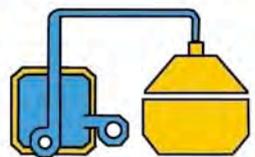
**Electric Cabinet**

Monitoring and adjustment of power , parameters setting and safety devices.



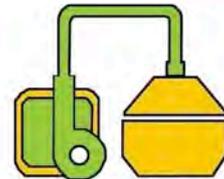
**Gravity Feeding System**

Ensure the material contnous and stable feeding to centrifuge.



**CIP Cleaning System**

Control the system clean the separation components automatically.



**Feeding Pump**

Ensure the flow of material to the centrifuge is stable and adjusted automatically.



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