

# DECANTER CENTRIFUGES



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Decanter SH17.10.500





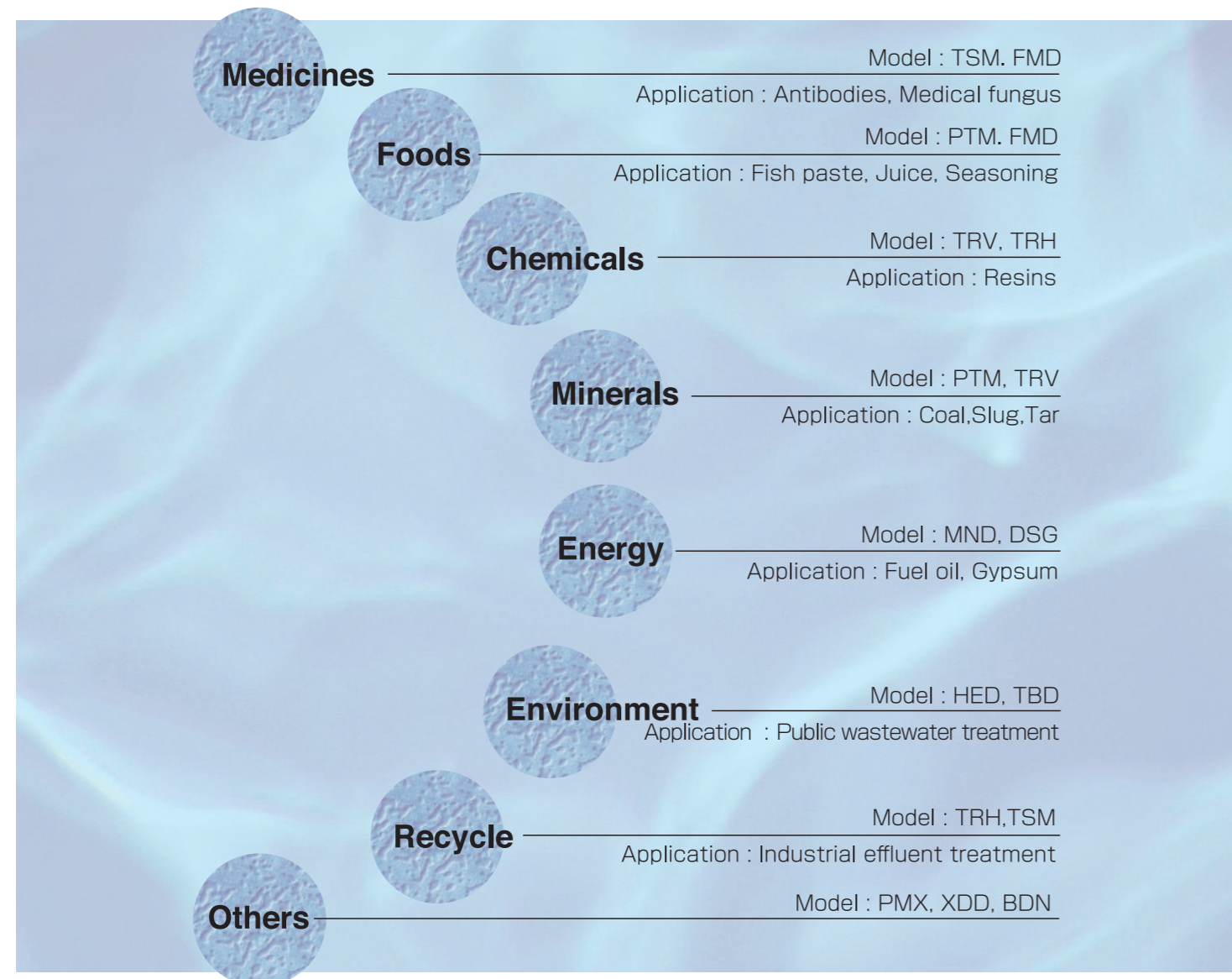
## **Integrated Knowledge for the Future**

Since 1950 Tomoe Engineering Co., Ltd. has been studying, developing and supplying centrifuges. Based on know-how of the half-century, we provide users with a full line-up of products built by advanced technologies as well as with extensive technical supports. Owing to the integrated system of production and support, we established the position as the pioneer in Japan and our technologies are highly valued at home and abroad.

Various Decanter Centrifuges are made for diversified applications and supplied to many customers in various areas. They have been supporting industrial activities and people's daily life.

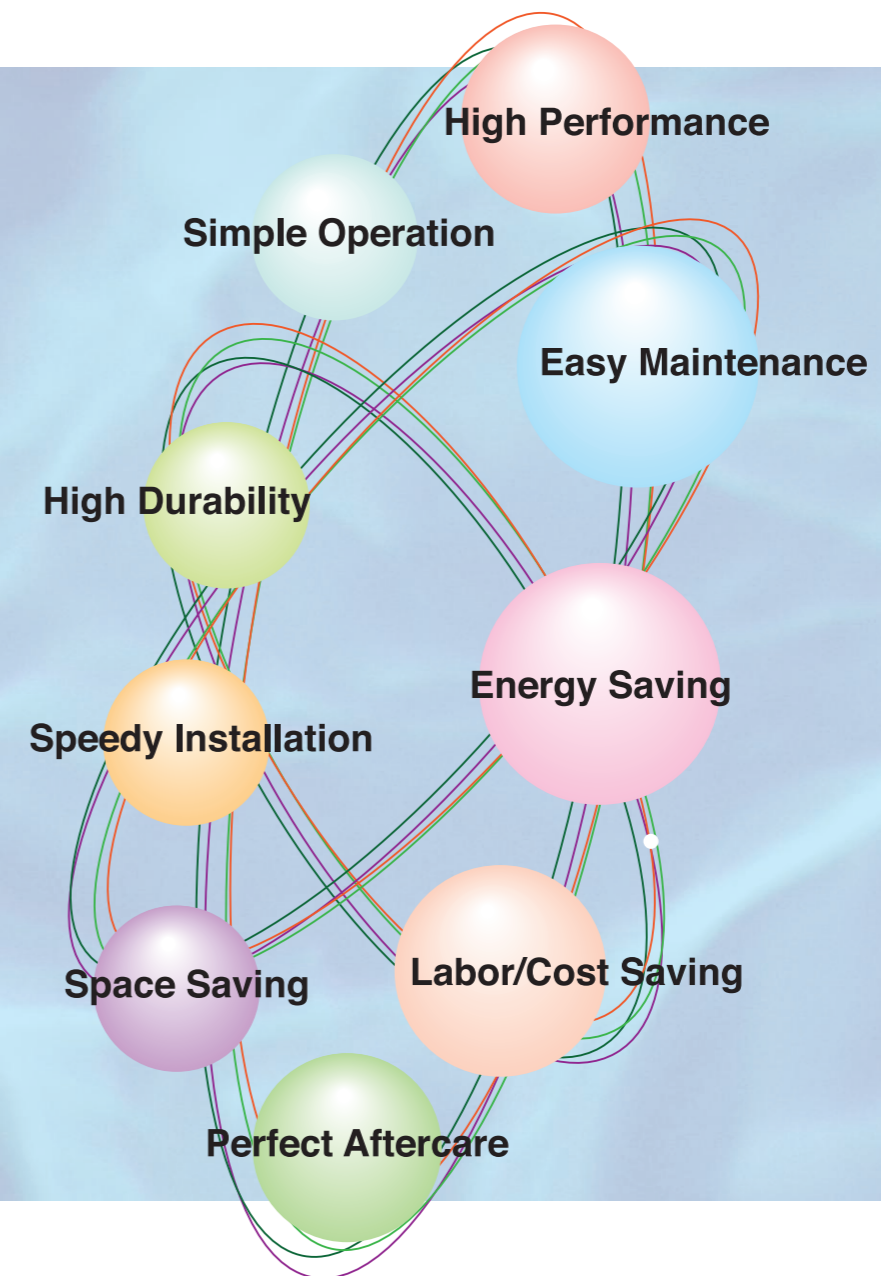
# Right Answers to Various Needs; Our extensive line-up solves your problem!

Areas where Decanters participate in are expanding year by year. To industries of pharmacy, foods, chemicals, shipbuilding, power generation, water treatment and more, we have already supplied more than 10,000 Decanter Centrifuges. When you look at our customer list, you will see we are working together with industries very closely for your daily life. Our extensive line-up is the product of our continuous responses to every one of practical requirements arisen at workshops.



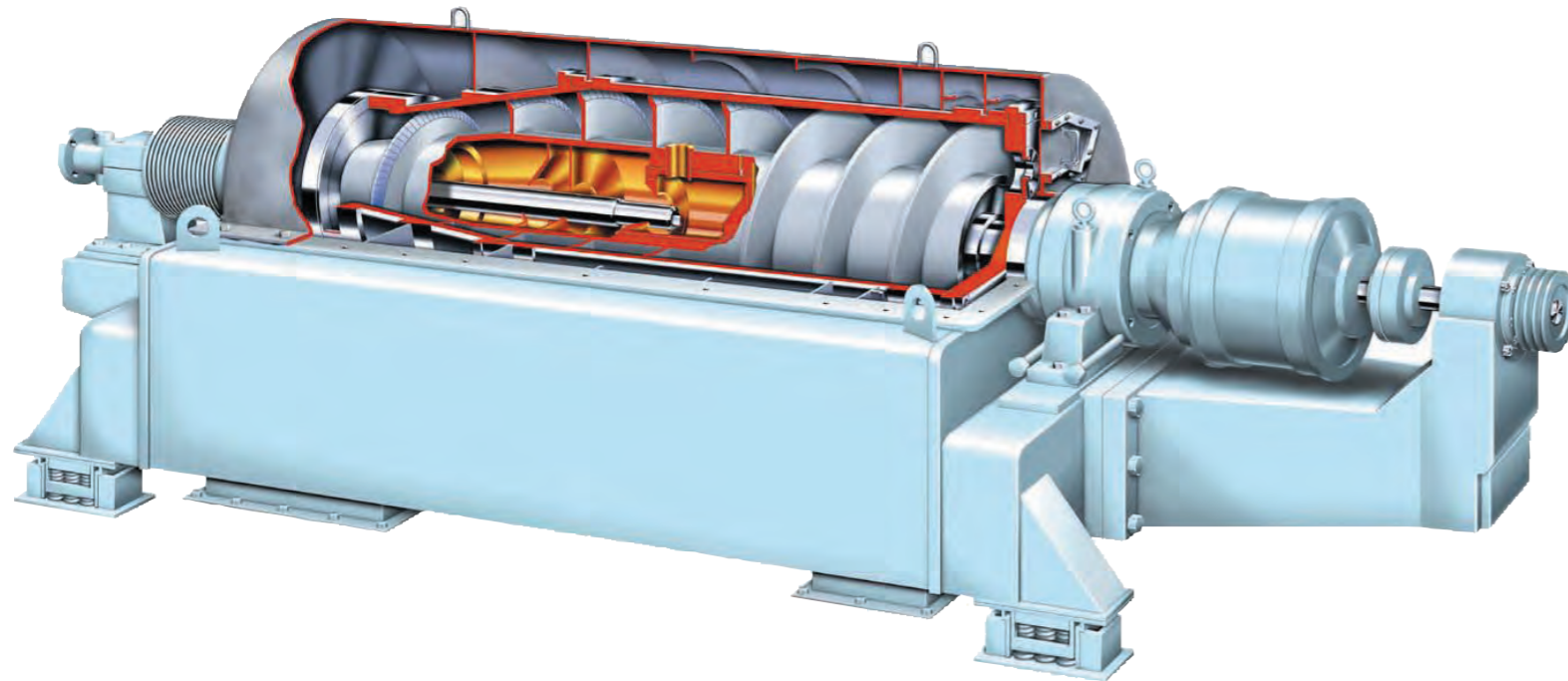
# High Technologies Built in More than the Half-Century; Quality of our products is proof of them.

The Decanters are designed deliberately and made carefully to meet each requirement of users for feeds, capacities and processes. We provide models which meet needs of the times, not to mention the fact that they demonstrate sophisticated functions and easy operation. Every Decanter exhibits excellent technologies and know-how which Tomoe has cultivated in more than 50 years. Because of their quality, the Decanters have established high reputation in every field and are expanding their market by themselves.



# Efficient Separation at Less Expense; The Decanters of wide applications.

The Decanter performs continuous stable separation for the long time. Also an easy operation and even an automatic operation are possible. We succeeded in producing a cost-effective and less-expensive Decanter. It does not require a large area for installation, as it is designed based on space-saving concept. Its main applications are "separation and dewatering of solids", "separation and purification of liquids" and "classification of solids" out of the mixture of solids and liquids, and separation of the mixture of two liquids. In every case, it performs effective treatment in the short time.



■ General purpose PTM

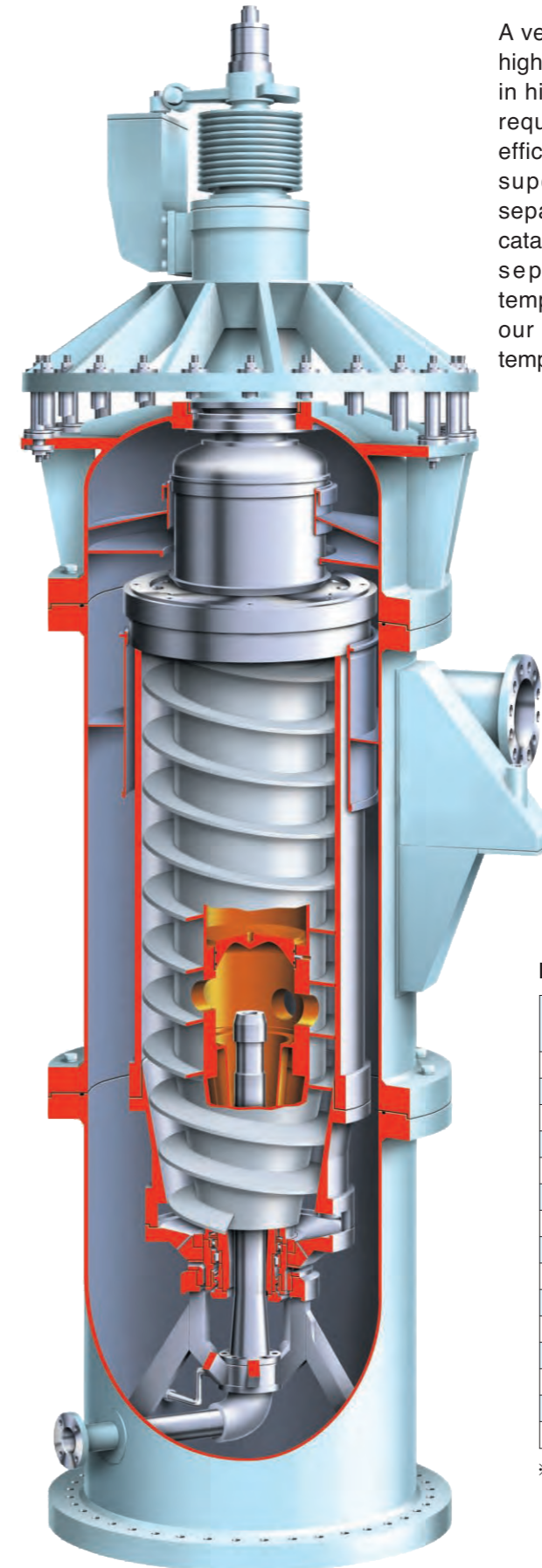
Model	Centrifugal force (G)	Motor (kW)	Weight (kg)	Dimension (mm)		
				Length	Width	Height
PTM 006	3,200	3.7	200	1,200	1,000	500
PTM 015	3,200	3.7~7.5	400	1,400	1,200	700
PTM 016	3,200	5.5~7.5	500	1,600	1,200	700
PTM 200	3,200	5.5~15	800	1,800	1,800	900
PTM 300	3,200	7.5~18.5	900	2,000	1,800	900
PTM 340	3,200	11~30	1,200	2,500	1,800	1,000
PTM 350	2,500	15~37	1,400	2,400	1,800	1,000
PTM 460	3,200	30~75	2,700	3,800	2,900	1,100
PTM 480	3,200	30~75	4,100	4,500	3,000	1,100
PTM 490	2,800	37~90	4,400	4,500	3,000	1,200
PTM 500	3,200	45~90	4,900	4,400	3,300	1,200
PTM 540	3,200	55~130	7,000	5,000	3,300	1,300
PTM 740	3,200	90~150	6,700	4,400	3,400	1,300
PTM 750	3,200	75~150	7,700	5,000	3,400	1,300
PTM 760	2,800	90~200	9,500	5,900	3,400	1,600
PTM 850	2,500	90~220	14,400	6,400	3,500	1,700
PTM 950	2,300	130~250	15,400	7,000	4,200	1,800

※The specification is subject to change without pre-notice.



# In separation of organic solvents and separation under high temperature and high pressure the Vertical Decanters claim the power.

A vertical structure provides a perfect enclosure. And owing to the high pressure resistance structure, the Vertical Decanter can be run in high pressurized conditions. Another benefit is that it does not require a large area for installation. As it is designed to perform efficient separation even in the hard conditions, it demonstrates its superb power in removing liquids out of resins, "solid-liquid separation" of slurry containing organic solvents and recovery of catalyses at the chemical plants, liquefaction of coal, and "solid-liquid separation" of heavy oil and waste plastics under high temperature/pressure conditions. New HT type has been added in our product line that can process materials under the maximum temperature of 400°C.

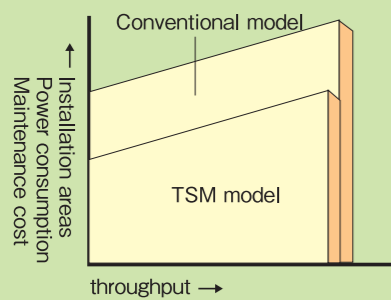
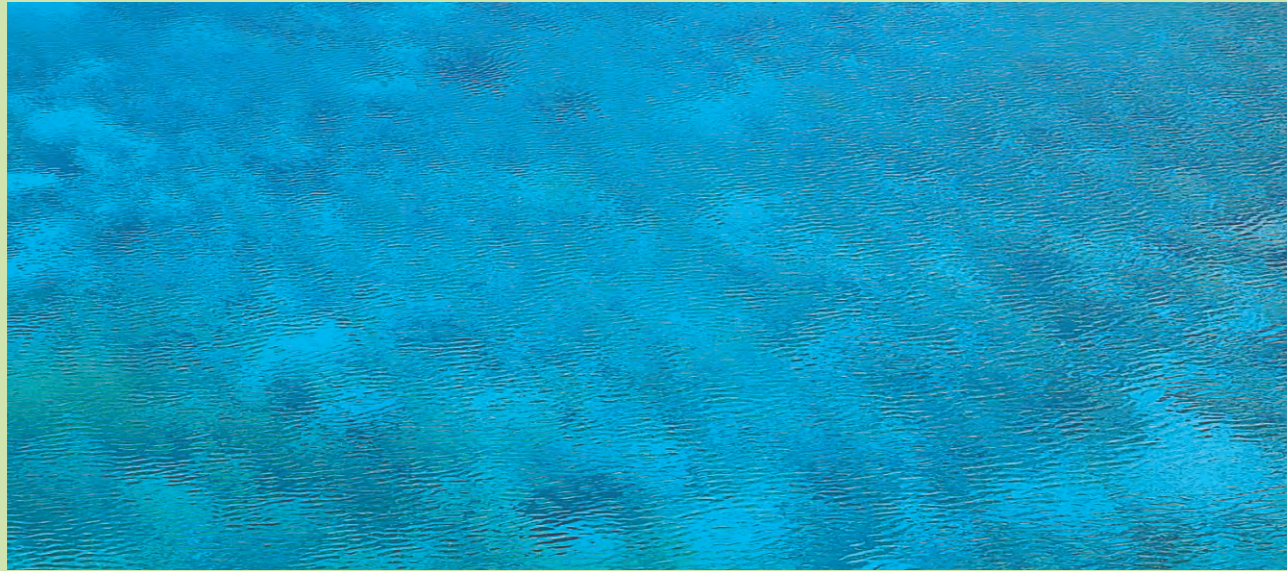


■ Vertical TRV

Model	Centrifugal force (G)	Pressure (MPa·G)	Motor (kW)	Weight (kg)	Dimension (mm)		
					Length	Width	Height
TRV 085	5,400	0~1	11~15	700	1,600	1,000	1,600
TRV 250	3,200	0~0.1	15~22	800	2,200	1,000	2,100
TRV 400	3,200	0~0.1	37~45	1,100	2,300	1,000	2,100
TRV 440	3,200	0~0.1	45~55	1,400	2,500	1,000	2,600
TRV 445	3,200	0~1	45~75	1,600	2,500	800	2,600
TRV 455	3,200	0~1	75~110	2,500	2,600	1,300	2,900
TRV 460	3,200	0~0.1	75~110	3,800	3,500	1,650	3,500
TRV 490	3,200	0~0.1	110~130	4,300	3,500	1,650	4,400
TRV 600	3,200	0~0.1	150~220	7,800	4,200	1,900	4,400
TRV 610	3,200	0~1	150~280	8,800	4,200	1,900	4,600
TRV 680	3,200	0~0.1	190~250	10,700	4,200	1,900	5,600
TRV 770	2,800	0~0.1	200~300	8,900	4,400	1,900	5,200
TRV 775	2,800	0~1	200~350	9,800	4,400	1,900	5,200
TRV 870	2,100	0~0.1	250~350	13,500	4,600	2,600	5,800
TRV 875	2,100	0~1	300~400	13,500	4,600	2,600	5,800

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**Basic Design Concept is to Save Labor, Energy and Resources. That is why TSMs are playing major roles in production systems and wastewater treatment plants.**



TSM models have a novel dewatering zone and an expanded separation zone. TSM models surpass the conventional centrifuges of similar bowl dimensions in dewatering and treatment capacities. Their high flocculation efficiency reduces dosage of flocculant further. Energy consumption is remarkably small, compared by the conventional models. Our uniquely developed tiles on the edge of the screw conveyor blade not only enhance durability but also reduce maintenance cost remarkably. TSM models are high performance standard models which bring many benefits. Therefore, they are used in various areas such as water/sewage works, industrial effluent and solid-liquid separation in the production processes.



■ Horizontal TSM

Model	Centrifugal force (G)	Main motor (kW)	Back drive motor (kW)	Weight (kg)	Dimension (mm)		
					Length	Width	Height
TSM 002	2,100	2.2	0.75	290	1,140	820	560
TSM 004	2,100	2.2	1.5	480	1,260	950	620
TSM 005	2,100	3.7	2.2	550	1,390	1,050	740
TSM 010	2,100	5.5	2.2	620	1,610	1,100	730
TSM 020	2,100	7.5	2.2	1,190	1,950	1,360	850
TSM 030	2,100	11	2.2	1,360	2,320	1,360	900

Model	Centrifugal force (G)	Main motor (kW)	Back drive motor (kW)	Weight (kg)	Dimension (mm)		
					Length	Width	Height
TSM 040	2,100	15	3.7	1,650	2,440	1,510	900
TSM 043	2,100	18.5	3.7	1,820	2,760	1,800	990
TSM 050	2,100	30	5.5	2,500	2,950	2,200	1,120
TSM 053	2,100	30	5.5	3,000	3,300	2,250	1,120
TSM 055	2,100	37	7.5	3,550	4,000	2,250	1,200
TSM 056	2,100	37	7.5	3,840	4,450	2,250	1,200
TSM 060	2,100	45	7.5	4,200	4,150	2,250	1,280
TSM 063	2,100	55	7.5	4,800	4,750	2,500	1,280
TSM 070	2,100	55	11	6,100	4,600	2,900	1,300
TSM 073	2,100	75	15	7,500	5,200	3,100	1,300
TSM 074	2,100	75	15	7,800	5,500	3,100	1,300
TSM 075	2,100	75	15	7,800	5,000	3,400	1,300
TSM 080	2,100	90	18.5	9,500	5,900	3,500	1,600

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**In dewatering process of synthetic resins TRH succeeded in further reduction of moisture contents.**

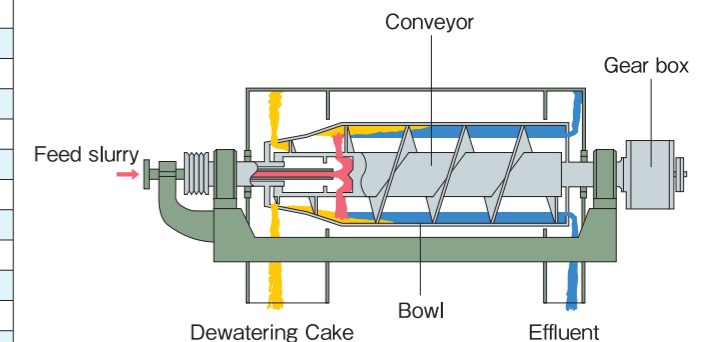


Personal computers, automobiles, toys and more..., you may find plastic products everywhere. In the manufacturing of these plastics, the dewatering process is the most critical part. The efficient-dewatering TRH Decanter is created for that. Provision of a unique beach structure reduces moisture contents of dewatered cakes remarkably, while provision of a high torque gear box and a high rigidity screw conveyor enhances its capacity. For application to toxic and volatile materials, an airtight type TRH Decanter is also available. The TRH decanter meets any requirements related to various synthetic resins such as vinyl chloride and polyurefin.

■ Standad TRH for resins

Model	Centrifugal force (G)	Motor (kW)	Weight (kg)	Dimension (mm)		
				Length	Width	Height
TRH 006	3,100	3.7	200	1,200	1,000	500
TRH 015	3,200	3.7~7.5	400	1,400	1,200	700
TRH 016	3,200	5.5~11	700	1,700	1,100	800
TRH 030	3,200	11~30	900	2,000	1,800	900
TRH 034	3,200	15~37	1,200	2,500	1,800	1,000
TRH 035	2,500	15~37	1,400	2,400	1,800	1,000
TRH 046	3,200	30~75	2,700	3,800	2,900	1,100
TRH 048	3,200	30~75	4,100	4,500	3,000	1,100
TRH 050	3,200	45~90	4,900	4,400	3,300	1,200
TRH 054	3,200	55~130	7,000	5,000	3,300	1,300
TRH 074	3,200	75~150	6,700	4,400	3,400	1,300
TRH 075	3,200	75~150	7,700	5,000	3,400	1,300
TRH 084	2,500	90~220	10,500	5,100	3,600	1,700
TRH 094	2,300	130~250	15,200	5,800	4,200	1,800

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**Sanitary Consideration for Processing of Foods and Medicines;  
Together with the CIP system,  
the sanitary FMD Decanter keeps itself clean.**

**Reduces CO<sub>2</sub> emission and is energy saving  
Dewatering centrifuge operated  
with lower power at higher efficiency**



More than any other things, the production process for foods or medicines demands cleanness. The FMD model is the sanitary decanter whose conveyor and casing are treated with buffing and polishing to prevent solid from remaining deposited in the rotor. Also, the CIP system rinses the inside of the rotor completely and automatically, and prevents deposited solids from decaying. It will release you from labors of bowl disassembling and flushing. The FMD Decanter brings another large benefits; increase of a yield ratio, reduction of operation hours and the space. As for a food processing sector, it is used in the production of fish paste, beer or soybean milk, and for a pharmaceutical sector, used in the separation of various fungi.



We have developed a new bowl of higher dewatering ability (HED) that can be operated with lower power through our cumulated technologies for long years. As HED is equipped with power regeneration system, automated torque control and fine differential speed control, it can greatly reduce power consumption. Acceleration of fewer chemical dosage and lowering moisture contents has dedicated to huge reduction of CO<sub>2</sub> emission as well as lower reliance on natural world. Designed as a compact model, it requires smaller area for installation and full automation is also feasible. As a

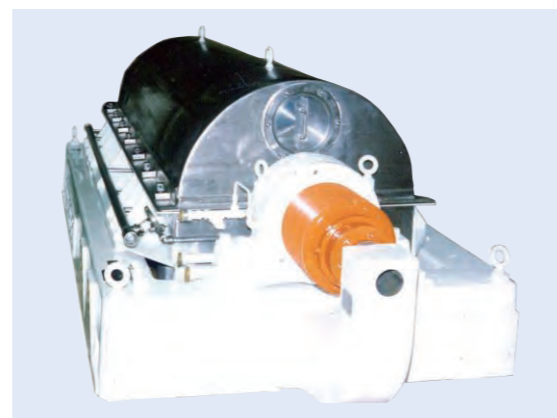
conclusion, the centrifugal dewatering model HED is suitable for the present-day requirements of energy conserving, labor saving, high efficiency, reducing maintenance frequency and consideration to environment.



■FMD for foods and medicines

Model	Centrifugal force (G)	Main motor (kW)	Back drive motor (kW)	Weight (kg)	Dimension (mm)		
					Length	Width	Height
FMD 100	3,200	3.7	1.5	200	1,200	1,000	500
FMD 200	3,200	5.5	1.5	400	1,400	1,200	700
FMD 300	3,200	7.5	1.5	700	1,700	1,200	800
FMD 400	3,200	15	2.2	900	2,000	1,800	900
FMD 600	3,200	18.5	2.2	1,200	2,500	1,800	1,000
FMD 700	3,200	22	2.2	1,400	2,400	1,800	1,000
FMD 800	3,200	55	11	4,100	4,500	3,000	1,100
FMD 900	3,200	75	22	7,000	5,000	3,300	1,300

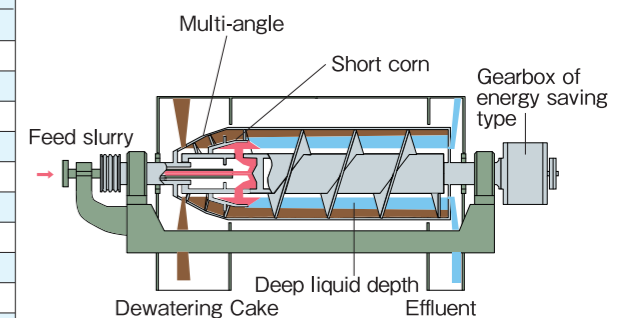
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■Centrifugal dewatering models operated with lower power at higher efficiency

Model	Centrifugal force (G)	Main motor (kW)	Back drive motor (kW)	Dimension (mm)		
				Length	Width	Height
HED 030	500~2,100	5.5~7.5	3.7	2,000	1,410	840
HED 050	500~2,100	7.5~11	3.7~5.5	2,600	1,800	1,000
HED 070	500~2,100	11~15	5.5	3,100	2,000	1,000
HED 100	500~2,100	22~30	7.5	4,200	2,300	1,300
HED 150	500~2,100	30~37	7.5~11	4,650	2,450	1,300
HED 200	500~2,100	37~45	11~15	5,100	2,450	1,300
HED 300	500~2,100	55~75	15~18.5	5,300	3,000	1,350
HED 400	500~2,100	75~90	22	6,000	3,150	1,580
HED 500	500~2,100	110~132	22~30	6,550	3,400	1,620
HED 600	500~2,100	132~160	30~37	7,000	3,620	1,750
HED 800	500~2,100	160~220	37~45	7,800	3,950	1,850

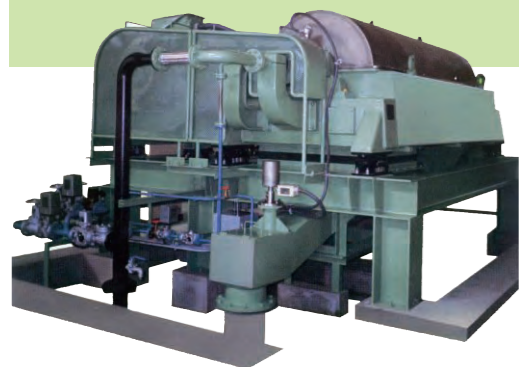
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## Thickening of fine particle and microorganism suspension. BDN Decanter helps process rationalization.



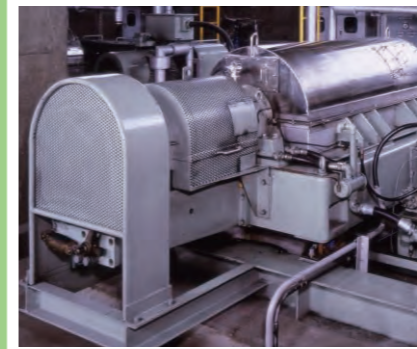
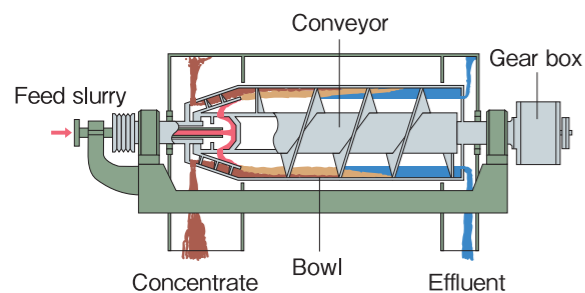
The BDN Decanter is the centrifugal thickener for thickening hard settling materials without adding chemicals. The maximum reduction of an energy loss in clarifying, which accounts for the most part of electric power consumption, and the maximum expansion of a clarifying area contributes to highly effective separation. Further, the wide passage design enables BDN to discharge out liquid in steady concentration continuously without any difficulty. A lot of BDN decanters were supplied to the pharmaceutical industry as well as water treatment plants. A large capacity BDN model can treat materials at 200 m<sup>3</sup>/H. And a high performance BDF, whose function has been improved even with a few chemical dosage, is also available.



■ Centrifugal thickener BDN

Model	Centrifugal force (G)	Motor (kW)	Weight (kg)	Dimension (mm)		
				Length	Width	Height
BDN 006	1,500~2,000	2.2	180	1,180	1,000	440
BDN 015	1,500~2,000	3.7	330	1,370	1,160	610
BDN 030	1,500~2,000	5.5	860	1,860	1,740	880
BDN 034	1,500~2,000	7.5	1,120	2,330	1,740	1,010
BDN 035	1,500~2,000	11	1,500	2,300	1,740	1,010
BDN 047	1,500~2,000	18.5	1,900	2,730	2,200	1,130
BDN 048	1,500~2,000	18.5~22	4,100	4,360	2,620	1,040
BDN 055	1,500~2,000	22~30	4,400	4,460	2,930	1,150
BDN 054	1,500~2,000	37~45	7,000	4,990	3,210	1,280
BDN 075	1,500~2,000	37~55	7,700	4,990	3,350	1,300
BDN 076	1,500~2,000	45~75	9,500	5,860	3,350	1,580
BDN 085	1,500~2,000	75~90	14,400	6,400	3,500	1,700
BDN 095	1,500~2,000	90~110	15,400	7,000	4,200	1,800
BDN 096	1,500~2,000	110~132	19,500	7,900	4,300	1,850
BDN 100	1,500~2,000	150~200	34,800	8,700	4,500	2,400
BDN 109	1,500~2,000	250~315	40,000	9,800	4,600	2,400

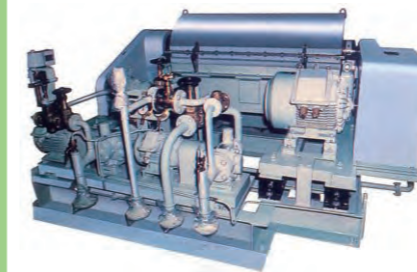
※The specification is subject to change without pre-notice.



DSG

### Change from Batch to Continuous Operation by the High-Solid Dewatering Decanter.

DSG is the decanter of superb cost performance for gypsum treatment. The stable continuous operation is possible, as it does not require an additional process such as the batch system does. Also as separation and discharging are performed consecutively, the whole gypsum production system can be made compact. This model is supplied to many power stations and various plants.



MND

### Separation of Sludge in Fuel Oil for Marine Engines. Maintenance free from the dock to the dock.

MND separates continuously sludge contained in fuel oil and lubricant. A loss of oil is minimized and disposal of discharged sludge is easy. Abrasion resistance of the conveyor is very high, as its blade edge is reinforced uniquely. This model is completely free from maintenance.



PMX

### Remarkable reduction of flocculant. Abundant models answer needs right.

PMX reduced an amount of flocculant remarkably. Attaching advanced quality tiles on the conveyor, its abrasion resistance was heightened and easy repair on site became possible. Various optional useful functions, such as the automatic cleaning system, the proportional chemical control, the automatic torque control and the power recovery system of the Back drive motor are also available.



XDD

### Direct dewatering of slurry in low concentration prevents decay and malodor.

Materials in low concentration used to be dewatered after being preserved and thickened. However, this caused decay of materials and emission of malodor. XDD solved this problem by the immediate dewatering. As thickening and dewatering functions are built in, the independent gravity thickener or mechanical thickener not needs.



TBD

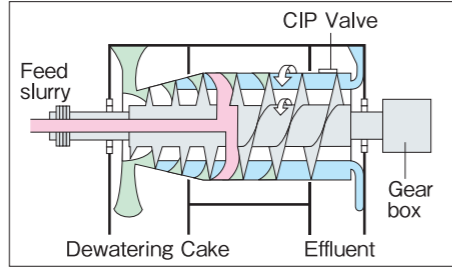
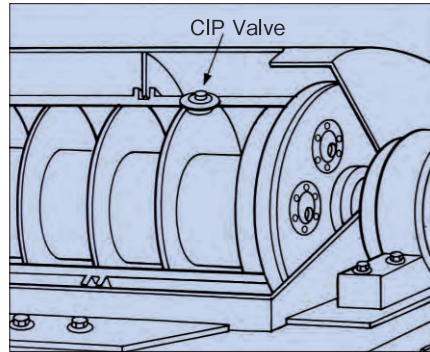
### Thickener, the successor to TSM Decanters; Saves Labor, Energy and Resources.

TBD offers steady thickening of various hard settling soft sludge. If it is associated with protection equipment, the optional automated thickening control and the automated rinse system, it can be run completely free from operator's care. Further, by adding flocculant, it not only secures high yield but also saves power consumption.

# Specific Design for Each Specific Need. It means right separation without failure.

## CIP&SIP

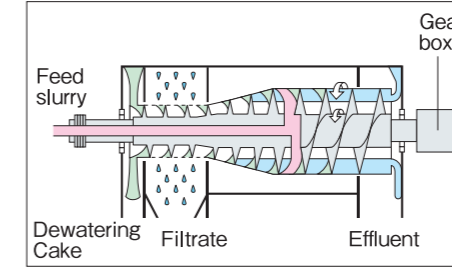
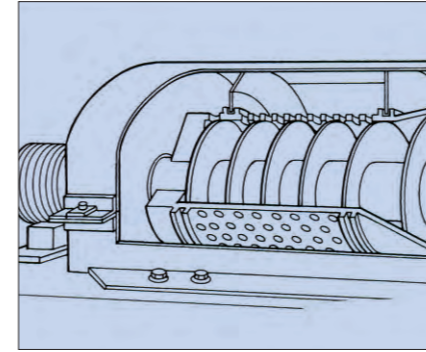
CIP function for cleanness and sanitation provided for separation foods and medicines



As parts contacting liquids are made of stainless steel and machined with buffing and polishing, separated solids hardly stick on them. Further, the inside of the casing is rinsed by the rinse nozzle and remaining liquids are discharged out completely by the CIP valve. Also the SIP type for sterilizing is available.

## HB

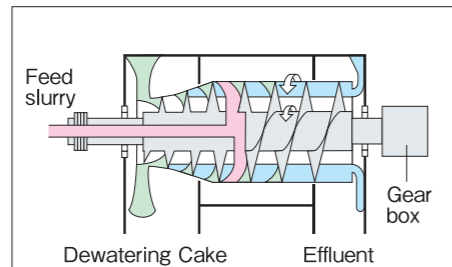
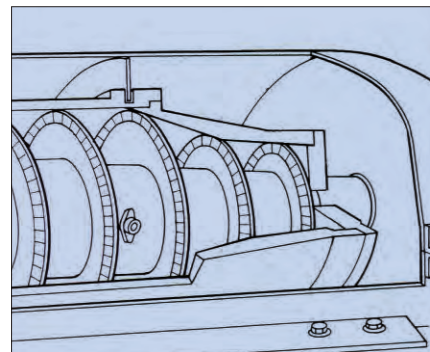
Continuous two treatment functions; Sedimentation and filtration



The sedimentation function of the decanter and filtration function of the centrifugal filter were unified into one system. Centrifugal force achieved the best recovery and dewatering. Also in the filtration area, cakes can be rinsed efficiently. This system was introduced to various industries for dewatering and rinsing of paraxylene, ammonium sulfide, gypsum, ores and bisphenol A.

## NMA

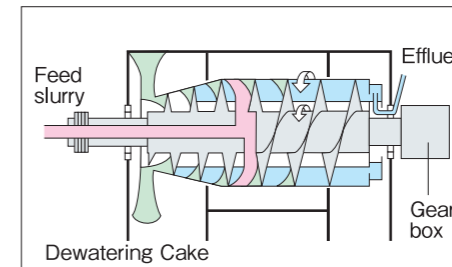
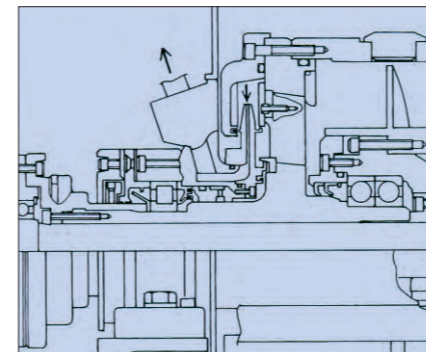
Unique beach structure for production of the lowest moisture content cakes



In dewatering PVC, PP, and GA at chemical and food plants, and dewatering gypsum, moisture contents of the products should be extremely low. NMA was created for that. The beach structure was optimized for reduction of moisture contents. Also more rigid screw conveyor enhanced its capacity.

## CP

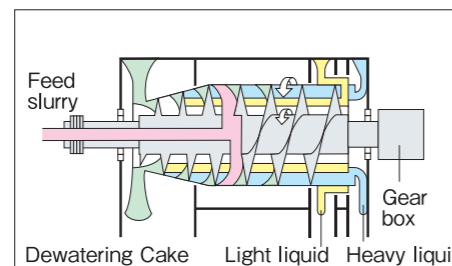
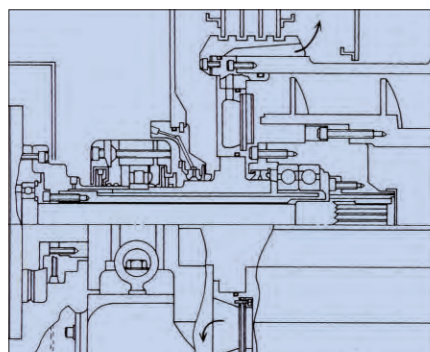
Efficient separation, restraining materials from foaming



In treatment of foamy materials, such as recovery of proteins or separation of soybean milk and lees of bean curd, the CP system restrains materials from foaming and separates them efficiently. The CP system also has the function of the transfer pump for separated liquid.

## TP

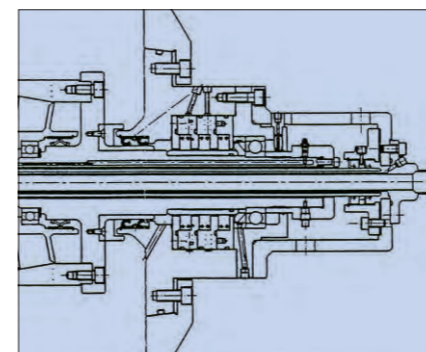
Continuous separation into three phases, "Solid-Liquid-Liquid," by simple and easy operation



Two liquids and solids can be separated into "solid-liquid-liquid" simultaneously. This system was introduced to separation of "fish oil-water-meal" at the marine product processing plants, "ammonia liquor-tar-sludge" at the cokes plants and "oil-water-sludge" at the waste oil treatment plants.

## HS

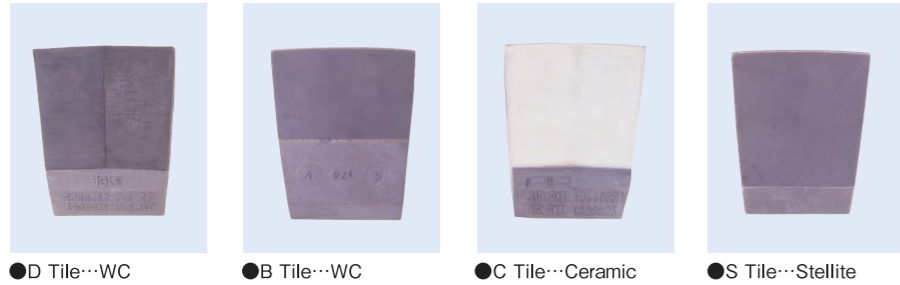
Centrifugal force stronger than ever; Solution for the continuous operation of hard settling materials



By use of high-strength stainless steel, the high frequency motor and the oil/air lubrication system, the decanter centrifuge achieved the operation at the highest speed. It enables the decanter to separate very fine particles at centrifugal force as high as 8000G.



# Higher Quality than ever; Advanced technology has made it possible.

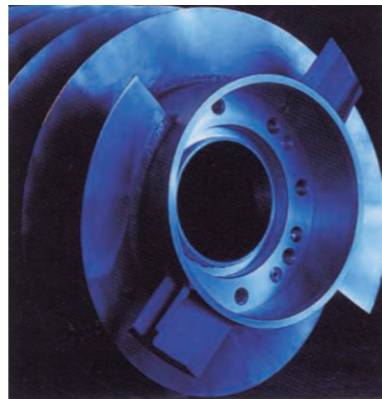


## Conveyor Tile

The blade of the screw conveyor is one of the most important parts of the centrifuge. By the unique back-up plate, sintered tungsten carbide tiles are set on the blade to extend the conveyor life. Also this method makes it easier to replace tiles on site. And a wide variety of tiles are available for various applications.

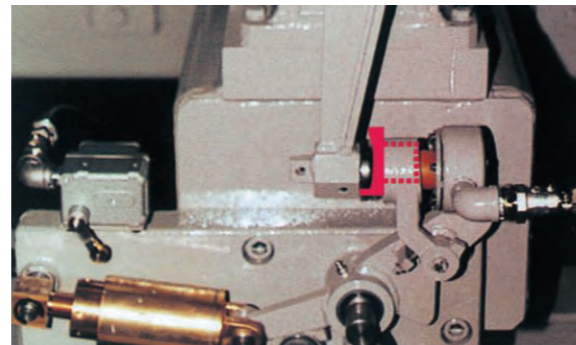
## Multi-Flight Conveyor

As the multi-flight screw conveyor reduces a load of solids per one screw turn and produces thinner cakes, operation of the decanter becomes much smoother. There are several types from the double flight to fourfold flight.



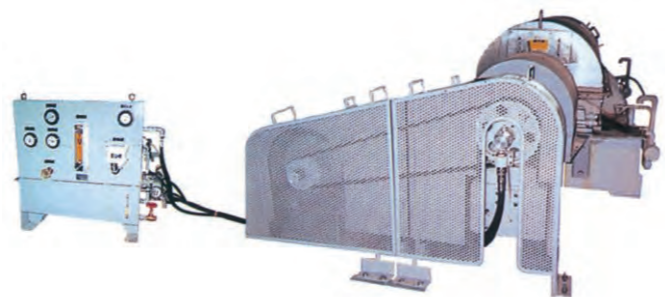
## Anti-Chattering Function

Chattering causes the gear box a torque-over problem and produces an evil effect on durability of the unit. A unique device has been employed in order to prevent the unit from chattering.



## Gear box for forced feed lubrication

In order to enhance capacity of the decanter and durability of the gear box, oil circulation systems are added to the gear box of vertical and horizontal decanters. This system provides continuous high load operation.



## Special Casings

We supply special casings for prevention of clogging inside the casing. They are "the mounted casing" raised upward, "the wide casing" of expanded width, and "the inside casing" surrounding cake discharge port. They prevent solids from depositing inside the casing. Further, we can provide "the divided casing type"



## Automatic Concentration Controller

There is a close relation between concentration and viscosity of thickened sludge. The controller keeps concentration at a steady level, adjusting the differential speed automatically. This is a perfect equipment of combination of the sensor and control systems..

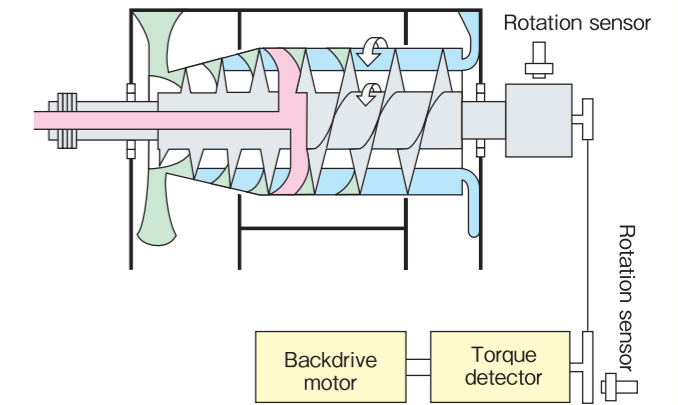


## Automated Torque Control

Cake moisture contents and conveying torque are proportional. Tomoe's automated torque control system detects a change of conveying torque, makes an automatic adjustment of conveying speed, and keeps moisture contents at a set level.

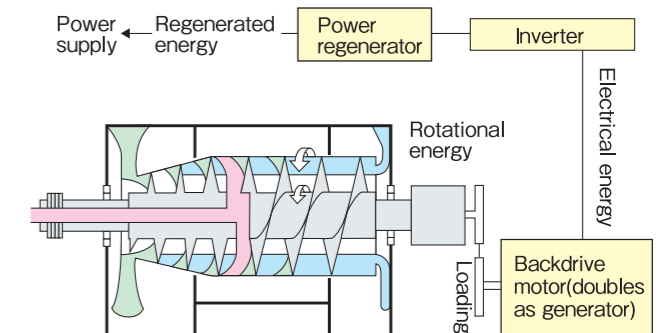
## Fine Differential Speed Control

The combined system of the torque detector and the revolution sensor to control thickness of the cake. Controlling the differential speed by fine accuracy of 0.1 rpm, it keeps cake moisture constant.



## Power Regeneration

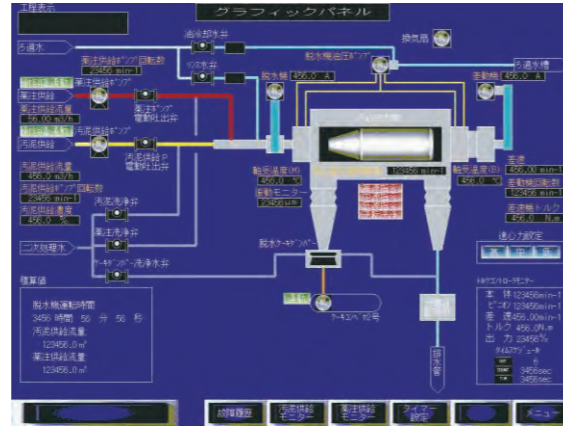
Energy generated by the screw conveyor during its conveyance of solids is converted to electric energy by the generator. Especially, the high-solid type decanter can regenerate a lot of electric power and save energy effectively.



# Always on the Side of the User; This philosophy invented following equipment.

## Centrifuge touch-panel for monitoring system

The touch-panel for monitoring system is also available for efficient operational management and maintenance of decanter. The touch-panel exhibits at a glance operating-, treating-, alarming- and processing-situations. Equipped with centrifugal selector, the suitable selection of centrifugal power assures you an economic stable operation.



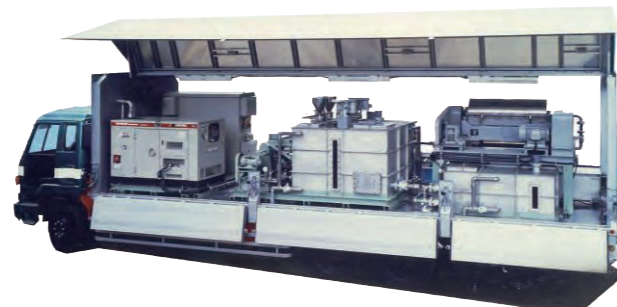
## Noise Cover

For requirements of much advanced noise reduction, we supply the package unit or capsule unit. These devices satisfy requirements for saving space, unifying electric and instrumental equipment and reducing odor as well as noise.



## Dash man

Accessory equipment and instruments as well as the centrifugal dewatering centrifuge are mounted on the truck. As mobile Dash man runs about for various treatment plants easily, it is able to reduce running cost remarkably and to be operated easily.



# Tailored and Progressive Supporting System



## Laboratory and field test for selection of the best Decanter

We perform the separation test, such as the laboratory test, the full scale test and the field test by the mobile laboratory truck to provide the user with the best decanter. Based on analysis of these test results, we produce the best decanter.



## From designing to plant-engineering with abundant experience

We have designed and engineered various plants for oil and fat refining, meal processing, sludge removing, thickening, and dewatering. Based on abundant experience and know-how, we dedicate ourselves to the development of the industry.



## Persistent and careful basic research for better decanter

For development of the centrifuges, basic studies related to material of decanter, such as the abrasion and decaying tests, are important. Analyzing test data and repeating CAD/CAE designs and calculations, we study for the better centrifuges.



## Back-up at every stage; Before the delivery and after

The separation test for selection of the best decanter and timely after-services; at every stage our engineers of excellent technology will support you. Also they will suggest the best proposal for cost, noises, malodors, abrasion, flocculation, and special separation requirements.