



FLOTTWEG SEDICANTER®
Discover New Potentials



DISCOVER NEW POTENTIALS

Flottweg Sedicanter® for Processing Fine and Pasty Products

The Flottweg Sedicanter® is an innovative solid bowl centrifuge (decanter centrifuge) which combines the advantages of decanter centrifuges and disk stack centrifuges alike. The centrifugal force of the Sedicanter® is between 5000 and 10,000 x g. Its clarification efficiency is thus similar to that of a disk stack centrifuge. At the same time its construction design allows the Sedicanter® to process high solids loads in the feed, like a decanter. In contrast to a decanter, however, the Sedicanter® can also process fine and pasty solids – which can be discharged from a decanter only with difficulties due to their soft consistency.

The Sedicanter® is appropriate for processing **soft products** such as biomass, yeast suspensions, protein suspensions, fermentation broth, and many more.

COMPARISON OF CHARACTERISTICS



DECANTER

- + High solids load in the feed
- + Good adjustment to fluctuating solids loads in the feed
- Low separation efficiency compared to disk stack centrifuges



DISK STACK CENTRIFUGE

- + High separation efficiency and excellent clarification
- Sensitive to fluctuating solids loads in the feed
- Problems when processing high solids loads

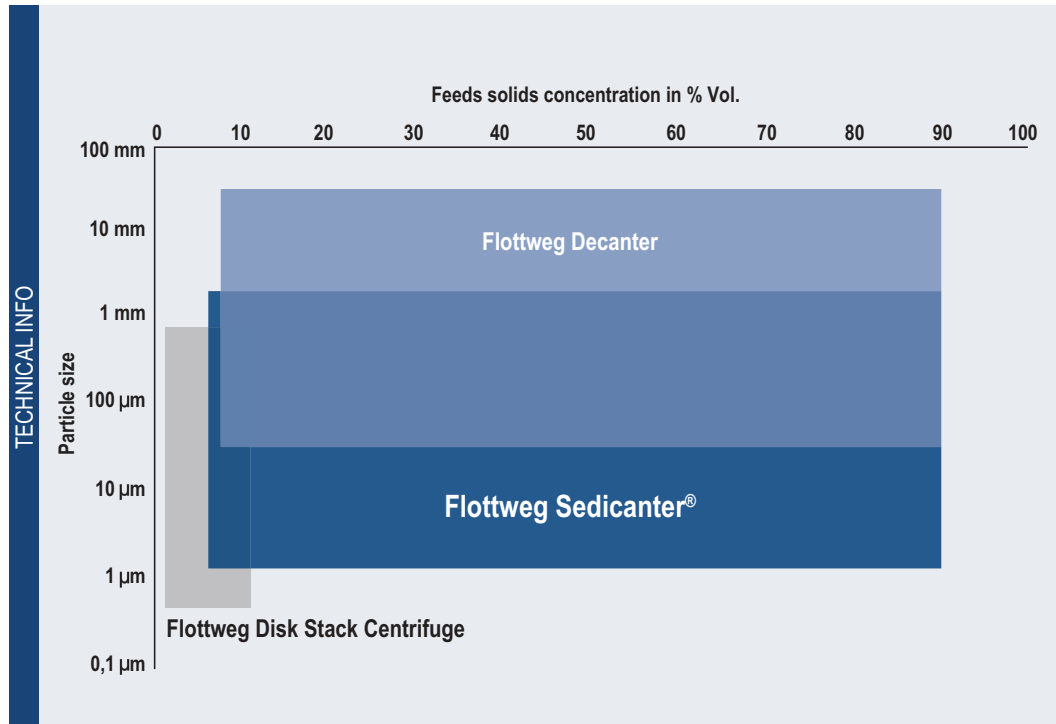


SEDICANTER®

- + High solids loads in the feed
- + Good adjustment to fluctuating solids loads in the feed
- + High separation efficiency and excellent clarification

TECHNICAL INFO

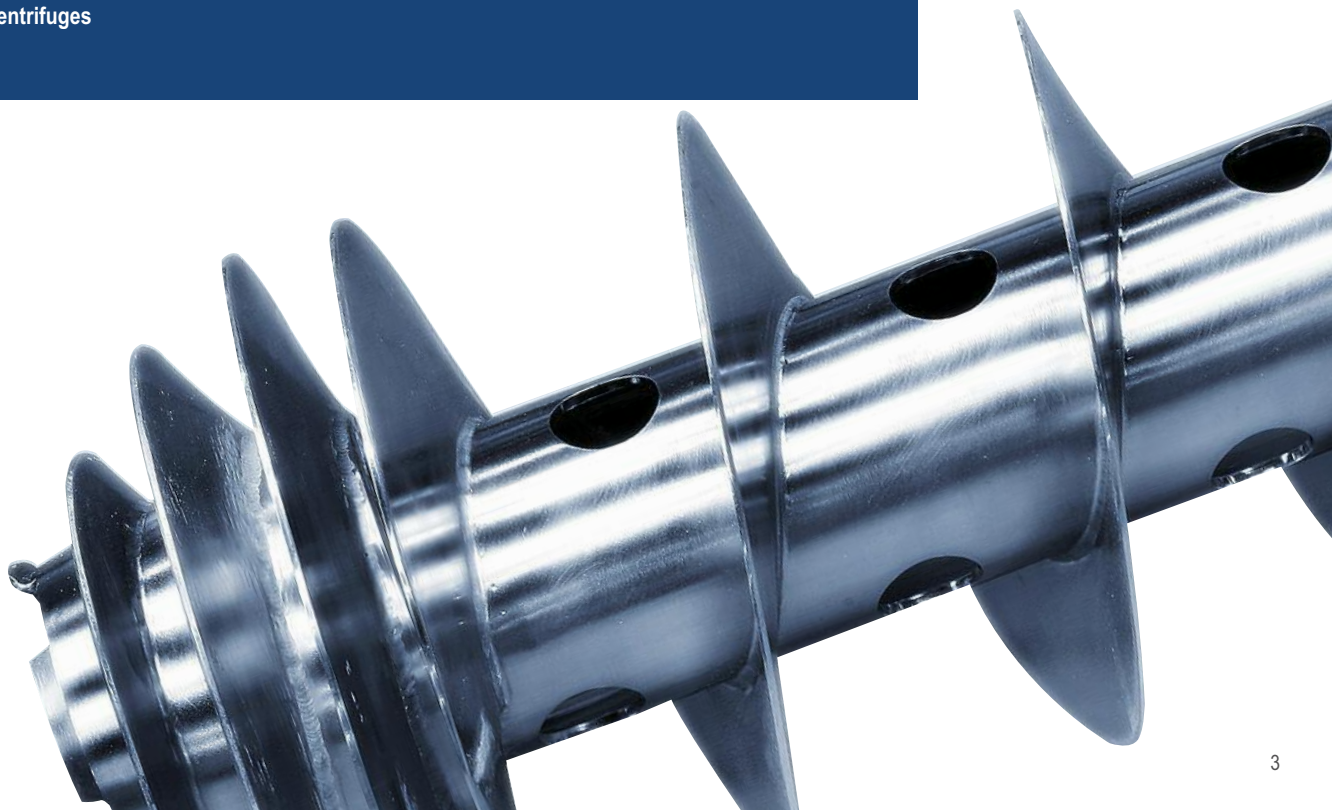
Overview



Comparison of application areas for Sedicanters®, decanters and disc stack centrifuges depending on particle size and solids concentration in the feed

Advantages of the Flottweg Sedicanter®

- Efficient separation of suspensions for which decanter centrifuges or disk stack centrifuges provide only insufficient results
- Processing of suspensions with fine and pasty solids or fluid sediments (yeast, protein, etc.)
- High g-forces for efficient solids separation and maximum clarification of the liquids, similar to disk stack centrifuges



The picture shows a Sedicanter® scroll

APPLICATION AREAS OF THE FLOTTWEG SEDICANTER®

Overview of applications and examples

The Sedicanter® has turned out to be the best solution compared to other industrial centrifuges when it comes to separating high-concentration fine and soft solids from suspensions. Flottweg Sedicanters® are reliably used in the following applications:

INDUSTRIAL BIOTECHNOLOGY

Efficient separation of biomass from fermentation broth is one of the focus applications of the Sedicanter®. It is used in industrial biotechnology for the production of vitamins and enzymes, for example.

SOY MILK

Soy and protein yields can be increased. Especially in combination with fine product grinding, it is possible to optimize the production process.

WHEAT STARCH

In the production of wheat starch, the Sedicanter® separates undissolved particles from the pentosan phase. Fine starch can be recovered from different process stages. Thus, it is possible to increase the product yield. The quality of the process water is improved.

SUGAR SYRUP

The Sedicanter® efficiently separates different kinds of raw syrup, e.g. undesired proteins and fibers.

ALGAE

Pre-concentrated algae is thickened and/or de-watered. That means that the energy efficiency of the harvesting process is improved since the algae comes out as a compact cake. Therefore, only a small quantity of water has to be separated in the subsequent process stages.

ALCOHOL STILLAGE

The Sedicanter® can be used for separating further solids of the so-called thin stillage (after first separation). This means that the selective protein yields from thin stillage increase.

PLANT EXTRACTS

The Sedicanter® increases the yield of different plant extracts, even in case of very fine maceration. The extraction medium can be water or a solvent.



PRODUCTION OF PROTEIN

In the production of plant or animal proteins the Sedicanter® efficiently separates the coagulated protein, helping to increase the protein yield.

BEER RECOVERY

The Sedicanter® efficiently thickens surplus yeast generated in the brewing process, creating two valuable products: The recovered beer can be reintroduced into the brewing process and the yeast can be used for further processing in the food industry, in the dietary supplement industry, or as animal feed.

Haven't found your application? We look forward to your request. Together with our customers we develop new optimization possibilities in different applications.



Mobile Sedicanter® system
in a gas-tight design for field tests



HOW THE SEDICANTER® WORKS

A Unique Conception

The functional principle of the Flottweg Sedicanter® is similar to that of a solid bowl decanter centrifuge. Distinctive features of this kind of centrifuge are a solid wall bowl and a conveyor scroll located within the bowl. The centrifugal force is

generated by rotation. The **conveyor scroll** rotates at a slightly **different speed** from that of the bowl and thus conveys the separated solids. The entire centrifuge rotor consists of a bowl shell, a scroll, and a **rotating gear**, which generates the differential speed.

HOW THE SEDICANTER® WORKS IN DETAIL

TECHNICAL INFO

ACCELERATION OF THE SUSPENSION

The suspension to be separated is fed into the machine via a pipe which extends to the end of the long zone **1**. That allows the entire length of this cone to be used as the clarification zone. Liquids and solids go through the clarification zone in the same direction (co-current principle) **2** avoiding turbulence and back-mixing and improving the sedimentation effect. Moreover, the liquid level is close to the rotational axis, ensuring a large clarification volume. Liquids and solids are accelerated to a maximum centrifugal speed of 10,000 g. For comparison: conventional decanters only allow for 6,000 g.

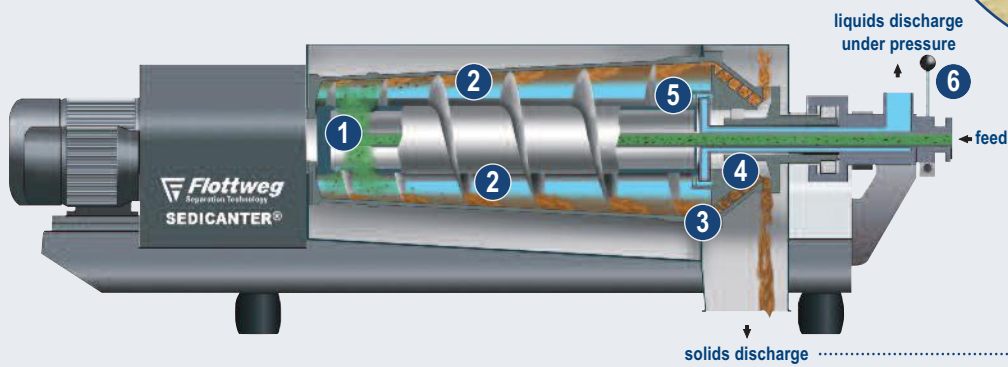
SOLIDS SEPARATION

With the help of the conveyor scroll, the separated solids are conveyed over the long flat cone to the junction of the two cones. There, at the largest radius of the bowl, is the greatest centrifugal acceleration and thus the maximum compression of the solids. At the junction is a weir disk **3**. The outer edge of this disk dips into the separated sediment, which is pressed through a gap and discharged from the machine via the scroll at the steep cone **4**.



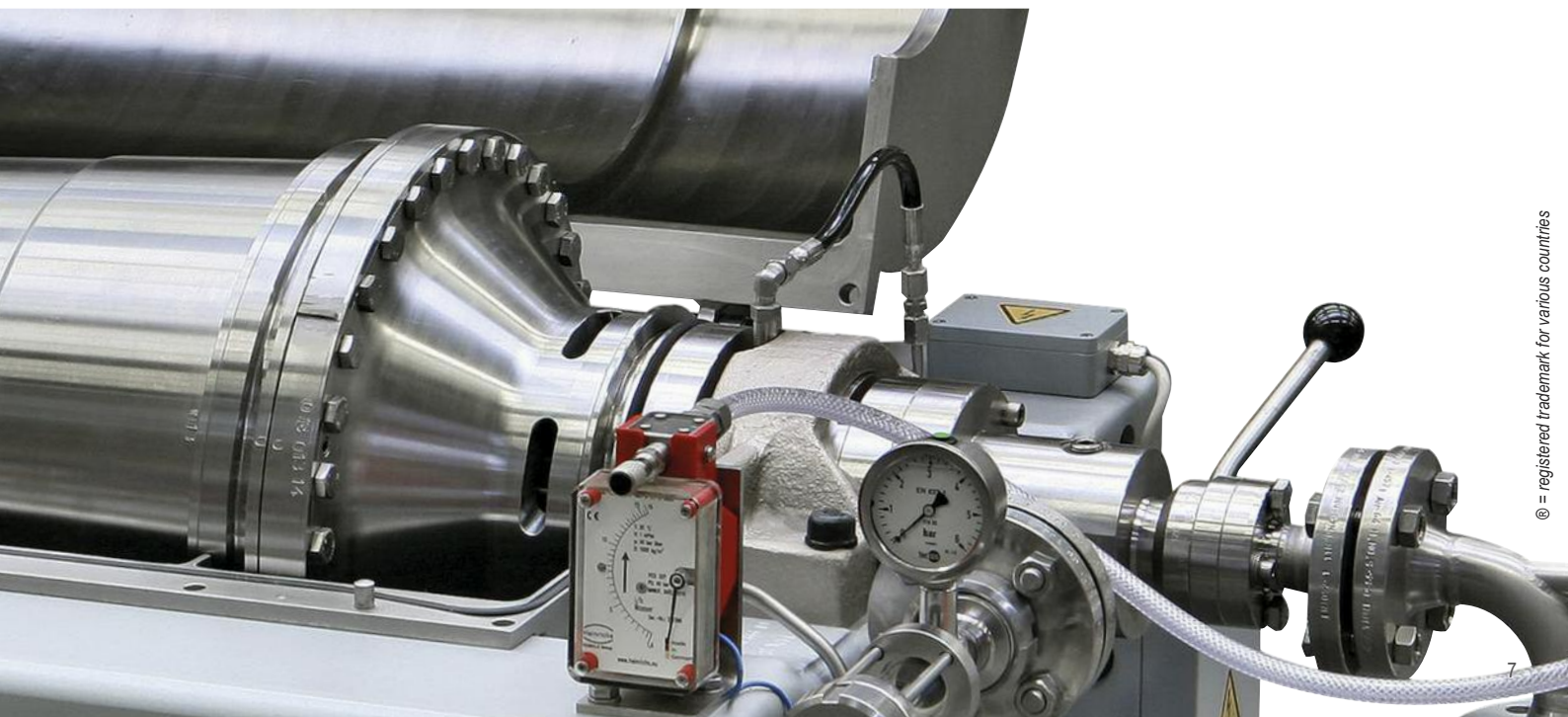


Example: Beer recovery, high dry substance content in the separated yeast



SEPARATION OF THE LIQUID / CENTRATE

Using an impeller disk located at the end of the clarification zone, the clarified liquid is discharged from the machine under pressure **5**. By adjusting the impeller, the liquid level in the bowl can be regulated **6**, which in turn changes the hydrostatic pressure on the solids. This means that the cake dryness of the discharged solids and the purity of the centrate can be adjusted from outside during operation using the adjustable impeller.



THE SEDICANTER® IN A NUTSHELL

Advantages



HIGH CLARIFICATION EFFICIENCY

- High centrifugal force, up to 10,000 g
- High clarification volume. Optimal utilization of the bowl volume
- Long clarification zone and co-current principle

Machine design in compliance with hygienic design thanks to



BOWL MATERIAL

- Product-wetted weldings, hygienic design (optional)
- All surfaces are appropriately treated (optimal surface roughness).
- Flushing devices in the housing and in the scroll body
- Electro-polished surfaces for scroll, housing, and bowl (optional)



ADJUSTABLE IMPELLER

- Improves the cleaning effect of the centrifuge bowl



FREQUENCY DRIVEN DRIVES

- For CIP cleaning at low rotating speed



Optimum adjustment to specific characteristics of the product and the process:



ADJUSTABLE IMPELLER

- Adjustable during operation



FLOTTWEG SIMP DRIVE®

- Torque dependent and stepless regulation of the bowl and differential speed
- These machine parameters permit the automatic control of the Sedicanter® on request.

High solids content thanks to:



BOWL DESIGN

- Strong compression by centrifugal force
- Hydrostatic pressure on the solids



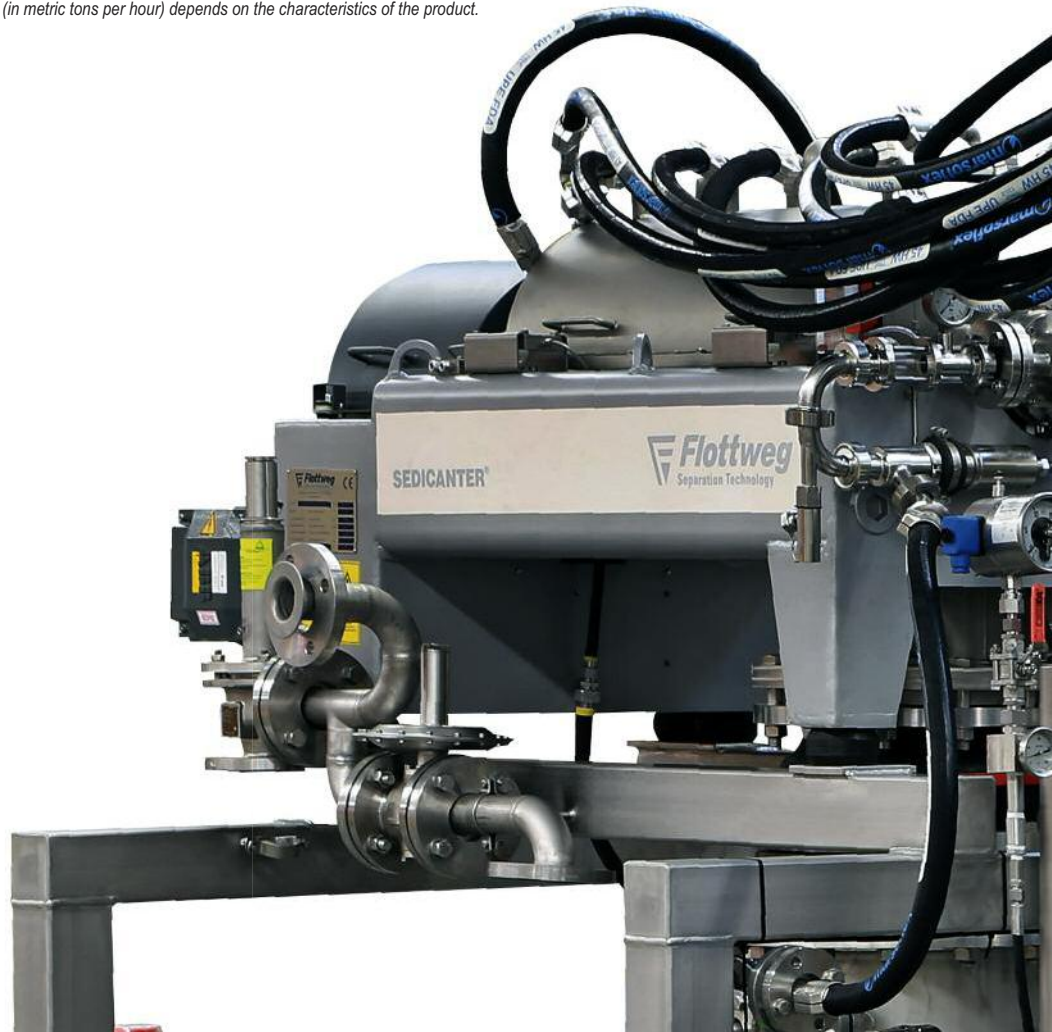
TECHNICAL DATA



TECHNICAL DATA FOR THE FLOTTWEG SEDICANTERS®			
Type	S3E-3	S4E-3	S6E-3
Bowl diameter	12"	18"	26"
Bowl rotation speed	7750 rpm	5000 rpm	3650 rpm
Max. g force	10000 x g	6500 x g	5000 x g
Differential speed	1.5 – 30 rpm	1.5 – 30 rpm	1.5 – 30 rpm
Materials of construction	All product wetted parts are made of rustproof and acid proof stainless steel (4.4571 and superior).		
Dimensions* (L x W x H)	90" x 28" x 30"	127" x 40" x 48"	179" x 67" x 50"
Total weight*	2315 lb	5300 lb	19000 lb
Motor for bowl drive	20 hp	50 hp	100 – 180 hp
Motor for scroll drive Flottweg Simp Drive®	5 hp	7.5 hp	20 hp
Capacity**	1 Mt/h	4 – 5 Mt/h	25 – 40 Mt/h
Design	S3E and S4E models are equipped with a hinged cover and flushing device for housing and scroll, optionally: electropolished finish/gastight version		

* Figures are guidelines only.

** Actual capacity (in metric tons per hour) depends on the characteristics of the product.



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FLOTTWEG SEDICANTERS® ARE AVAILABLE IN THE FOLLOWING DESIGNS

HYGIENIC DESIGN

For safe processing of food as well as pharmaceutical, fine chemical and biotechnological products. Complete CIP cleaning of all product-wetted parts. All metallic and product-wetted parts are made of austenitic or austenitic-ferritic stainless steels. No gaps or dirt traps. Elastomers and seals in compliance with FDA regulations. Includes flushing devices for the scroll body and the housing. Optional: Electro-polished bowl parts and scroll



Mobile test unit with explosion protection and purging device

EXPLOSION PROTECTION

with or without inert gas purging in compliance with ATEX or NEC directives for zones 1 and 2 for use in explosion hazard areas. The protection is necessary for processing media whose vapors together with oxygen form a potentially explosive mixture, such as solvents.



Flottweg Separation Technology – Engineered For Your Success



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