

THE FLOTTWEG TRICANTER®
A HIGH-QUALITY AND VERSATILE DECANTER CENTRIFUGE
Three-Phase Separation at its Best



THE TRICANTER® AND THE VARIABLE IMPELLER

Versatile and Efficient Three-Phase Separation

For more than 40 years, Flottweg has been manufacturing the Tricanter® for three-phase separation. This experience, combined with numerous and well-known reference companies all over the world, makes us one of the best possible addresses for mechanical separation technology. Even other manufacturers of separation technology use the term "Tricanter" when it comes to three-phase separation. These facts symbolize the pioneering spirit and role of Flottweg Separation Technology.

As already explained, the Tricanter® enables a simultaneous separation of three phases. So, a three-phase separation makes it possible to separate two liquid phases from one solid phase at the same time.

But how is that even possible? The different densities of the (immiscible) liquids and the solid mean that all three phases can be discharged simultaneously using the Tricanter®. This is the reason for the name Tricanter® (tri for three). To ensure that the separation process can take place, the solid phase must be the specifically heaviest phase and the liquid phases must have different densities. Otherwise, the scroll of the Tricanter® will not be able to transport the solid at all, or only inadequately, and this has an effect on the separation result.

The structure and function of the Tricanter® are similar to those of a decanter (two-phase separation). The decisive difference between these two machines has to do with the way that the liquid is discharged. There are two liquid phases in a Tricanter®. There is a "heavy" liquid phase (higher density and discharged under pressure) as well as a "light" liquid phase (lower density and discharged without pressure).

An impeller discharges the "heavy" liquid phase. Furthermore, the operator can use the adjustable impeller to adjust the pond depth of the

The Flottweg Tricanter® and its benefits

- Greatest possible purity of the liquids to be separated by using the adjustable impeller
- More than 40 years of experience ensure maximum continuity, versatility and performance
- Other processing steps/separating stages can be dispensed with, or are no longer required, thereby offering cost savings for the plant owner
- Adaptation to changing conditions (product in the feed) possible at any time
- Automation is possible
- Developed and manufactured in Germany for the highest possible production quality

heavy liquid without difficulty during ongoing operation. An adjustment mechanism causes the position of the impeller to change, thus changing the separation zone of the liquids (see page 3). The process engineering results can thus be influenced so as to achieve the required separation result.

TRICANTER® - TYPICAL APPLICATIONS FOR THREE-PHASE SEPARATION

- Processing tar as well as sludges containing oil from refineries, oil ponds etc.
- Processing sawlow thorn (sea buckthorn) berries
- Separating wheat starch and gluten during starch production
- Extracting animal/vegetable fats and oils
- And far more...

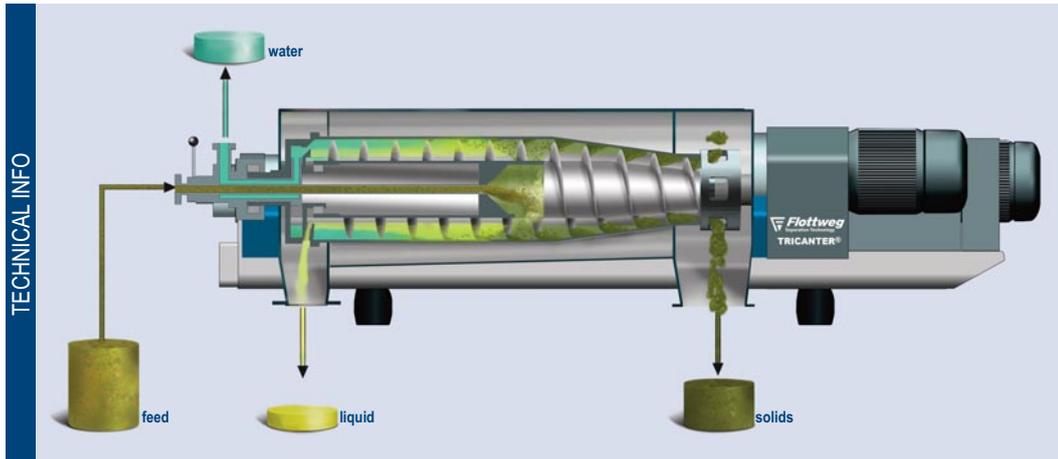


OPERATING PRINCIPLE 3-PHASE

The Flottweg Tricanter®

The Flottweg Tricanter® performs a three-phase separation, i.e. the simultaneous separation of two immiscible liquids with different densities and one solid phase, provided that the solid phase is the heaviest

phase. The main difference from a decanter is the separate discharge of the two liquid phases.



Flow of liquids and solids in a Flottweg Tricanter®



Customer benefits of the variable impeller

- Immediate adjustment of the pond depth and liquid-liquid separation zone during ongoing operation
 - ▶ optimum results
- Savings in costs due to the needlessness of a separate chamber pump
- Easy reading of the variable impeller scale ▶ ease of adjustment
- Automation is possible

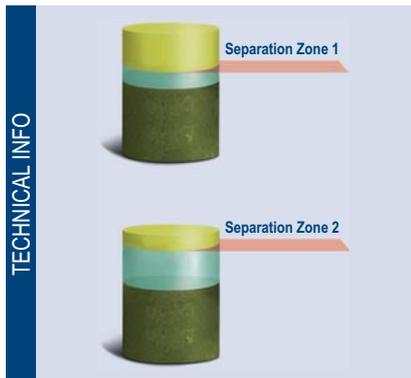
NO MATTER IF FEED CONCENTRATION VARIES

The Flottweg Tricanter® discharges the heavy liquid through an adjustable impeller under pressure and the light phase by gravity. The variable impeller allows for precise on-the-fly adjustment of the pond depth and liquid-liquid separation zone. This optimizes the purity

of the liquids and may eliminate downstream equipment. For detailed information regarding the variable impeller, please visit our website www.flottweg.com.



Feed and discharge devices with control lever for the adjustable impeller of the Flottweg Tricanter®



No matter if feed concentration varies: Best separation results with the Flottweg Tricanter® System

FLOTTWEG SEPARATION TECHNOLOGY – ENGINEERED FOR YOUR SUCCESS

Flottweg has been developing and producing centrifuges for more than 60 years including more than 40 years of successfully providing high-end machinery for three-phase separation. Flottweg convinces customers all over the world with an

unique experience as well as an outstanding expertise, especially when it comes to applying and using separation technology for the purpose of three-phase separation. Even more, by using Flottweg Systems and Equipment, customers receive significant and unique benefits in comparison to other providers of mechanical separation equipment or systems:

Why should a customer consider to buy Flottweg Machinery, Equipment and Systems especially the Tricanter®? The answer to that question is clear.

- **High-quality:**

We convince with high-quality machinery and systems. Due to our extensive and significant experience, we offer the best solution for customers. And “best solution” means total satisfaction!

- **Efficiency:**

By using our equipment, the highest purity of particular substances can be reached, increasing value for customers in turn.

- **Durability:**

Our Machines and Systems provide an outstanding durability. This can be confirmed by the fact that all necessary spare parts are still available even decades later (30 years and more).

- **The Tricanter® offers the following benefits:**

- greatest possible purity of separated liquids by using the adjustable impeller
- adaptation to changing conditions (product in the feed) possible at any time
- more than 40 years of experience in three-phase applications

... in other words, the Tricanter® symbolizes the benchmark for three-phase separation



GLOBAL AFTERMARKET SUPPORT NETWORK

No Matter Where You Are in the World



CUSTOMER SERVICE IS OUR STRENGTH

Application-based project planning, high-quality manufacturing and professional after-sales service are prerequisites for a trouble-free operation. Experienced and reliable service engineers from our customer service department are ready to respond quickly if needed. The Flottweg Service Group is also available to perform preventive maintenance in order to avoid interruptions in production.

QUALITY “MADE IN GERMANY”

Flottweg is ISO 9001 certified and manufactures its products in compliance with the latest technical standards.



Flottweg Services include

- Experienced advice on separation processes
- Pilot tests on-site or at the Flottweg Laboratory and Test Center
- Selection and sizing of appropriate equipment
- Customer-specific automation/control systems and process integration
- Design and construction of complete process systems
- Installation, commissioning, maintenance, repair and spare parts service worldwide

FLOTTWEG AFTER-SALES CUSTOMER SERVICE

Even the best machinery needs to be maintained and serviced. Flottweg has established a worldwide service network consisting of its own subsidiaries, branch offices, and representatives to provide our customers with localized service and spare parts.

Our service engineers and technicians are qualified for any kind of installation, commissioning, repair and maintenance.



Flottweg Service Technicians are always available for you

FLOTTWEG WORLDWIDE

Flottweg is headquartered in Vilsbiburg (near Munich), Germany, and has branch offices in Cologne and Leipzig as well as subsidiaries in Australia, Brazil, China, France, Italy, Mexico, Poland, Russia and the United States plus representatives in nearly all countries worldwide.

Check out our website at www.flottweg.com to find a competent contact person.



THE FLOTTWEG PRODUCT FEATURES

In terms of mechanical separation, there are various influencing factors that play an important role to achieve the highest possible outcome and benefit for customers. As a result, Flottweg sets itself apart from its competitors in terms of perfectly

meshing these individual parameters according to the principle "The Beneficial Combination For Your Efficient Solution".

In other words: the more perfectly adjusted each parameter is on another, the better the result at the end of the whole process.



LUBRICATION

- Clever designs
- Always clean oil on the bearing
- Minimal oil consumption
- Maximum protection of process due to consistent and precise lubrication



WEAR PROTECTION

- High resistance to wear of the decanter centrifuge
- Longer service life of the decanter
- Reduced costs, because only wearing parts are renewed



SEALING SYSTEMS

- Individual adaptation of the decanter centrifuge depending on the field of application
- No risk of explosion due to the avoidance of giving off undesirable product emissions to the surrounding area
- Possibility of processing toxic, hazardous or acid products



POND DEPTH

- The pond depth makes it possible for solids to be dewatered to a greater extent, which makes for an improved product result
- Improved clarifying performance, for improved total dry solids in the solid
- Possibility for directly influencing the separation performance by changing the pond depth; optimisation of the separation process
- Optimum adaptation to customers' requirements in order to achieve the best possible result



DECANTER SCROLL

- Especially made decanter scroll for highest performance
- A large „choice“ of variations due to decades of experience
- Individual adaptation of the decanter scroll for long-term customer satisfaction





ADJUSTABLE IMPELLER

- The variable impeller can be adjusted during ongoing operation
- Optimum adaptation to changed conditions (product property in the feed)
- Perfect separating properties are achieved, for an optimum product result
- Exact and variable setting of the pond depth is possible by changing the weir disc diameter
- Automation is possible



DIFFERENTIAL SPEED

- The differential speed makes it possible to keep the solid in the bowl for the ideal length of time
- Optimum dewatering with fluctuating feed conditions
- Optimum setting of the total dry solids that can be achieved
- Protection against overload and blockage
- Variably adjustable differential speed in order to be able to react to an extremely wide range of requirements (product properties in the feed)



SIMP DRIVE®

- High efficiency due to consistently high dry substance value (DS = the higher this value, the dryer the separated solid)
- High throughput performance due to high bowl speed and precisely adjusted differential speed
- Simple display and regulation of the scroll torque including overload protection
- The scroll speed and differential speed can be controlled easily, because they are independent from one another



MATERIALS

- Depending on the application, Flottweg offers the appropriate materials for your centrifuge
- Increased durability of the decanter centrifuge, even when confronted by aggressive media (acids, alkalis and cleaning agents)
- Maximum product quality during the entire process
- Improved stability of the decanter centrifuge



DECANTER BOWL

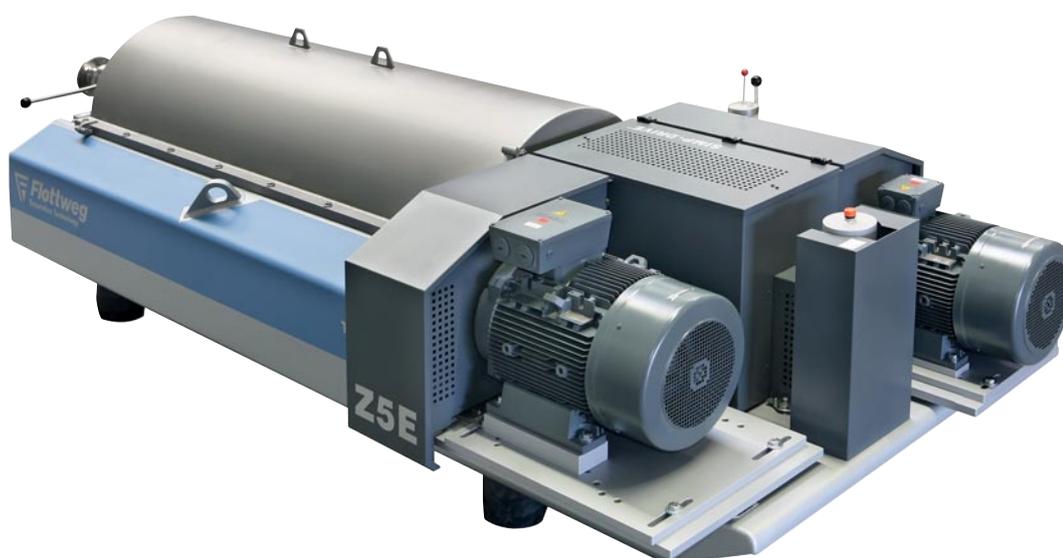
- The most varied applications demand different geometries from the decanter bowl. Flat cone, steep cone, diameter, outfeed diameter, extremely different length conditions:

Due to modular design Flottweg can always offer the correct decanter bowl that is precisely matched to customers' requirements.



SERVICE

- Repairs by qualified specialists and technicians
- Longer machine service life
- Minimised risk of the system/machine failing
- Improved process efficiency
- Expert and experienced employees are at your side
- All necessary spare parts are still available even decades later (30 years and more)



Flottweg Separation Technology – Engineered For Your Success



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