

**FLOTTWEG CENTRIFUGES,
BELT PRESSES AND SYSTEMS**
For Efficient Solid-Liquid Separation



FLOTTWEG

Our Company

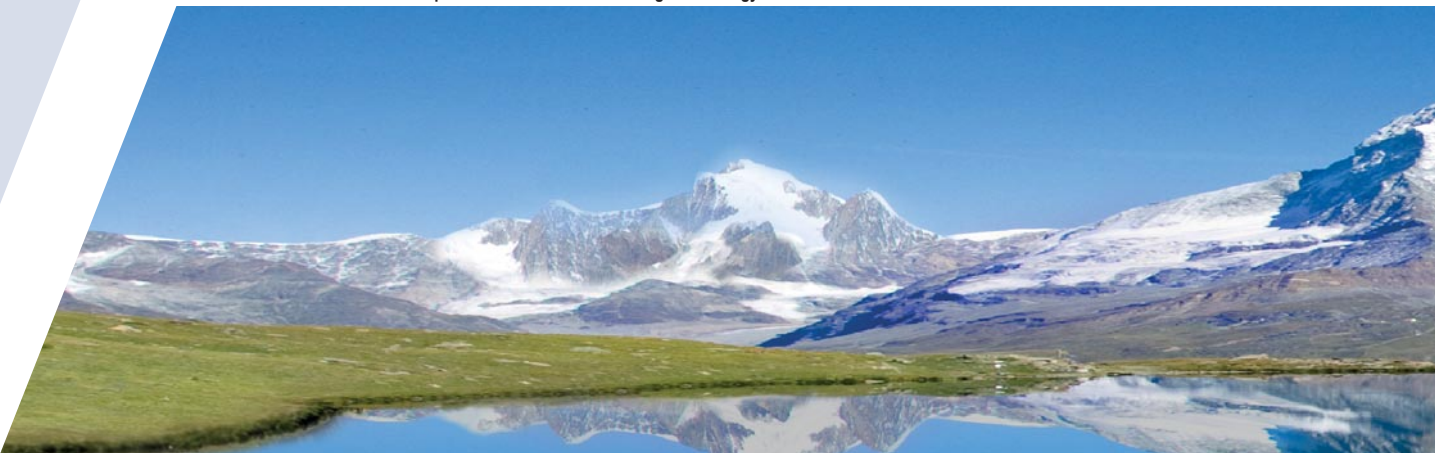
We have been manufacturing centrifuges, belt presses, and processing systems for **mechanical solid-liquid separation** for more than 60 years. This technology encompasses core functions in many industrial sectors, i.e. clarifying liquids, separating liquid suspensions and concentrating and dewatering solids. Our company has grown to more than 750 employees and we achieve sales of 145 Million Euro, with an export rate of more than 85%.

Over the years, we have gained considerable expertise in nearly all solid-liquid separation applications including applications in mining, mineral oil, chemical, biotech, food and environmental industries.

In order to offer our customers the best solutions available, we continuously update and develop our centrifuge and belt press technology and launch new models and versions on the market regularly. Today the Flottweg Product Range comprises decanters, Tricanter[®], Sedicanters[®], Sorticanters[®], disc stack centrifuges and belt presses. Flottweg Machines are available as single components or as complete processing systems, e.g. as compact systems on platforms or in containers.



Our contribution to environmental protection: Innovative centrifuge technology for effective waste water treatment



With decades of experience, we are keenly aware of the individual requirements in different applications and, therefore, we take this knowledge into consideration during the development of our machines.

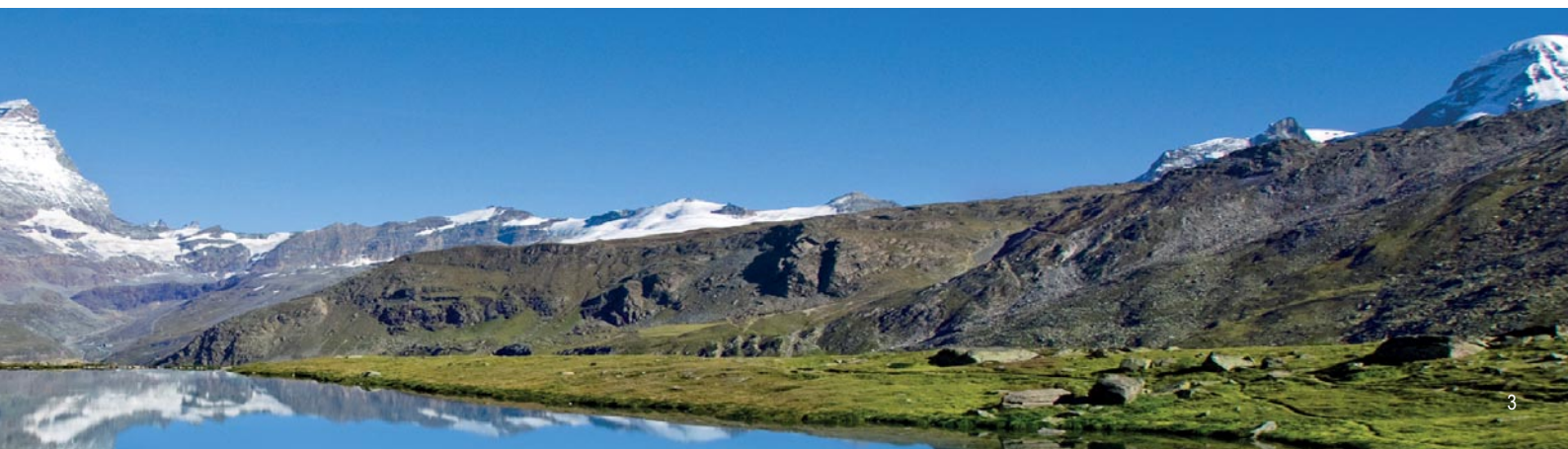


Our **worldwide service organization** including our subsidiaries and representative offices all over the world provides top notch customer service. Flottweg State-of-the-Art Technology is developed and manufactured in Germany.

Thousands of satisfied and renowned customers all over the world appreciate Flottweg Decanters, Disc Stack Centrifuges and Belt Presses and are our best references: Big groups such as Coca-Cola, Cargill, Shell and Heinecken as well as sewage plants in Hamburg, St. Petersburg and Sydney.



The Flottweg Headquarters in Vilsbiburg, northeast of Munich



SOLID-LIQUID SEPARATION

Since ever mankind has been making use of mechanical separation for wine clarification, wheat starch production, and gold washing. Common amongst these simple methods is separation by gravity settling (sedimentation) on one hand as well as mechanical pressing on the other hand.

When using centrifuges, gravity is replaced by centrifugal force. Today's centrifuges generate up to ten thousand times the force of gravity. Consequently, separation using centrifuges is faster and more efficient than gravity sedimentation. The pressing principles are technically realized using modern filter presses and centrifuges.

In many processes, mechanical separation is responsible for product quality, production efficiency and environmental compatibility. Mechanical separation processes are found in nearly all industrial sectors.

Modern centrifuges have many advantages compared to other mechanical technology.

Flottweg has developed special versions of decanters to treat specific solid-liquid suspensions: these include Flottweg Tricanter[®], Sorticanter[®], and Sedicanter[®]. These machines have been developed for optimum separation results in different applications to meet individual requirements.

Flottweg also offers disc stack centrifuges for clarifying and polishing liquids.

Flottweg Belt Presses complete Flottweg's Product Line. In contrast to the centrifuges, the solid-liquid separation is performed via filtration and mechanical pressing. Compared to other filtration methods, the advantage of the belt press is continuous operation.

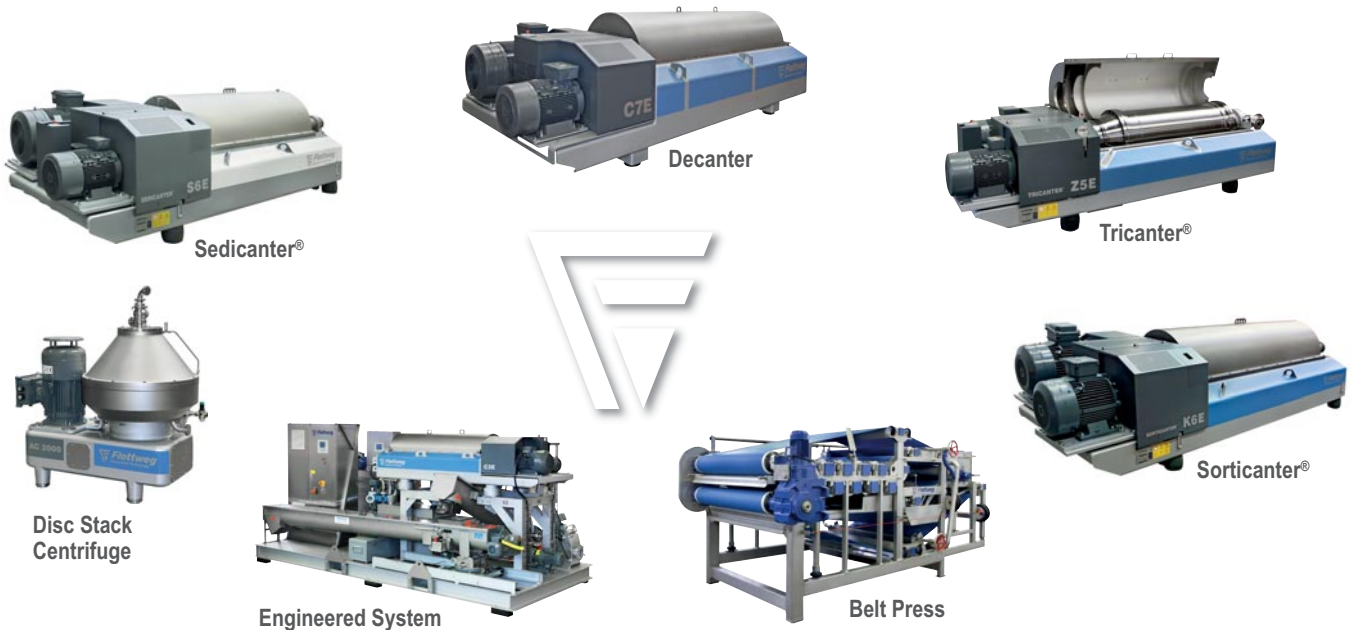
Advantages

- Small footprint
- Sealed construction to avoid odor emissions and product contamination
- Ease of handling through continuous and automatic operation
- No need for filter media or filter aids, etc.



FLOTTWEG PRODUCTS

And Applications



Basic operation	Solid-liquid (2 phases)					Liquid-liquid (2 phases)	Liquid-liquid-solid (3 phases)	Extraction	
	Clarifying liquids	Concentrating solids	Thickening and dewatering sludge	Dewatering solids	Wet-classification			Extraction from liquids	Extraction from solids
Decanter	■	■	■	■	■				■
Sedicanter®	■	■	■						■
Tricanter®	■	■					■		■
Sorticanter®					■				
Disc Stack Centrifuge	■	■				■	■	■	
Belt Press	■	■	■	■					■

Fats/Oils/Biofuels

Beverages

Chemicals/Pharmaceuticals/Food

Municipal Sewage Sludge

Aftermarket Support Worldwide

Industrial Waste/Mineral Oils

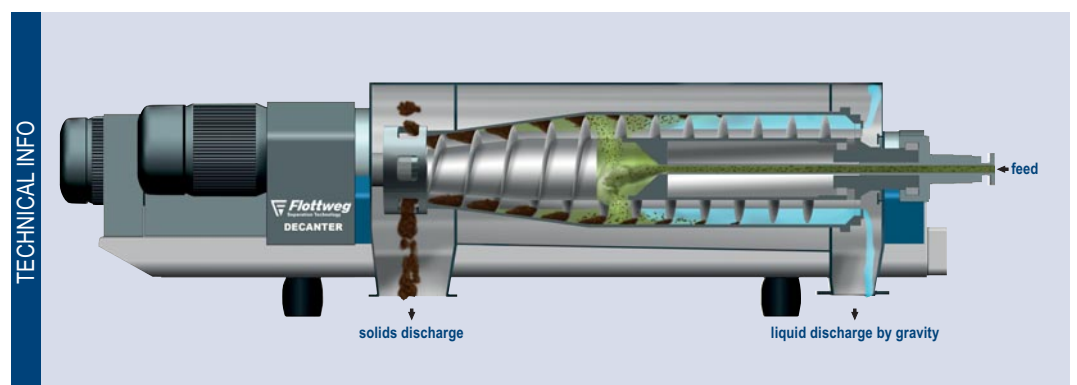
FLOTTWEG DECANTERS

Flottweg Decanters are used for continuous separation of suspended solids from liquids, clarification of liquids, classification of fine pigments, etc.

The Flottweg Decanter Product Line consists of two series: The C-series decanters are designed for the specific environmental requirements of waste water treatment. The Z-series decanters are modular in nature and can, therefore, be adapted to the specific demands of the different industrial sectors. Flottweg provides a broad range of decanter sizes, from pilot scale up to large commercial and industrial scale.

Typical applications

- Dewatering and thickening of sludge from municipal and industrial waste water
- Production of plastics and demisting of suspension polymers such as PVC, HDPE etc.
- Recovery and processing of animal and vegetable products (edible oils and fats, starches, proteins)
- Clarification of beverages (wine, beer, fruit and vegetable juices)
- Separation tasks in mining and minerals processing
- By-product stream clarification and dewatering for biofuels



Flottweg Decanter for the separation of solids from liquids with discharge by gravity of the liquid phase (centrate)

Flottweg Decanters of the Z-series

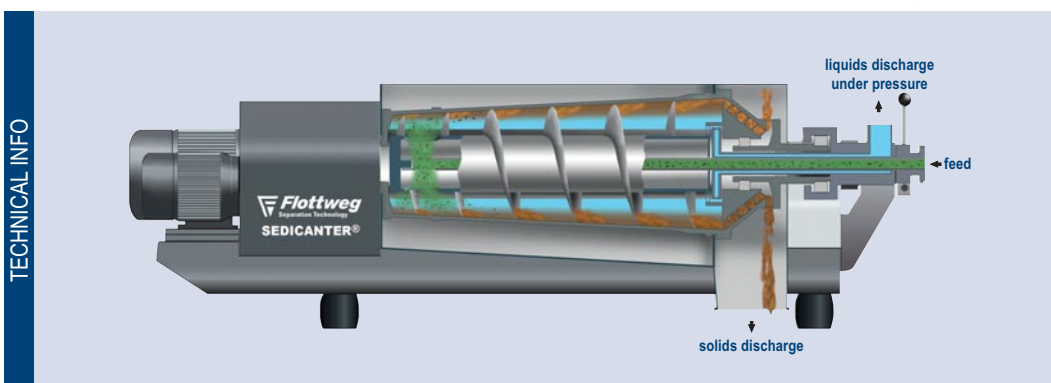


Flottweg Sedicanters® are used for the continuous separation of fine solids from liquids with the solids forming a soft to flowing sediment. Flottweg Sedicanters® are preferably used in cases where the solids are too fine to be effectively processed in a decanter and the sediment cannot be easily discharged from the decanter due to its soft consistency.

Flottweg's range of Sedicanter® sizes includes machines with capacities up to 50 m³/h (220 gallons per minute).

Typical applications

- Separation of biomass (yeast cells, bacteria, etc.) from fermentation broth
- Recovery and processing of vegetable proteins, e.g. soy
- Beer recovery from spent or surplus yeast



Flottweg Sedicanter®

Flottweg Sedicanter® for beer recovery



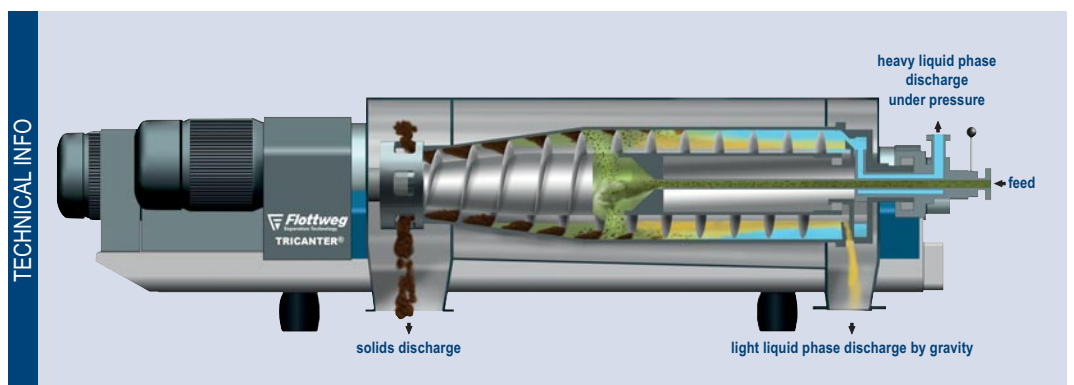
FLOTTWEG TRICANTERS®

Flottweg Tricanters® are utilized for continuous three-phase separation, i.e. simultaneous separation of two immiscible liquids and one solid phase; provided the liquids have different densities and that the solid phase is the heaviest phase. Construction and function are similar to the decanter. The most important difference is the separate discharge of the two liquid phases.

Flottweg's Tricanters® range in size from pilot scale to commercial and industrial scale with capacities of 80 m³/h (350 gallons per minute).

Typical applications

- Processing oil sludge from refineries, oil ponds, etc.
- Recovery and processing of animal and vegetable fats and oils
- During starch production for the separation of wheat starch and gluten



Flottweg Tricanter® (three-phase decanter)



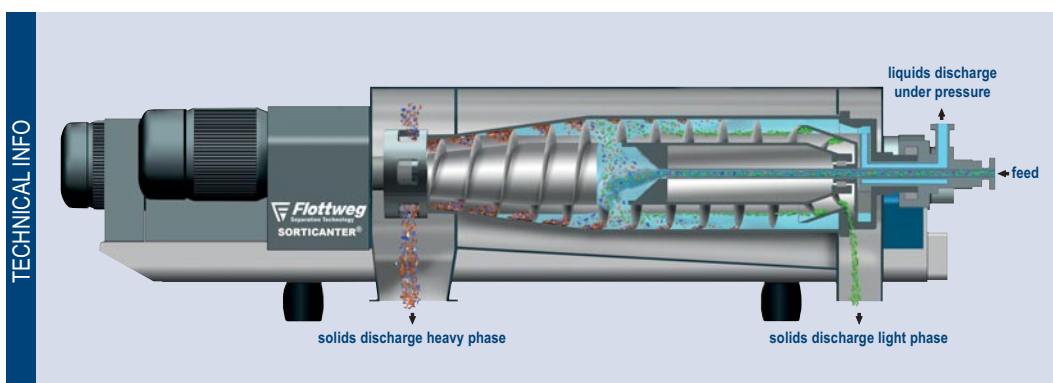
Flottweg Tricanter® System for processing oil sludge

Flottweg Sorticanters® are special centrifuges for the continuous separation of solids with different densities from a liquid. The process consists of a carrier liquid with a specific gravity that is between the densities of the two solid phases to be separated.

Flottweg Sorticanters® have phases capacities up to 1,000 kg/h of solids, depending on the properties of the feed.

Typical applications

- Plastic recycling
- Separation of mixtures with a floating and a settling solids phase from a liquid phase, with the density of the liquid being between the densities of the two solid phases



Flottweg Sorticanters®

Flottweg Sorticanter® System for plastics recycling



FLOTTWEG DISC STACK CENTRIFUGES

Disc stack centrifuges with self cleaning bowls are used for the separation of suspended solids from liquids and for two immiscible liquids with the simultaneous separation of solids.

Flottweg developed the AC-series of disc stack centrifuges. They are equipped with the **Soft Shot®** discharge system and feature accurate partial discharges and smooth operation.

Flottweg's Disc Stack Centrifuges have capacities from below 1 m³/h (4 gallons per minute) to 85 m³/h (370 gallons per minute).



Typical applications

- Beverage industry
- Food
- Chemical, biotech
- Animal and vegetable fats and oils
- Mineral oils etc.

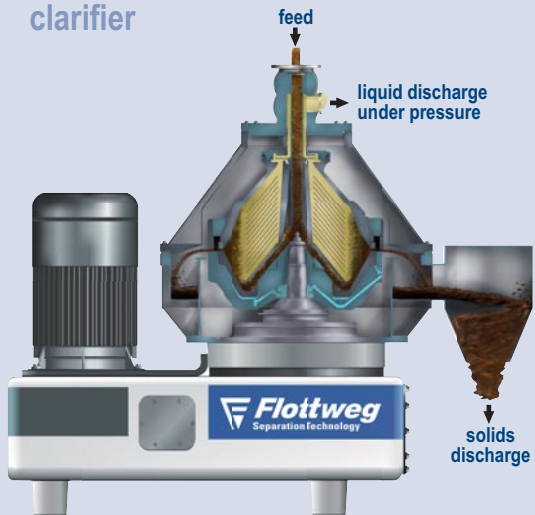
The range of Flottweg Centrifuges also includes special centrifuges which are used in soap production like the separation of toilet soap and lye.

Flottweg's Soap Centrifuges can process capacities from 1,000 to 10,000 kg/h soap.



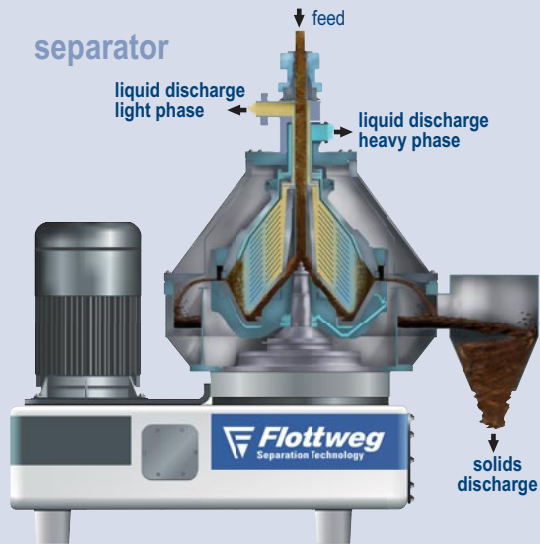
Flottweg Disc Stack Centrifuge, model AC 2500, for the clarification of fruit juice and fruit wine

clarifier



Flottweg Clarifier for the separation of solids from liquids

separator



Flottweg Separator for the separation of two immiscible liquids with simultaneous separation of solids



The picture shows the bowl of a disc stack centrifuge

FLOTTWEG BELT PRESSES

Flottweg Belt Presses are used for the continuous separation of liquid from different solid-liquid mixtures. In some processes, they can be used for second stage dewatering of the solids phase from a decanter.

Flottweg Belt Presses are made entirely of stainless steel. This provides for high hygienic standards and long term durability. Flottweg Belt Presses are ergonomically designed for easy access during operation and cleaning. A pneumatic belt-control system ensures for reliable operation with minimal manpower.

Flottweg Belt Presses have capacities from 1 up to 40 tons per hour of raw material feed.

Typical applications

- Extraction of juice from fruits and vegetables
- Dewatering of brewer grains
- Extract from algae
- Coffee grounds
- Extract from herbs



Flottweg Belt Presses for the extraction of apple juice



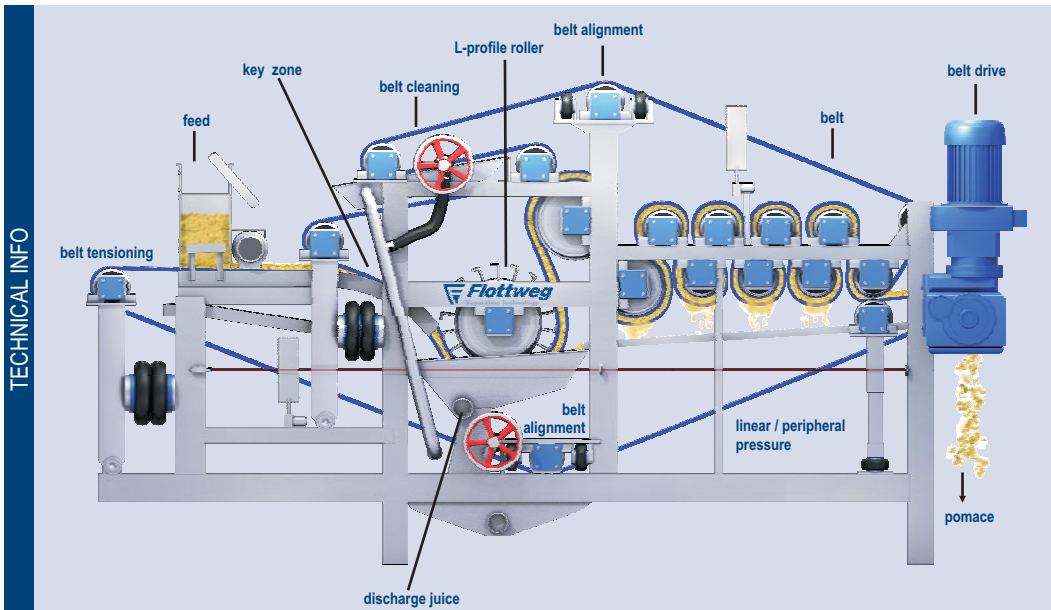


Diagram: How the belt press works

FUNCTIONAL DESCRIPTION

Via a **feed box** the product is spread uniformly and continuously onto the lower belt. In the **key zone**, the upper belt exerts a constantly increasing surface pressure on the product, thus building up a stable filter cake. In the pressing zone, the dewatering process begins in the first stage via the **L-profile roller** which provides a quick discharge of the separated liquid to both sides. In a second stage, the product is pressed via multiple **press rollers** with decreasing roller diameters. By applying increasing pressure and shear stress, the product is dewatered quickly and efficiently; as an option, there are rollers available for **linear** and **peripheral pressure** for further optimization of the machine's efficiency. In order to maintain high pressing capacity, the belts are continuously cleaned using pipes with **high pressure spray nozzles**.



Fruit slurry before it enters the key zone



FLOTTWEG PROCESSING SYSTEMS

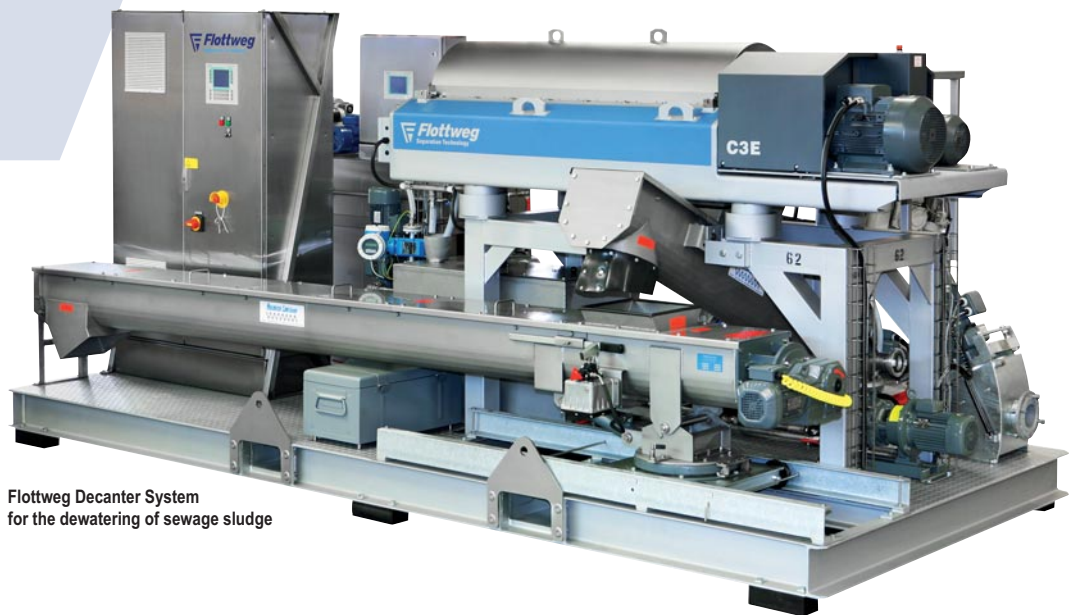
Separation processes often represent a challenge for our customers. Every process is different.

We offer our customers customized Flottweg Systems which satisfy the specific demands of the different industries. Upon request, the centrifuges and belt presses can be integrated into a completely skidded or containerized unit with the necessary additional components like pumps, heat exchangers, grinders etc.

Together with the customer, our project engineers custom design process systems and solutions for the specific separation task. The benefit of individual solutions is clear: Systems specifically adapted to customer processes run more reliably and efficiently.

Benefits of Flottweg Engineered Systems

- Optimum consultation in separation technology
- Process development and optimization
- Conception, scheduling, and construction of complete separation process lines
- Installation and commissioning from one source



Flottweg Decanter System
for the dewatering of sewage sludge

Flottweg Container System for processing oil sludge



High availability of all Flottweg Machines is one of our top goals. Sophisticated engineering, high manufacturing standards and professional maintenance are pre-requisites for trouble-free operation. Our competent and reliable customer service is ready when needed. We also provide preventive maintenance upon request.

Our skilled engineers and technicians are highly trained on centrifuges and belt presses.



Flottweg Service at a glance

- Layout of equipment and control units
- In house or field tests using mobile test units
- Rental machines and systems
- Used machines
- Customer after-sales support
- Customer trainings



QUALITY "MADE IN GERMANY"

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



Flottweg Products are designed and manufactured in Germany.

FLOTTWEG WORLDWIDE

Flottweg is headquartered in Vilsbiburg, Germany, (near Munich) 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.



Flottweg Separation Technology – Engineered For Your Success



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