



**SUCCESS IS ...
HIGH QUALITY,
EFFICIENCY, AND
SUSTAINABILITY**

Flottweg Centrifuges for the Recovery of A- and B-Starch,
Gluten, and Proteins



Engineered For Your Success



TABLE OF CONTENTS

Your Strong Technology Partner	page 02
The Starch Production Process at a Glance	page 03
Turn-Key Systems from a Single Source	page 05
The Flottweg Tricanter®	page 07
The Flottweg Sedicanter®	page 08
The Flottweg Nozzle Separator	page 09
The Flottweg Curved Screen BSF	page 13
The Flottweg Dough Mixer DMF	page 14
Flottweg Quality and Service	page 15





YOUR STRONG TECHNOLOGY PARTNER

Sustainable Starch Production

The efficient recovery of starch and proteins from renewable raw material coupled with the careful use of resources is becoming ever more challenging for producers.

The growing global need and ever-increasing demands of the food industry on raw materials are running up against the increasing scarcity of raw materials and supply bottlenecks.

Mechanical solid-liquid separation and industrial centrifuges in particular have been playing a key role in the sustainable production of starch, gluten, and plant-based proteins for many years.

Economical and Ecological

Flottweg has been a partner to the global starch industry for many years, assisting in the planning and implementation of efficient solutions. Globally, our systems process more than 4.5 million tons of wheat starch a year – and the trend is upwards. Our innovative process lines are continuously improving the separating and energy efficiency of our systems. For each application, Flottweg develops optimum process lines or delivers customized decanter centrifuges as required, helping to recover A- and B-starch, gluten, bran, and proteins in a closed system.

At the same time, going easy on resources, generating high yields and reducing our consumption of water and electricity are crucial to us. This is a win-win situation for producers and the environment.

This brochure sets out how we can support your production process in a sustainable way. Read on to learn more or contact one of our global experts directly via our website www.flottweg.com.

THE STARCH PRODUCTION PROCESS AT A GLANCE

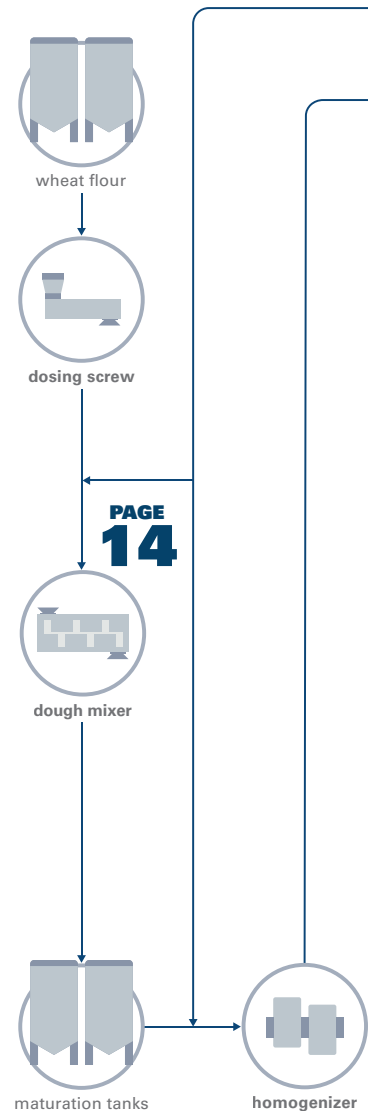
The Process of Extracting Starch and Gluten

Flottweg is one of the leading manufacturers of complete process lines for wheat starch production. Thanks to decades of experience, especially in three-phase separation, Flottweg offers innovative process lines which have been optimally adapted to your individual demands. This way, Flottweg customers benefit from optimum yields with minimum expenditure on technical equipment and the lightest possible use of resources.

Possible end products of wheat treatment are:

- Purified and dewatered vital gluten
- Purified A-starch suspension for the manufacture of glucose and native starch or as the basis for modified starch
- Concentrated B-starch suspension for use in ethanol production or as animal feed
- Concentrated pentosan fraction for use as animal feed

In three-phase separation, the Flottweg Tricanter® is a leading-edge technology. For instance, the adjustable impeller ensures efficient separation and an optimum final product, even with variable raw material quality. In terms of energy efficiency, our machines are also continuously being optimized with technical features such as the Flottweg Simp Drive®. The Flottweg nozzle separator has been completely redeveloped in a successful collaboration with our customers, setting new market benchmarks regarding energy consumption, capacity, and yields.



Flottweg – Guaranteeing the Best Possible Complete Solution

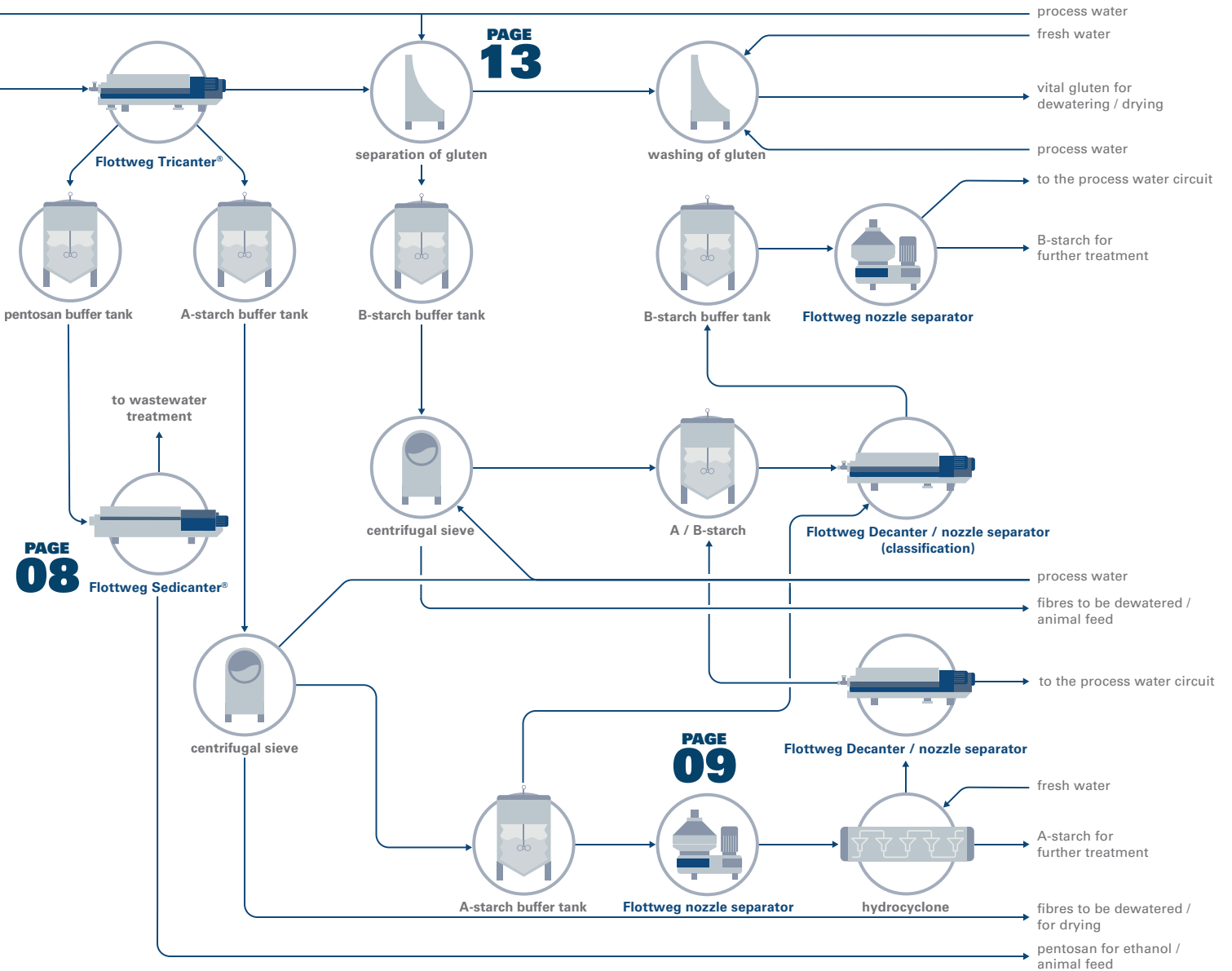
- Efficient engineering in close cooperation with end customers and/or local contractors
- References all over the world from all well-known starch producers
- Proven cooperation with renowned sub-suppliers
- Reliable support during the commissioning and optimization of your system



PAGE 07

PAGE 13

PAGE 09



PAGE 08



SUCCESS IS A TURN-KEY SYSTEM FROM ONE SOURCE

Experience – Long-time Competence and Trust

Flottweg has been a supplier for the starch industry all over the world for more than 30 years. The old system of gluten separation in the wheat starch process, called the “Martin Process”, has been progressively replaced by the modern three-phase process based on the Tricanter®. Flottweg has accompanied this development from the very beginning and has worked with their customers to optimize the processes.

Complete Systems – for a Smooth Operation and High Yields

Flottweg is a well-known manufacturer of complete systems in the wheat starch industry, offering a complete process line for the so-called wet process, which starts with flour dosage and ends with the purified final products (humid gluten and starch suspension).

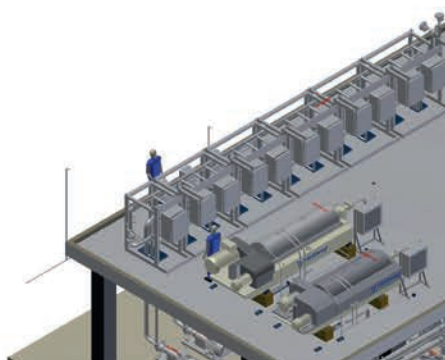
Worldwide References Are the Best Proof

Flottweg centrifuges are used in all well-known starch factories all over the world. For more than 30 years, we have been excelling with our centrifuges when it comes to reliability, high quality, and excellent service.

Our Engineering Capacities for Your Success

Mechanical separation technology presents us and our customers with major challenges time and again. Every process is unique, and the influencing factors vary widely. As a result, an “off the shelf” solution is usually impossible.

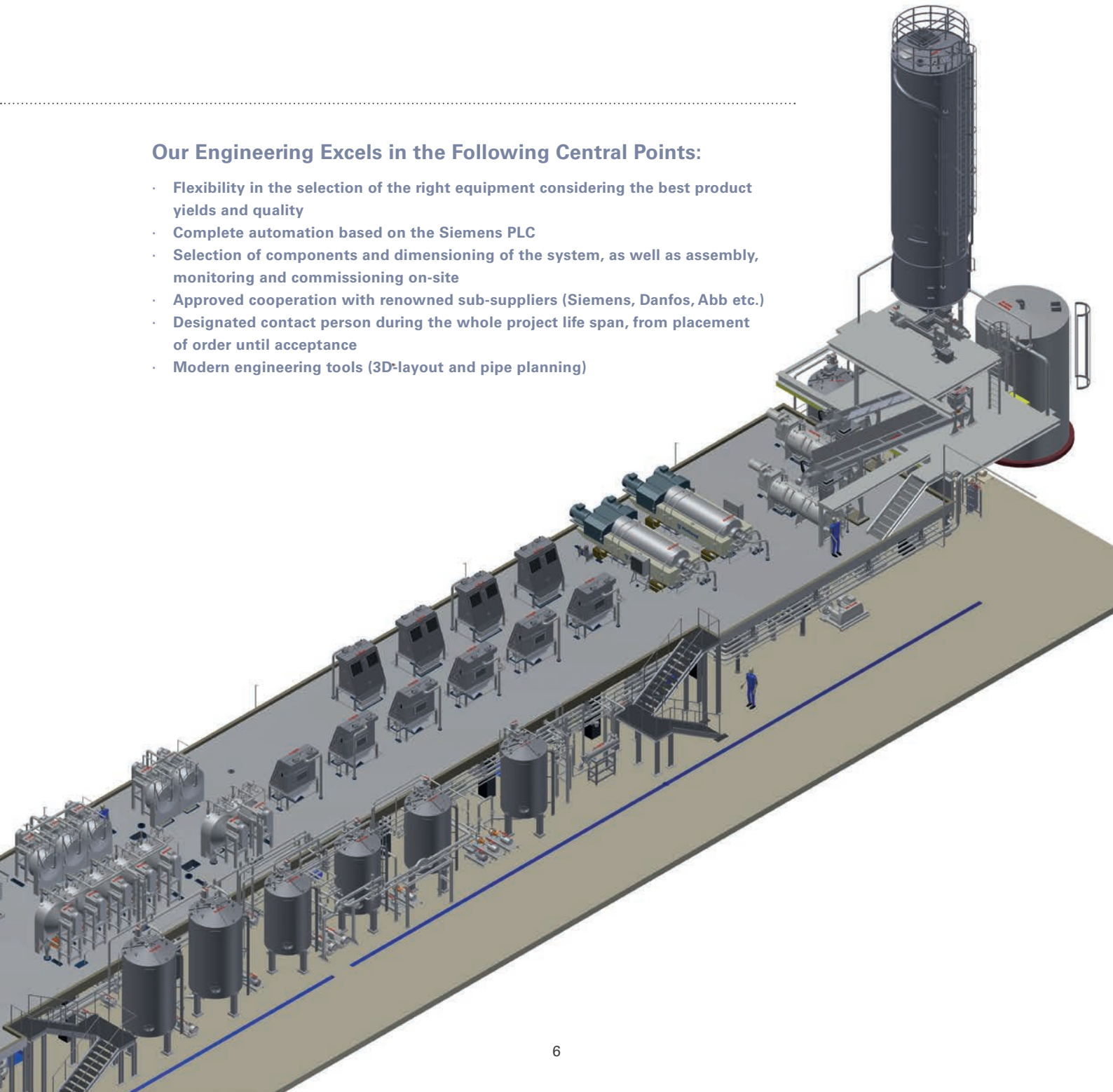
Flottweg is your partner for individual solutions in mechanical separation technology. We offer you the best solution based on our technology and experience. Together, we’ll find the best possible way to achieve the ideal overall process under the general conditions specified. We’ll work out processes together and place emphasis on the details. Together, we’ll achieve the optimum result.





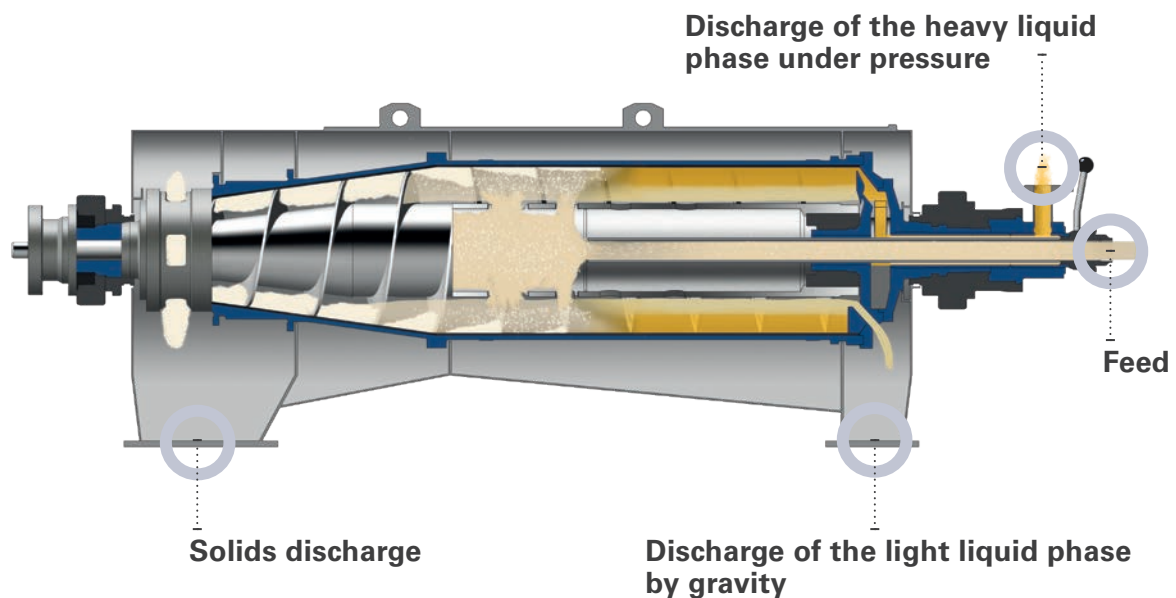
Our Engineering Excels in the Following Central Points:

- Flexibility in the selection of the right equipment considering the best product yields and quality
- Complete automation based on the Siemens PLC
- Selection of components and dimensioning of the system, as well as assembly, monitoring and commissioning on-site
- Approved cooperation with renowned sub-suppliers (Siemens, Danfos, Abb etc.)
- Designated contact person during the whole project life span, from placement of order until acceptance
- Modern engineering tools (3D-layout and pipe planning)





THE FLOTTWEG TRICANTER®



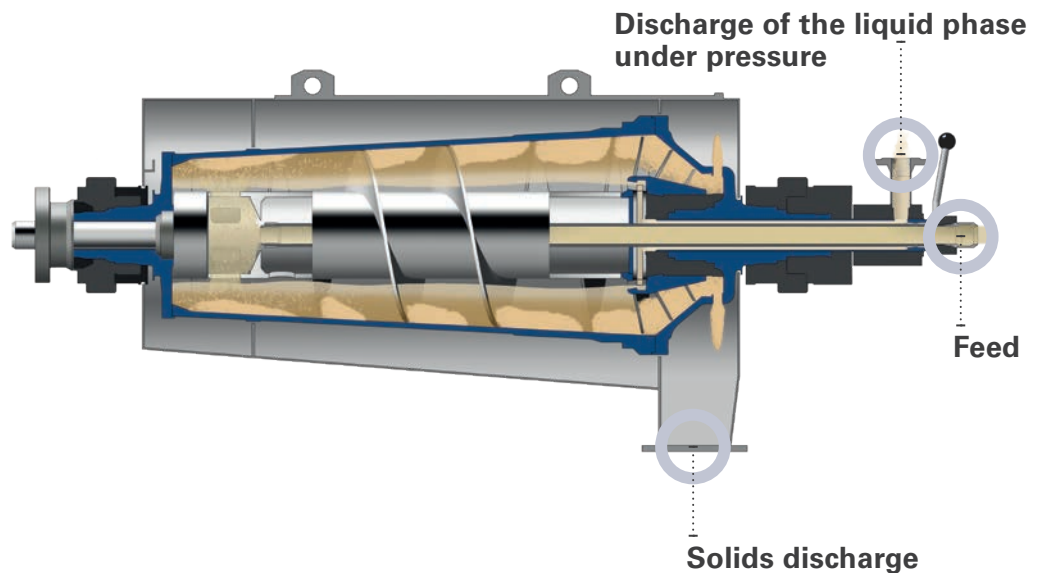
The Flottweg Tricanter® and Its Benefits

- Greatest possible purity of the liquids to be separated and optimum adaptation to changing conditions of the product in the feed by using the adjustable impeller
- Other processing steps / separating stages can be eliminated or are no longer required, offering cost savings for the plant owner
- Optimum centrifuge model for any capacity
- The Flottweg Tricanter® meets current requirements for hygienic processing.
- Developed and manufactured in Germany for the highest possible production quality
- Experience and know-how – Flottweg has been manufacturing the Tricanter® for three phase separation for more than 40 years.
- The Flottweg Tricanter® stands for maximum performance, quality, versatility, and continuity.





THE FLOTTWEG SEDICANTER®



Soft and flowable solids like proteins, pentosan, and so on are hard to process using a standard decanter. Only the patented Flottweg Sedicanter® can provide an optimum result. Even under changing feed conditions, it gets the best separation results thanks to its adjustable impeller.

The Flottweg Sedicanter® and Its Benefits

In wheat production, the Flottweg Sedicanter® can be used in the following applications:

- Separation of fine starch from different process wastewater
- Clarification and concentration of pentosan
- Clarification of saccharized starch suspensions

Technical characteristics of the Flottweg Sedicanter®:

- Separation of difficult-to-sediment solids with an acceleration of up to 10,000 g
- Available with the approved Flottweg Simp Drive®
- Available in hygienic design
- Gastight operation is possible



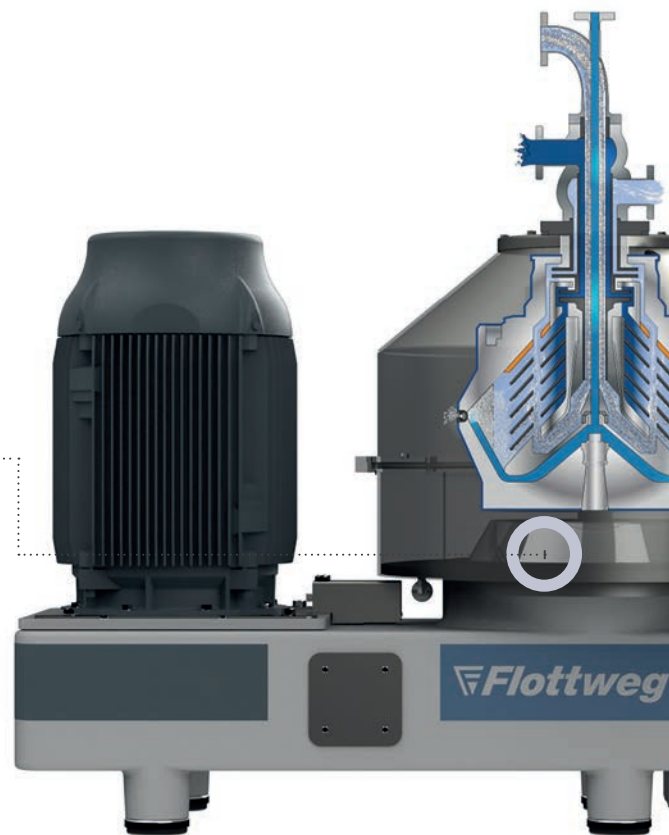
ENERGY-SAVING, MAINTENANCE- OPTIMIZED AND POWERFUL

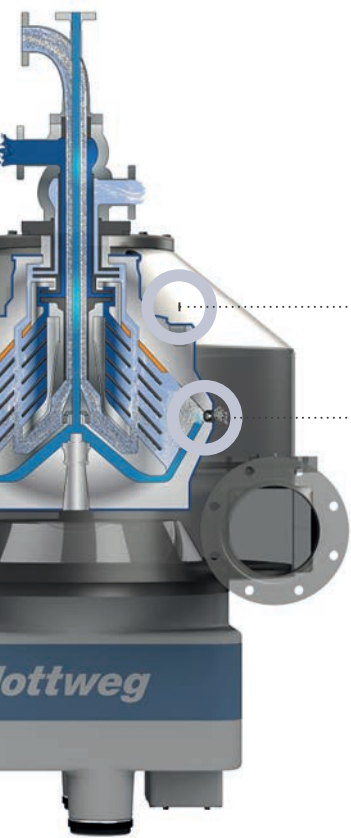
Flottweg Nozzle Separators in 2- or 3-Phase Configuration

Our Flottweg nozzle separators are available in two basic configurations: a 2-phase configuration to separate solids from liquids and a 3-phase configuration to separate solids from liquids and simultaneously fractionate different particle sizes. In this way, the Flottweg nozzle separators can be adapted to existing production processes.

The Compact Spindle Drive

- Reduced current during acceleration and quick acceleration to the operation speed
- Flexible adaptation to the requirements of the product to be processed thanks to a simple and variable control system for the bowl speed and smooth operation
- Reduced power demand and reduced mechanical stress on the system
- Standard drive motors, i.e. high availability
- Drive concept for reduced wear due to a contact-free sealing concept for high availability
- Easy maintenance thanks to a modular construction, which allows for simple replacement of the compact spindle.





The Bowl

- Bowl with innovative interior design for optimum running smoothness and hygienic requirements
- Optionally, the bowl can be equipped with a washing device that is designed as a contact-free and maintenance-free system.
- Optionally, it is possible to recycle the concentrate to obtain a higher concentration in order to compensate for product fluctuations and to stabilize the process.
- The entire bowl can be mounted or demounted as it is a compact assembly group for easy maintenance.

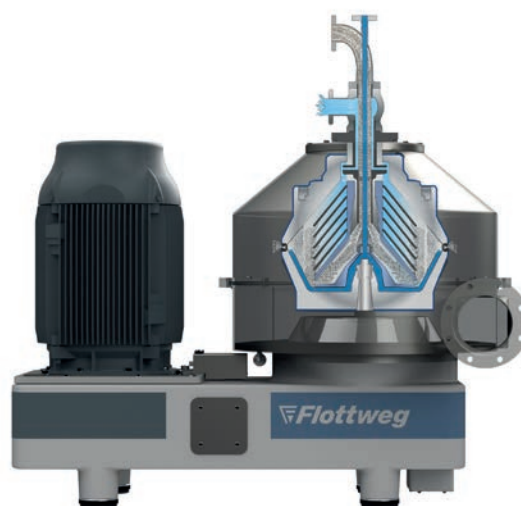
The Nozzles

- Quick and easy replacement of the nozzles makes it possible to optimally adapt the system to the product to be processed.
- Nozzles with different diameters are available for an optimal adaption to the process.
- The nozzles are protected against wear using inserts of hard metal for a long lifetime.
- The innovative alignment of the nozzles assures maximum energy recovery during the solids discharge.

AN EFFICIENT SOLUTION

Developed with Our Customers and for Our Customers

Flottweg nozzle separators enable the separation of solids from liquids and assure a highly efficient clarification or separation. Our separation technology experts have developed the Flottweg nozzle separator in collaboration with our customers.



Centrifugal Acceleration

- The actual g-forces in the nozzle separator are up to 9000 x g
- The high g-force enables an efficient clarification or separation

Master Saver

- Maximum energy saving thanks to an innovative bowl design
- Optimized flow pattern inside the machine
- Consistently optimized weight of the rotation components

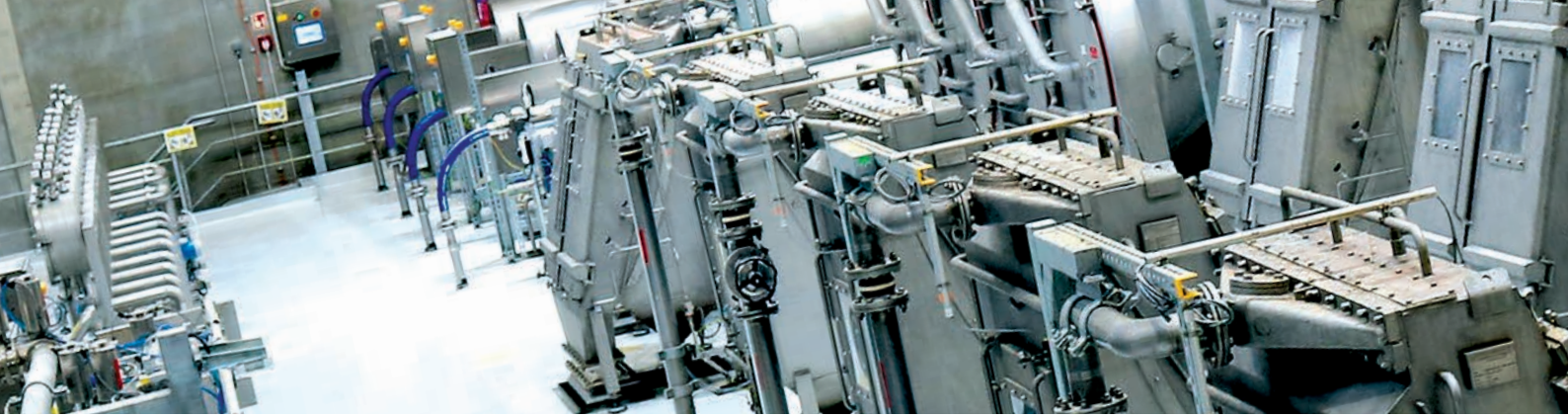
Perfect Hygienic Design

- Construction in compliance with the principles of hygienic design
- Deposit-free solids discharge
- Product wetted parts made of high-quality stainless steel
- Easy integration into CIP processes

Intelligent Design

- Closed-loop lubrication system reduces wear.
- Contact-free sealing concept
- Carbide wear protection for long nozzle life
- Belt drive for high machine availability
- Quick assembly or disassembly of the compact spindle drive resulting in reduced costs for service and maintenance





THE FLOTTWEG CURVED SCREEN BSF

Curved screens are used in the following applications:

- Static solid/liquid separation
- Dewatering of high-viscosity media
- Separation of starch and gluten
- Preliminary dewatering of wheat gluten

The Flottweg curved screen – the functional principle

A curved screen works on a simple principle. The screen is made of metal profile rods whose edges lie in the direction of flow of the medium. The result is that the solids slide down under the force of gravity. At the same time, the liquid flows through the screen. At the end of the curved screen is a collector for the separated materials.

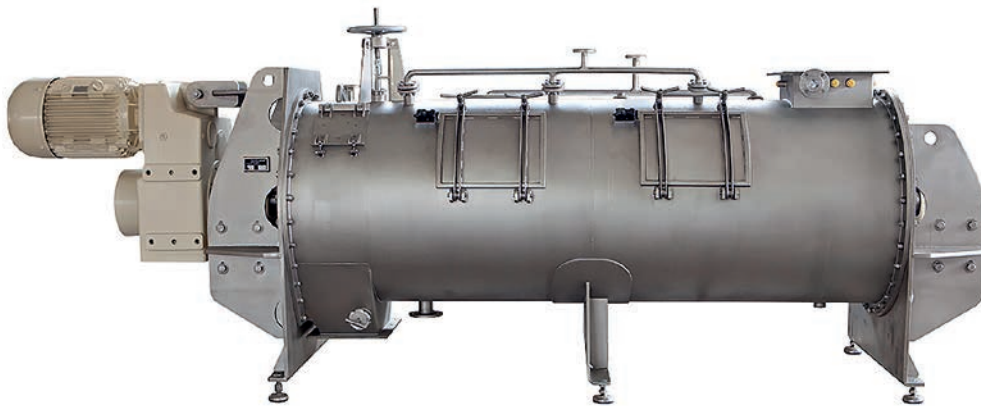


The Advantages of the Flottweg Curved Screen

- **Optimized product feed under primary pressure**
- **Closed housing**
- **Washing nozzles to wash the solids**
- **Simple maintenance**
- **Curved screens are easy to clean**
- **CIP cleaning possible (Cleaning In Place)**
- **Automatic high pressure cleaning of the screen surface (option)**



THE FLOTTWEG DOUGH MIXER DMF



The Flottweg dough mixer – the functional principle

Hygienic, low-maintenance, and heavy-duty describe the Flottweg dough mixer (DMF). Dough mixers are used for the continuous, no-caking, no-residue mixing or processing of wheat flour and water. Flottweg designed the dough mixer with an optimum arrangement of paddles to the mixer housing. The result: a homogeneous dough that can be processed in later steps without problems. Thanks to the continuous, gentle product handling, the Flottweg dough mixer meets requirements perfectly.

The Advantages of the Flottweg Dough Mixer

- **Continuous mixing**
- **Intense mixing with gentle product treatment**
- **Mixing without sticking and leaving residues**
- **Processing of wheat flour and water so that a homogeneous dough is generated**
- **Product wetted parts made of stainless steel**
- **Maintenance friendly**
- **Robust design**
- **CIP cleaning possible**



FLOTTWEG QUALITY AND SERVICE



Guaranteed Flottweg Quality

Typical “Made in Germany” quality: We have a very clear idea about quality and do not make any compromises here. Often, our customers have to deal with aggressive substances contained in wastewater. That is why we only use rustproof and acid-resistant materials for wetted parts.

Our optimally equipped machines will withstand your demands permanently – in extreme cases 24/7.

Our strict quality controls (DIN ISO 9001:2015) as well as the ability to track all critical components provide additional product safety.



Our Service – Always Available for You!

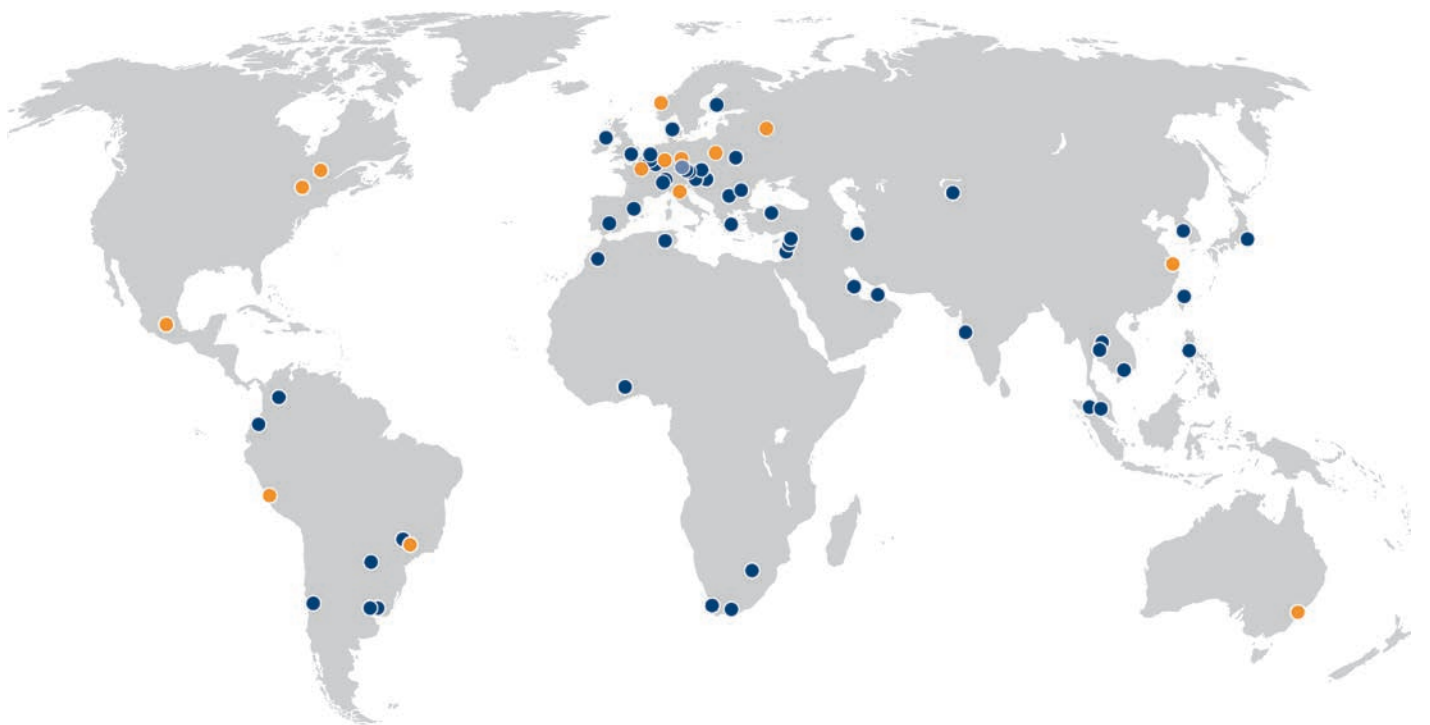
Almost 1100 employees located globally throughout our network of more than 60 sales and service points are ready to assist you.

We not only strive to provide excellence when selecting and dimensioning our systems, but we are ready to assist you also afterward, whenever you need us – in more than 100 countries worldwide and 24/7.

Any questions? Then don't hesitate to contact us!

We will show you how you can save costs and energy when using the Flottweg turn-key systems. Together with our experts, we'll discover your precise optimization potential.

For more information, please visit our website: www.flottweg.com.



- – Headquarters
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