



CORN OIL TRICANTER® MAXIMUM CORN OIL YIELD IN THE BIO- ETHANOL PROCESS

High quality, maximum yield, easy maintenance and operation



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MORE YIELD, LESS EFFORT

Not only Flottweg stillage decanters help to optimize bioethanol plants – the Flottweg corn oil Tricanter® also optimizes corn oil extraction

What challenges are bioethanol producers facing:

Fluctuating availability and quality of raw materials as well as technical and regulatory hurdles.

What bioethanol producers want:

Efficient oil extraction in bioethanol production along with a flexible, robust and reliable solution to improve the overall oil yield and performance of the plants.

What is the solution for bioethanol producers:

Flottweg focuses on optimizing corn oil extraction in bioethanol plants: The Flottweg corn oil Tricanter® enables the targeted separation of valuable distillate oil. It provides a higher yield in comparison to conventional separators.

What is the result for bioethanol producers:

Economic advantages and pure oil of high quality – ideal as a feed additive or raw material for biodiesel .

Corn oil Tricanter® from Flottweg, the world's leading manufacturer of industrial centrifuges, separate the corn oil from the syrup in a single process step after evaporation. The corn oil Tricanter allows easy operation, low energy consumption as well as very low maintenance.

Flottweg corn oil Tricanter®: the proven solution for optimizing your processes and increasing the value of your production.

Higher ROI: the best reason to make the switch!

With the Flottweg corn oil Tricanter®, you get a proven system that offers the following benefits, among others:

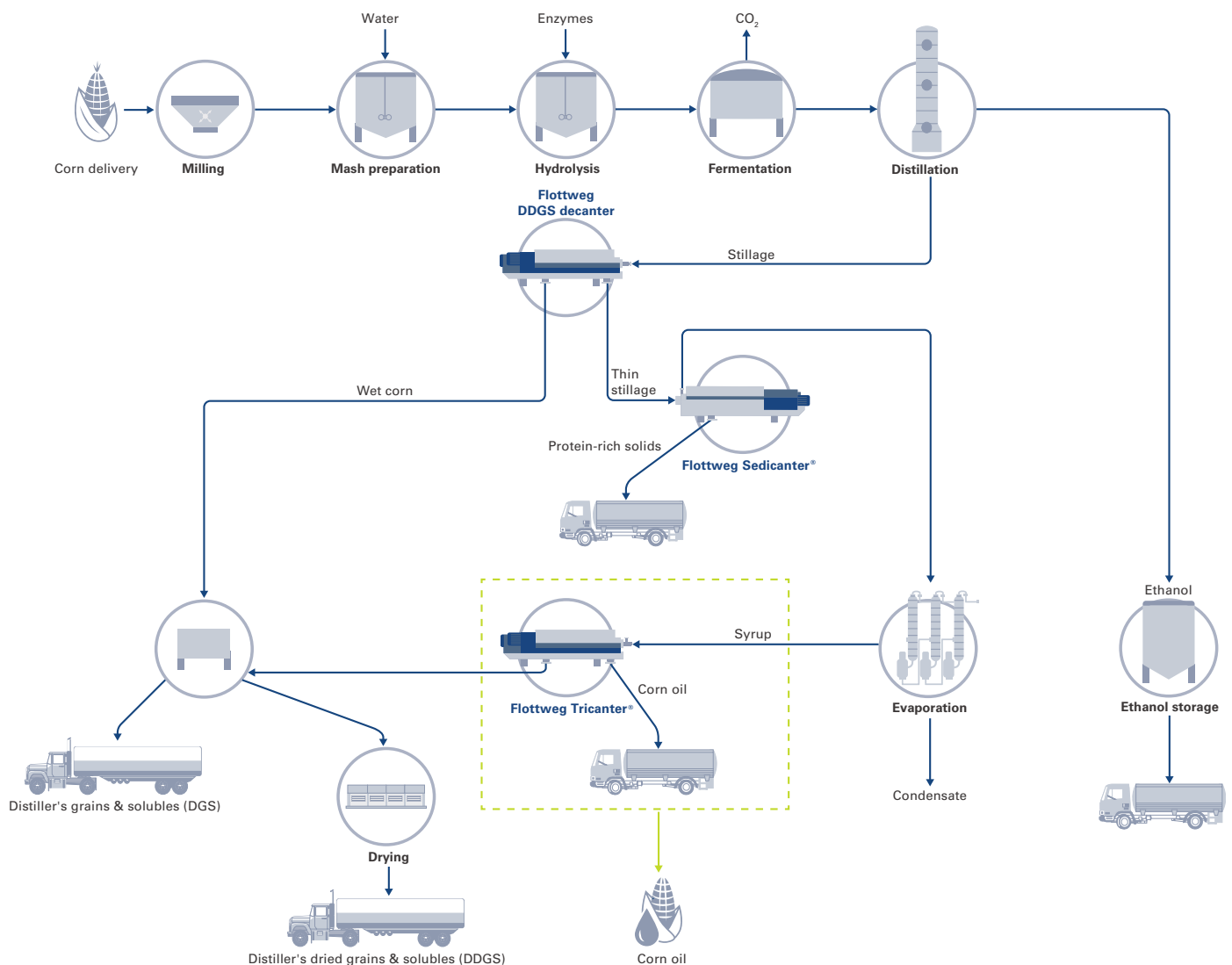
- Improved overall performance of your plant due to the high oil yield.
- Reliability through easy operation during production and cleaning.
- Lower operating and maintenance costs.
- High availability of the corn oil Tricanter® system in 24/7 operation.
- Maximum efficiency thanks to an adjustable impeller for flexible adaptation to the feed concentrations.

Flottweg is certified according to DIN EN ISO 9001:2015 and manufactures its products according to the latest technical standards.

Find out how the Flottweg corn oil Tricanter® tangibly increases the overall efficiency of your bioethanol plant: This is what we mean by “Engineered For Your Success!”



BIOETHANOL + CORN OIL = GREATER PROFIT FROM YOUR PLANT





These are the individual phases of profitable, high-yield bioethanol production with Flottweg products

- Receipt and preparation of the raw material: cleaning and milling of the corn.
- Fermentation: conversion of sugar into ethanol using yeast.
- Distillation: separation of ethanol and residues.
- **Flottweg DDGS decanter:** with the optimized stillage decanter design driest cake can be achieved and more oil goes to evaporation and can be separated with the corn oil Tricanter®.
- **Flottweg Sedicanter®:** improvement of the solids separation to up to 95% and extraction of high-protein solids from the thin stillage.
- **Oil extraction with the Flottweg corn oil Tricanter®:** separation of high-quality corn oil from corn syrup.
- Drying and by-product recovery: production of DDGS (animal feed) from the residues.



SUCCESS IS ... PROFITING FROM TECHNOLOGY

Flottweg corn oil Tricanter[®] are the key to greater profitability in bioethanol production

In addition to decanter centrifuges, Flottweg also produces separators. Why does Flottweg use the Tricanter[®] specifically for the corn oil extraction process?

The corn oil Tricanter[®] is Flottweg's three-phase decanter for liquid-liquid-solid separation.

Especially in the process step of corn oil extraction, it offers tangible advantages:

- The corn oil Tricanter[®] can easily handle higher quantities of solids compared to separators.
- Operation is particularly simple and very similar to existing decanters.
- Fluctuating feed concentrations during production and cleaning are effectively compensated.
- Fewer cleaning cycles are required than with a separator. This saves valuable process water and energy, extends the operating time and increases product yield.



How does the corn oil Tricanter® affect the product yield?

These factors combine to ensure the best possible oil quality and high yield:

- Thanks to a special impeller, the separation zone – and the oil yield – can be precisely adjusted.
- The impeller can be controlled during operation, either manually or automatically with a Flottweg control system.
- The special design prevents possible back-mixing of the liquid phases within the three-phase decanter.

What about the operating costs?

A look at the ongoing operating costs quickly reveals the many benefits offered by the Flottweg corn oil Tricanter®:

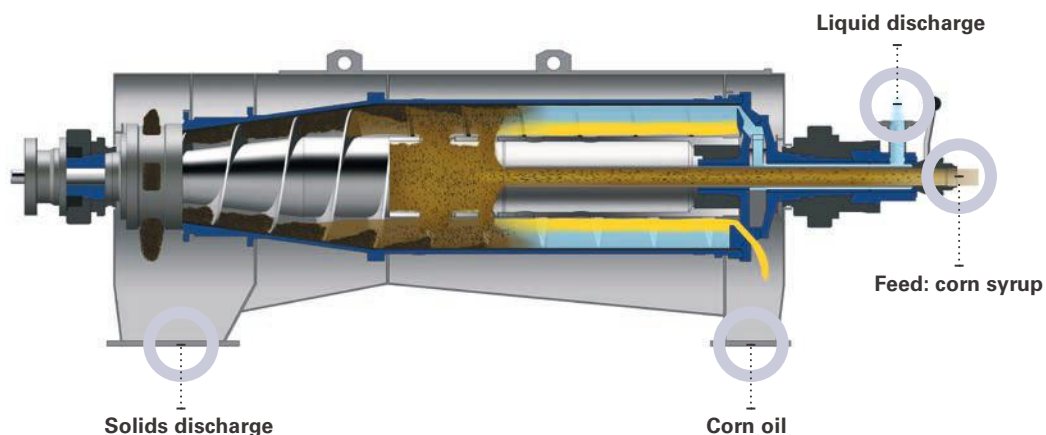
- Easy to operate for trained personnel (low training costs, similar to decanter).
- Lowest energy requirements due to high efficiency.
- Discharge of the liquid phase under pressure. This may eliminate the need for an additional conveying pump.
- Simple integration into (existing) CIP (Cleaning In Place) processes.
- Low cleaning effort saves CIP costs (energy and cleaning agents).
- An annual small maintenance and a big maintenance every two years is sufficient for the Tricanter®.

Conclusion: In addition to the associated process optimization, our corn oil Tricanter® customers benefit from an excellent ROI!



FLOTTWEG TRICANTER® – FUNCTION AND SPECIAL FEATURES

Flottweg Tricanters® are used for the simultaneous separation of liquid, oil and solids (three-phase process). Due to the special design of the impeller and the rotor, renewed mixing of the water and oil phase is virtually impossible after separation (e.g. by turbulence). As a result, the Tricanter® achieves high purity in the separated fat phase – i.e., in the case of bioethanol production processes, the corn oil.



BENEFITS AT A GLANCE



Flottweg Simp Drive®

The Flottweg Simp Drive® regulates the differential speed according to the scroll torque. This allows the Flottweg Tricanter® to automatically adapt to different load conditions and dewater the supplied product to the maximum total dry solids.

- Minimal energy consumption thanks to high efficiency.
- High throughput due to high bowl speed and precisely matched differential speed.
- Simple display and control of the scroll torque, including overload protection.
- The scroll can also be turned when the machine is at a standstill in order to clean out the machine (e.g. after an unplanned power failure).



Flottweg impeller (standard with Tricanter®)

The adjustable impeller can vary the pond depth continuously during operation, allowing for quick and precise adaptation to changing feed concentrations.

- High separation efficiency, even with changing composition of the feed mixture.
- Optionally available with automatic remote adjustment.
- Discharge of the liquid phase under pressure. This can eliminate the need for an additional conveying pump.
- Upon request: fully automatic control by turbidity measurement in the oil or liquid phase.



Flottweg Tricanter® scroll

The scroll represents the conveying tool in the corn oil Tricanter® and is specifically designed for the requirements of the bioethanol industry. It continuously conveys the separated solids to the solids discharge.

- Continuous discharge of solids. No need for cleaning cycles, which are usually required with a separator. No control water system required (eliminates the need for a booster pump and reduces the need for process water).
- Flexible processing, even of fluctuating solids loads and particle sizes as well as different syrup consistencies.

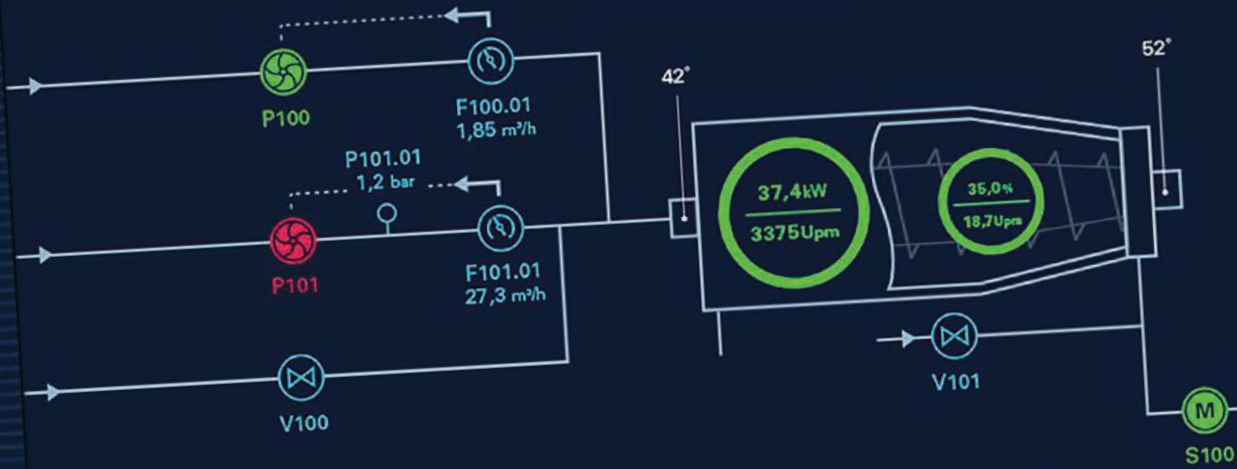


Easy integration into existing processes

The market is constantly evolving, which means ever-changing requirements on your part. The Flottweg corn oil Tricanter® can be easily integrated into existing processes. It thus supports the optimum productivity and performance of your bioethanol plant.

- Simple connection to existing piping systems. No valve panel or rotary brush screen required in the feed (unlike separators).
- Easy integration into existing cleaning processes.
- The robust design is insensitive to process fluctuations.
- Upon request: custom design for plug & play commissioning.





RELIABLE PROCESSES, LOWER COSTS

INto the system and GO: Flottweg InGo user interface for easy control

Every Flottweg corn oil Tricanter® is equipped with a pre-installed and factory-tested control package including the InGo operating concept. The Flottweg automation package offers you the following benefits:

- High process reliability combined with low costs thanks to an intuitive operating concept.
- High functional reliability thanks to climate-controlled control cabinets for safe operation under extreme conditions such as heat, dust and moisture.
- Worldwide support is possible thanks to the integrated remote maintenance system: direct, secure VPN connection to all network participants of the Flottweg control system (PLC, VFD, HMI, etc.).
- Simple data connection of the Flottweg control system to customer PLC or SCADA systems via individual protocols (Profibus, Profinet, Ethernet IP, Modbus, UPC-UA).
- Optional: control of customer units (pumps, valves, etc.).



The modern machine control, combined with the InGo operating system, enables fully automatic interaction of the individual process and system components. Users can see the operating state at a glance – even in poor lighting conditions or outdoors. In addition, the control system meets the highest standards for operational and machine safety. This ensures high process availability even when FW control components are integrated into the customer's control system.

With InGo...

- **you always have a complete overview and full control over all process components.**
- **you save time and costs when operating the system.**
- **you operate the corn oil Tricanter® intuitively, as InGo is based on the established concepts of smartphones and PCs.**
- **user acceptance is guaranteed – without the need for extensive training.**
- **you always retain control over all process parameters.**

FLOTTWEG QUALITY AND SERVICE



Guaranteed Flottweg quality

Typical “Made in Germany”: we have a clear understanding of what quality is and do not compromise on it. In the food industry, our products must comply with high standards of hygiene. Therefore, the Flottweg centrifuge components that come into direct contact with the medium to be processed (e.g. bowl, scroll, and feed) are made exclusively of high-grade, rust and acid-resistant stainless steels. This also makes it possible to increase the strength and improve the resistance.

Our machines are equipped to meet your requirements permanently – in extreme cases 24 hours a day, 7 days a week. Our strict quality controls (ISO 9001:2015) and the traceability of all critical components ensure additional product safety.



Our service – always there for you!

Over 1,100 employees worldwide in a network of more than 60 sales and service locations are available to assist you. We not only strive for first-class advice on the selection and design of our systems, but we are also there for you afterward, whenever you need us – in more than 100 countries around the world.



Success can be planned. In just three steps.

Are you planning your own success story for your products?

Then get in touch with Flottweg and benefit from our 3-step roadmap:

01

We discuss your separation task and business goals with you.

02

In the pre-engineering stage, we analyze your raw materials in our laboratory and carry out customized tests at the Flottweg Technical Center or on site at your business premises. The first product samples can also be provided at this point.

03

After the design and detailed development process, you will receive a concrete offer including all relevant line figures for your individual Flottweg application.

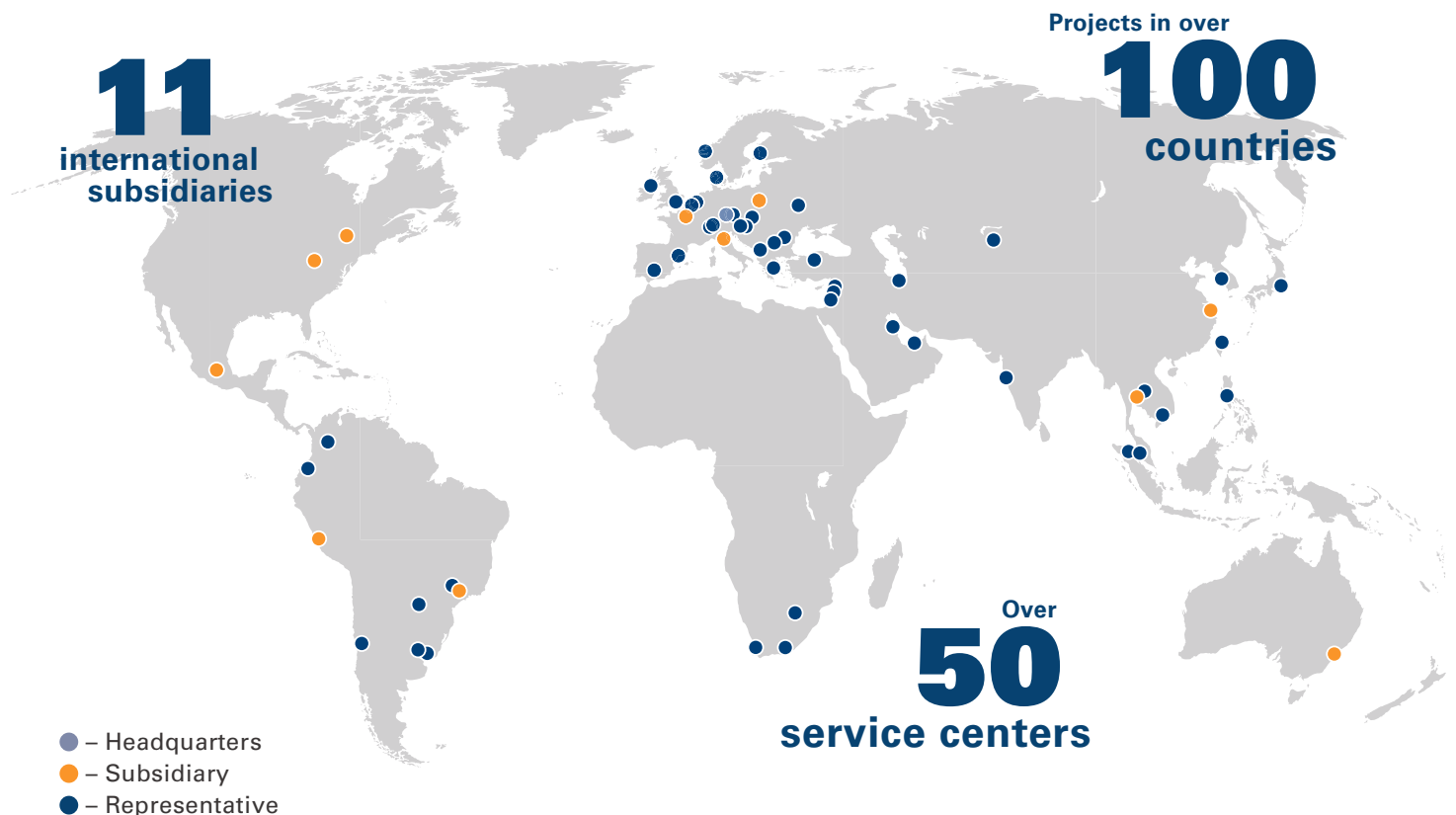
Make Flottweg the engineer of your success:

Our sales partners are looking forward to hearing about your ideas and challenges!



Flottweg worldwide

To be able to serve our customers worldwide, we maintain an international sales and service network: we are represented in over 100 countries. All branches and representatives have specially trained service technicians, some of whom we train in our in-house Flottweg Academy.





Representative

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