



FLOTTWEG CENTRIFUGES
for High Efficient Stillage Separation
in Bioethanol Production



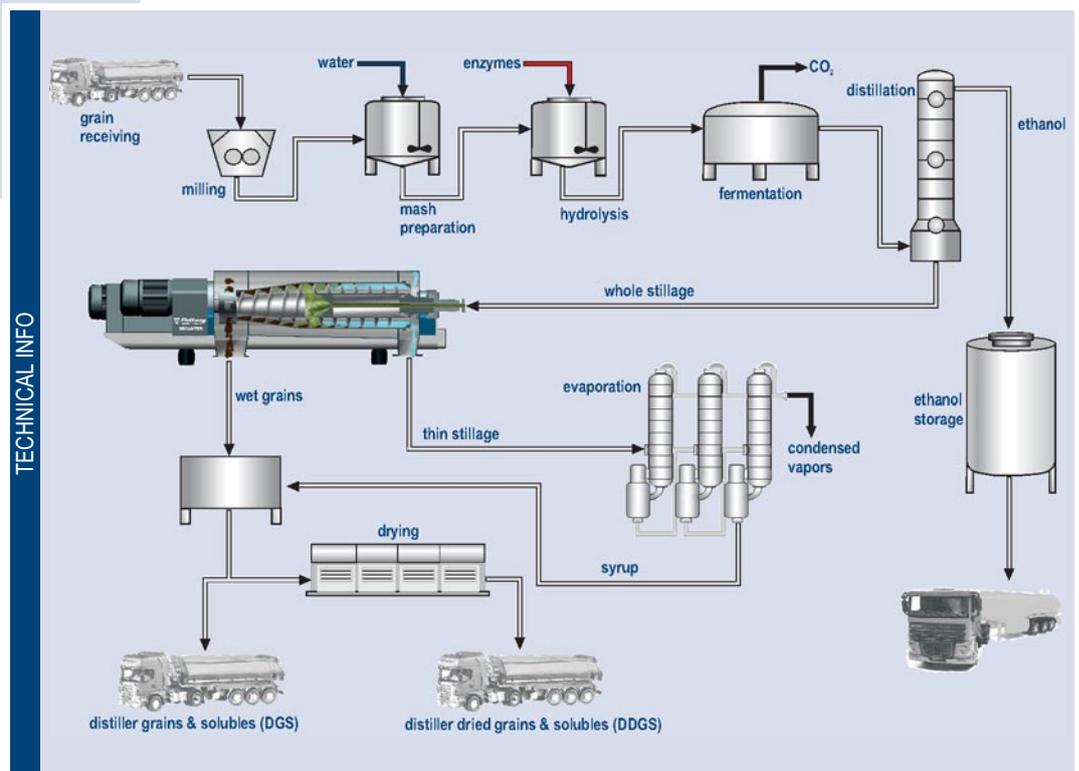
ETHANOL

The Green Fuel

Ethanol has been produced from a variety of biomass feedstocks for a number of years. The growth of ethanol is fueled by the desire to reduce dependence on fossil fuels while at the same time reducing carbon dioxide greenhouse gas emissions. Every industrialized nation is making an effort to utilize ethanol as a fuel or fuel additive.

Efficient ethanol production is a primary concern. Advanced biotechnology is applied to optimize yields in the hydrolysis and fermentation process. Following distillation, the whole stillage is separated by decanter centrifuges into wet grains and thin stillage. The thin stillage is concentrated into syrup via evaporation and this syrup is blended with the wet grains prior to thermal drying. The wet grains or the DDGS contain non-converted sugar, proteins, and fibers and are utilized as animal feed.

Flottweg manufactures decanter centrifuges specially designed to meet the whole stillage separation requirements for the ethanol industry. These centrifuges are called Flottweg DDGS Decaners. Flottweg manufactures DDGS Decaners in sizes that can handle feed rates associated with 5, 10, 15, and 20 MMGY of ethanol production per decanter giving the end user the largest selection available for true DDGS decanter technology.



THE FLOTTWEG SEDICANTER®

for Enhanced Protein Recovery and Evaporator Efficiency



In the ethanol process, the Flottweg Sedicanter® can be installed downstream from the DDGS decanter to separate the fine particles from the decanter centrate (or thin stillage). These particles are rich in protein thus having an added value when utilized for animal feed. There is also a secondary advantage: The fine particles in the thin stillage can build up layers in the evaporators thus causing fouling on the heat exchanger surfaces. If the fine particles are separated upstream, fouling can be reduced which results in longer intervals between cleaning cycles.

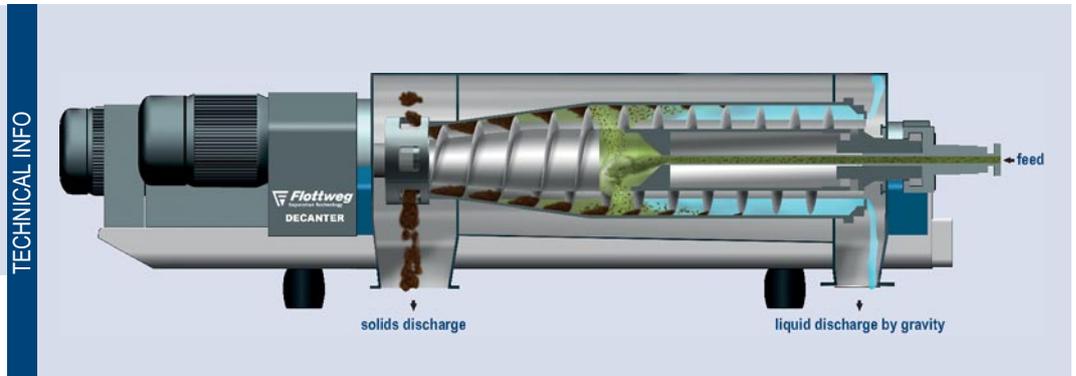
Customer benefits at a glance

- Utilizing Flottweg DDGS Decanter Centrifuges increases wet grain dryness thereby reducing drying energy requirements and natural gas costs.
- Flottweg DDGS Decanter Centrifuges have lower power utilization compared to conventional decanter designs and can save the end user significant reduction in operating power and lower installed horsepower.
- Enhanced yield in protein recovery from thin stillage via the Flottweg Sedicanter®
- With high solids recovery, Flottweg DDGS Decanters as well as Sedicanters® increase evaporator efficiency and subsequently reduce evaporator maintenance costs.



SPECIAL FEATURES

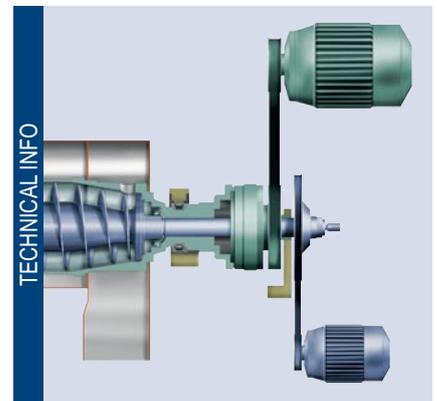
of Flottweg DDGS Decanters and Flottweg Sedicanters®



Flottweg Decanter for liquid-solid separation with gravity overflow of the liquid phase (centrate)

SIMP DRIVE®

The Flottweg Simp Drive® automatically controls the scroll differential speed according to the torque load that the feed stream generates. Thus, the decanter adapts itself to varying operating conditions, including solids load and feed rate, resulting in optimum cake dryness and solids recovery. Our VFDs deliver power directly to the scroll while other decanter manufacturers' VFDs utilize the motor as a brake generator. This "direct power in philosophy" enables us to utilize standard "off-the-shelf" VFDs and smaller motors, which will save the end user money during installation and on operating power over the lifetime of the equipment.



Flottweg Simp Drive®

OIL-AIR LUBRICATION SYSTEM

Flottweg's simple, compact, and effective oil-air (droplet) lubrication system continuously delivers the main bearings with the optimal amount of fresh, non-recycled oil, thereby minimizing bearing temperature and maximizing bearing life while reducing energy consumption and requiring virtually no maintenance.



Oil-air lubrication system

COMPACT DESIGN

Flottweg Decanters have the most compact machine and maintenance footprints allowing the end user to maximize plant space. In conjunction with the compact layout, the Flottweg DDGS Decanters have design features that make it the most ergonomic, maintenance friendly, and accessible decanter available.

UNIQUE WEAR PROTECTION

All wear exposed parts are protected by a collection of proven wear elements that are design/task specific to maximize element life and minimize replacement costs and down time. These include a proprietary heat applied tungsten carbide spray, tungsten carbide tiles, tungsten/stainless steel housing inserts, silicon carbide wear inserts, and ceramic paste.



Critical success factors

Cost efficient due to

- Minimized energy consumption for Flottweg Simp Drive®
- Maintenance friendly

High performance in terms of cake dryness and centrate clarity

- Machine designs based on decades of experience in stillage separation

High availability and reliability

- Sturdy construction
- Secure supply of lubrication oil to the bearings via oil-air lubrication
- Short downtime while servicing due to easy access to service points



THE FLOTTWEG SEDICANTER®

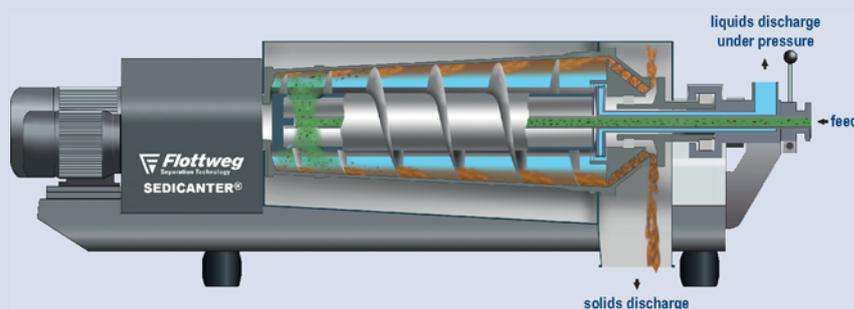
The Flottweg Sedicanter® is a centrifuge specifically designed for the separation of very fine solids. One of the features of the Sedicanter® is the high g-force which facilitates the separation of fine slow settling solids, so-called soft products. The unique bowl design enables easy and constant discharge of the fine solids. This means high solids concentrations or slight variations in the infeed do not restrict the performance of the Sedicanter®.

This unique machine has been in use in various industrial ethanol plants for quite some time.

Special features of the Flottweg Sedicanter®

- Unique bowl design for high speeds to separate fine particles
- Hydraulic cake discharge to convey pasty fluid sediments (protein)
- Proven in many applications including thin stillage clarification

TECHNICAL INFO



Flottweg Sedicanter®

TECHNICAL DATA

of Flottweg DDGS Decanters and Flottweg Sedicanters®



TECHNICAL DATA FOR FLOTTWEG DDGS DECANTERS					
Type	Z4E-4	Z5E-4	Z6E-4	Z73-4	Z8E-4
Bowl diameter	420 mm / 16.5"	530 mm / 21"	620 mm / 24.5"	730 mm / 28.5"	770 mm / 30"
Bowl speed	4200 rpm	3500 rpm	3200 rpm	2750 rpm	2650 rpm
g-force	4115	3610	3530	3080	3000
Materials of construction	All product wetted parts are made of high grade austenitic stainless steel (AISI 316 and superior) and Duplex				
Dimensions* (L x W x H)	3493 x 1000 x 1200 mm 137" x 40" x 47"	4180 x 1560 x 1140 mm 165" x 61" x 45"	4804 x 1440 x 1290 mm 189" x 57" x 51"	4815 x 2350 x 1450 mm 190" x 93" x 57"	6400 x 2000 x 1500 mm 252" x 80" x 59"
Gross weight*	3000 kg 6615 lb	6200 kg 13 225 lb	9230 kg 20 350 lb	10 500 kg 23 150 lb	15 000 kg 33 000 lb
Motor for bowl drive	22 kW 30 hp	55 kW 75 hp	110 kW 150 hp	150 kW 200 hp	160 kW 215 hp
Motor for scroll drive Flottweg Simp Drive®	4 kW 5 hp	15 kW 20 hp	22 kW 30 hp	30 kW 40 hp	55 kW 75 hp
Max. Capacity**	20 m³/h / 90 gpm	40 m³/h / 175 gpm	74 m³/h / 325 gpm	85 m³/h / 375 gpm	130 m³/h / 570 gpm

* to be understood as guidelines

** actual capacity depends on type and composition of raw material

TECHNICAL DATA FOR FLOTTWEG SEDICANTERS®			
Type	S3E-3	S4E-3	S6E-3
Bowl diameter	300 mm / 12"	470 mm / 18"	670 mm / 26"
Bowl speed	7750 rpm	5000 rpm	3650 rpm
Differential speed	1.5 – 30 rpm	1.5 – 30 rpm	1.5 – 30 rpm
Materials of construction	All product wetted parts are made of high grade stainless steel such as Duplex, AISI 316 Ti and superior		
Dimensions* (L x W x H)	2304 x 700 x 752 mm 91" x 28" x 30"	3222 x 1000 x 1200 mm 127" x 39" x 47"	4527 x 1705 x 1270 mm 178" x 67" x 50"
Gross weight*	1210 kg / 2668 lb	3100 kg / 6834 lb	10 530 kg / 23 215 lb
Motor for bowl drive	15 kW / 20 hp	37 kW / 50 hp	75 kW / 100 hp
Motor for scroll drive Flottweg Simp Drive®	4 kW 5 hp	5.5 kW 7.5 hp	15 kW 20 hp

* to be understood as guidelines

FLOTTWEG DDGS CENTRIFUGES

for Bioethanol Production

Flottweg has been developing and manufacturing decanters for over 55 years and is one of the world's leading decanter manufacturers.

Flottweg DDGS Centrifuges are operating at major ethanol producers in Europe, North America, and Asia.

SERVICE

Flottweg provides 24-hour turn-around on shipment of parts and offers a scroll loaner/exchange program.

QUALITY "MADE IN GERMANY"

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



FLOTTWEG DDGS CENTRIFUGE TECHNOLOGY

is used for whole stillage separation of

- Corn
- Milo
- Wheat / barley
- Rice
- Cassava and others



Flottweg Separation Technology – Engineered For Your Success



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