FLOTTWEG CENTRIFUGE TECHNOLOGY FOR THE MINING INDUSTRY
Maximize Recovery and Profit
MECHANICAL SEPARATION IN THE MINING INDUSTRY
Enhance your Success with Centrifuge Technology

Flottweg is one of the world’s leading manufacturers of industrial centrifuges for solid-liquid separation. For over 60 years, our technology has supported our clients in maximizing their profit by increasing their yields with highly efficient separation solutions. The heart of every separation process, our FLOTTWEG DECANTER centrifuges, are the optimum choice for a wide range of separation tasks.

Efficient operation, robust design and high purity output make FLOTTWEG DECANTERS Made in Germany a multi talent in the mining industry. Our separation solutions can be found in nearly all processes in the recovery of mineral raw materials.

Examples of FLOTTWEG applications in the mining industry are:

**HYDROMETALLURGICAL PROCESSING**
- Gold and silver
- Lead and zinc
- Nickel and copper
- Platinum
- Rare elements

**INDUSTRIAL MINERALS**
- Kaolin
- Ground calcium carbonate (GCC)
- Precipitated calcium carbonate (PCC)
- Titanium dioxide
- Barium and zinc sulfate
- Aluminium hydroxide

Are you looking for any other applications? Contact us, we will be happy to answer your questions and find an individual solution!

Our separation technology meets all requirements for the mining industry:

### Key Success Factors
- Reliable, robust and easy to operate
  - optimized cost for operation
- Quality and purity of the final products
  - quick return on investment
- Better environmental performance with
  - reduced supplies and consumables
  - high yield, reduced by-products
  - energy savings
  (e.g. subsequent drying processes)
Are you laying out new facilities or optimizing existing ones? Discover the possibilities of FLOTTWEG DECANTER technology. For decades, the usual separation equipment to perform the different separation tasks in mining processes has comprised static settlers, thickeners, low speed centrifuges and filters.

Our engineers have continuously optimized our centrifuges for the requirements of mining applications. Best wear protection, continuous operation with high g-force and fully automatic systems make our solutions the ideal separation equipment for the mineral tasks. Particular highlights include the impact on cost effectiveness, quality of the final product and the environmental compatibility of DECANTER centrifuges.

**Centrifuge Facts**

**Versatility**
- Separation (2-phase and 3-phase)
- Classification / Degritting
- Concentration / Thickening
- Clarification / Dewatering

**Key Success Factors:**
- Handling large product quantities
- Resistance to wear and corrosion
- Continuous and automatic operation
- Closed design to avoid emissions
- Long service interval
- Brief service downtime
The FLOTTWEG TRICANTER® performs a three-phase separation, i.e. 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.

**OPERATING PRINCIPLE 3-PHASE**

The FLOTTWEG TRICANTER®

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 further downstream equipment.

**NO MATTER IF FEED CONCENTRATION VARIES**

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Hydrometallurgical processing of ores is highly varied and has become an increasingly important technology in the production of today’s precious and base metals. Processing plants in the form of flotation or leaching installations selectively enrich the specific metallic components. FLOTTWEG DECANTERS perform this separation in a continuous and most efficient operation.

From an environmental standpoint, waste products such as leaching residues and tailings are also separated via centrifuges. FLOTTWEG DECANTERS achieve the highest cake dryness and optimum centrate clarity.

**TYPICAL PROPERTIES OF PRODUCTS ARE**

- Density of the solids above 2 g/cm³
- pH – conditions which require special materials
- Temperatures up to 100°C
- High hardness of the solids which require adequate wear protection
- High salinity which affects the liquid density and liquid viscosity
- Requirement for corrosion resistant materials
- Small particle sizes in the range of 5 – 100 µm

**FLOTTWEG DECANTERS Benefits**

- High cake dryness
- High separation efficiency
- Continuous operation
- Automated operation reduces labor costs
- Small footprint
- Short payback period

**TYPICAL PRODUCTS**

- Gold and silver
- Lead and zinc
- Nickel and copper
- Platinum
- Further rare earth elements
- Many other hydrometallurgical mining applications

FLOTTWEG provides decanters specifically designed on basis of extensive knowledge in ore processing. The state-of-the-art FLOTTWEG DECANTER technology offers the highest separation efficiency and operational reliability even in case of challenging applications.
TAKE ADVANTAGE OF OUR EXPERTISE ...
... and Many Years of Experience in the Mining Industry!

FLOTTWEG DECANTERS Z92 in the gold extraction process

FLOTTWEG DECANTERS Z73 in the zinc extraction process

FLOTTWEG DECANTERS Z92 in the nickel extraction process

... and many more.
Ask our sales agents for references!
FLOTTWEG SIMP-DRIVE®
The bowl is driven via a motor controlled by a frequency inverter (VFD). The FLOTTWEG SIMP-DRIVE® - an intelligent system consisting of a multi-stage planetary gear and control system including a frequency inverter - controls the differential speed depending on the torque that is generated when transporting the solids cake through the centrifuge bowl. When processing products generating high torques, the FLOTTWEG SIMP-DRIVE® is also an intelligent protection for the gearbox and the drive in case of torque overload.

SIMP-DRIVE® Benefits
- High efficiency and low energy demand
- Low power consumption
- A simple drive system not requiring linkage
- Constant drive, constant torque
- Simple integration into process control systems
- Smallest possible inverter size
- Frequency inverters which are standard designs
- High flexibility in the selection of the operating speed
- Discharge of the bowl even at standstill
- Applicable for small to medium differential speeds

OPTION
FULLY HYDRAULIC DRIVE
The bowl and the scroll are driven by separate hydraulic motors. A characteristic feature is the hydraulic motor which rotates together with the bowl and directly powers the scroll, with the bowl driven by V-belts. A compact hydraulic unit with two variable pumps feeds two separate oil circuits. The volume flow rate of the oil determines the bowl speed and the differential speed of the scroll, with the oil supply pressure directly proportional to the torque output and thus to the load. The drive’s design enables independent rotation of the scroll even when the bowl is shut down.
MATERIALS OF CONSTRUCTION
FLOTTWEG exclusively uses high-quality Duplex stainless steels for all parts that come into contact with the product. On request, FLOTTWEG centrifuges are also available in more corrosion resistant materials such as super duplex steels or high nickel alloys e.g. Hastelloy.

WEAR PROTECTION
FLOTTWEG offers a wide range of wear protection to meet the particular material requirements of the mining applications:

1) Welded hard facing or spray coating
2) Ceramic
3) Tungsten carbide tiles
4) Chilled hard metal portcastings
5) Plastic liners

In order to minimize maintenance costs for applications involving highly abrasive products, all wear protection elements, except welded hard facings or spray coatings, are field replaceable.
### TECHNICAL DATA OF FLOTTWEG DECANTERS AND TRICANTERS®

<table>
<thead>
<tr>
<th>Model</th>
<th>Z4E</th>
<th>Z5E</th>
<th>Z6E</th>
<th>Z8E</th>
<th>Z92</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong> (L x W x H)</td>
<td>3500 x 1000 x 1200 mm 138 x 39 x 47 inch</td>
<td>4200 x 1300 x 1150 mm 165 x 51 x 45 inch</td>
<td>4800 x 1800 x 1250 mm 189 x 70 x 49 inch</td>
<td>6200 x 2000 x 1500 mm 244 x 78 x 59 inch</td>
<td>5900 x 2800 x 1750 mm 232 x 110 x 69 inch</td>
</tr>
<tr>
<td><strong>Gross weight</strong></td>
<td>3000 kg / 6600 lb</td>
<td>6200 kg / 13600 lb</td>
<td>9750 kg / 21500 lb</td>
<td>14150 kg / 31200 lb</td>
<td>18000 kg / 39700 lb</td>
</tr>
<tr>
<td><strong>Motor for bowl drive</strong></td>
<td>45 kW</td>
<td>90 kW</td>
<td>132 kW</td>
<td>160 kW</td>
<td>250 kW</td>
</tr>
<tr>
<td><strong>Motor for scroll drive</strong></td>
<td>15 kW</td>
<td>55 kW</td>
<td>110 kW</td>
<td>110 kW</td>
<td>110 kW</td>
</tr>
<tr>
<td><strong>FLOTTWEG SIMP-DRIVE®</strong></td>
<td>15 kW</td>
<td>55 kW</td>
<td>110 kW</td>
<td>110 kW</td>
<td>110 kW</td>
</tr>
<tr>
<td><strong>Max. hydraulic capacity</strong></td>
<td>35 m³/h</td>
<td>60 m³/h</td>
<td>80 m³/h</td>
<td>160 m³/h</td>
<td>180 m³/h</td>
</tr>
</tbody>
</table>

*Acceleration in g, depending on the temperature and the density of the product.

*The listed figures are to be understood as guidelines. Actual capacity will depend on the individual characteristics of the feed product.

**Data based on water, g-force depending on temperature, special material and product density. Data to be understood as guidelines.