FLSmidth Dorr-Oliver Eimco Flotation Technology

- Superior Metallurgy
- Higher Availability
Based on sound metallurgical design principles and anchored in the world’s most efficient designs, FLSmidth Dorr-Oliver Eimco has combined the expertise of two world leaders, Dorr-Oliver and Eimco to create ultimate flotation technology for process specific solutions. The result is high recovery, which translates into greater efficiency and increased profits.

Every project is custom engineered with application driven design for proper metallurgy: Each cell row is designed to provide the optimum process condition to the match minerals flotation characteristics and particle size distribution.

It is a heavy investment in money and time to develop and bring a new cell to market. FLSmidth Dorr-Oliver Eimco has years of experience and our specialized flotation equipment continues to prove efficient and successful in a variety of applications around the world.

The two factors having the strongest impact on a flotation circuit’s financial performance are Metallurgical Recovery and Flotation Cell Availability. Our flotation machines surpass the performance of competing flotation machines in both of these important areas.

**Superior Metallurgy**

FLSmidth Dorr-Oliver Eimco flotation machine’s metallurgical superiority has been proven in side-by-side comparative tests conducted by major mining companies. Results show that our flotation machines operate on superior grade recovery curves with respect to coarse and fine particle recovery.

The superior performance is related to flotation favorable hydro-dynamics which produce higher active cell volumes, provide longer residence times and complement froth removal.

**Greater Availability**

Competing equipment cannot match the availability of our Dorr-Oliver, Eimco and Wemco flotation machines. Our flotation mechanisms can be removed for maintenance without process interruption. Maintenance is minimized cutting down on availability loss due to failure. On our SmartCell models, rotors are located in an elevated position enabling, ease of start-up and reduced rotor and disperser wear relative to competitive machines.
The first Wemco® Model No. 250 SmartCell® in commercial operation in Chile since April, 2004.

FLSmidth Dorr-Oliver Eimco pioneered the way for large cell technology. From its first Wemco 257 m³ cell installed in 2003, to now even bigger 300 m³ cells being installed in Chile. These 26 x 300 m³ Wemco cells will be the first major installation of 300's for a new plant and the first used in rougher/scavenger duty!

**Large Flotation Cell Benefits**

Results exceed metallurgical, hydrodynamic, and mechanical performance of smaller cells

- Side-by-side testing shows superior recovery especially with coarse particle flotation
- 15% lower installed costs than 160 cubic meter cells
- Lower operating and maintenance costs

*Wemco® SmartCell® Rows located in Peru*
WEMCO® SmartCell™ Flotation Machines

Cylindrical Tank Design
- Improves mixing efficiency and air dispersion
- Better surface stability and less pulp turbulence
- Lower capital costs
- Reduced power consumption

Hybrid Draft Tube & Beveled Tank
- Improves hydrodynamic mixing
- Increases solids suspension
- Improves coarse particle recovery

Radial Launder & Mixing Baffles
- Increases froth mobility
- Decreases froth residence time
- Increases recovery
- Enhances froth stability

WEMCO® SmartCell™ Flotation
Wemco has long been a trusted and proven leader in flotation technology under the FLSmidth Dorr-Oliver Eimco brand. The SmartCell Flotation series combines the proven Wemco mechanism with cylindrical cells to optimize energy input, aeration, and mixing. This configuration reduces pulp turbulence and improves froth stability. Additional standard features include a hybrid draft tube, beveled cell bottom, froth crowder, mixing baffles, and radial launders. Since the introduction of the SmartCell Flotation Machine in early 1996, most major base metal flotation developments have selected WEMCO SmartCell machines.

14 Standard Cell Sizes
We provide a wide range of SmartCell sizes from 0.05 m³ to 300 m³.

Pilot Units and Testing
The FCTR™ (Floatability Characterization Test Rig), has proven to be very reliable in many AMIRA pilot campaigns and is offered with 0.15 m³ roughers and 0.075 m³ cleaners.
**Advanced & Proven Design**

**WEMCO® SmartCell™ Flotation Circuits are Custom Engineered to Meet Your Specific End-User Requirements.**

Listed Below is a Sampling of Available Options

**Connection and Discharge Boxes**

We provide the connection and discharge box to meet your needs. The conventional box is preferred for applications where recycle streams are a consideration. The hinged dart valve, internal to the SmartCell flotation tank, provides the lowest cost option, and reduces the flotation footprint by allowing the SmartCell tanks to be spaced flange to flange. The circular box provides a significant availability advantage with respect to unscheduled maintenance and also allows flange-to-flange tank spacing.

**Flat Versus Semi-Supported Tank Bottoms**

An important engineering consideration is the support of the flotation cell. We provide both flat and semi-supported options. The flat option is the lowest cost when considering only the price of the cell; however, quite often the semi-supported option provides the lowest overall project cost.

**Air Control**

A unique feature of the SmartCell flotation machine is the ability to self-adjust the air input rate to changing slurry conditions. For example, the SmartCell self-aspirating mechanism automatically reduces the air input rate as the slurry percent solids increase. There are applications; however, when metallurgical performance can be improved if this self-adjusting feature is overridden with automatic air control.

**Instrumentation and Control**

Every SmartCell flotation machine is provided with ultrasonic pulp level control as a standard feature. Advanced instrumentation and adaptive expert systems are available as options.
Increased Fines Recovery and improved Concentrate Grade.

FLSmidth Dorr-Oliver Eimco's advanced flotation technology has been re-engineered from the ground up. Based on sound metallurgical design principles, anchored in the world's most efficient rotor and stator design, Dorr-Oliver flotation cells are the ultimate in process specific solutions. High recovery is guaranteed as a result of process specific design programs. Energy efficiency is well documented in the highly advanced pumping rotor. Advanced process control allows for simple efficient integration into the modern concentrator.

Rotor and Stator Design

Years of research have led to the most advanced rotor design in the world. The pumping chambers are designed to minimize pumping energy while providing superior air dispersion, one of the keys to better flotation performance. Our stators have been engineered to provide the correct mix of particle momentum, trajectory and recirculation. This advanced technology is available for installation into any flotation machine. Let us show you the benefits!

Flash Flotation

Flash flotation offers a unique opportunity to improve performance in many mineral processing circuits. Successes in metal recovery of the gold, lead, nickel, copper, and platinum group of metals are well documented.
**Dorr-Oliver® Flotation Cell Measurement and Dimensions**

**Computer Control**
Advanced process control is available for all of our flotation projects, both new and as a retrofit. We also offer consulting services and innovative solutions to flotation process control problems, such as novel Concentrate Mass Flow Measurement.

Cell tanks on all large Dorr-Oliver flotation cells are truncated, conical bottom, round tanks or U-shaped in cross-section. Corners are eliminated, and the conical bottom or U-shape helps to feed slurry into the pump action of the rotor and prevent short-circuiting.

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### RT Series - Round Tank (Roughing Service)

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<th>Model*</th>
<th>B (in.) Width</th>
<th>C (in.) Height</th>
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*Model designation shows: Active cell volume in ft³

RT=Round Tank

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### R & UT Series - Rectangular and U-Shaped Tanks

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*Model designation shows: Active cell volume in m³

RT=Round Tank

UT=U-shaped Tank
Combined Flotation Solutions

The hybrid flotation solution we have developed, means cells with different operating systems can work successfully, side-by-side, maximizing overall plant recovery and final concentrate grades.

Combining flotation cells with markedly different processing actions into a single process bank increases recovery rates. The Wemco design with the agitator near the top of the cells has excelled on coarse particle recovery and the Dorr-Oliver cells excelled on fines and concentrate grade.

On large cells, we have developed a “Universal Tank” that can accommodate either the Wemco induced-air cell or the Dorr-Oliver forced-air cell and are interchangeable. Both cells feature beveled bottoms, support structures, and a common radial launder design. Cell-to-cell connectivity is enhanced by patented, hinged dart valves which eliminate the need for a junction box and enable cells to be positioned closer together.

By supplying customized solutions to its mineral processing partners, FLSmidth Dorr-Oliver Eimco maintains its global industry leadership in the supply of flotation technology with over 53,000 flotation cells delivered to date.

FLSmidth Dorr-Oliver Eimco Hybrid Rows

In the past, mineral producers had to choose between mechanical flotation systems that naturally ingest ambient air and others that require a blower. To meet today’s specialized plant requirements, we introduced a flotation circuit that exploits the inherent and unique advantages of the Wemco® self aspirated and Dorr-Oliver® forced air technologies.

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