FLOTATION CONTACT CELL

The Flotation Contact Cell is a slurry aeration flotation device with no moving parts. The Contact Cell is very compact, highly efficient, simple to operate and has low energy and maintenance costs.

LOW CAPITAL COST PER UNIT RECOVERY

- The unique high shear bubble contacting system achieves very fast flotation kinetics.
- Rapid kinetics result in short residence time, typically one-third that of conventional flotation machines.
- Use of internal launders reduce overall dimensions.
- High capacity is achieved with a small footprint and short height, thus reducing infrastructure costs.

LOW ENERGY AND MAINTENANCE COSTS

- No impeller means minimal maintenance and energy costs.
- Flotation of particle-bubbles takes place in a separate chamber without agitation.
- Fast flotation is perfect for roughing and scavenging operations.
- Small size is suitable for retrofitting or adding capacity in existing plants that are operating over-capacity or reducing footprint at new installations.

HOW DOES IT WORK?

The Contact Cell consists of two main components:

- The contactor is a chamber in which feed slurry and flotation air are brought together under pressure. Pressure is maintained by a restriction located at the downstream end of the contactor. Typical pressure in the contactor is 20±5 psig (140±30 kPa), and residence time is only 1-2 seconds.
- Discharge from the contactor flows into the bottom of the separation cell, where the particle-bubble aggregates form froth for removal as an overflow. The uncollected particles are removed through an underflow line. As with a flotation column, the froth may be water washed so the Contact Cell can also be used as a cleaner cell. Typical residence time is about 2 minutes.

HOW IS IT SIZED?

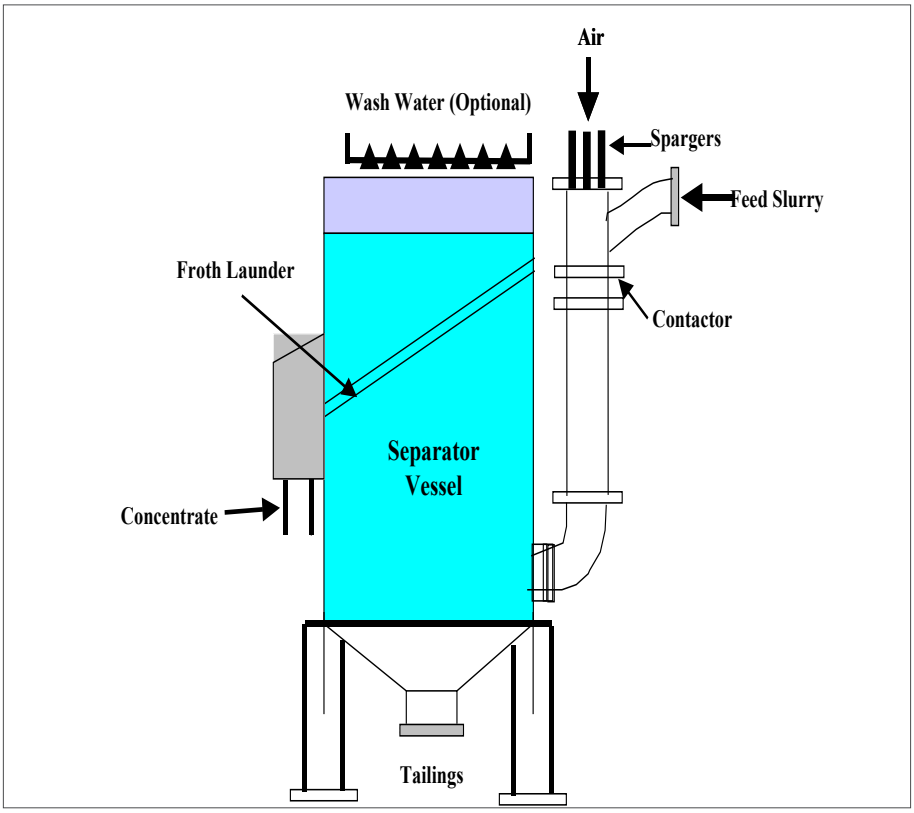
A Contact Cell installation is sized from a combination of laboratory flotation tests and SGS Minerals Services's operating experience. However, due to the extremely fast kinetics obtained in the Contact Cell, full-scale design is more accurate after we have conducted pilot testing on site with 10-inch (250 mm) diameter cells. Scale-up is then achieved by reviewing the retention time in the contactor and separation cell and the requirements for froth removal.

HOW IS IT INSTALLED?

The Contact Cell requires a reasonably steady feed flow but it can be fed with a fixed speed pump drawing from a sump that is designed to function with a fixed slurry level. The sump is fed both fresh feed and a portion of the Contact Cell underflow that is diverted by an automatic valve to maintain a constant level in the sump. The pump is sized to handle more slurry flow than the fresh feed alone, and the recirculation of Contact Cell underflow increases the recovery from the single stage cell.

WHERE IS IT USED?

- Homestake Mining, Eskay Creek - a unit cell in the grinding circuit for recovery of gold and silver and a second unit for rougher tailings scavenging.
- Calcium carbonate flotation - four unit cells are operating in a Scandinavian plant for scavenger flotation of fine calcium carbonate, and two additional units are under construction in Canada.
- Agnico Eagle, Laronde Division – 3 unit cells are used for copper and zinc roughing applications as well as 2 cells for cleaning.
- Molycorp, Mountain Pass, California - one unit cell installed for rare-earth mineral flotation.
- Barrick Gold, Bulyanhulu mine – one unit cell for flash flotation in the primary grinding circuit for added gold recovery.



QUICKER PAYBACK, LOW MAINTENANCE, LOW CAPITAL COST

CONTACT INFORMATION

Email us at minerals@sgs.com
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