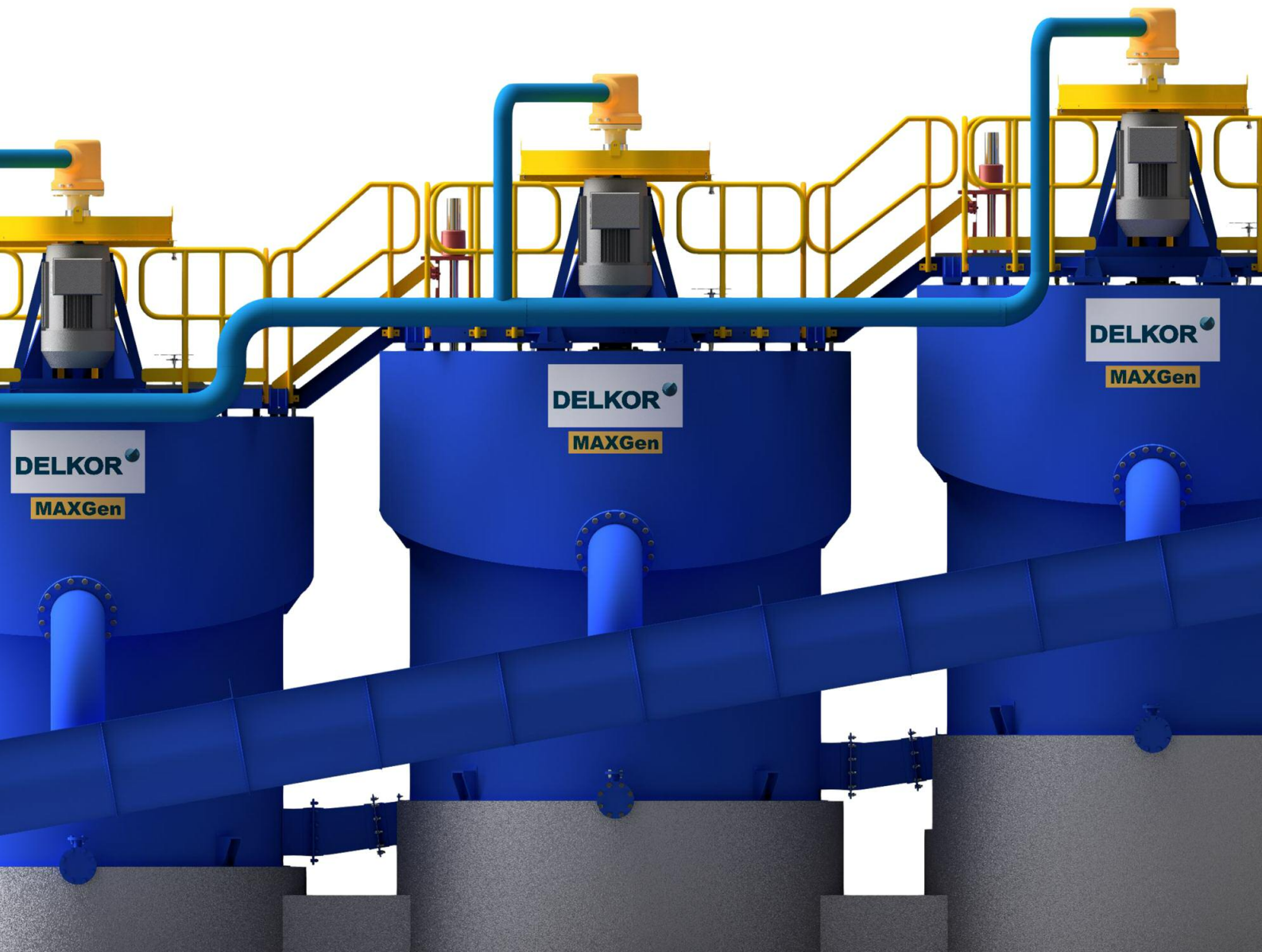


DELKOR[®]



DELKOR BQR FLOTATION CELLS

For best-in-class metallurgical performance

Innovation out of tradition – It pays to talk to a specialist!

TAKRAF Group, through its established and well-known brands, TAKRAF and DELKOR, provides innovative technological solutions to the mining and associated industries. We leverage our experience, acquired over more than a century, to provide equipment, systems and services that best satisfy our clients' mining, comminution, material handling, liquid/solid separation and beneficiation requirements. Owners and operators around the world trust our engineered solutions to lower the total cost of ownership and reduce environmental impact by improving efficiency with safe and reliable equipment. For sustainable solutions backed by expert service you can rely on TAKRAF Group. Visit us at www.takraf.com.

We at TAKRAF Group are committed to environmental and social sustainability in all our business interactions and have adopted a Zero Harm approach under our global safety promise.

Owners and operators around the world are confident that TAKRAF Group provides the most suitable solution to their unique project requirements. We assist our clients in overcoming the most complicated challenges in transforming the resource industry towards a sustainable future. We focus on specific areas that are critical for reliable and sustainable operations, as it is here where we best support our clients with innovative solutions that save energy, lower environmental impact and meet or exceed operational requirements.

One focus area is liquid/solid separation, where we capitalize on our global DELKOR brand and its track record of thousands of successful installations. In line with our commitment to environmental sustainability, DELKOR dewatering and process equipment are specifically designed for the needs of the mining industry.

We leverage our global organization and aggregate our extensive expertise by offering a unique combination of both application experience and product based knowledge. Clients therefore benefit from direct technical discussions with our local specialists, who are able to draw upon this expertise and provide the most suitable local solution and service that enhances safety, improves sustainability, decreases costs and increases efficiency.

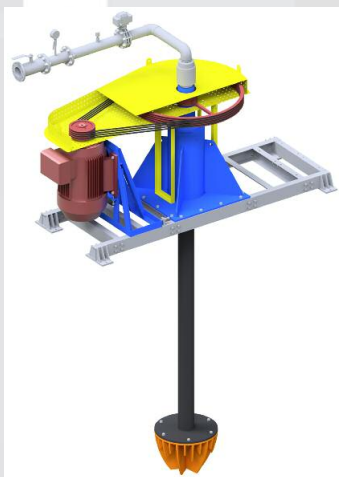
Our commitment is summarized by:

Safety | Reliability | Innovation | Sustainability

DELKOR BQR FLOTATION CELLS

DELKOR's new generation BQR flotation cells, equipped with the proprietary **MAXGen** mechanism, achieve best-in-class metallurgical performance with a view to maximizing the sustainable recovery of minerals.

The **MAXGen** mechanism is the culmination of state-of-the-art research, extensive bench scale test work, scale-up and industrial trials.



Incorporation of the MAXGen mechanism within a BQR flotation cell makes it possible to achieve best-in-class metallurgical performance, combined with greater ease of maintenance and lower cost of ownership.

The MAXGen mechanism focuses on the generation of a swarm of air bubbles with optimum size distribution, which facilitates the flotation of fine and coarse particles equally, while keeping the solids in suspension efficiently. This maximizes the probability of bubble-particle interaction.

MAXGen MECHANISM FOR BEST METALLURGICAL PERFORMANCE

- No sanding
- MAXimum bubble-particle attachment
- Higher grade
- Higher recovery

Launders and Froth Crowder

- External / internal / radial, or a combination
- Custom froth area
- Specific lip length
- To improve grade

Deeper, high slope launders

- Easy froth flow
- Quicker removal

Internal/external eDART valves

- Precise slurry level controls
- Consistent froth velocity
- To improve grade
- Internal valves – compact layout
- External valves – safety
- External valves – cell bypass made easy

Welded or bolted tank design

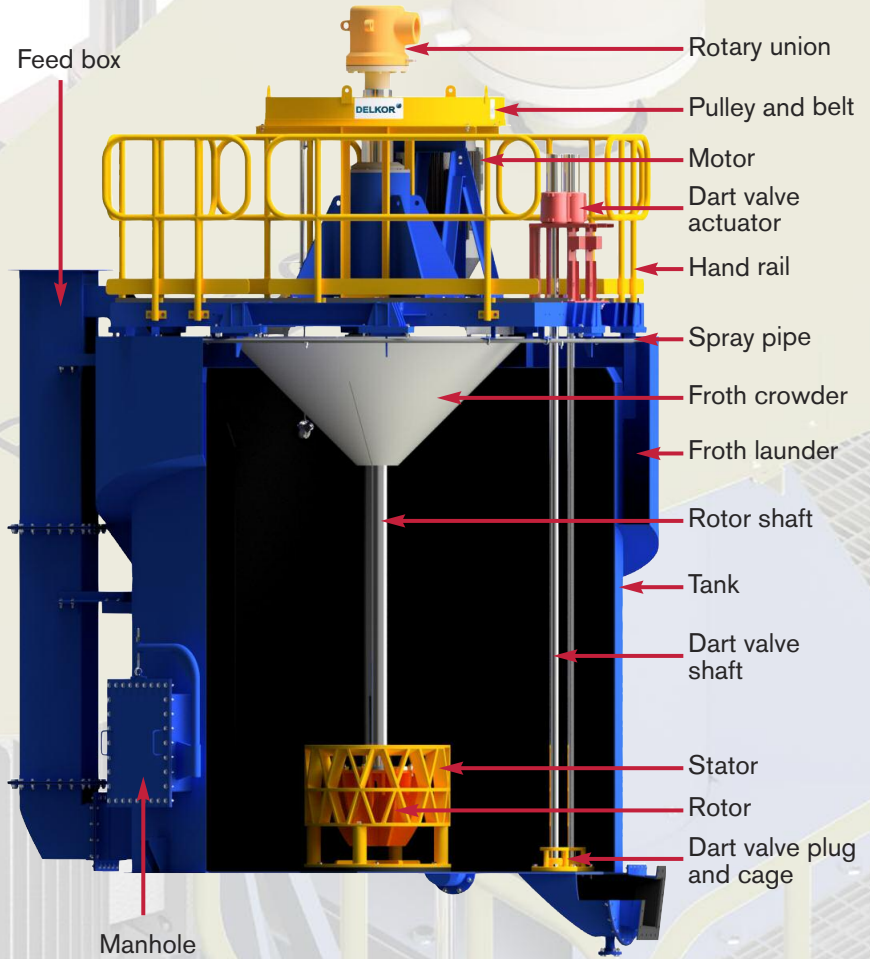
- Convenient logistics
- Improved erection time

Adequately sized manhole

- Easy access to internals

Modular walkway design

- Flexible layout

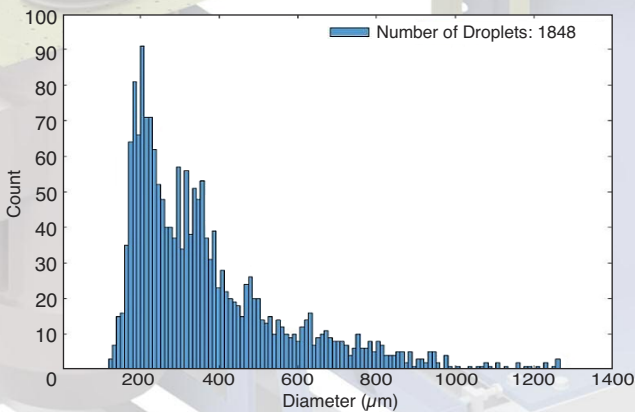


Finer bubbles, stable froth

DELKOR

METALLURGICAL PERFORMANCE

- Optimum bubble size distribution
- Capability to generate large quantity of bubbles
- Optimum degree of agitation
- Improved mixing patterns
- Adjustable froth crowder to optimise froth area
- Optimum lip length through selection of suitable type of froth launders to improve mass pull
- Precise slurry / froth level controls through eDART valves



Optimum bubble size distribution

EASE OF MAINTENANCE

- Adequately sized manhole to access internals and or remove internals
- Stator and stator support stool in segments
- Froth crowder in segments for easy handling
- Caged dart valve plugs to not transfer stress to the valve shafts
- Modular walkway to offer flexible plant walkway design
- Auto-cell bypass system in collaboration with eDART
- Deeper launders and froth wash spray nozzles to evacuate froth quickly

LOW COST OF OWNERSHIP

- Co-location of design, engineering and manufacturing in an ISO certified facility in India to offer best delivery time
- Option of welded or bolted tank design to reduce site work and improve logistics
- Reduced specific power consumption
- Reduced wear rate of rotor and stator

MAXGen Mechanism	DELKOR BQR Flotation Cell Details						
	Model	Tank ID (mm)	Tank Height (mm)	Effective Volume (m ³)	Air Requirement m ³ /min	kPa*	Installed Power (kW**)
External Launder	BQR 15	1,238	1,680	1.5	1.0	14.0	7.5
	BQR 30	1,598	1,970	3	1.6	19.0	11
	BQR 50	1,898	2,295	5	2.3	21.0	15
	BQR 100	2,388	2,840	10	4.1	25.0	22
	BQR 200	3,018	3,530	20	5.6	32.0	30
	BQR 300	3,448	4,000	30	7.3	36.3	45
	BQR 400	3,788	4,420	40	8.3	38.0	55
	BQR 500	4,098	4,710	50	9.2	41.3	55
Internal Launder	BQR 700	4,588	5,290	70	11.4	49.0	75
	BQR 1000	5,088	4,820	70	11.4	49.0	75
	BQR 1300	5,588	5,450	100	15.2	48.0	90
	BQR 1500	6,088	5,860	130	17.3	58.6	110
	BQR 2000	6,308	6,260	150	19.5	56.6	132
	BQR 3000	6,988	6,700	200	29.2	63.2	160
	BQR 3000	7,888	7,780	300	36.0	65.0	200

* Indicative values only; ** Indicative values only @ 1.35 Pulp S.G.

HOW THE MAXGen MECHANISM WORKS

Rotor and Stator

The new range of **MAXGen** mechanisms achieves best-in-class metallurgical performance.

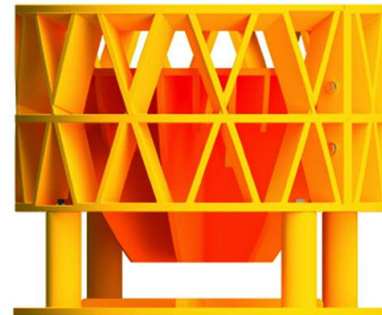
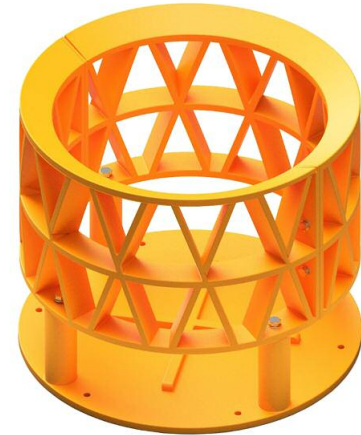
The rotor has a set of smaller and larger blades to

- Generate large swarms of finer bubbles
- Achieve efficient pumping
- Achieve effective agitation

The stator is located on the floor of the tank and has a unique diamond shaped profile to

- Effectively diffuse bubbles in the turbulent zone
- Improve hydrodynamics in the cell

The **MAXGen** mechanism provides a conducive environment around the mechanism for maximum bubble- particle interaction, thus improving flotation kinetics



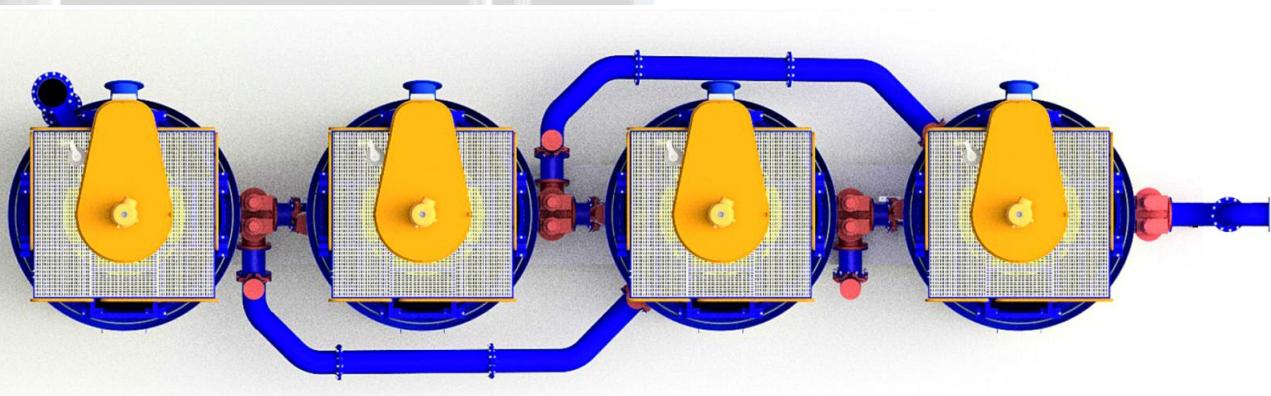
FROTH AREA AND LAUNDER LIP LENGTH

Froth area and launder lip length are important to achieve best metallurgical performance.

Careful selection of the froth crowder diameter and the type of launder will result in optimum froth carry rate and desired mass pull.

Available types of launders:

- External
- Internal
- Radial
- Combination of the above



BQR Flotation cells with bypass arrangement

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