

A close-up, low-angle shot of a yellow industrial hydrocyclone. The device is composed of several stacked, conical sections held together by numerous silver-colored bolts. The word 'CAV' is printed in large, bold, black letters on the side of one of the sections. The background is a plain, light color, and the lighting creates strong highlights and shadows, emphasizing the metallic texture and the circular geometry of the components.

**WEIR**

**Minerals**

**Cavex® Hydrocyclones**



Featuring a laminar spiral inlet geometry design, Cavex® hydrocyclones are engineered to deliver excellent efficiency, capacity and long wear life.



Our innovative Cavex® hydrocyclone design provides excellent classification efficiency and hydraulic capacity, reducing the number of hydrocyclones required for a given duty.

With an extensive range of vortex finders and spigot sizes, our hydrocyclones offer maximum operational flexibility.

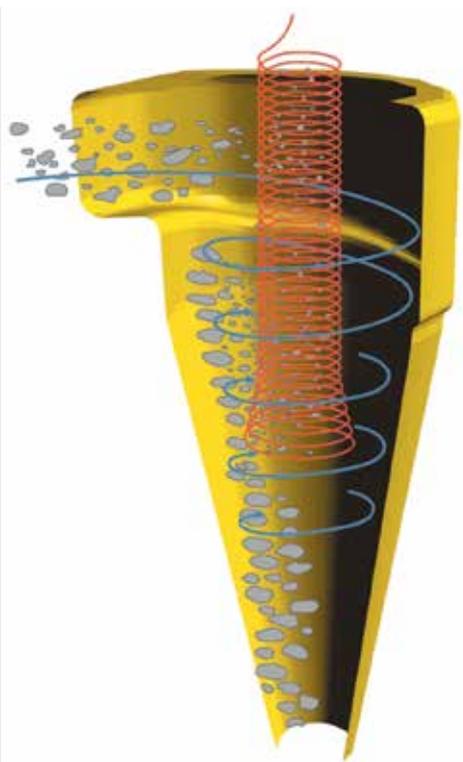
Our Cavex® hydrocyclones feature:

- High process performance efficiency
- High capacities
- Tough casings
- A wide range of wear-resistant lining options for maximum longevity

#### Design features

- The Cavex® shape: laminar spiral inlet geometry is designed to provide excellent separation efficiency and hydraulic capacity, as well as maximum feed chamber wear life
- Corrosion resistant, polyester or carbon steel housings
- Exterior reinforcement
- Wide range of vortex finder and spigot sizes are available
- Multiple cone angles
- Multiple sizes of feed chamber liner
- Specialised options to further maximise Cavex® hydrocyclone efficiency

## Maximised hydraulic capacity, increased circuit capacity and a long wear life.



### How it works

The laminar spiral inlet geometry design provides a natural flow path into the Cavex® hydrocyclone. Its unique shape, without sharp edges, shelves or square corners, allows the feed stream to blend smoothly with rotating slurry inside the chamber (pictured left).

### Increasing circuit capacity

For grinding circuit applications, Cavex® hydrocyclones increase circuit capacity by minimising the quantity of fines by-passing to the underflow stream. This is achieved by maximising the air core diameter created within the rotating mass of fluid within the hydrocyclone.

### Improved flow means more with less

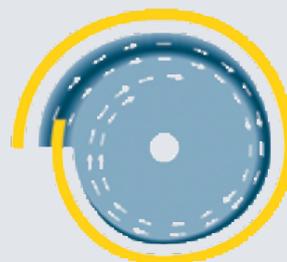
Cavex® hydrocyclones are designed to maximise the volume of processed slurries by minimising flow resistance through the feed chamber. This reduces the quantity of hydrocyclones required.

### Long wear life

Cavex® hydrocyclones have been proven to deliver up to three times the life of conventional feed head liners in comparable applications.

Cavex® hydrocyclones can be supplied unlined or lined with a variety of wear-resistant materials developed by Weir Minerals. The range of options include elastomers, ceramic tiles, monolithic ceramic liners, urethane and white iron linings.

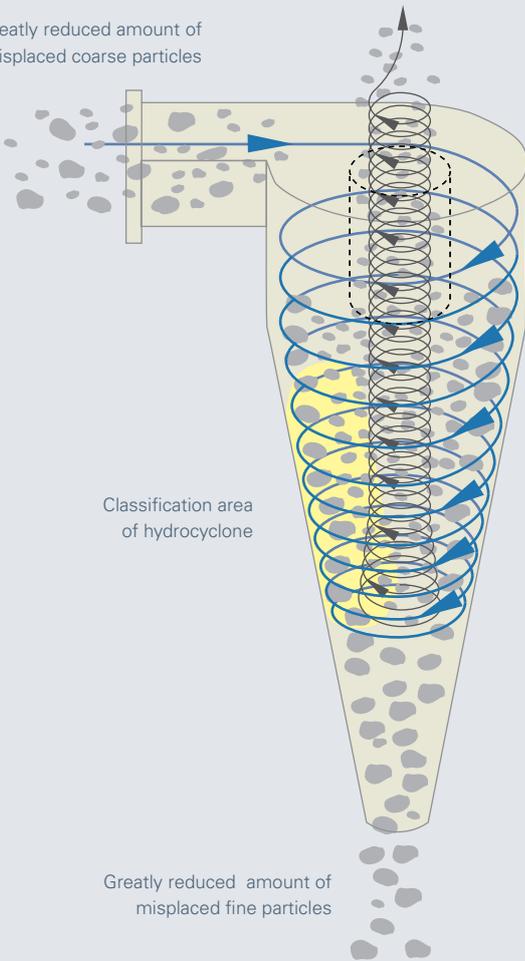
### Cavex® Hydrocyclone



In Cavex® hydrocyclones, a controlled feed stream blends progressively and smoothly hence turbulence is reduced throughout the hydrocyclone. The Cavex® hydrocyclone feed geometry substantially increases hydraulic capacity as there is less resistance to slurry flow.

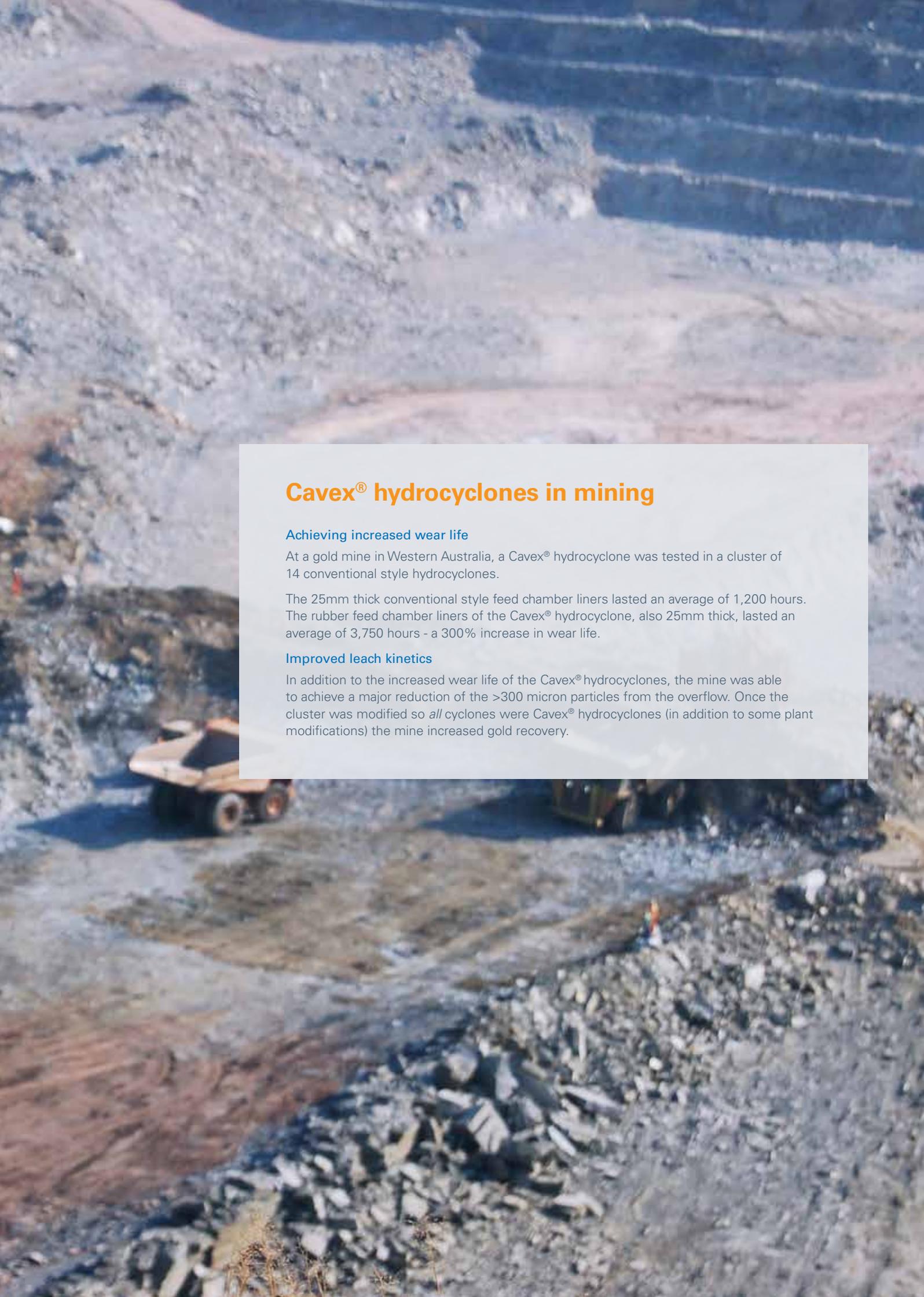
### Classification Efficiency

Greatly reduced amount of misplaced coarse particles



Greatly reduced amount of misplaced fine particles





## Cavex® hydrocyclones in mining

### Achieving increased wear life

At a gold mine in Western Australia, a Cavex® hydrocyclone was tested in a cluster of 14 conventional style hydrocyclones.

The 25mm thick conventional style feed chamber liners lasted an average of 1,200 hours. The rubber feed chamber liners of the Cavex® hydrocyclone, also 25mm thick, lasted an average of 3,750 hours - a 300% increase in wear life.

### Improved leach kinetics

In addition to the increased wear life of the Cavex® hydrocyclones, the mine was able to achieve a major reduction of the >300 micron particles from the overflow. Once the cluster was modified so *all* cyclones were Cavex® hydrocyclones (in addition to some plant modifications) the mine increased gold recovery.

## Specialised, leading-edge options to further maximise Cavex® hydrocyclone efficiency.

### Increased capacity and efficiency with Cavex® hydrocyclones fitted with air core boosters

Cavex® hydrocyclones fitted with our patented air core boosters are designed to improve capacity and hydrocyclone efficiency by reducing the total pressure across hydrocyclones, increasing the volume flow split to the overflow.

The air core booster allows use of a larger apex for a given by-pass of water to the underflow, which produces a more stable, larger diameter air core, increasing capacity and reducing by-pass of fines.

Air core boosters also reduce the likelihood of the hydrocyclone operating under roping conditions, or blockages caused by oversize tramp material.

### Cavex® polyurethane hydrocyclones

The Cavex® polyurethane hydrocyclone is solidly constructed and provides excellent separation efficiency, hydraulic capacity, and a longer feed chamber liner life than conventional involute or tangential feed cyclone designs.

- Lightweight
- Corrosion resistant exterior
- Low cost

### Cavex® DE hydrocyclones

Our Cavex® DE (double efficiency) hydrocyclone is a double classification unit, working in a single stage, without intermediate pumping.

The DE hydrocyclone generates a very low by-pass of fines in the underflow while reducing the misplacement of coarse particles to the overflow.

The key feature of the Cavex® DE hydrocyclone is the internal control mechanism which impacts the cleansing of the viscous layer and the mass partition between the first and second stages. This area of water injection is called the wash water injection chamber.

### Cavex® hydrocyclone canisters

Our Cavex® hydrocyclone canisters provide a unique method of clustering a group of small polyurethane hydrocyclones, enabling higher throughputs with a significantly reduced footprint.

- Compact design
- Low wear
- Higher capacity per unit
- 40CVX canister 30-50 m<sup>3</sup>/hr
- 100CVX canister 100-150 m<sup>3</sup>/hr



**Top:** Cavex® DE hydrocyclones with air core boosters installed at a mine site in Chile.

**Middle:** Cavex® 40CVX hydrocyclone canisters in operation at a mine site in Brazil.

**Bottom:** Cavex® solid polyurethane hydrocyclone model 150CVX6.

## Cavex® hydrocyclones are highly efficient across numerous applications and operating environments.

### Applications and linings

Cavex® hydrocyclones are available in a wide range of sizes and linings to meet your operation's specific requirements. They are expertly tailored for hard rock, coal, and multiple mineral processing operations such as classifying and dewatering. Our Cavex® hydrocyclones are well suited for grinding circuits, tailings and single or multiple stage desliming applications. Cavex® hydrocyclones are also used in various types of dense medium applications in diamond processing and coal cleaning plants.

Cavex® Hydrocyclone Applications											
APPLICATION	40CVX	100CVX	150CVX	250CVX	400CVX	500CVX	650CVX	700CVX	800CVX	1000CVX	1200CVX
Dense Medium Separation				■	■	■	■	■	■	■	■
Grinding Circuit		■	■	■	■	■	■	■	■		■
Sand and Gravel		■	■	■	■	■	■	■	■		■
Tailings		■	■	■	■	■	■	■	■		■
Phosphate	■	■	■	■	■	■	■	■	■		■
Mineral Concentrate	■	■	■	■	■	■	■	■	■		■
FGD/Limestone	■	■	■	■	■						
Oil Sands	■	■	■	■	■	■	■	■	■		■
Coal Classification			■	■	■	■	■	■			
Flotation	■	■	■	■	■	■	■		■		
Waste Water	■	■	■	■	■	■	■	■	■		■

Cavex® Hydrocyclone Linings									
MODEL	SOLID POLY	MONOLITHIC CERAMIC	URETHANE LINERS	ELASTOMER LINED	REINFORCED POLY HOUSING	METAL HOUSING	CERAMIC TILED	CAVEX® DE HYDROCYCLONE	AIR CORE BOOSTER
40CVX	■	■							
100CVX	■	■		■	■	■			
150CVX	■	■	■	■	■	■			
250CVX	■	■	■	■	■	■	■	400/250	■
400CVX		■	■	■	■	■	■	500/400	■
500CVX		■	■	■		■	■	650/500	■
650CVX		■	■	■		■	■		■
700CVX		■		■		■			■
800CVX		■		■		■	■		■
1000CVX						■	■		
1200CVX				■		■	■		



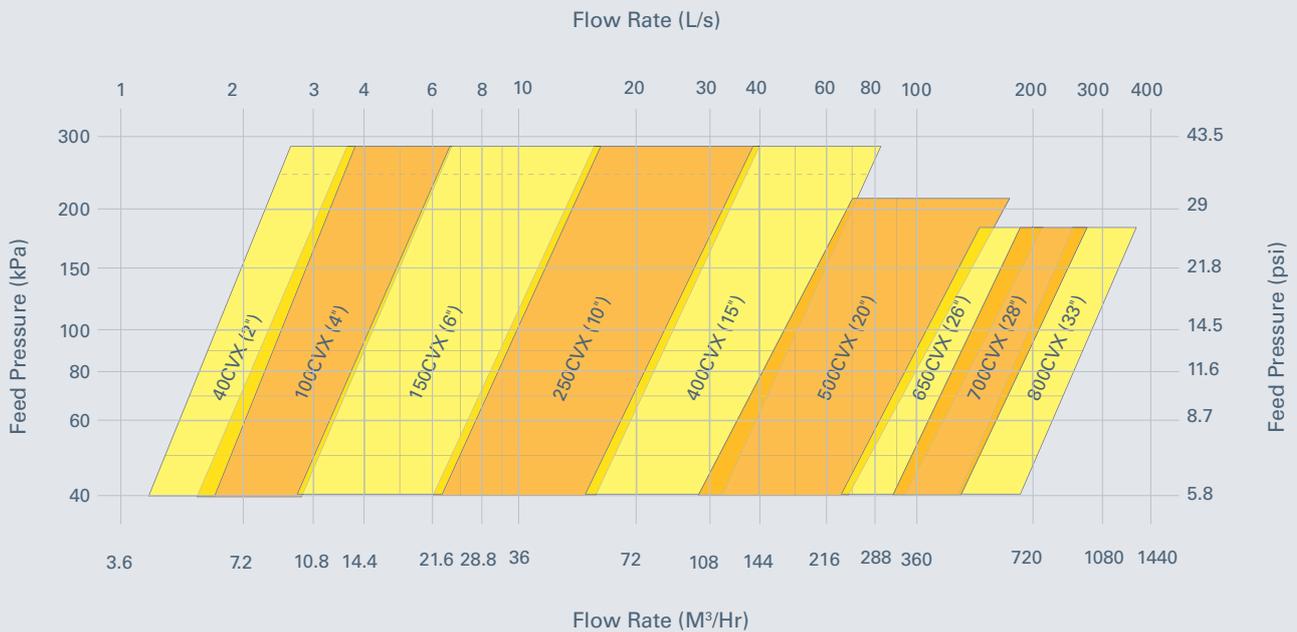
#### Models 100, 150, 250 and 400

- Fibre reinforced plastic casing (FRP)
- Snap fit, replaceable elastomer liners and ceramic lining available
- Stainless steel quick release clamp fasteners
- Polyurethane or hyperchrome vortex finders
- Elastomer, urethane or ceramic spigots
- Moulded HDPE overflow pipe
- Can also be manufactured with cast metal housings

#### Models 500, 650, 700 and 800

- Fabricated steel or cast ductile iron casings
- Replaceable elastomer liners up to 45mm thick. Ceramic lining available.
- Elastomer vortex finders
- Elastomer or ceramic spigots
- Elastomer lined steel overflow pipe or 'Air Core Booster' cap available

**Cavex® Hydrocyclone Capacities (approximate)**



## We are committed to providing you with tailored hydrocyclone designs and the technical expertise and services to maximise production while minimising your total ownership costs.



### **Cavex® hydrocyclones feature our control and monitoring system**

Our control and monitoring system allows you to remotely assess your Cavex® hydrocyclones to ensure that they are continuously operating at optimum performance and maximum efficiency.

This system can detect and predict poor hydrocyclone operating conditions, such as roping, to ensure you are maximising throughput at all times.

### **How it works**

Advanced sensors are fixed to the exterior of your Cavex® hydrocyclone. They will detect minute alterations in interior momentum and the air core.

The control system records the operational history of both stand-alone hydrocyclones, and individuals, within a cluster, collecting and logging data on any change in conditions.

The data is then transmitted to the remote control centre, providing operational data in real time.

### **Accessing the data**

Data is transferred from connected equipment to the secure site where it can be stored temporarily. This valuable data can be accessed securely anywhere on the planet through our online portal, seamlessly interfacing with your Distributed Control System (DCS).



**Top:** Control and monitoring system sensor connected to the air core booster of a Cavex® hydrocyclone.

**Bottom:** Control and monitoring system installed on a Cavex® 250CVX hydrocyclone at a mine site in Chile.

**Our Weir Minerals Services™ team:  
Your trusted operating partner**

Cavex® hydrocyclones are backed by the vast Weir Minerals Services™ network, which means our experts are there to support you, every step of the way, wherever you may be.

Our expert team will work alongside you to deliver:

- Total hydrocyclone performance analysis to:
  - Increase throughput
  - Review of size classification
  - Increase efficiency
  - Reduce power consumption
  - Reduce water consumption rates
- Customised cluster solutions
- Customised lining to maximise wear life and reliability

Our experienced team can design hydrocyclone clusters that retrofit into existing spaces to maximise production, and address operational and maintenance issues.

Our expertise and experience will ensure your operation and process equipment consistently performs at its optimal capacity. By focusing on performance and reliability, we work with you to achieve maximum productivity and efficiency for your operation, combined with flexible commercial options.

We have an extensive global network able to provide services on-site, or at one of our 150 dedicated service centres.





## Minerals

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