



Fine Grinding Technology

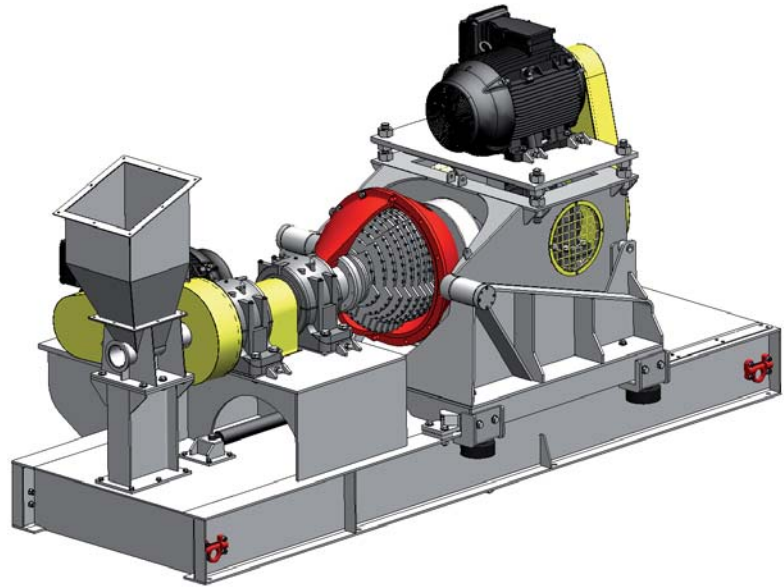
CPG Resources – Mineral Technologies

Leaders in Mineral Separation



Expertise. Experience. Superior Technology.

While retaining the ability to grind to conventional coarse sizes, Mineral Technologies' Patented KAD (Kelsey Axial Displacement) Mill has been developed to satisfy the ever increasing demand for efficient and economical production of fine and ultrafine products.



KAD Mill

The new patented KAD Mill addresses issues that have become increasingly important to the comminution process, such as specific energy consumption, carbon tax, ultrafine particle production, and mechanochemical material properties.

The KAD Mill works by delivering a feed material through a shaft to a spherical grinding chamber where it is dispersed between an external rotating shell, and an internal counter-rotating sphere (or disc / pin assembly). Rotational speeds are adjusted to suit individual applications.

As the surfaces of the shell and sphere accelerate, particle size reduction occurs autogenously (no grinding media).

Grinding takes place predominantly via particle to particle shear and abrasion, as the particles transfer energy in communication.

Centrifugal forces imparted on the feed particles result in a build up against the inside of the shell wall. This forms a natural wear protection and eliminates the need for mill liners.

The rotating shell and the counter-rotating sphere share a common spherical centre, but are axially displaced to maximise the active grinding volume and enhance the transfer of material through the mill.

Material retention time within the mill can be controlled by feed rate variation and/or by a variable diameter dam ring at the exit of the grinding chamber.

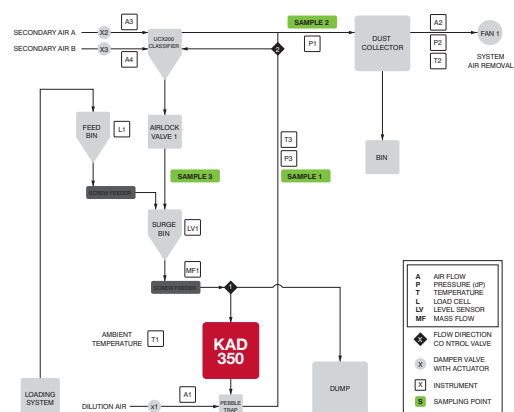
The patented process brings a new level of economy, particle size reduction, and comminution control to the milling industry.

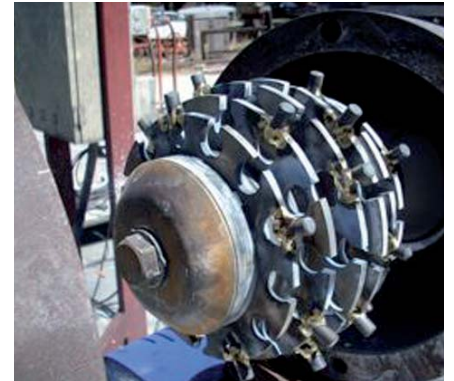
Test Facilities

Testing is important to maximise performance on individual applications. A fully equipped test facility is available, which includes a KAD 350 Mill linked in closed circuit to either dry (air classifier and bag house) or wet (hydro cyclone) closed circuit supplementary equipment.

To optimise performance, grinding implements and mill operating parameters are developed for each material type during the laboratory test phase.

Products are laser sized, and SEM and XRD facilities are also available.





Features

Mechanically Robust

The KAD Mill is designed with conventional mechanical components that have been over-engineered to ensure reliability.

Grinding Elements

Customised internal grinding elements (discs and spheres) achieve optimum performance.

Self Lining

Feed and product materials build up on the inside of the shell as a protective lining. There are no mill liners.

Fully Automated

PLC controlled, providing history trends of key data plus the ability to integrate into a plant control system using conventional communication protocols (which can also be used for maintenance planning).

Low Noise

Operated without noise attenuation.

Compact Design

The customised grinding elements can be installed in an existing plant, with minimal external requirements.

Benefits

Low Specific Energy

The KAD Mill produces Fine and Ultrafine products under very economic conditions

Autogenous Grinding

No grinding media requirements nor consequent contamination to product

Exceptionally High Power Intensity

Efficient centrifugal milling at up to 1200G, providing power intensities of up to 5000 kW/m³

Large Reduction Ratios

Ability to accept large particle size feeds in the production of fine products

Versatile

The KAD Mill can quickly be changed to process alternative materials or produce different product sizes

Maintenance Friendly

Safe and simple maintenance

Applications

Industrial Minerals

Carbonates, zircon, baryte, etc., down to single digit microns, and especially materials with "platey" or acicular properties such as talc, mica and wollastonite.

Mining

Liberation of fine and ultrafine gold, platinum, and other precious metals. Applications in high tonnage base metal concentrators ranging from secondary milling of SAG mill products to fine and ultra fine regrinds.

Inorganic Chemicals

Flame retardants such as ATH, pigment bases such as TiO₂, and other materials used in ceramic and refractory products.

Geopolymers

Cement substitutes

KAD Mill Models

Model	Power Range (kW)		Dimensions (mm)			Weight (kg)
	Shell	Drum	Width	Length	Height	
250	22	11	500	1800	500	400
350	30	15	700	2500	1500	1200
800	360	160	2100	4800	2200	10 000
1500	900	450	3000	7000	3000	20 000

A KAD 800 Mill can be supplied for customer site tests and/or as a modular pilot plant to produce commercial quantities of fine product.



CPG Resources – Mineral Technologies

Locations

Head Office

Carrara, Gold Coast, Queensland

T +61 7 5569 1300

F +61 7 5525 3810

E mineraltechnologies@au.cpg-global.com

South Africa

Alton, Richards Bay

T +27 35 797 3230

F +27 35 797 4629

E mineraltechnologies@au.cpg-global.com

Western Australia

West Perth

T +61 8 9213 9213

F +61 7 5525 3810

E mineraltechnologies@au.cpg-global.com

India

Kolkata, West Bengal

T +91 33 2462 1749

F +91 33 2462 8479

E pintubose_kolkata@yahoo.com

North America

St Augustine, Florida

T +1 904 827 1694

F +1 904 827 1695

E mdmtusa@aol.com

Kochi, Kerala

T +91 484 238 9097

F +91 484 238 9506

E md_cochin@sify.com

South America

Belo Horizonte, Brazil

T +55 31 3201 2606

F +55 31 3201 2653

E comercial@rochemt.com.br