

Kelsey – Centrifugal Jig

KELSEY



Description

The Kelsey Centrifugal Jig extends the efficient size recovery range of fine mineral separation processes to 10 microns by combining the principles of conventional jig technology with centrifugal force.

Spinning the jig increases the gravitational field, which subsequently increases the apparent specific gravity difference between minerals. The particle acceleration enhances selectivity and consequently improves mineral recovery and separation.

Elutriation water is pulsed at high frequency through a bed of ragging material (retained on an internal cylindrical wedge wire screen), using a patented, low energy, offset cam mechanism. This facilitates separation of mineral particles on the basis of specific gravity. Minerals with a higher specific gravity than the ragging material move through the ragging bed to concentrate, while lower specific gravity gangue and slime minerals are rejected to tailings.

Key operating variables that can be adjusted to control processing of different mineral assemblages include:

- Centrifugal force;
- Selection of different specific gravity ragging materials;
- Size distribution of the ragging material; and
- Elutriation water rate.

Installed worldwide, Kelsey Jigs deliver excellent metallurgical performance that is superior to competing fine mineral recovery systems.

The Kelsey Jig is available in three configurations:

- Laboratory unit;
- J1302 production unit; and
- J1802 production unit.

Features

- Continuous production process
- Nominal throughputs to 50 t/h
- Adaptable to feed variations
- High mechanical reliability
- Automatic screen cleaning system
- Integrated lubrication system
- PLC control compliant
- Heavy duty, rubber and ceramic lined construction

Key Benefits

- Higher fine mineral recovery and concentrate grades than conventional gravity separation techniques
- Improved separation efficiencies down to 10 microns
- Ability to separate minerals with small specific gravity differences
- Enables economic re-treatment of tailings
- Environmentally friendly operation (no reagents required)

Applications

Kelsey Jigs are currently installed in Australia, South Africa, Brazil, Peru, Bolivia, India and the USA – processing zircon, rutile, tin, tantalum, tungsten, gold and nickel. In addition, testwork has achieved positive results for chromite, iron ore, niobium, base metals (Pb, Zn, Co, Cu) and other applications.



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Modular Plants

Mineral Technologies has designed and now supplies standard design modular jig plants, including all equipment (pumps, screens, cyclones, sumps, etc), electrical and PLC control systems, water supply system and Kelsey Jig – all housed in a modular steel frame sized for easy shipping and site assembly. These plants can and have been previously designed in standard shipping container sized frames to make transport around the globe as easy as possible. The plants are fully assembled and water tested at Mineral Technologies’ Carrara workshop prior to despatch.

The key advantages of this approach include:

- Tried and tested plant designs pre-tested on water at the factory;
- All critical pre-jig feed preparation equipment is selected and installed for each specific application;
- Modular/shipping container sized modules for low cost transport;
- Compact, reducing footprint;
- Minimal site works; and
- Short site set up time (typically one week) – plug and play – connect in feed, water, power, tails and concentrate discharge and the plant is ready to run.

