Jigs

MBE Coal & Mineral Technology – originally the former KHD Humboldt Wedag- can undoubtedly boast of more than 150 years of engineering excellence in jigging technology and to this date continued research and development are carried out to improve the range of jigs being made available by this company. With the introduction of BATAC® in 1964 and ROMJIG® in 1984 allowed large jig widths and consequently larger capacities with extremely good separation efficiencies.

Through continuous in-house developments and experience gained in more than a hundred projects, MBE has established its clear leadership position whilst building up a worldwide unique in the field. As a result, our BATAC® and ROMJIG®s do not only excel by their high separation efficiencies but also through:

- Ease of operation
- Robustness of design
- Minimized maintenance costs
- Highest throughput capacities

MBE has in its product range, two types of jigs to suit various needs of the client, namely, BATAC® jig and ROMJIG®.
BATAC® Jig

This proprietary machine of MBE caters to all kinds of coal, minerals etc. of varying coarse, medium and fine sizes. BATAC® jigs are underpulsated which effects in higher separation efficiencies than BAUM jigs and higher throughput rates than BAUM alongwith lesser footprint and lesser corner effect.

Salient features of BATAC® Jig include:

- A centre air chamber for each compartment for stable operation and uniform stroke distribution
- Permanent and adjustable air pockets guarantying fast and hassle free startup
- PLC based jig controllers
- Independent working discharge devices with separate hydraulic systems which ensures optimal product qualities over the entire jig bed even when feed distribution is non-uniform
- Ultrasonic sensor technology for highest discharge precision
- Highest throughput rates available in the market
- Technologically superior pulse generators
The main features of a Batac® Jig are:

- Water Only Process
- Operating cut points from 1.3 to 7.85
- High Throughput Rates
- Lump Ores : 75 – 90 tph/m jig width
- Fine Ores : 68 – 78 tph/m jig width
- Compact Design, up to 7m in width
- 1 or 2 cut points in one machine possible
- Handle up to 20% feed and water variations
- Can be stopped instantaneously and restarted immediately
- Adjustments done from the control room for all Jig functions
- Inter – Operable with all established process automation system
- No mechanical adjustments on jig drive required

<table>
<thead>
<tr>
<th>BATAÇ® Jig features</th>
<th>Coal</th>
<th>Minerals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Jig bed width</td>
<td>8.0 m</td>
<td>6.0 m</td>
</tr>
<tr>
<td>Maximum throughput</td>
<td>960 tph (for coarse)</td>
<td>500 tph (for coarse)</td>
</tr>
<tr>
<td></td>
<td>850 tph (for fine)</td>
<td>450 tph (for fine)</td>
</tr>
<tr>
<td>Size Range</td>
<td>150 – 10 mm (for coarse)</td>
<td>45 – 6 mm (for coarse)</td>
</tr>
<tr>
<td></td>
<td>10/12 – 0.5 mm (for fine)</td>
<td>10 - 0.315mm (for fine)</td>
</tr>
</tbody>
</table>
ROMJIG®

ROMJIG specifically developed for treating ROM coal for deshaling purposes. Earlier jigs were incapable of deshaling without crushing the ROM coal to a size less than 150 mm which incurred extra costs. But with the development and introduction of the ROMJIG this limitation was done away with and ROM coal with sizes upto 400 mm could be directly Deshaled with this machine without crushing. This method also thus helps in protecting the subsequent comminution system. This machine is a movable bed screen with excellent separation efficiencies and robust design. It is highlighted by advantages such as absence of hutch water clarification, low water and energy demands and small number of ancillary equipments. Therefore, it outrivals any other method of mechanical refuse separation.

ROMJIG® Jig features

- **Maximum Jig bed width**: 2.0 m
- **Maximum throughput**: 400 tph
- **Size Range (mm)**: 30-400
- **Specific Water Consumption**: 0.03 m³/ton
- **Specific Energy Consumption of feed**: 0.2 kWh/ton
MAGNETIC SEPARATORS

More than 40 years of research and development by MBE has been put into development of highly efficient superior quality machines which are used for separating magnetic materials from non-magnetic materials. These machines include JONES® WHIMS and PERMOS®, the former being a high intensity machine whereas the second a medium intensity machine. Continuous improvements in their technical features and the high acceptance by our worldwide clients testify the lasting success and state of the art of the JONES® WHIMS and PERMOS® MIMS.

JONES® WHIMS

The JONES is a uniquely designed WHIMS which can separate feebly magnetic material from non-magnetic materials at a very fine grain size (<2 mm), depending on application. The JONES is capable of producing very high magnetic field intensity of upto 1.5T at very low energy consumption and thus guarantees low operating and maintenance costs.

Salient features of the JONES® include:

- Very high magnetic intensity upto 1.5T
- High dry throughput achieved in a single machine upto 400 tph
- Special grooved plate design which ensures maintenance of uniform gap between the plates for long operating time thus creates a uniform magnetic field magnetic field throughout.
- Advanced feeding devices
- Robust design
- Low energy consumption
- Particle size upto 2mm
- Air cooled coil boxes
- Low operating and maintenance costs
<table>
<thead>
<tr>
<th>Type</th>
<th>Capacity (dry tph)</th>
<th>Diameter (m)</th>
<th>Power (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP 335Q</td>
<td>400</td>
<td>3.35</td>
<td>260</td>
</tr>
<tr>
<td>DP 335</td>
<td>220</td>
<td>3.35</td>
<td>120</td>
</tr>
<tr>
<td>DP 317</td>
<td>140</td>
<td>3.17</td>
<td>85</td>
</tr>
<tr>
<td>DP 180</td>
<td>40</td>
<td>1.8</td>
<td>30</td>
</tr>
<tr>
<td>DP 71</td>
<td>5</td>
<td>0.71</td>
<td>21</td>
</tr>
<tr>
<td>P 40</td>
<td>0.5</td>
<td>0.4</td>
<td>4.6</td>
</tr>
</tbody>
</table>
PERMOS® MIMS

It is medium intensity magnetic drum separator which allows wet and dry separation of coarse and fine materials with a medium susceptibility at high throughput rates. As a permanent magnet is present in the PERMOS® hence no electricity is required to produce the magnetic field. Strong field intensities and an advanced design of the magnet system guaranty low operating costs. The PERMOS® MIMS operates at 0.5T on the drum surface and meets the demand for cost-effective solutions for many applications.

Salient features of PERMOS® MIMS:-
- Equipped with a high quality permanent magnet (NdFeB)
- Specially magnetized heavy duty magnet blocks
- High magnetic fields upto 0.5T on the drum surface
- For both dry and wet process
- Drum shell of stainless steel
- Rubber lining for wear protection
- Discharge roll for easier discharge of magnetic concentrate driven by a separate motor
- Cost-effective low energy consumption and high throughput

<table>
<thead>
<tr>
<th>Type</th>
<th>Capacity (dry tph)</th>
<th>Diameter (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERMOS® 202</td>
<td>Laboratory unit</td>
<td>0.2</td>
</tr>
<tr>
<td>PERMOS® 602</td>
<td>Pilot plant unit</td>
<td>0.2</td>
</tr>
<tr>
<td>PERMOS® 606</td>
<td>20</td>
<td>0.6</td>
</tr>
<tr>
<td>PERMOS® 612</td>
<td>40</td>
<td>1.2</td>
</tr>
<tr>
<td>PERMOS® 618</td>
<td>60</td>
<td>1.8</td>
</tr>
<tr>
<td>PERMOS® 624</td>
<td>80</td>
<td>2.4</td>
</tr>
<tr>
<td>PERMOS® 630</td>
<td>120</td>
<td>3.0</td>
</tr>
</tbody>
</table>
This innovative and exceptionally efficient machine is the propriety item of MBE which caters to the flotation process required to enrich lean grade ores and coking coal thus ensuring maximum recovery of the depleting resources. The PNEUFLOT® cells are characterized from other flotation machines present in the market by its self aeration technology (no need of blower) and absence of any movable parts. PNEUFLOT® has considerable advantages over other new flotation machines due to its compact size, absence of any rotating wear parts, controlled and uniform bubble size, high throughput et al.

Salient features of PNEUFLOT®:

- Better recovery and higher yield due to optimal particle bubble contact
- Higher selectivity with optimal control of air
- No re-sliming due to less shear force
- Control of bubble size possible
- Less wear due to absence of agitator
- Low energy consumption
- No compressed air due to its self aerating technology
- Small footprint
- Optimal froth control with adjustable goose-neck design
- Robust design
Comparison of PNEUFLOT® with other flotation machines

<table>
<thead>
<tr>
<th></th>
<th>Column Cell</th>
<th>Pneuflot Cell</th>
<th>Agitator Cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Cost</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Low</td>
<td>Low</td>
<td>Very high</td>
</tr>
<tr>
<td>Selectivity</td>
<td>High</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Flotation Time</td>
<td>Long</td>
<td>Short</td>
<td>Long</td>
</tr>
<tr>
<td>Compressed Air</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Wear</td>
<td>Normal</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Footprint</td>
<td>Small</td>
<td>Smaller</td>
<td>Big</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Reagent Consumption</td>
<td>Lower</td>
<td>Lower</td>
<td>High</td>
</tr>
<tr>
<td>Flotation Stages</td>
<td>More</td>
<td>Few</td>
<td>More</td>
</tr>
<tr>
<td>Turbulence</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Available machine sizes and features:

<table>
<thead>
<tr>
<th>Diameter (m)</th>
<th>Throughput (m³/hr)</th>
<th>Cell Volume (m³)</th>
<th>Footprint l x w (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8</td>
<td>8 – 12</td>
<td>0.5</td>
<td>1000x1000</td>
</tr>
<tr>
<td>1.2</td>
<td>15 – 30</td>
<td>1.5</td>
<td>2000x2000</td>
</tr>
<tr>
<td>1.8</td>
<td>30 – 70</td>
<td>3.0</td>
<td>2500x2500</td>
</tr>
<tr>
<td>2.5</td>
<td>70 – 150</td>
<td>6.0</td>
<td>3000x3000</td>
</tr>
<tr>
<td>3.0</td>
<td>150 – 300</td>
<td>12</td>
<td>4000x4000</td>
</tr>
<tr>
<td>4.0</td>
<td>300 – 600</td>
<td>25</td>
<td>5000x5000</td>
</tr>
<tr>
<td>5.0</td>
<td>600 – 1000</td>
<td>53</td>
<td>6000x6000</td>
</tr>
<tr>
<td>6.0</td>
<td>1000 – 1400</td>
<td>80</td>
<td>7000x7000</td>
</tr>
</tbody>
</table>
Low wear
- No rotational parts
- Slurry contacting parts made from silica ceramics

More efficiency
- No turbulence inside the flotation tank
- Aerated slurry via self aerator
- Changeable retention time without modification
- Wide range of bubble size including ultra fine bubbles
- Extreme throughput in very small volume (standard 1.000 m³/h with only 50 m³ cell)
- No resliming tanks to the absence of agitator

Easy at operation
- Adjustable volume of cells with froth crowder which also enables froth thickness adjustment
- Product and rejects quality can be influenced via goose neck
- Automatic regulated recirculation helps for water balancing
TESKA®

The TESKA® separator is heavy medium separator used for coal of +6mm size with capacities upto 800 tph. A very special feature of the machine is the large bath width related to size of the machine. The TESKA® can be supplied with bucket wheel diameters upto 6500mm, bucket widths upto 1500mm and bath widths upto 3000mm. Feed sizes upto 1200mm edge length can be processed in this machine. If magnetite is used as the heavy medium then TESKA® separator will allow the use of medium densities upto 2.3 g/cm³.

Salient features of TESKA®:
- The sliding pneumatically fitted sealing mounted between rotary bucket wheel and stationary inlet and outlet sections of the separating compartment prevents the escape of slurry into tires and drive elements.
- TESKA® separator is easily accessible
- Chute for sinks can be positioned at the right/ left thus making it layout friendly
- Adjustable nozzles arranged over the bucket wheel circumference induce a downward flow of dense media thus preventing an undesired density concentration towards the bottom of the separator. This feature also helps in keeping different layers of medium with uniform density
- Optimal bath utilization relative to separators volume
- Ceramic lined hence subject to less wear
PALLA®

The need for fine grinding and producing a uniformly sized grounded product is increasing continuously as the mineral ores are getting leaner and leaner by the day. MBE’s PALLA® mill has proved to be very efficient grinding equipment with applicability in more than 160 different types of materials and obtaining the required product size and distribution. PALLA® is a vibratory grinding mill which produces the required grain sizes in a simple continuous grinding process without any requirement of classification. Even ultrafine grinding can be achieved with his machine.

Salient features of PALLA®:-
- Both dry and wet grinding
- Different option of grinding cylinder connection
- Both continuous and discontinuous grinding possible
- Dust- tight
- Grinding at cryogenic temperatures
- High filling degree of grinding cylinders possible
- Low footprint
- Uniform product size distribution
- Low specific energy consumption

<table>
<thead>
<tr>
<th>Type</th>
<th>Dia (mm)</th>
<th>Length (mm)</th>
<th>Throughput (kg/h)</th>
<th>Power Dry (kW)</th>
<th>Power Wet (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM</td>
<td>200</td>
<td>300/600</td>
<td>0.1 – 150</td>
<td>1.9</td>
<td>-</td>
</tr>
<tr>
<td>20U</td>
<td>200</td>
<td>1249</td>
<td>20 – 500</td>
<td>5.5</td>
<td>-</td>
</tr>
<tr>
<td>35U</td>
<td>350</td>
<td>2306</td>
<td>50 – 3000</td>
<td>22</td>
<td>-</td>
</tr>
<tr>
<td>50U</td>
<td>500</td>
<td>3400</td>
<td>200 – 10000</td>
<td>75</td>
<td>90</td>
</tr>
<tr>
<td>65U</td>
<td>650</td>
<td>4525</td>
<td>400 – 20000</td>
<td>160</td>
<td>200</td>
</tr>
</tbody>
</table>
Hydrocyclone

MBE’s hydrocyclones have found a wide field of application in field of mineral processing plants and other processing plants around the world. These hydrocyclones are suited for varied application like desliming, degritting, thickening, et al.

MBE design include hydrocyclone from 160mm diameter to 500mm diameters with volumetric feed rate ranging from 40m$^3$/hr to 160 m$^3$/hr. Depending upon application these hydrocyclones can be lined with different materials like ceramic, Ni-hard etc.

Different diameter spigots are also available for these cyclones.

Depending upon the product size requirement, the underflow and overflow nozzles are selected to achieve the perfect product sizes in combination with the feed pressure to the inlet of the Cyclone.

The MBECMTI Hydrocyclones are provided with 3 different sizes of underflow nozzles alongwith he machine to the Client for them to achieve the desired results.

These hydrocyclones are being used extensively for size separation and thickening of fine coal slurry.
Basket Centrifuge

The MBE Basket Centrifuge is particularly suitable for continuous separation of solid/liquid mixtures of grainy bulk materials. The standardized design of mechanical & Centrifugal components enables optimum adaption to the specific requirement.

Details of this standardized design, of the dewatering process & design criterion have been given on the following pages.

**Fields of Application:**

- Coal Fines
- Fine Tailings
- Coarse Slurry
- Washed Coal & middling
- Fine Gravel
- Sand
- Potash dissolving residue

The horizontally arranged MBE CMTI vibrating Screen Basket Centrifuge, the material to be dewatered is fed into the inlet cone through the feed pipe. While flowing through the inlet cone, the material is slowly accelerated and uniformly distributed on the circumference of the slot type Screen Basket. The rotating basket is made to perform axial vibration by a vibrator unit with unbalanced drive.

Due to the combination of Centrifugal & Vibratory components, these axial vibrations have the material transported inside the conical screen basket along the inclined basket wall. This movement entails a reduced friction between the feed & basket wall.

The Centrifuge is mounted on Rubber Buffers for preventing the transmission of vibrations to the foundation. Vibration may occur as a result of fluctuating feed rates.
The horizontal design permits fitting the drive components to the outside of the machine housing. This means that all drive parts and consequently the basket inside the machine housing is easily accessible. The one piece Screen Basket and the inlet cone have been fastened to the Basket Shaft in an overhung position by means of the load bearing ring. This ensures easy assembly & dismantling. The vibrator with out of balance weight is accommodated in the bearing housing of the basket shaft. The complete drive mechanism has been suspended by the guide linkage spring. The axial vibrations are transmitted to the screen basket direct on the basket shaft and the load bearing ring without resilient element having been interposed. This results in a very simple & robust design. The vibrating mass is made up of the Screen Basket, Inlet cone, Load Bearing Ring & Basket Shaft as well as of the drive mechanism. It exceeds by further mass of material accumulating. Due to this fact and the horizontal arrangement, the centrifuge is insensitive towards the overload or fluctuating feed rates. The Screen Basket & Vibrator are each driven by a standard motor and V Belt.

**Technical Data:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type F</th>
<th>Type G</th>
<th>Type H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine Dimension (M)</td>
<td>1.8 x 2.4 x 1.45 H</td>
<td>2.3 x 2.7 x 1.9 H</td>
<td>2.3 x 2.8 x 1.9 H</td>
</tr>
<tr>
<td>Weight (T)</td>
<td>3.4</td>
<td>4.8</td>
<td>5.3</td>
</tr>
<tr>
<td>Basket diameter (M)</td>
<td>1</td>
<td>1.15</td>
<td>1.3</td>
</tr>
<tr>
<td>Basket Inclination (deg.)</td>
<td>10/12/14</td>
<td>10/12/14</td>
<td>10/12/14</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Circulating Oil</td>
<td>Circulating Oil</td>
<td>Circulating Oil</td>
</tr>
<tr>
<td>Amplitude (mm)</td>
<td>1.5-3</td>
<td>1.5-3</td>
<td>1.5-3</td>
</tr>
<tr>
<td>Solid Recovery</td>
<td>97-99%</td>
<td>97-99%</td>
<td>97-99%</td>
</tr>
<tr>
<td>Dewatering</td>
<td>5-9%</td>
<td>5-9%</td>
<td>5-9%</td>
</tr>
</tbody>
</table>
Vibrating Screens

MBE Coal & Mineral Technology USK (Circular vibrating screen), USL (Linear vibrating screen) and VSL (High Frequency Screen) with throughputs from **15 to 800 TPH** are the result of our constant research and development, based on many years of experience in the construction and manufacture of screening machines, which allows our valued clients to select at any time the best machine for operating requirements.

MBE has in its product range, three types of screens to suit various needs of the client, namely, Linear Motion Screen (USL), Circular Motion Screen (USK) and High Frequency Screen (VSL).

**USL Vibrating Screen:** This type of screens with linear vibration motion are used for dry or wet screening of coarse, medium or fine grain sizes. Since the vibration movement is linear, the screen may be positioned horizontally or with a slight inclination.

**USK Vibrating Screen:** This type of screens with circular vibration motion are particularly suitable for dry and wet grading of coarse and medium grain sizes in the range from about 80 to 0.5 mm.

**VSL Vibrating Screen:** This type of Vibrating Screen is used for dewatering and sizing of fines (-0.5 mm) using vibrating frequency of 1500 RPM. With the Vibration motors mounted on the top of the Screen,

<table>
<thead>
<tr>
<th>Vibration movement</th>
<th>USK</th>
<th>USL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of drive systems</td>
<td>1 drive unit for each screen side-plate</td>
<td>2 drive units to each side-plate</td>
</tr>
<tr>
<td>Position of the drive</td>
<td>in screen centre of gravity</td>
<td>one line connecting with centre of gravity</td>
</tr>
<tr>
<td>Angle of installation</td>
<td>inclined from 12° to 35°</td>
<td>horizontal or inclined ± 5°</td>
</tr>
<tr>
<td>Speeds</td>
<td>850 to 1200 1/min</td>
<td>1000 to 1450 1/min</td>
</tr>
<tr>
<td>Amplitudes</td>
<td>1.5 to 6 mm</td>
<td>3 to 7 mm</td>
</tr>
</tbody>
</table>
Applications:
1. Dry Sizing
2. Wet Sizing
3. Dewatering
4. De-pulping
5. Rinsing

Salient features of MBE CMT Vibrating Screens:
1. Acceleration of upto 4.5 G.
2. Simple and rapid assembly.
3. Easy replacement of screen deck.
5. Huck-bolts used instead of Rivets to relieve any stress on the Side plates.
6. High interchangeability of Spare parts.
7. Directly coupled hence no V belt required enhancing power transmission ratio.
8. Power transmission with universal coupling and Carden Shafts gives the motor complete vibration isolation from the Screen.
9. Vibration Control with Adjustable Masses enables to adjust the Amplitude as per Requirement.
10. Robust Construction
ROPU® PUMP

MBE CMTI centrifugal pumps, model ROPU, have been designed to handle mixture of solids and liquids. They are suitable for handling mechanically abrasive and chemically aggressive media.

MBE CMTI centrifugal pumps. Model ROPU, are used by numerous industries, e.g. Coal and Ore mining, Cement and Glass factories, Sand and gravel quarries, building industries, Fertilizer and salt recovery plants, Metallurgical plants, Chemical industry, Refuse incinerator plant and similar industries which handle coarse-grained, abrasive or aggressive mixtures of solid and liquids.

ROPU® centrifugal pumps are single staged pumps with single axial inlet, tangential outlet and closed impeller arranged in an overhung position with back blades to relieve the stuffing box.

Salient features of the ROPU pump:

1. Available in Mechanical as well as water sealing.
2. High impeller diameter and Low RPM for same Discharge and Head to prevent wear.
3. Provided with back impeller blades to relieve Gland seal.
4. High Efficiency
5. Head upto 100 M
6. Discharge upto 5000 Cu.M/Hr

The volute casing and the two liner walls are clamped and connected by thread bolts thus permitting easy replacement of wearing parts. The two liner plates are identical so that they are easily interchanged if subject to regular wear.

The internally threaded impeller is screwed onto the mating thread of the shaft.
After wear of the liner or impeller respectively, the intake side between the impeller and the side wall may be adjusted by thrust or tension bolts respectively, in the bearing cap and in the bearing insert.

The pump is provided with high quality packing. The split gland and the detachable stuffing box housing permit ample access to the gland for easy replacement of the packing rings. To cope with the specific operating conditions, the stuffing box has been designed with optional fresh water flushing, fresh water sealing or grease sealing.

The pump may be alternatively equipped with stuffing box packing or mechanical seal. The hydrodynamic section of the pump is carried by a bearing block of welded construction which has been designed to also provide the base plate and thus the pump may be placed directly on the foundation.

The radial and axial forces transferred by the impeller to the shaft are absorbed by a Cylindrical Roller Bearing and a pair of grooved ball bearings which transfer them to the bearing block. The housing of the anti-friction bearings is filled with oil to the indicator level. The large volume of oil ensures high heat dissipation resulting in long service life of the bearings.
LOG WASHER

In ore dressing, log washer is primarily used for the stripping of manganese and ferrous ores of their clay impurities. Stripping ores of this type of their argillaceous adhesions results in an appreciable enrichment of the precious metal content, so that, in the majority of cases, the products cleansed in the log washer are of ample industrial standard quality purity, easily disposable without further dressing.

The log washer is more often used in the treatment of stone and earth, the plant used for producing bright road ballast for construction, as well as for foundation consolidation in the Building industry, it is also widely used for cleaning limestone, for subsequent kilning, or for chemical processing.

The log washer is used for medium size lump material of a granular range between 0 and 60 mm

<table>
<thead>
<tr>
<th>Type</th>
<th>: Duplex (Twin Shaft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dia. of Log (mm)</td>
<td>: 1200 mm (each)</td>
</tr>
<tr>
<td>Length of Log (mm)</td>
<td>: 6000 mm (each)</td>
</tr>
<tr>
<td>Height</td>
<td>: 2280 mm</td>
</tr>
<tr>
<td>Throughput</td>
<td>: 125 tph (nominal), 150 tph (max)</td>
</tr>
<tr>
<td>Power</td>
<td>: 2 X 37.5 kW</td>
</tr>
</tbody>
</table>
SPIRAL CLASSIFIER

It is a mechanical classifier which separates on the basis of settling rates of the particles (coarse & fine) in the fluid medium (water). MBE – CMT Spiral Classifiers are manufactured as Simplex Submerged Type based on the proven principle of AKINS spiral classifier. Due to the larger and quieter pool, this type of Classifier is applied for finer separations (65# to 325 #) and throughput range from 30 to 275 tph depending on solid concentration.

Very Slow Speed Spiral Classifier is being used for dewatering purposes in various Iron Ore beneficiation plants.

<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>Length (mm)</th>
<th>Pitch</th>
<th>Flare</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>5500</td>
<td>Single</td>
<td>Medium</td>
</tr>
<tr>
<td>1000</td>
<td>5500</td>
<td>Triple</td>
<td>Full</td>
</tr>
<tr>
<td>1500</td>
<td>7500</td>
<td>Triple</td>
<td>Full</td>
</tr>
<tr>
<td>1800</td>
<td>4200</td>
<td>Triple</td>
<td>Full</td>
</tr>
<tr>
<td>1800</td>
<td>11500</td>
<td>Triple</td>
<td>Full</td>
</tr>
</tbody>
</table>
DRUM SCRUBBER

To cleanse off adhering impurities from the surface of broken ore ranging from 0 to 25 mm, washing is generally recommended in Drum Scrubber. MBE-CMT’s rugged designs, anti-abrasion coatings of alloyed steel ensure a good life. The washing can be done by ways, co-current as well as counter current. Models are available with and without trommels.

<table>
<thead>
<tr>
<th>Type</th>
<th>Diameter (mm)</th>
<th>Length (mm)</th>
<th>Throughput (dry solids)</th>
<th>Power (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1604</td>
<td>1600</td>
<td>4000</td>
<td>12 – 20</td>
<td>15</td>
</tr>
<tr>
<td>2005</td>
<td>2000</td>
<td>5000</td>
<td>25 – 40</td>
<td>30</td>
</tr>
<tr>
<td>2406</td>
<td>2400</td>
<td>6000</td>
<td>40 – 70</td>
<td>45</td>
</tr>
<tr>
<td>2808</td>
<td>2800</td>
<td>8000</td>
<td>80 – 125</td>
<td>75</td>
</tr>
<tr>
<td>3610</td>
<td>3600</td>
<td>10000</td>
<td>160 – 250</td>
<td>160</td>
</tr>
</tbody>
</table>
APRON FEEDER

It is used for handling coarse ore, especially Primary Crusher feed. MBE-CMT is ruggedly constructed, consisting of a series of high carbon/manganese steel pans, bolted to strands of heavy-duty chain, which run on steel sprockets.

The Apron Feeder Length is dictated by the plant substructure. The length can be enlarged according to the layout requirements.

<table>
<thead>
<tr>
<th>Type</th>
<th>Pan Width (mm)</th>
<th>Length (mm)</th>
<th>Power(kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLB 1400 X 4500</td>
<td>1400</td>
<td>4500</td>
<td>11</td>
</tr>
<tr>
<td>PLB 2250 X 11100</td>
<td>2250</td>
<td>11100</td>
<td>110</td>
</tr>
</tbody>
</table>
Double Roll Crushers

In the double roll crusher the feed is distributed by a feeder over the entire roll width. The material is drawn into the crushing gap by appropriately shaped teeth projecting from the rolls. For special applications, teeth of different heights are available at option.

The anticipated maximum feed size determines the roll diameter. The size of the desired product can be fixed by the adjustable gap width between tip and bottom of tooth.

The throughput rate is a function of roll width, gap width and peripheral speed.

Both swings systems are carried in the base frame. The crusher rolls are hollow cylinders with headwalls and bearing shafts. Webs fitted to the roll body parallel to the cylinder axis provide for additional securing of the crushing shells. The bearing journals run in self aligning roller bearings and are protected against dust by shaft sealing and labyrinth rings.
Forces generated during crushing are transmitted via the bearing housings and absorbed by the swing retaining frame direct. The gap setting can be adjusted by way of a spindle with threaded sleeve. This adjusting device is normally combined with the mechanical overload protection.

Each crusher roll is driven by a fly-wheel type pulley which serves at the same time as a V-belt pulley. The drive is installed vertically underneath the pulley. This arrangement eliminates re-tensioning of the V-belts and re-locating of the feeder with advancing wear of the crushing shells.

The practical application of roller crushers for a multitude of duties has resulted in the development of a standard machine which, on request, can be modified to a special type of equipment for given comminution tasks.

**Special Characteristic features:**
- Low machine weight due to the double swing system.
- No transmission into the foundation of the forces generated during the reduction process.
- Counter balancing by retraction of the crusher rolls.
- No re-location of the feeder required, not even in case of pronounced wear.
- Easy replacement of the crushing shells and simple removal of the crusher rolls.
- Effective protection of the bearings against dust and other contaminations.
- Vertical arrangements of the drive which eliminates the necessity of V-belt tensioning upon changes in the gap width or in case of overload.

**Application:**
- Lignite coal
- Coal
- Salts
- Calcareous marl
- Coke
- Dolomite
- Lime stone
- Sintered material hot or cold
Environmental Centrifuge

MBE has in its product range, two types of environmental centrifuges, 2 Phase centrifuges & 3 Phase centrifuges.

Solid Bowl Centrifuges Co-Current design (2 Phase): The feed material is into solid bowl centrifuge with the aid of a pump. Progressive cavity pumps are commonly used for this duty, as they ensure a controlled uniform delivery of the feed. The feed rate may be ascertained with the aid of a flow meter in order to determine the throughput rate per hour or per day.

The feed material is first pumped through a stationary feed pipe (1) into the feed compartment (2) which is located in the hub of the material screw conveyor (5) and within the field of centrifugal forces. The effect of these centrifugal forces causes the feed to flow through the feed compartment outlets (3) and into the bowl (4) of the solid bowl centrifuge.

The principal of co current flow starts the settling process as the feed enters at the large diameter end of the bowl. Solids and liquid are transported in the same direction. Hence, the complete bowl length is available for setting. This arrangement provides long settling distances and extended sedimentation time for the feed material to be dewatered or thickened. The settling operation proceeds uniformly, trouble free and with minimal turbulence.

The centrifugal force developed during normal operation causes the relatively heavy solid particles to settle on the bowl wall. These sedimented particles are transported inside the bowl...
by the screw conveyor (5) to the solids discharge point (7). Bowl and screw conveyor rotate in the same direction, but the screw conveyor speed slightly differs from that of the bowl. That differential speed is brought about by a suitable gearbox (6) by the corresponding transmission ratio of the V-belt drive, or through the utilization of a special hydraulic scroll drive system.

The separated solids are discharged through outlet openings (7) and are collected in casing (8). They are then routed through a chute to be discharged. The cent rate flows through the return channels (11) fixed to the conveyor hub in the opposite direction to that of the solids. The liquid leaves the centrifuge at the feed inlet end. This arrangement avoids interference with the sedimentation process, which normally occurs with the traditional countercurrent design.

The return channels for the cent rate discharge are sized so that the velocity of the flow substantially prevents the sedimentation of superfine solids contained in the cent rate against the interior walls of the channels. The cent rate is discharged over vertically adjustable weir plates (12) thus allowing for changes to be made to the cent rate level and consequently altering the volume of the liquid retained inside the centrifuge. The cent rate is discharged through a chute. Visual inspection of the cent rate for the purpose of controlling the cent rate clarity is possible by taking samples at the machine outlet. Alternatively, provision can be made for automatic cent rate turbidity measurement and adjustment.

Special features of Solid Bowl Centrifuge:

- **High Separation Efficiency:** Solid Bowl Centrifuge is designed for Co-Current flow incorporating, long settling distance, high pool depth, longer dry beach and small angle. Hence, no turbulence will occur with high pool depth and long dry beach, ultimately extending the sedimentation time.

- **Low Power Consumption:** These centrifuges are operated at low “G” force/low speed without turbulence and small beach angle. Hence, low power requirement about 08KWH.MH3 and low wear & tear without compromising efficient dewatering.

- **Optimum Cake Dryness:** Cake dryness is optimized by varying the differential speed between 2-50 rpm by simply changing the pulleys.
Efficient Wear Protection: Conveyor flight and other wear prone parts are lined with tungsten carbide which is much more superior to standard stelite hard surfacing. The wear & tear of bowl shell is prevented by strip lining.

Easy Maintenance: MBE CMT Solid Bowl Centrifuge construction is simple with centralized lubrication system by which all the bearings can be lubricated while the machine is in operation.

<table>
<thead>
<tr>
<th>Type</th>
<th>Indicating Capacity (m³/hr)</th>
<th>Drive Motor</th>
<th>Max‘G‘ Force</th>
<th>Max. Bowl Speed (RPM)</th>
<th>Normal Size</th>
<th>Total Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S0-1</td>
<td>1-2</td>
<td>7.5</td>
<td>2689</td>
<td>4400</td>
<td>250 x 750</td>
<td>850</td>
</tr>
<tr>
<td>S1-1</td>
<td>4-6</td>
<td>11</td>
<td>2247</td>
<td>3400</td>
<td>350 x 1050</td>
<td>1560</td>
</tr>
<tr>
<td>S1-11</td>
<td>8-12</td>
<td>18.5</td>
<td>2662</td>
<td>3700</td>
<td>350 x 1560</td>
<td>1900</td>
</tr>
<tr>
<td>S2-1</td>
<td>12-15</td>
<td>18.5/22</td>
<td>2175</td>
<td>2950</td>
<td>450 x 1350</td>
<td>2300</td>
</tr>
<tr>
<td>S2-11</td>
<td>20-25</td>
<td>22</td>
<td>1755</td>
<td>2650</td>
<td>450 x 1950</td>
<td>2570</td>
</tr>
<tr>
<td>S3-01</td>
<td>25-30</td>
<td>22/30</td>
<td>1425</td>
<td>2200</td>
<td>530 x 2270</td>
<td>3200</td>
</tr>
</tbody>
</table>
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