Rotary Discharge Machine
Rotary Discharge Machines

For a variety of applications wherever difficult bulk material needs to be discharged from

• Rectangular hoppers
• Open stockpiles
• Large cylindrical silos

All LOUISE Rotary Discharge Machines feature the logarithmically shaped discharge arms and automatic operation including reverse travel.

Three basic alternatives:
• Block Model type BEW-BL
• Low Profile Model type BEW-FL
• Rotating Model type BEW-K

Materials which can be handled:
• FGD-gypsum
• Coal
• Gypsum
• Limestone
• Lignite
• Clay
• Marl
• Petcoke
Rotary Discharge Machine type BEW-BL

Double side discharge for rectangular hoppers

The block-type Rotary Discharge Machine is designed for double side discharge.

All drive components are located in a solid casing.

The machine moves inside a tunnel and reclaims the product from both sides.

The hydraulic unit or the frequency controller allows to adjust the reclaim capacity.
Rotary Discharge Machine type BEW-BL
Coal storage and reclaim

The Ishikawa power plant, Okinawa - Japan, features four silos with a storage volume of 50,000 m³. These silos, ranging among the largest worldwide, were built by Mitsui Construction Co. Ltd.

The coal is discharged by four Rotary Discharge Machines arranged parallel to each other. Each discharge machine travels on rails installed in a concrete tunnel covering the whole length of the silos. This arrangement allows each individual machine to discharge from either one of the four silos. The travel distance exceeds 200 m.

The block-type discharge machine is designed in such a way that the coal is reclaimed from both sides of the shelf. Each machine has a reclaim capacity of 40 t/h – 400 t/h and both the discharge wheel and the travel mechanism are hydraulically driven and adjustable. The discharge wheel's diameter of 4 m allows to cut deeply into the material column, an important feature to prevent bridging of the stored product. A material guide installed on the BEW serves as dust cover and guides the product onto the belt conveyor located underneath the Rotary Discharge Machine.

At the Shikoku coal-fired power plant of Electric Power Development Co. Ltd., the coal storage silos feature 8 Rotary Discharge Machines each reclaiming 1,000 t/h coal from two rows of 4 silos each. At the Denpatsu plant, 8 Rotary Discharge Machines reclaim from 2 rows of 2 silos each.
The coal extracted in open-cast mining is stored on an open stockpile during the winter season when shipping service is interrupted due to low temperatures. 6.5 million tons of coal can be stored on this open stockpile until the end of the winter season.

A total of 9 Rotary Discharge Machines reclaim the coal from this stockpile. Three machines each work in one unit and achieve a total reclaim capacity of 10,000 t/h. With this capacity and a discharge wheel diameter of 4 m, they range among the best performing reclaimers worldwide.

The discharge machines travel on rails inside a tunnel with a cone-shaped roof, continuously discharging the coal onto a belt conveyor also installed in the tunnel. When travelling back and forth, the discharge arms dig deeply into the coal through slots arranged in the tunnel. Each rotary discharge machine is driven by a 2.2 kW motor and travels the distance of 360 m with a velocity of 0.9 m/min.

In order to achieve a high torque with only 1 to 10 rpm, the discharge wheels are actuated by hydraulic units with 110 kW electric motor. If the discharge machines encounter high resistance due to the frozen status of the coal, the pressure sensors actuate the reverse mode and restart the machine. The drive unit is installed inside a compact casing with easy access.

The machines are in operation since 1976 and demonstrate the high availability of the LOUISE Rotary Discharge Machines.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage capacity</td>
<td>open stockpile, 6.5 million tons</td>
</tr>
<tr>
<td>Stockpile length</td>
<td>360 m</td>
</tr>
<tr>
<td>Discharge capacity of each discharge machine</td>
<td>3,300 t/h</td>
</tr>
<tr>
<td>Installed power</td>
<td>150 kW</td>
</tr>
<tr>
<td>Rotating speed of discharge wheels</td>
<td>adjustable from 1 to 10 rpm</td>
</tr>
<tr>
<td>Diameter of discharge wheels</td>
<td>4,000 mm</td>
</tr>
<tr>
<td>Travel speed</td>
<td>0.9 m/min</td>
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</tbody>
</table>
Data sheet

Rotary Discharge Machine type BEW-BL

<table>
<thead>
<tr>
<th>discharge wheel diameter (mm)</th>
<th>discharge opening height (mm)</th>
<th>penetration depth (mm)</th>
<th>cone-shaped tunnel width (mm)</th>
<th>rail to hopper shelf height (mm)</th>
<th>hopper shelf to belt feeder height (mm)</th>
<th>theoretical capacity Q (m³/h)</th>
<th>both-sided discharge with wheel speed n (rpm)</th>
<th>max. admissible travel speed V (m/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,000</td>
<td>200</td>
<td>350</td>
<td>1,300</td>
<td>600</td>
<td>1,000</td>
<td>94 (2.90)</td>
<td>940 (29.0)</td>
<td>6.35</td>
</tr>
<tr>
<td>2,500</td>
<td>250</td>
<td>450</td>
<td>1,600</td>
<td>775</td>
<td>1,100</td>
<td>138 (2.28)</td>
<td>1,380 (22.8)</td>
<td>6.35</td>
</tr>
<tr>
<td>3,000</td>
<td>300</td>
<td>700</td>
<td>1,600</td>
<td>775</td>
<td>1,100</td>
<td>225 (1.91)</td>
<td>2,250 (19.1)</td>
<td>6.35</td>
</tr>
<tr>
<td>4,000</td>
<td>400</td>
<td>1,000</td>
<td>2,000</td>
<td>1,030</td>
<td>1,200</td>
<td>410 (1.43)</td>
<td>4,100 (14.3)</td>
<td>6.35</td>
</tr>
<tr>
<td>5,000</td>
<td>500</td>
<td>1,150</td>
<td>2,700</td>
<td>1,030</td>
<td>1,200</td>
<td>580 (1.14)</td>
<td>5,800 (11.4)</td>
<td>6.35</td>
</tr>
</tbody>
</table>

Standard dimensions and capacity. Further dimensions and capacities on request.
BEW with single sided discharge

Discharge wheel with six arms, each with wear resistant front plate and armoured tip.

BEW with single sided discharge

- Festoon towing arm
- Safety limit switch
- Anti-collision sensor
- Travel distance sensor
- Travel distance limit switch
- Local control box
- Discharge wheel dust cover

BEW with single sided discharge and double swivel mechanism
Rotary Discharge Machine type BEW-FL

BEW with single sided discharge

Installed on the belt conveyor supporting structure, the Rotary Discharge Machine moves along the hopper shelf and reclaims the bulk material. The drive unit and electrical package are safely stored inside the dust-tight casing of the machine.

BEW with single swivel drive for single sided discharge

Installed on the belt conveyor supporting structure, the Rotary Discharge Machine travels to defined areas of the hopper where it reclaims the bulk material. A high speed mode in the travel drive allows to reach these areas quickly. The main drive with all its components forms a swivel unit installed on the trolley.

BEW with double swivel drive for single sided discharge on both sides

Installed on the belt conveyor supporting structure, the Rotary Discharge Machine travels to defined areas of the hopper. The discharge wheel swivels between the shelves on both sides of the hopper. A high speed mode in the travel drive allows to reach these areas quickly. The main drive with all its components forms a swivel unit installed on the trolley.
Rotary Discharge Machine

type BEW-FL with weigh feeder

**Raw material handling in a Cement Plant**

Three Rotary Discharge Machines are installed underneath a row of hoppers storing a total of 9,000 t of limestone, marl and dolomite. In order to obtain the required mixture directly when reclaiming the different raw materials from the hoppers for subsequent mill feeding, the reclaim capacity of the three discharge machines is controlled by a Weigh Belt Feeder forming part of the mobile discharge machine.

The actual volume to be reclaimed by the discharge machine from the three hoppers is determined in the laboratory. Adequate adjustment of the total reclaim capacity is made in the mill control room. The mixture ratio remains unchanged.

On account of the homogeneous volumetric reclaim through the hopper openings, an accuracy of +/- 1% can be achieved with the Weigh Feeders.

<table>
<thead>
<tr>
<th>Storage capacity</th>
<th>9,000 t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>limestone and marl of 0 – 60 mm</td>
</tr>
<tr>
<td>Humidity</td>
<td>max. 14 %</td>
</tr>
<tr>
<td>Capacity of each discharge machine</td>
<td>30 – 180 t/h</td>
</tr>
<tr>
<td>Installed power</td>
<td>20 kW</td>
</tr>
<tr>
<td>Rotating speed of discharge wheels</td>
<td>adjustable from 0.5 to 5 rpm</td>
</tr>
<tr>
<td>Travel speed</td>
<td>1 and/or 0.45 m/min</td>
</tr>
<tr>
<td>Weigh belt feeder width</td>
<td>800 mm</td>
</tr>
</tbody>
</table>
## Rotary Discharge Machine - Low Profile Model

<table>
<thead>
<tr>
<th>DR (mm)</th>
<th>H (mm)</th>
<th>P (mm)</th>
<th>B (mm)</th>
<th>O (mm)</th>
<th>V (mm)</th>
<th>Z (mm)</th>
<th>T (mm)</th>
<th>$U = 0.3 \text{ m/s}$ (m$^3$/h)</th>
<th>$U = 3.0 \text{ m/s}$ (m$^3$/h)</th>
<th>V (m/min)</th>
<th>max. admissible travel speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,000</td>
<td>200</td>
<td>400</td>
<td>2,300</td>
<td>1,450</td>
<td>1,500</td>
<td>600</td>
<td>500</td>
<td>47 (2.90)</td>
<td>470 (29.0)</td>
<td>6.35</td>
<td></td>
</tr>
<tr>
<td>2,500</td>
<td>250</td>
<td>450</td>
<td>2,650</td>
<td>1,500</td>
<td>1,850</td>
<td>650</td>
<td>550</td>
<td>69 (2.28)</td>
<td>690 (22.8)</td>
<td>6.35</td>
<td></td>
</tr>
<tr>
<td>3,000</td>
<td>300</td>
<td>700</td>
<td>3,000</td>
<td>1,600</td>
<td>2,200</td>
<td>650</td>
<td>700</td>
<td>112 (1.91)</td>
<td>1,120 (19.1)</td>
<td>6.35</td>
<td></td>
</tr>
<tr>
<td>3,500</td>
<td>350</td>
<td>800</td>
<td>3,300</td>
<td>1,700</td>
<td>2,500</td>
<td>700</td>
<td>750</td>
<td>151 (1.63)</td>
<td>1,510 (16.3)</td>
<td>6.35</td>
<td></td>
</tr>
<tr>
<td>4,000</td>
<td>400</td>
<td>1,000</td>
<td>3,600</td>
<td>1,850</td>
<td>2,800</td>
<td>750</td>
<td>800</td>
<td>151 (1.63)</td>
<td>2,050 (14.3)</td>
<td>6.35</td>
<td></td>
</tr>
</tbody>
</table>

Standard dimensions and capacity. Further dimensions and capacities on request.
Rotating Rotary Discharge Machine type BEW-K

For large silos with a 5 m to 12 m diameter

The discharge wheel undercuts the material column and guides the material to the central outlet chute.

- First in / First out
- Simultaneous feeding and discharge
- Proportional reclaim
- Easy access
In the coal-fired plant in Indiana the FGD-gypsum, a by-product of the flue gas desulphurisation process, is stored in concrete silos. With an average humidity of 8 – 10%, sometimes even 15%, the FGD-gypsum is a heavy and sticky material with poor flow characteristics. The exact data of this material were determined by tests carried out in the LOUISE laboratory and the reclaim of each silo is now performed with a rotating rotary discharge machine designed to suite the specific characteristics revealed by these tests.

Each machine reclaims a total of 500 t/h, a capacity reached within 15 seconds, and loads onto 20 ton trucks. With normal loading conditions, the material volume of each silo is unloaded within 8 hours. In order to provide easy access, the discharge machine bottom and outlet chute are fitted directly underneath the discharge arms. The bottom rotates with the discharge wheel and the machine may be entered from the side opposite to the discharge arms.

<table>
<thead>
<tr>
<th>Storage capacity</th>
<th>2 silos of 1,000 m³ each</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter of each silo</td>
<td>8 m</td>
</tr>
<tr>
<td>Height of each silo</td>
<td>20 m</td>
</tr>
<tr>
<td>Installed power</td>
<td>75 kW</td>
</tr>
<tr>
<td>Discharge capacity of each discharge machine</td>
<td>500 t/h</td>
</tr>
<tr>
<td>Rotating speed of discharge wheel</td>
<td>adjustable from 0.3 to 3 rpm</td>
</tr>
<tr>
<td>Diameter of discharge wheel</td>
<td>4,500 mm</td>
</tr>
</tbody>
</table>
## Rotating rotary discharge machine type BEW-K

### Rotating Rotary Discharge Machine type BEW-K

<table>
<thead>
<tr>
<th>Diameter silo (mm)</th>
<th>Diameter discharge wheel (mm)</th>
<th>Diameter cone (mm)</th>
<th>Diameter floor ring opening (mm)</th>
<th>Diameter concrete floor opening (mm)</th>
<th>Diameter incl. undercut (mm)</th>
<th>Max. protrusion of cone girder (mm)</th>
<th>Discharge opening height (mm)</th>
<th>Penetration depth (mm)</th>
<th>Theoretical capacity Q (m³/h) with wheel speed n (rpm)</th>
<th>U = 0.3 m/s</th>
<th>U = 3.0 m/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,000</td>
<td>3,000</td>
<td>3,600</td>
<td>1,200</td>
<td>1,950</td>
<td>5,140</td>
<td>600</td>
<td>300</td>
<td>700</td>
<td>112 (1.91), 1,120 (19.1)</td>
<td>(m³/h)</td>
<td>(rpm)</td>
</tr>
<tr>
<td>6,000</td>
<td>3,600</td>
<td>4,400</td>
<td>1,300</td>
<td>2,350</td>
<td>6,140</td>
<td>700</td>
<td>350</td>
<td>800</td>
<td>155 (1.67), 1,550 (16.7)</td>
<td>(m³/h)</td>
<td>(rpm)</td>
</tr>
<tr>
<td>8,000</td>
<td>4,500</td>
<td>6,000</td>
<td>2,200</td>
<td>3,750</td>
<td>8,140</td>
<td>900</td>
<td>450</td>
<td>1,000</td>
<td>247 (1.27), 2,470 (12.7)</td>
<td>(m³/h)</td>
<td>(rpm)</td>
</tr>
<tr>
<td>10,000</td>
<td>4,500</td>
<td>8,000</td>
<td>3,700</td>
<td>4,750</td>
<td>10,140</td>
<td>900</td>
<td>450</td>
<td>1,000</td>
<td>247 (1.27), 2,470 (12.7)</td>
<td>(m³/h)</td>
<td>(rpm)</td>
</tr>
<tr>
<td>12,000</td>
<td>4,500</td>
<td>10,000</td>
<td>5,700</td>
<td>8,250</td>
<td>12,140</td>
<td>900</td>
<td>450</td>
<td>1,000</td>
<td>247 (1.27), 2,470 (12.7)</td>
<td>(m³/h)</td>
<td>(rpm)</td>
</tr>
</tbody>
</table>

Standard dimension and capacity. Further dimensions and capacities on request.
Bulk material testing in our laboratory

To determine the physical and mechanical properties and behaviour of specific bulk materials, our laboratory incorporates a large variety of testing equipment. Various test methods allow to determine the correct application of our products, e.g. shear testing.
Components

5 BEW-K’s 10,000/4,500 during assembly in the workshop

Block gear units for BEW-BL
Chassis of BEW-K, view onto hydraulic cylinders for rotation
Conversions and Refurbishments

• Upgrading of existing plant components
• Targeting increased efficiency
• Higher output
• Improved availability

With our expert team of engineers planning selective modernisation measures, we pay special attention to the upgrading of existing plant components, targeting increased efficiency, higher output rates and improved availability.

Upgrading of your materials handling and storage equipment to state-of-the-art technology is achieved through a tailor-made refurbishment process under optimum utilisation of time and budget.

Most of the existing components are re-used in the refurbishment process to save cost.

Engineered conversions and refurbishments for increased efficiency and output are performed on AUMUND equipment as well as on the equipment of other manufacturers.
After Sales Service

Customer Proximity around the World
At AUMUND, service does not end at the sale of the equipment. It's the beginning of a long-term partnership. AUMUND offers you a full range of services - from commissioning to the delivery of quality spare and wear parts to customized preventive maintenance programs and equipment upgrading. The benefits for you: Maximum equipment efficiency at lower operating cost.

Commissioning and Field Service
Today, presence “on the spot” is an absolute “must”. Therefore, our commissioning and service engineers operate from support centers on all continents to guarantee immediate and competent support.

Spare and Wear Parts
A comprehensive range of genuine spare parts is available for our entire product range from stocks in Germany, Hong Kong and the USA. Our product specialists provide assistance and respond instantly.

Retrofits & Modernisation
Aged and worn equipment? Capacity increase needed? Too high operating cost? AUMUND “just as new” retrofits are economical and tailor-made solutions for improving your existing equipment at reasonable cost.

Preventive Maintenance
Knowing beforehand that service will be needed allows you to schedule downtime and save money with timely repairs. Repairs or retrofits can be accurately anticipated allowing for the downtime to be at the most convenient times and at the lowest possible cost.

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AUMUND GROUP

Your partner for all requirements regarding material handling and storage.
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Reputation and competence proven by more than 10 000 installations in over 100 countries.

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