Grinding and Milling
Grinding line with hopper and screw discharge

The most widely used for standard grinding

The RMP or RMA type hammermills are generally installed on a concrete or metal floor and fixed with anti-vibrating mountings.

The air enters via the ABMS feeder and goes through the mill screens and then through the automatic cleaning filter.

The air is forced out after passing through a muffler.

The motorized flap adjusts the air flow-rate at the centrifugal fan inlet.

The ground product is discharged by the screw conveyor equipped with a sealing flap or better still, with a rotating valve.
1. Hopper
2. Helmet gate
3. ABMS feeder (destoner, ferrous cleaner)
4. Air intake (Atex option)
5. Hammermill
6. Filter
7. Motorized flap
8. Centrifugal fan
9. Silencer (option)
10. Hopper under hammermill
11. Explosion vent and air outlet duct (Atex option)
12. Screw conveyor
13. Sealing valve
14. Rotary valve
Grinding line with pneumatic conveying

The most widely used for fine grinding lines (0.8 mm or 20 mesh screens)

The air gets in through the ABMS feeder and an additional air inlet. It passes through the screens inside the hammermill. The ground product is conveyed by suction thanks to the fan. An automatic cleaning filter separates the product from the air. The air flap adjusts the air flow rate at the fan inlet. The air is forced out after going through a muffler. Considering the fineness of the product, the cyclo-filter is flat bottomed, equipped with a motorized cleaning arm and a sealing valve. A centrifugal sieve is designed to separate the products. The particles not meeting the required size are handled back towards the mill. In ATEX area, an explosion vent and an air outlet duct ensures the safety of the installation.
1. Hopper
2. Helmet gate
3. ABMS feeder (destoner, ferrous cleaner)
4. Air intake (Atex option)
5. Hammermill
6. Pneumatic transfer
7. Filter with cleaning arm
8. Motorized air flap
9. Centrifugal fan
10. Silencer (option)
11. Explosion vent and air outlet duct (Atex option)
12. Sealing valve
13. Turbosifter
Hammermill feeder - ABMS type

Features

- Magnetic separator with pneumatic cylinder, automatically operated or remote controlled by an operator.
- Removal of heavy particles, especially stones and non-ferrous metals.
- Quality of hammermill feeding leading to the wearing of screens and hammers to be the same all over the rotor length.
- Increase of the screens and hammers lifetime thanks to a regular and homogeneous feeding.
- Assembly on the hammermill with silent-block.

![Diagram of Hammermill Feeder - ABMS Type]
ABMS 10 hammermill feeder

Motorized sector for the product layer adjustment

Orientation flaps for air flow admission

Cellular rotor for a regular feeding of the grinding chamber over its full length

Splitter box for a fast connection to the supervision system

Magnetic separator with automatic cleaning

Screw for automatic removal of stones and non-ferrous metal
screens

For over 30 years, our hammermill system has built-up a solid reputation in the following industries:

- **For animal feed industry**: 3 mm or 6/7 mesh screens
- **For aqua food meal and petfood industries**: 0.8 mm or 20 mesh screens
- **For biofuel industry**: 2 mm or 9 mesh screens

- **Corn**: Ground with Ø 5.0 mm screen at 1500 and 3000 rpm
- **Poultry feed premix**: Ground with Ø 3.0 mm screen at 1500 rpm
- **Chicken feed premix**: Ground with Ø 2.5 mm screen at 3000 rpm
- **Fishfeed premix**: Ground with Ø 0.8 mm screen at 3000 rpm
Dynamic rotor balancing

Dynamic balancing on bench as per G 2.5 tolerance, corresponding to a radical deviation of 2.5 µm, i.e. a balancing mass of 23 g for a rotor weight of 1300 kg. Controls carried out without and subsequently with hammers in position.

Monitoring of bearings

Optionally, STOLZ can provide its hammermill with a monitoring system of the bearings:

- Continuous monitoring of vibrations
- Reliable measurement by detection of impact noise
- Limited machine maintenance downtime with a smart maintenance
- Easy setting and commissioning
- Diagnosis display, commutation outputs for processing.

Innovative technology

The bearing controller technology is based on a frequency analysis diagnosis. The bearing status can be displayed on the controller with a logical “green - yellow - red”.

The monitoring and diagnosis are carried out in real time.

The bearing controller setting is easy: the bearing to be monitored has to be selected from a database, the rotation speed of motors with variable speed has to be specified.
Hammermills - RM and RMP types

Features

- Two-way direction of rotation
- Speed of rotation up to 3600 rpm
- Effective screening area from 0.45 to 2.20 m²
- Quick change of hammers by tilting
- Change of screens while running
- Continuous control of bearings and grinding chamber temperatures
- Adjustable feeder flap
- Grinding chamber fitted with grooved armor plate and counter-hammers

RM type: Manual removal of screens
RMP type: Manual removal of screens assisted by pneumatic cylinders (French patent n°93-051-88)

For fine grinding process, the grinding chamber has reinforced sealing.

RMF type: Identical to RM but for fine grinding
RMPF type: Identical to RMP but for fine grinding
STOLZ has built-up a new grinding / sieving concept in order to offer solutions for an even finer grinding dedicated to the specific food formulas for extrusion meeting the users requirements.

Our sifters with two-way centrifugal rotation and automatic cleaning while running (see pages 22-23) are installed at hammermills outlet with 400 to 1600 mm chamber width, and with 37 to 355 kW.

That concept, combined with the RM hammermill reputation and our high quality ABMS pneumatic feeder-metal remover-destoner appeal to several dozens of customers each year.
**Atex**

In an ATEX zone the atmosphere can become explosive according to the local or operational conditions.

For an installation in ATEX zone, STOLZ build ATEX hammermill feeders and hammermills with components complying with the operating area.

We require the installation of the feeder air intake outside the building and an explosion panel to protect the hopper under hammermill. That explosion panel is calculated according to the product characteristics given by the customer.

All the accessories will comply with the legislation in force.

**Splitter boxes**

STOLZ hammermills and feeders are provided as standard with sensors and probes with output on M12 connectors (see picture opposite).

These sensors, probes and solenoids are linked to M12 splitter boxes (see picture below).

When the machine is delivered, the wiring between sensors/probes and splitter boxes has already been done in factory with pre-assembled potted cable.

The information transfer between the hammermill and the automaton is quick (limited wiring on hammermill, no installation required of junction boxes or raceway on the machines...).

Splitter box for a quick connection to the supervision

Interlocking system by key transfer

Temperature gauge on bearings

Automatic greasing of bearings

Temperature gauge on grinding chamber
Overall dimensions of RM14 to RMP116 hammermills

<table>
<thead>
<tr>
<th>Type</th>
<th>Power</th>
<th>Mill mass with motor and ABMS</th>
<th>Quantity of hammers</th>
<th>Effective screening area (m²)</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(kW)</td>
<td></td>
<td></td>
<td></td>
<td>A*</td>
</tr>
<tr>
<td>RM 14</td>
<td>45/75</td>
<td>3200</td>
<td>52</td>
<td>0,70</td>
<td>2150</td>
</tr>
<tr>
<td>RM 16</td>
<td>75/110</td>
<td>3750</td>
<td>72</td>
<td>1,00</td>
<td>2435</td>
</tr>
<tr>
<td>RM 18</td>
<td>90/132</td>
<td>4150</td>
<td>92</td>
<td>1,25</td>
<td>2615</td>
</tr>
<tr>
<td>RMP 110</td>
<td>110/160</td>
<td>4550</td>
<td>112</td>
<td>1,50</td>
<td>2800</td>
</tr>
<tr>
<td>RMP 114</td>
<td>180/250</td>
<td>5800</td>
<td>152</td>
<td>2,00</td>
<td>3595</td>
</tr>
<tr>
<td>RMP 116</td>
<td>200/355</td>
<td>6900</td>
<td>168</td>
<td>2,20</td>
<td>3740</td>
</tr>
</tbody>
</table>

* A’ dimension given for a standard motor

Overall dimensions of ABMS feeders

<table>
<thead>
<tr>
<th>Type</th>
<th>Power</th>
<th>Mass</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(kW)</td>
<td>(kg)</td>
<td>A</td>
</tr>
<tr>
<td>ABMS 4</td>
<td>1,5</td>
<td>530</td>
<td>574</td>
</tr>
<tr>
<td>ABMS 6</td>
<td>1,5</td>
<td>590</td>
<td>754</td>
</tr>
<tr>
<td>ABMS 8</td>
<td>1,5</td>
<td>650</td>
<td>934</td>
</tr>
<tr>
<td>ABMS 10</td>
<td>1,5</td>
<td>720</td>
<td>1114</td>
</tr>
<tr>
<td>ABMS 14</td>
<td>2,2</td>
<td>840</td>
<td>1484</td>
</tr>
<tr>
<td>ABMS 16</td>
<td>2,2</td>
<td>900</td>
<td>1629</td>
</tr>
</tbody>
</table>
Grinding line supervision

The automation and supervision of a STOLZ grinding line optimize the unit capacity and control all the machines and personnel safety devices.

The supervision of the grinding line ensures:

- Information management
- Alarms management
- Alarms historization
- Passwords management
- Maintenance help
- Process events historization
- Energy consumption calculation per ton of ground product

The power and driving of the line, or just the driving, can be managed by the whole unit.

The driving part is monitored by a network (As-i) designed to lower the quantity of wires and the time spent for wiring significantly.

The standard remote maintenance is designed to operate at a distance on the automaton. The purpose is to have a repair service and to improve the system easily.
Self standing automatic screen selector

The automatic SAGA screen selector is designed to insert one of the 4 sets of screens in stand by through data exchange with the production automation without any manual operation.

The SAGA can be adapted to STOLZ RMP type hammermills from 110 to 116 type.

Features

• Traceability of screens
• Limited downtime
• 4 sets of screens available
• Improved working conditions

<table>
<thead>
<tr>
<th>Type</th>
<th>Screens quantity</th>
<th>For hammermill type</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>10.4.1</td>
<td>2x4</td>
<td>RMP 110</td>
<td>3800</td>
</tr>
<tr>
<td>14.4.1</td>
<td>2x4</td>
<td>RMP 114</td>
<td>3800</td>
</tr>
<tr>
<td>16.4.1</td>
<td>2x4</td>
<td>RMP 116</td>
<td>3800</td>
</tr>
</tbody>
</table>
In the RMA configuration (automatic exchange of screens while running), the screens are fitted into 2 rigid half frames sliding inside the grinding chamber. The change of screens is automatic. It is performed by 2 pneumatic cylinders.

Also comes in RMAF version for fine grinding.

**Features**

- Automated change of screens
- Traceability
- Change of screens without downtime
- Easy control of the overall condition of screens

<table>
<thead>
<tr>
<th>Type</th>
<th>Power</th>
<th>Hammer-mill mass with motor and ABMS (kg)</th>
<th>Quantity of hammers</th>
<th>Effective screening area (m²)</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RMA 16</td>
<td>75/110</td>
<td>3750</td>
<td>72</td>
<td>0,85</td>
<td>3840</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1600</td>
</tr>
<tr>
<td>RMA 18</td>
<td>90/132</td>
<td>4350</td>
<td>92</td>
<td>1,10</td>
<td>4410</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1900</td>
</tr>
<tr>
<td>RMA 110</td>
<td>110/160</td>
<td>5000</td>
<td>112</td>
<td>1,35</td>
<td>4795</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1990</td>
</tr>
<tr>
<td>RMA 114</td>
<td>180/200</td>
<td>8050</td>
<td>152</td>
<td>1,95</td>
<td>6270</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2500</td>
</tr>
</tbody>
</table>

* ‘A’ dimension given for a standard motor

Non contractual photos and diagrams
Hammermills - RME type

That hammermill is derived from the RM range. It has been adapted to meet reliability criteria required by industries with important surges requiring a very high mechanical and wearing strength (knackery, paper blocks, cakes, cassava roots, etc...)

**Features**
- Two-way rotation
- Screen exchange when machine stopped

**Features**
- Speed 3000 rpm
- Grinding chamber equipped with grooved armor plates
- Hammers with high thickness

That type of hammermill is usually fed by a belt conveyor with adjustable speed. The powder is conveyed by a hopper and a screw conveyor.

<table>
<thead>
<tr>
<th>Type</th>
<th>Power (kW)</th>
<th>Hammer-mill mass without motor (kg)</th>
<th>Quantity of hammers</th>
<th>Effective screening area (m²)</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RME 12</td>
<td>45</td>
<td>1940</td>
<td>28</td>
<td>0,4</td>
<td>2195</td>
</tr>
<tr>
<td>RME 14</td>
<td>55</td>
<td>3050</td>
<td>40</td>
<td>0,7</td>
<td>2370</td>
</tr>
<tr>
<td>RME 17</td>
<td>110</td>
<td>3650</td>
<td>56</td>
<td>1,1</td>
<td>2600</td>
</tr>
</tbody>
</table>

* 'A' dimension given for a standard motor
Crusher

That machine can be installed in all product inlets (in bulk or in bags) when the particle size of a product that should be powdery is not guaranteed.

The crusher can be assembled in a circuit under a discharging hopper or a bag unloader but its purpose is not to turn a non friable raw material into powder.

**Features**

The crusher includes one or two rotors depending on the required capacity. It has two versions, coarse or fine, according to the required particle size.

**Options :**

- Rotation sensor
- Temperature probes on bearings

<table>
<thead>
<tr>
<th>Type</th>
<th>Quantity of rotors</th>
<th>Power (kW)</th>
<th>Mass (kg)</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMG1</td>
<td>1</td>
<td>1x2,2</td>
<td>230</td>
<td>A: 1210 B: 660 C: 400</td>
</tr>
<tr>
<td>BMF1</td>
<td>1</td>
<td>1x2,2</td>
<td>240</td>
<td>A: 1210 B: 660 C: 400</td>
</tr>
<tr>
<td>BMG2</td>
<td>2</td>
<td>2x5,5</td>
<td>920</td>
<td>A: 2150 B: 960 C: 430</td>
</tr>
<tr>
<td>BMF2</td>
<td>2</td>
<td>2x5,5</td>
<td>1035</td>
<td>A: 2150 B: 960 C: 430</td>
</tr>
</tbody>
</table>

Drawing: crusher with double row of toothed discs

Page 18
Our range of crumblers is designed to make crumbles from 0.2 to 4 mm with granulated product passing between 2 rollers.

**Features**
- Ø250 mm rollers
- Space adjustment between cylinders with remote control with analog position detection
- Integrated system for product sampling
- Automatic spacing of cylinders when foreign bodies going through
- Total spacing of rollers to allow a free passage of pellets

<table>
<thead>
<tr>
<th>Type</th>
<th>Capacity</th>
<th>Power (kW)</th>
<th>Mass (kg)</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEDT 600</td>
<td>4 à 6</td>
<td>7,5</td>
<td>1100</td>
<td>A 1590</td>
</tr>
<tr>
<td>PEDT 1000</td>
<td>8 à 12</td>
<td>11</td>
<td>1400</td>
<td>B 1990</td>
</tr>
<tr>
<td>PEDT 1500</td>
<td>12 à 18</td>
<td>15</td>
<td>1850</td>
<td>C 2490</td>
</tr>
<tr>
<td>PEDT 1800</td>
<td>15 à 25</td>
<td>18,5</td>
<td>2200</td>
<td></td>
</tr>
</tbody>
</table>
Filters with automatic cleaning

**Pad filters**

The pad filter is the most frequently used equipment in grinding operations with mechanical handling.

It is designed to recycle particles directly within the product mass.

**Features**

- Limited size for filtering area up to 120 m²
- Cleaning by counter current compressed air (tank do not require to be proofed again)
- Filtering pads adapted to the different kinds of products

**Regulation**

- Atex 94/9/CE compliance on demand
- Compliance to the regulations in force and to specific requests in regard of dust discharge
- Air tank compliance to the 97/23/CE pressure equipment directive, do not require to be proofed again

**Solutions for limited explosion risks**

- Use of antistatic medias
- Installation of explosion vents (to be specified according to : implantation, capacity, product KST,...)
- Installation of a decoupling valve
- Reinforcement of the filter
- Clogging monitoring of the media by measuring the Delta-P
- Control of the medias state
- Wastes control
- Inert gas injection
Sleeve filters

The sleeve filter installed in a cylindrical case is generally used in case of grinding with pneumatic handling. It may be fitted, with a emptying cone in its lower part. For fine grinding application, it is worthwhile replacing the cone with a flat bottom equipped with a motorized rotary sweeper.

Our sequencer is designed to control and monitor the pads and sleeves filters cleaning. The solenoid valves are inserted into the sequencer. This device is set according to the required use. The sequencers are fitted with a ΔP module, controlling the start-up and stop of the cleaning operation. This device saves air and improves filtration.

It is equipped with:

- High and low ΔP alarms (with relay output)
- A ΔP threshold and an input for fast running
- A control of an electric fault
- An analog output for the remote monitoring of ΔP measurement
- 2 relay outputs to report faults and control the cleaning.
The need to separate a product batch into 2 different and regular particle sizes, especially in the field of bioethanol, starch, cement, petfood, and fishfeed lead STOLZ to design a range of high performance rotative sifters, called «turbosifter».

**Specifically designed for the separation of fine ground products**

- Cleaning of screens by air blowing and rotation of screens supports (BCMT version)
- Limited risk of cross-contamination
- Quick change of screens through large sized side doors
- Limited maintenance
- BCMF version with fixed screens for standard products not requiring any specific cleaning
- Screens from 5 mm to 0.4 mm, or 4 to 40 mesh

**Features**

- Bi-rotor innovative technology for the clogging powders sifting
- Sturdy structure and ATEX compliance
- High performance separation of fatty and fine products
- Drive by motor and belts, or direct gear-motor
## Non contractual photos and diagrams

- Wide range of stainless steel screens
- By-pass at machine inlet - right or left hand side (optional)
- Nozzles for the screens pneumatic cleaning
- Easy and tight sealing of screens

---

### Wide range of stainless steel screens

### By-pass at machine inlet - right or left hand side (optional)

### Nozzles for the screens pneumatic cleaning

### Easy and tight sealing of screens

---

### Type | Dimensions (mm) | Rotor/Screens power | Mass | Effective area
--- | --- | --- | --- | ---
| | A | B | C | (kW) | (kg) | (m²) |
| BCMT 400 | 2330 | 650 | 730 | 5,5/0,37 | 285 | 1,0 |
| BCMT 600 | 3500 | 900 | 1050 | 9,2/0,37 | 800 | 2,5 |
| BCMT 750 | 4100 | 1000 | 1150 | 15/0,37 | 1100 | 4,2 |
| BCMT 1250 | 4100 | 1600 | 1400 | 18,5/0,37 | 1850 | 7,5 |
| BCMT 1250+ | 4700 | 1600 | 2100 | 45/0,75 | 3100 | 12,0 |
Handling equipment & Dedusting
Grinding and milling
Thermal conditionning & Cooling
Pelletizing
Mixing & Coating
Sifting & Cleaning
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