DP Pulveriser®
since 1962

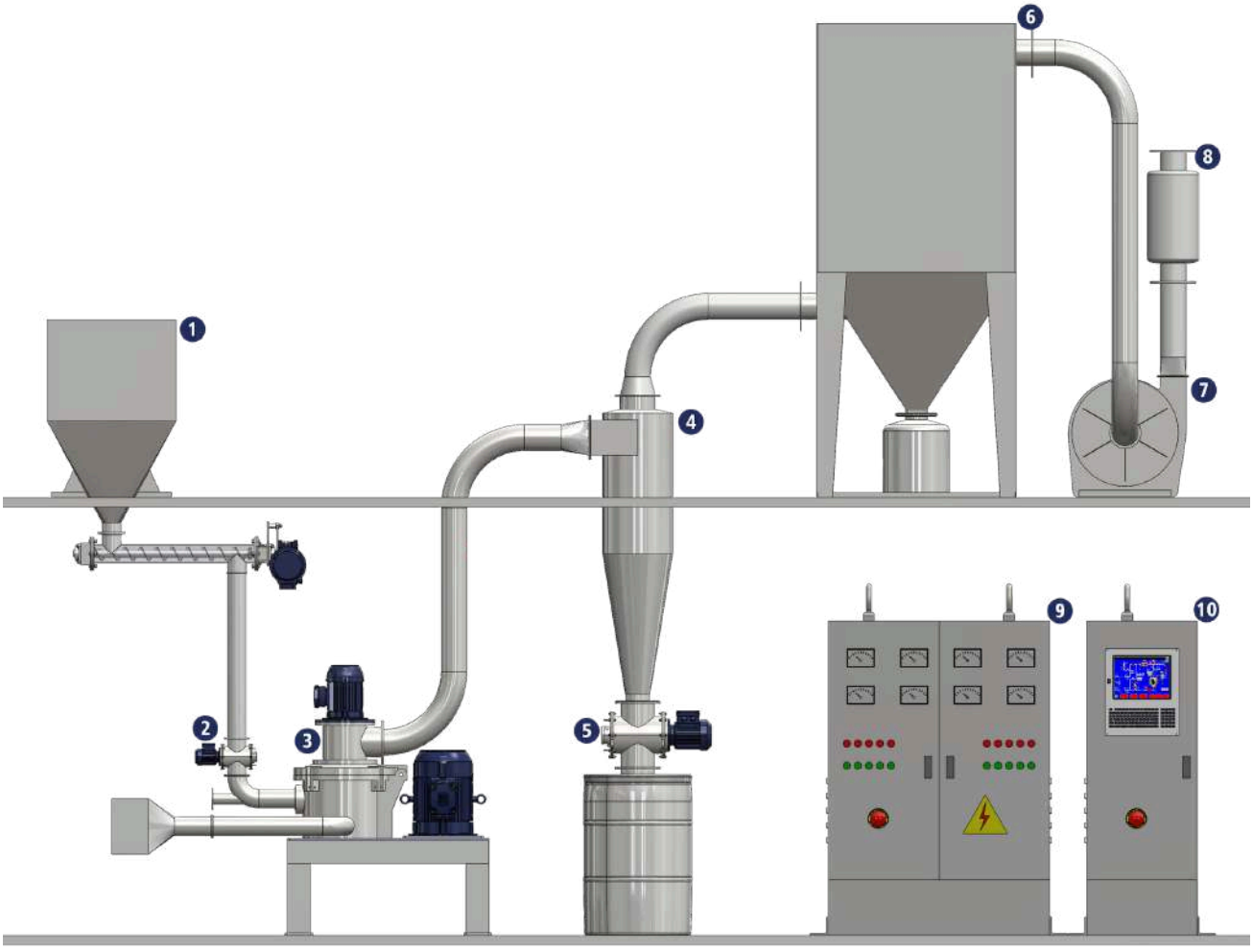

# DP® eACM Air Classifier Mill Enhanced Type

*Pulverisers & Classifier Mills*

# Introduction

The DP® Air Classifier Mill Enhanced Series is a high-performance, high-speed screenless hammer mill with an integrated air classifier. Designed for higher rotor RPM and optimized bearing systems, it delivers enhanced grinding efficiency and finer particle reduction typically in the 5–30 micron range. The system ensures sharper top-cut control, narrow particle distribution, and superior performance for demanding and heat-sensitive applications.

1. **Feed Hopper With Screw Feeder**
2. **Rotary Air Valve**
3. **DP® Air Classifier Mill**
4. **Cyclonic Separator**
5. **Rotary Air Valve**
6. **Pulse Jet Dust Collector**
7. **External Conveying Fan**
8. **Silencer**
9. **Control Panel**
10. **PLC Panel**



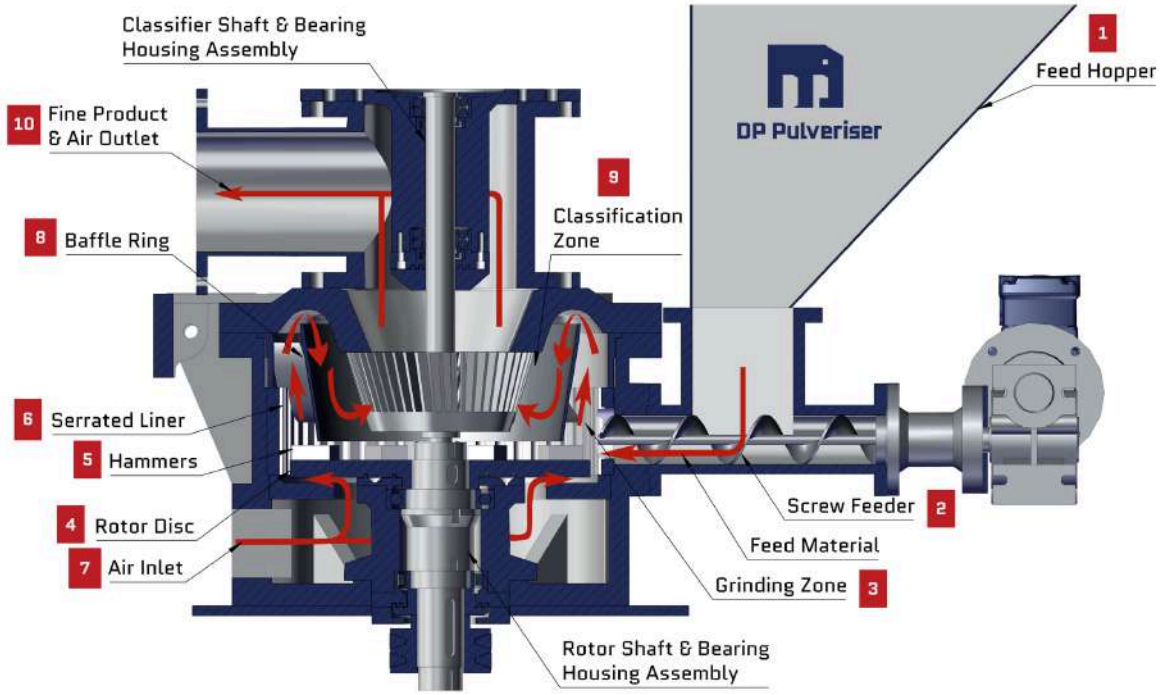

*Typical process flow diagram of a enhanced ACM*

## Working Principle

The DP® Air Classifier Mill integrates continuous grinding and dynamic classification into a single compact unit. The feed material enters through the **feed hopper (1)**, where a **screw feeder (2)** delivers it at a regulated rate into the **grinding zone (3)**. Inside this zone, a high-speed **rotor disc (4)** fitted with **hammers (5)** accelerates the material outward. The **serrated liner (6)**, positioned along the chamber wall, enhances impact by deflecting the material back into the hammer path, resulting in efficient size reduction through repeated collisions.

As the particles are ground, a stream of air introduced through the **air inlet (7)** assists in carrying the material upward into the **classification zone (9)**. Here, the air/material mixture passes through a **baffle ring (8)** and reaches the rotating classifier rotor, housed within the classifier shaft & bearing housing assembly. Particles of the desired size pass through the classifier and exit with the air stream via the **fine product & air outlet (10)**, while oversized particles are rejected and returned to the grinding zone for further reduction. This internal loop ensures consistent fine product quality with a sharp particle size cutoff.

The mixture of fine product and air is then conveyed through external piping to a cyclonic separator, where the product is separated and collected. Any remaining ultrafine dust is carried further to a pulse-jet dust collector, ensuring clean and dust-free air discharge. The system also include a conveying blower to maintain controlled airflow. Overall, the integrated design allows for precise particle size control, energy-efficient grinding, and dust-free operation in a compact and maintainable layout.




*A cross-sectional view of the ACM*

## Features & Benefits

- High-speed grinding system engineered for enhanced rotor RPM and improved milling performance
- Integrated grinding and dynamic classification in a single compact unit
- Advanced rotor and bearing design optimized for stable high-speed operation
- Narrow particle size distribution with sharp top-cut control
- Stepless online particle size adjustment for precise fineness control
- Suitable for fine and ultrafine particle sizes down to ~5 microns
- Optimized grinding chamber and liner design for higher grinding efficiency


*DP® ACM-200 Air Classifier Mill*

## Options and Accessories

- **Construction Materials**: Available in carbon steel, stainless steel (SS304, SS316, SS316L), or custom-engineered configurations to meet specific product or regulatory requirements.
- **High-Speed Bearing System:** Specially selected high-speed bearing arrangements designed to support elevated rotor RPM and ensure stable long-term operation.
- **Pressure Shock Resistance:** Can be designed to withstand pressures up to PSR 11 Bar.
- **Cooling Technology:** Optional integrated airflow cooling or water jacket cooling ensures safe handling of heat-sensitive materials, preserving product quality.
- **Hammer Options:** Multiple hammer configurations are available (flat, serrated, pin type), in various wear-resistant materials, based on grinding characteristics.
- **Classifier Options:** Available with dynamic classifier designs featuring variable speeds and material options (carbon steel, hardened steel, ceramics) for precise top-cut control and durability.
- **Safety Mechanisms:** Can be equipped with vibration sensors, temperature sensors, and safety interlocks to ensure operational safety and equipment protection.
- **Combined Functionality:** Option for combined drying and pulverising processes.

*Co-axial bearing housing assembly*

*Range of classifier wheel designs*

# Machine size

| Model | Rotor drive | Classifier drive | Mill speed (Max.) | Classifier speed (max.) | Air flow rate | Scale-up factor |
|---|---|---|---|---|---|---|
| ACM | kW | kW | rpm | rpm | $m^3/h$ | - |
| 2E | 3 | 0.55 | 13650 | 9850 | 410 | 0.2 |
| 5E | 5.5 | 1.1 | 8060 | 8450 | 630 | 0.5 |
| 10E | 7.5 | 2.2 | 7860 | 7300 | 1100 | 1 |
| 15E | 11 | 3 | 7860 | 7300 | 1640 | 1.35 |
| 20E | 15 | 4 | 6300 | 5900 | 2180 | 1.8 |
| 25E | 18.5 | 4 | 6300 | 5900 | 2720 | 2.25 |
| 30E | 22 | 5.5 | 5400 | 5300 | 3260 | 2.7 |
| 40E | 30 | 7.5 | 5400 | 5300 | 4340 | 3.6 |
| 60E | 45 | 11 | 3250 | 4850 | 6500 | 5.4 |
| 75E | 55 | 11 | 3250 | 4850 | 8120 | 6.75 |
| 100E | 75 | 15 | 2450 | 4200 | 10820 | 9 |
| 120E | 90 | 15 | 2450 | 4200 | 12920 | 10.8 |
| 150E | 110 | 18.5 | 2450 | 4200 | 16220 | 13.5 |
| 200E | 160 | 37 | 2250 | 3800 | 21020 | 18 |

*DP® ACM-200 Air Classifier Mill system*

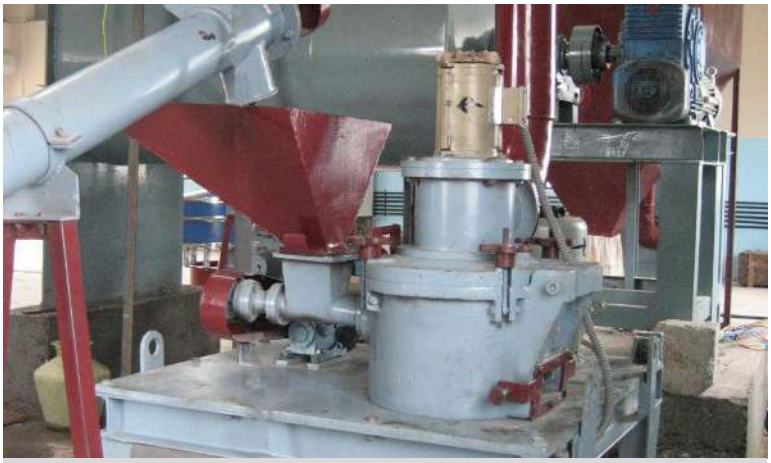
# Application

| Type | Feed Material | Fineness | Capacity [kg/h] *ACM-10* |
|---|---|---|---|
| **Battery Raw Materials** | Graphite | $d_{50}$ 30 µm | 120 |
| | Lithium carbonate | $d_{50}$ 7 µm | 50 |
| | Battery Material (Metal Oxides) | $d_{50}$ 10 µm | 300 |
| | Toner | $d_{50}$ 20 µm | 50 |
| **Paints** | Powder Coating | $d_{50}$ 20 µm | 130 |
| | Pigment (red) | $d_{99}$ 15 µm | 350 |
| | Pigment (copper) | $d_{99}$ 18 µm | 450 |
| **Foods** | Sugar | $d_{99}$ 25 µm | 110 |
| | | $d_{99}$ 10 µm | 32 |
| | Chickpea | $d_{90}$ 150 µm | 200 |
| | Turmeric | $d_{90}$ 120 µm | 80 |
| | | $d_{90}$ 300 µm | 120 |
| | Tea Leaves | $d_{50}$ 20 µm | 90 |
| | Rice | $d_{99}$ 75 µm | 70 |
| | Cocoa | $d_{99}$ 75 µm | 300 |
| **Feeds** | Soy bean protein | $d_{50}$ 20 µm | 40 |
| | Fish Meal | $d_{50}$ 50 µm | 70 |
| | Defatted Soybean | $d_{50}$ 60 µm | 600 |
| | Rice Bran | $d_{50}$ 30 µm | 30 |
| **Minerals** | Zeolite | $d_{99}$ 40 µm | 1250 |
| | Ground Calcium Carbonate | $d_{97}$ 25 µm | 160 |
| | Talc | $d_{99}$ 20 µm | 100 |
| | Silica | $d_{99}$ 30 µm | 200 |
| | Iron Powder | $d_{95}$ 45 µm | 160 |
| **Pharmaceuticals** | Lactose | $d_{50}$ 75 µm | 650 |
| | | $d_{99}$ 30 µm | 140 |
| | Sorbit | $d_{50}$ 50 µm | 10 |
| | Glucose | $d_{50}$ 75 µm | 220 |
| **Plastics** | CMC | $d_{50}$ 80 µm | 20 |
| | Phenolic Resin | $d_{50}$ 20 µm | 220 |
| **Chemicals** | Stearates | $d_{99}$ 40 µm | 150 |
| | Activated Carbon | $d_{50}$ 20 µm | 100 |
| | Citric Acid | $d_{50}$ 20 µm | 95 |
| | Pesticide (Bisphenol A) | $d_{99}$ 63 µm | 350 |
| | Carbon Black | $d_{99}$ 30 µm | 120 |
| | Silica Gel | $d_{50}$ 30 µm | 105 |

Installation of DP® ACM-10 in South India for grinding of coconut flakes

DP® ACM-2 Air Classifier Mill Lab-Pilot Size

DP® ACM-60 for grinding of sea weed

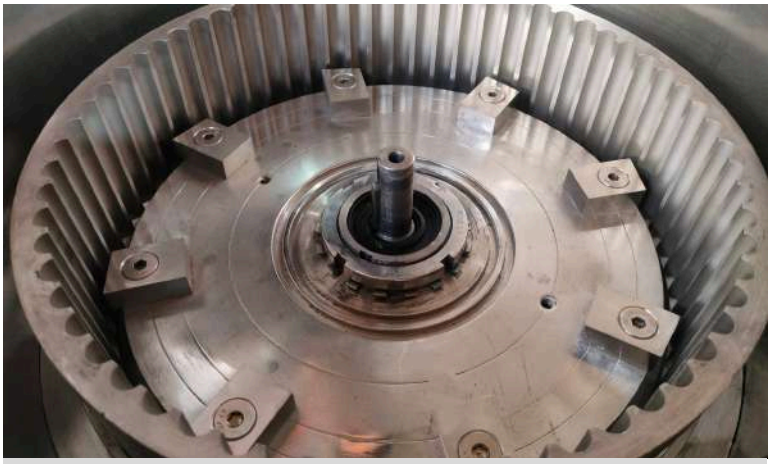


Installation of DP® ACM-10 in South India for grinding of phenolic resin

Installation of DP® ACM-10 in North India for grinding of biomass

Production of 3 nos. DP® ACM-15 for grinding of organic yellow pigment

Installation of DP® ACM-30 in West India for grinding of synthetic graphite



Internal view of grinding chamber in a DP® ACM-10

DP® ACM-10 ready for dispatch

DP® ACM-60 ready for dispatch

DP® ACM-15 ready for dispatch

Typical control panel with process flow diagram

Installation of DP® ACM-10 in West India for grinding of zinc metal

Open view of DP® ACM-15

DP® ACM-5 ready for dispatch

Top open view of DP® ACM-10

## Who are WE?

We are DP Pulveriser Industries and have been designing and building size reduction equipment in India since 1962. We believe in using the materials of the highest grade to build our equipment because we understand your need for a machine that will perform - without breakdown - day in and day out. 60+ years, 7500 installations and 32 countries later we now hold the reputation of being one of India's finest manufacturers of size reduction equipment. Regardless of the industry you operate in, DP can optimize, innovate and automate your entire process with tailor made solutions and expertise that is backed by 60+ years of experience. We are a young bunch of passionate engineers excited to work on your next challenging project

## What do we DO?

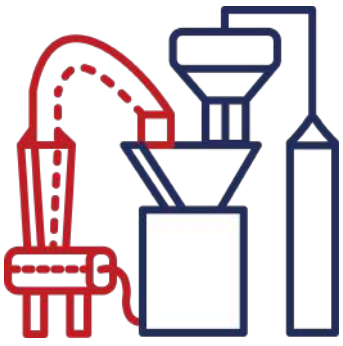
**DP Pulveriser Industries' offerings are broadly classified under 3 segments:**

### Powder Processing Equipment

Built for durability and low maintenance even after years of service, Our core strength lies in Size Reduction and Air Classification. We offer a wide range of machines to meet all your particle size requirements.

### Testing and Other Services

We offer various services such as material trials of our equipment, grinding and air classification of your material on a contract basis and even particle testing and analysis at a fully equipped laboratory on the campus of our partner IIT Gandhinagar.



### Turnkey Systems & Plant Automation

Thanks to our decades of experience, we understand what processing technologies and equipment are best suited for your application and industry. This means we can be your one stop solution for setting up complete powder processing plants carefully tailored to your needs.

## Our Global Footprint

- Australia
- Bahrain
- Germany
- Mexico
- New Zealand
- South Africa
- Qatar
- Canada
- United Arab Emirates
- Bangladesh
- Ghana
- Hongkong
- Iran
- Nepal
- Singapore
- Nigeria
- Bhutan
- China
- Tanzania
- Oman
- Philippines
- Switzerland
- Uruguay
- Zambia
- Kenya
- Estonia
- Egypt
- Mauritius
- Madagascar
- Guatemala
- Indonesia
- Sri Lanka
- Bremen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