Professional
Powder Equipment
Manufacturer

TENCAN

Powder Equipment
Milling Technology
Powder Materials

Product Brochure


LARGE GRINDING EQUIPMENT

# Honeycomb mill powder composite modification machine

## CM

Specifically designed for surface treatment of micro- and nanoscale powders



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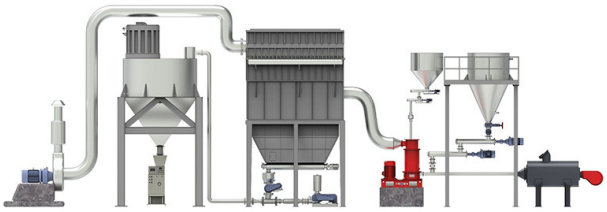
https://www.planetaryballmills.com/products/grinding-series/large-grinding-equipment/honeycomb-mill-powder-composite-modification-machin.html

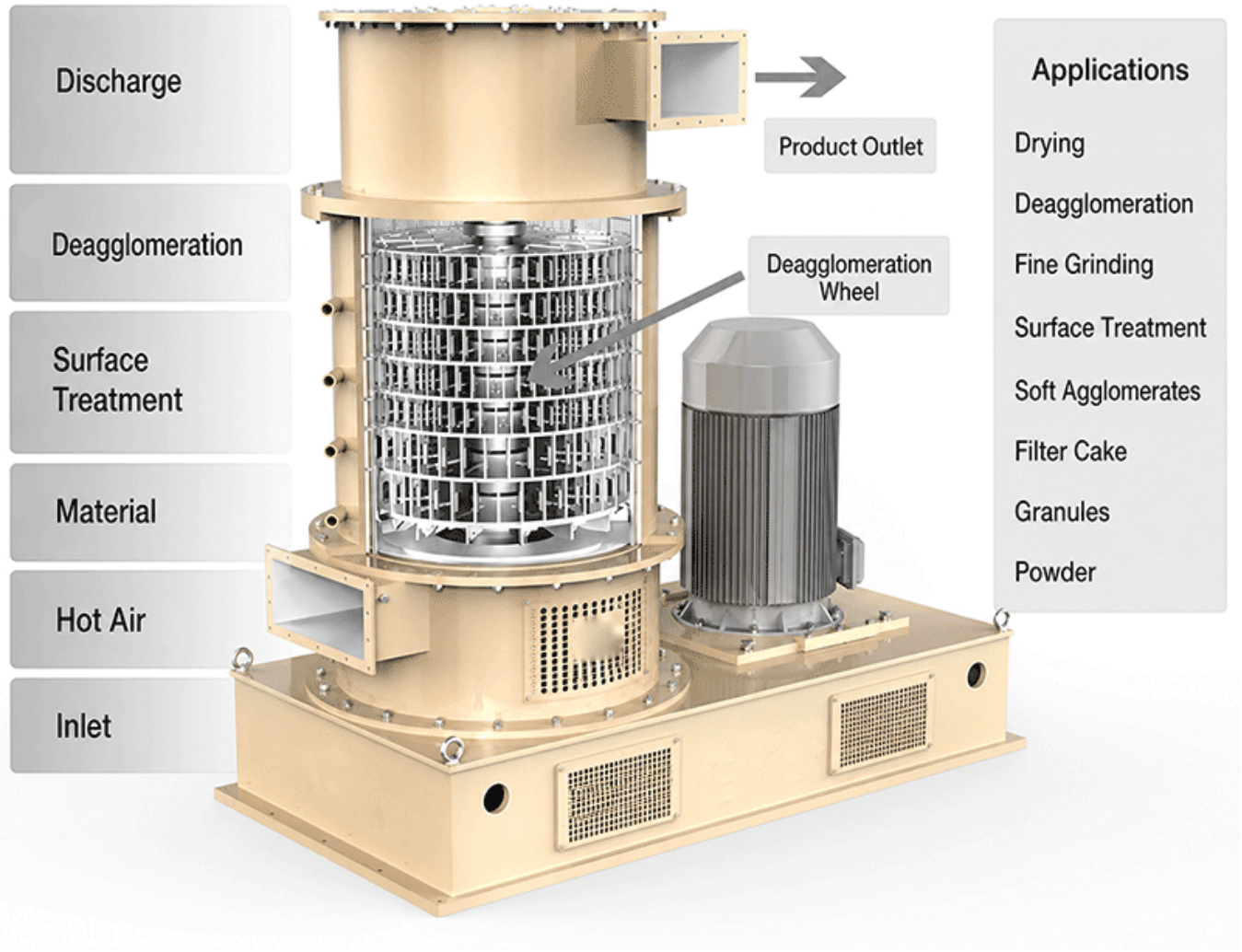
# Product Overview

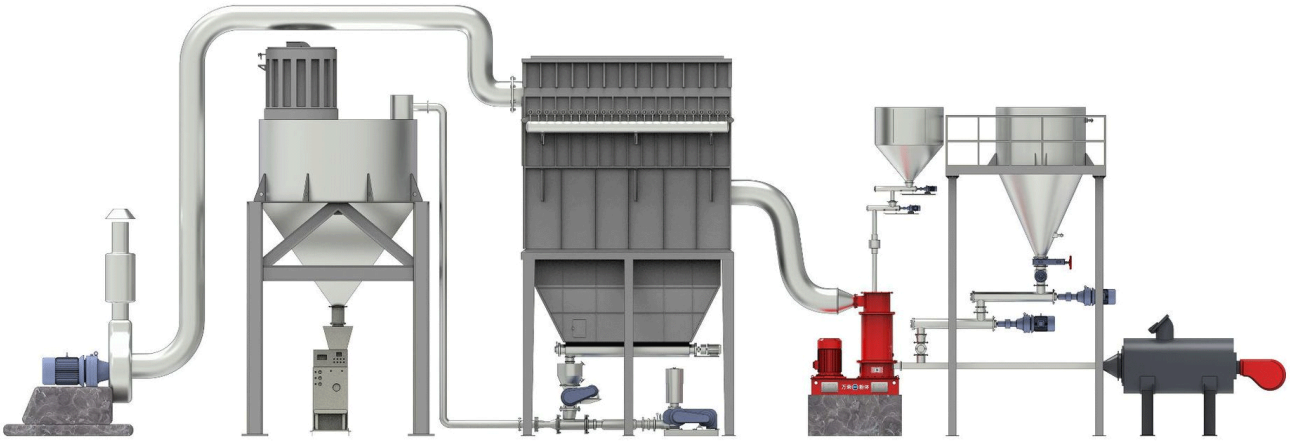
Specifically designed for surface treatment of micro- and nanoscale powders

## Product Introduction

Honeycomb mill is a collection of **Deep drying, depolymerization and dispersion, composite modification** An all-in-one mechanical, chemical and continuous powder processing equipment, specially designed for the surface treatment of micro- and nano-scale powders. Its core structure consists of a depolymerization wheel, a drying chamber, a crushing and depolymerization chamber and a mixing and modification chamber. It achieves multi-functional integration through modular design and is suitable for powder modification needs in the fields of non-metallic minerals, new energy materials and environmental protection. The equipment adopts a vertical layout and combines high-speed shear force and atomization modification technology to complete the entire process from raw materials to finished products in 30 to 50 seconds, significantly improving production efficiency and product quality.


Discharge
Deagglomeration
Surface Treatment
Material
Hot Air
Inlet
Product Outlet
Deagglomeration Wheel
Applications
Drying
Deagglomeration
Fine Grinding
Surface Treatment
Soft Agglomerates
Filter Cake
Granules
Powder



Calcium carbonate, magnesium hydroxide, titanium dioxide, talc, iron oxide, hydrotalcite, precipitated silica, PCC and GCE, clay, kaolin, phosphate, alginate, stearic acid, pigments, zeolite, mica and other non-metallic minerals.

- **Non-metal mineral modification** : Such as calcium carbonate, talcum powder, kaolin, quartz and other surface coating treatments to improve their dispersion and functionality in plastics, rubber and coatings
- **New energy material preparation**: Used for depolymerization and surface activation of battery materials such as lithium iron phosphate and nano-silica to improve electrochemical performance
- **Environmental protection and resource recycling**: Industrial wastewater deoiling, waste paper deinking, oil field sewage treatment, and recovery of metal particles in smelting slag
- **Special process requirements**: Achieve ultra-fine grinding, drying and modification of powder at the same time, reducing energy consumption and pollution of multiple equipment in series

# Technical parameters

| Technical parameters model | CM350 | CM500 | CM750 | CM1000 | CM1250 | CM1500 | CM2250 |
|---|---|---|---|---|---|---|---|
| Maximum speed, rpm | 6500 | 4500 | 3000 | 2250 | 1800 | 1500 | 1000 |
| Gas flow rate, km $^3$/h | 1.25-4 | 2-6 | 3-12 | 4-15 | 5-20 | 6-25 | 9-37.5 |
| Host power, kW | 15-30 | 22-55 | 45-90 | 75-132 | 110-200 | 132-260 | 200-400 |
| Production capacity, t/h | 0.5-1.0 | 1.0-1.5 | 1.5-2.0 | 2.0-2.5 | 2.5-3.0 | 3.0-3.5 | 3.5-4.5 |

**"Honeycomb grinding" technology in the nanoelectronics industry:**
In the nanoelectronics industry, the drying equipment "honeycomb mill" plays a vital role. Here are its top five applications in the nanoelectronics industry:

1、Production of nanoparticles: By precisely controlling particle size, high-quality nanoparticles are produced.

2、Thin film manufacturing: used to manufacture uniform, high-performance thin film materials.

3、Manufacturing of conductive ink and slurry: improve conductivity to meet the needs of electronic equipment.

4、Battery materials: In battery manufacturing, ensure the consistency and performance of materials.

5、Fuel cell catalyst: Promote the reaction efficiency of the fuel cell and improve the overall performance.

**Advantages of technology:**
Precise control of particle size: Achieve precise control of particle size by adjusting operating parameters such as feed rate, air flow and temperature.
High efficiency: fast drying time, reducing material loss and increasing output.
Material property preservation: A controlled dry environment ensures that the inherent

properties of nanomaterials are preserved.

“The application of "honeycomb mill" technology in the nanoelectronics industry has promoted the innovation and development of the industry and provided a key tool for the production of high-quality, high-performance nanomaterials.

## Working Principle

- **deep drying stage**
  Powder enters with 110~130℃ hot air **drying chamber** , turbulence is formed under the action of the high-speed rotating rotor, and the residual moisture is quickly evaporated to less than 0.05% through negative pressure flash evaporation.
- **dispersion stage**
  The dried powder enters **crushing depolymerization chamber** , the depolymerization wheel drives the material to spiral upward at a linear speed of 160m/s, collides with and shears the stator (sawtooth structure), and breaks the soft agglomeration to the original particle size.
- **Compound modification stage**
  The depolymerized powder enters in the form of turbulent flow **Mixing modification chamber** , 1~3 kinds of atomized modifiers are sprayed evenly through compressed air, and form a single molecule coating layer with the powder in the boiling state (coating rate ≥ 99.2%)
- **Finished product output**
  The modified powder is transported to the dust removal system for separation and packaging through airflow, and the exhaust gas is purified and discharged through an induced draft fan.

# Product Features

Honeycomb mill is a mechanical mill that can simultaneously realize modified grinding, drying, sorting, and surface chemical treatment of powder. It advocates first depolymerization and then drying, and simultaneously realizes the practical process of surface treatment. It is specially designed for the production of ultra-fine powder with strict particle size requirements. Its main machine consists of a depolymerization wheel, a discharge door, an air inlet, a classifier, a feed inlet, a multi-channel surface dispersant inlet and a feeder. It has extremely high deep drying and depolymerization capabilities, as well as highly continuous three-stage compound modification and dispersion processing technology.

It is a truly highly continuous powder compound modification machine that integrates multiple functions such as powder drying, grinding and depolymerization, compound modification and dispersion processing. The entire continuous depolymerization and modification process is operated under negative pressure, with a high degree of continuity. The modifier is pre-liquefied and atomized for feeding, automatic feeding measurement, adjustable system temperature, controllable feeding speed, air flow transportation of finished products, no dust pollution, and can achieve large-scale production. It is easy to operate, runs smoothly, and has low labor intensity. At the same time, the operating technical parameters, modification temperature and residence time can be automatically adjusted according to the properties of the surface modifier to ensure good modification and dispersion effects for ultra-fine powder.

# Accessories & Customization

### Accessories
Grinding jars, heating elements, sample holders, control modules and other matching accessories can be selected according to the product configuration.

### Customization
For voltage, capacity, chamber size, process temperature or application requirements, please contact TENCAN for a suitable configuration.