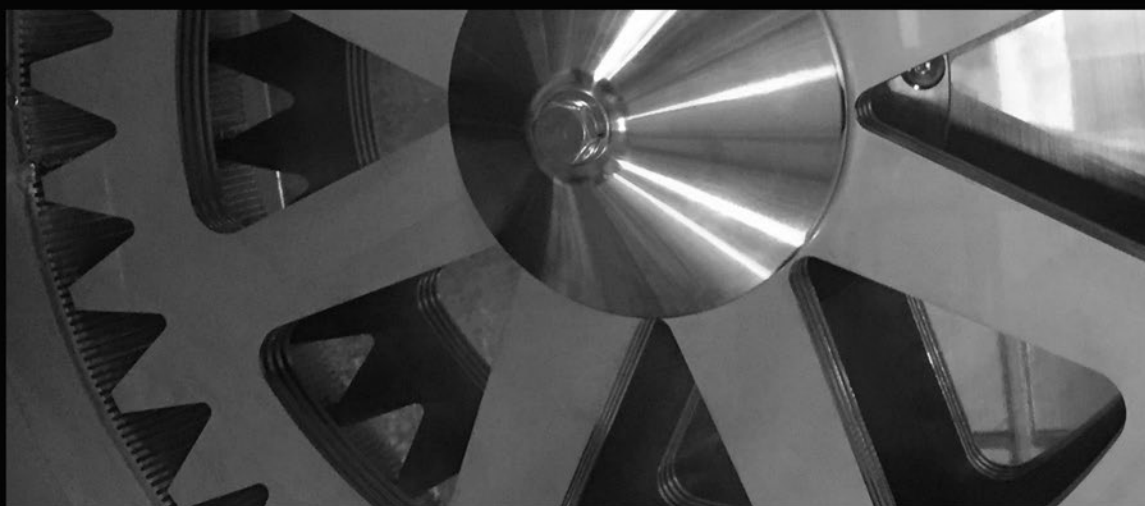


— The Science of Powder™ —



Looking at the new technology of Fine grinding
and the future of the global environment



Powder Bank Japan Corporetion

We provides valuable powder through grinding technology and propose effective utilization of limited resources.

In addition,we will operate businesses that contribute widely to society and human resources who can contribute to society.

As a leading company in cutting edge technology and strive to manufacture and develop safe and high-quality products.



Company Profile

- ◆ Company name Powder Bank Japan Corporation
- ◆ Date of establishment June 8,2006
- ◆ President and CEO Tadashi Eto
- ◆ Capital 25 million yen
- ◆ Headquarters Plant Surugadaishita MK Bldg. 4F,
1-41, Kanda Jimbo-cho Chiyoda-ku,
Tokyo 101-0051, JAPAN
TEL:+81-03-5283-8800
FAX:+81-03-5217-5017
URL:<https://www.pb-j.jp>
E-mail:info@pb-j.jp
- ◆ Business activities Sales and sales planning of grinding mills and related equipment.
Maintenance and management of grinding mills and related equipment.
Contract processing of grinding and related processing by grinding mills and related equipment.
Manufacture and sale of raw materials for foods, health foods, cosmetics, and quasi-drugs.
Development and sales of functional materials and development and sales of health foods.
Business matching business as a powder concierge.
Zero emission system development and sales business.
- ◆ Associated company Nippon Barrier Free Co.,Ltd
- ◆ Intellectual property Patent : 8 (Japan)
1 (Indonesia)
Registered trademark : 7

Smart Powder System



【 Smart Powder System】

It is a comprehensive system that combines technology and knowledge, from the next-generation primary industry style to the manufacture and sale of functional raw materials (powder).

What is a smart powder system?

1	Maximum taste, flavor and color	2	Minimal decomposition of nutrients by heat	3	Utilized as functional food and preserved food
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【 Powder concierge 】

- Product development support
- Powdering support
- Matching support

【 Consulting 】

- Proposal of smart powder system
- Proposal of next-generation agricultural style



Smart Powder®

【Food raw materials】

Fine grinding that preserves flavor color and nutrition

Green tea



Rice



Soybeans



Carrot



Broccoli



Egg shell



【Industrial raw materials】

Fine grinding as it is keep raw materials

Acrylic



Carbon fiber



PET



Compound aqueous solution



Cellulose



Oil-soluble raw material



Air stream fine grinding mill

《 Fine grinding dry raw material 》

※ Raw materials with a water content value of 15% or less



Fine grinding any material in a moment without changing its flavors or colors!

- Air stream fine grinding mill packed with original technology.
- Creates high-grade powder with better flavor ,taste , and color.

◆ 【Air stream fine grinding mill (Airtag mill)】:MP series

·MP2-350 ·MP10-550 ·MP20-700 ·MP70-1000

◆ 【Low heat generation and impact type fine grinding (BI mill)】:BI series

·BI2-350 ·BI10-550 ·BI20-700 ·BI70-1000

◆ 【Versatile combined fine grinding system (AIBIM)】:AIBIM series

·AIBIM2-350 ·AIBIM10-550 ·AIBIM20-700 ·AIBIM70-1000

Air stream fine grinding mill – Airtag mill –



Fine grinding that preserves flavor and color and nutrition without deterioration in the quality of raw materials due to heat!

- ◆ This is a standard machine by air stream fine grinding developed by our company. <Patented technology>
- ◆ Since the raw material passes through the machine within 1 second, it is powdered at normal temperature.
- ◆ Depending on the raw material, a particle size with a central particle size of $10\mu\text{m}$ or less is possible.

【Fine grinding Example】 Matcha, etc. $10\mu\text{m}$ or less,
Fine grinding of raw materials containing oil such as soybeans...

Low heat generation and impact type fine grinding – BI mill –

Fine grinding with Impact!

Fine grinding various materials vulnerable to heat extremely efficiently.



- ◆ Rotating blade and grinding chamber body of the BI mill is different from that of the Airtag mill.
- ◆ It is air stream fine grinding technology with an impact type element added. <Patented technology>
The particle size may be coarser than that of the Airtag mill, and it is suitable when you want to increase the processing amount. (Center particle size $15\mu\text{m}$ or more)
- ◆ Especially suitable for fine grinding of “weak heat” raw materials regardless of food or industrial type.

【Fine grinding Example】 Earn grinding Capacity in about $20\sim 30\mu\text{m}$.
Dry fine grinding of rice, etc. ...

Versatile combined fine grinding system – AIBIM –

【Airtag mill Parts】

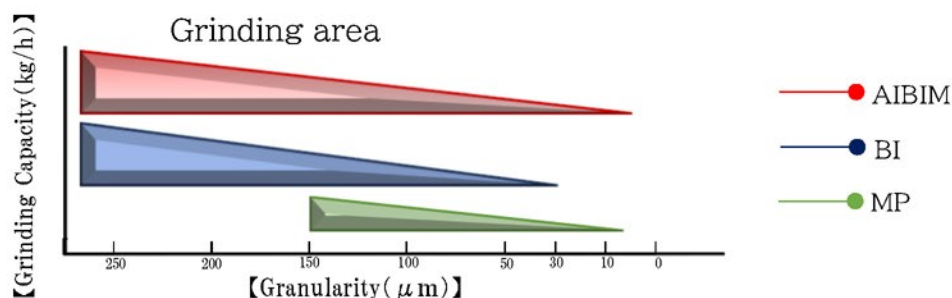


【Bi mill Parts】



This is the ultimate form of fine grinding mill!
Parts can be installed easily according to various fine grinding conditions.

- ◆ The same features of our previous models have been retained.
- ◆ By replacing the parts, one unit can handle a wide variety of raw materials regardless of whether they are food or industrial.
- ◆ It can accommodate various manufacturing conditions from high-mix low-mix to high-volume production.



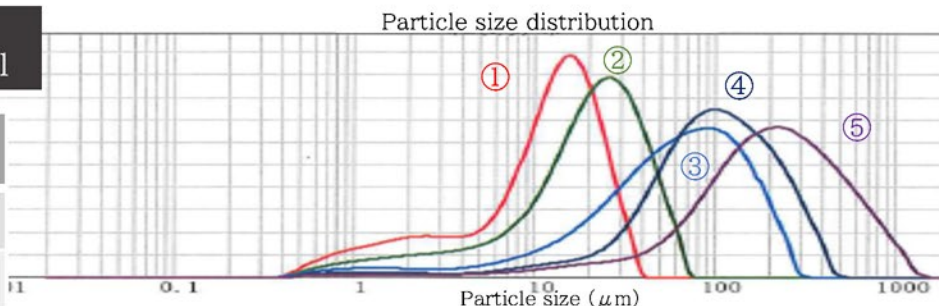
Easy particle size adjustment

Even with the same raw material ,the particle size can be easily adjusted by simply setting the position of the rotary blades and the inverter.

Particle size distribution of Rice flour by the same model

Rice flour comparison table(d0.5)
Unit: μm

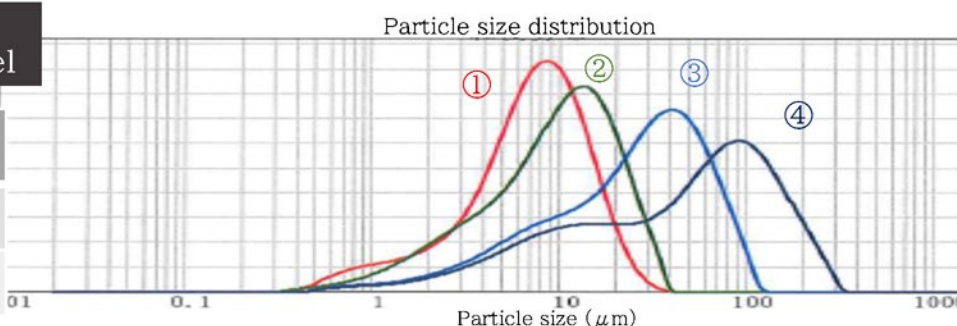
①	②	③	④	⑤
12.3	20.0	61.1	97.4	208



Particle size distribution of green tea by the same model

Green tea comparison table(d0.5)
Unit: μm

①	②	③	④
7.4	20.1	27.4	51.7

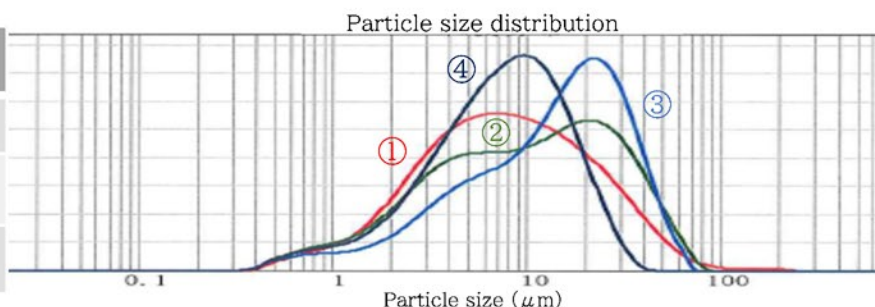


Comparison table of particle size by various mills

Grinding with AIBIM gives a sharp finish.

Fine grinding comparison by each model
(Comparison of particle size:d0.5)

①	②	③	④
Stone mill	Ball mill	(AIBIM) Airtag mill	(AIBIM) BI mill
7.7 μm	10.3 μm	7.5 μm	14.7 μm



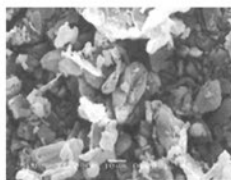
Main raw materials available

【 Food department 】

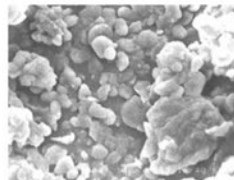
* Tea leaves(including stalks) * Mulberry leaves * Soybeans
* Coffee beans * Rice * Buckwheat * Dried bonito shavings * Vitamins
* Food preservatives(glucosamine, algin acid etc.)
* Okara soy pulp * Other dry materials

【 Industrial department 】

* Various resins * Paint powder * Toners * FRP others
* Silica sand * Carbon * Calcium carbonate * Lime * Sodium nitrate
* Woodchips * Waste plastics * Fruits seeds others



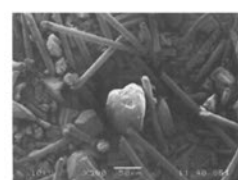
Green tea
(Electron microscope×1000)



Soybeans
(Electron microscope×1000)



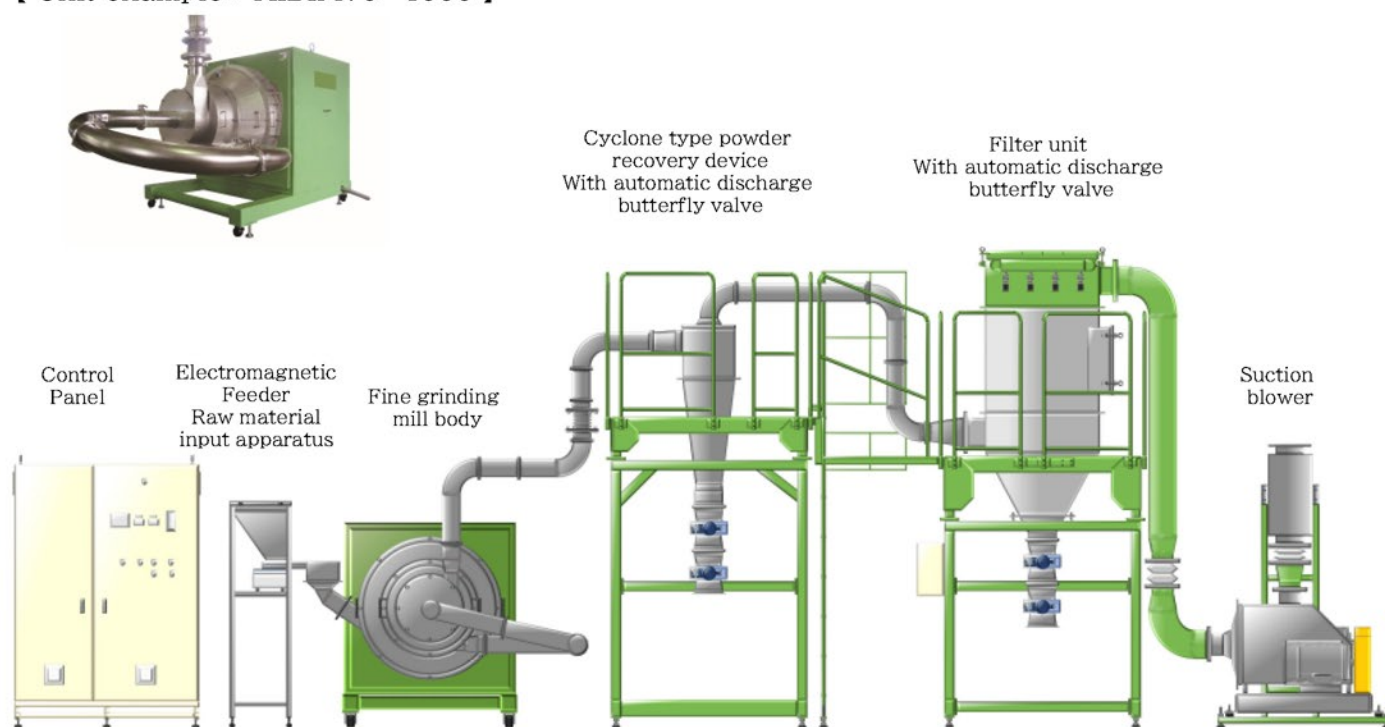
Carbon fiber
(Electron microscope×300)



FRP
(Electron microscope×300)

Fine grinding mill System configuration

【 Unit example : AIBIM70-1000 】



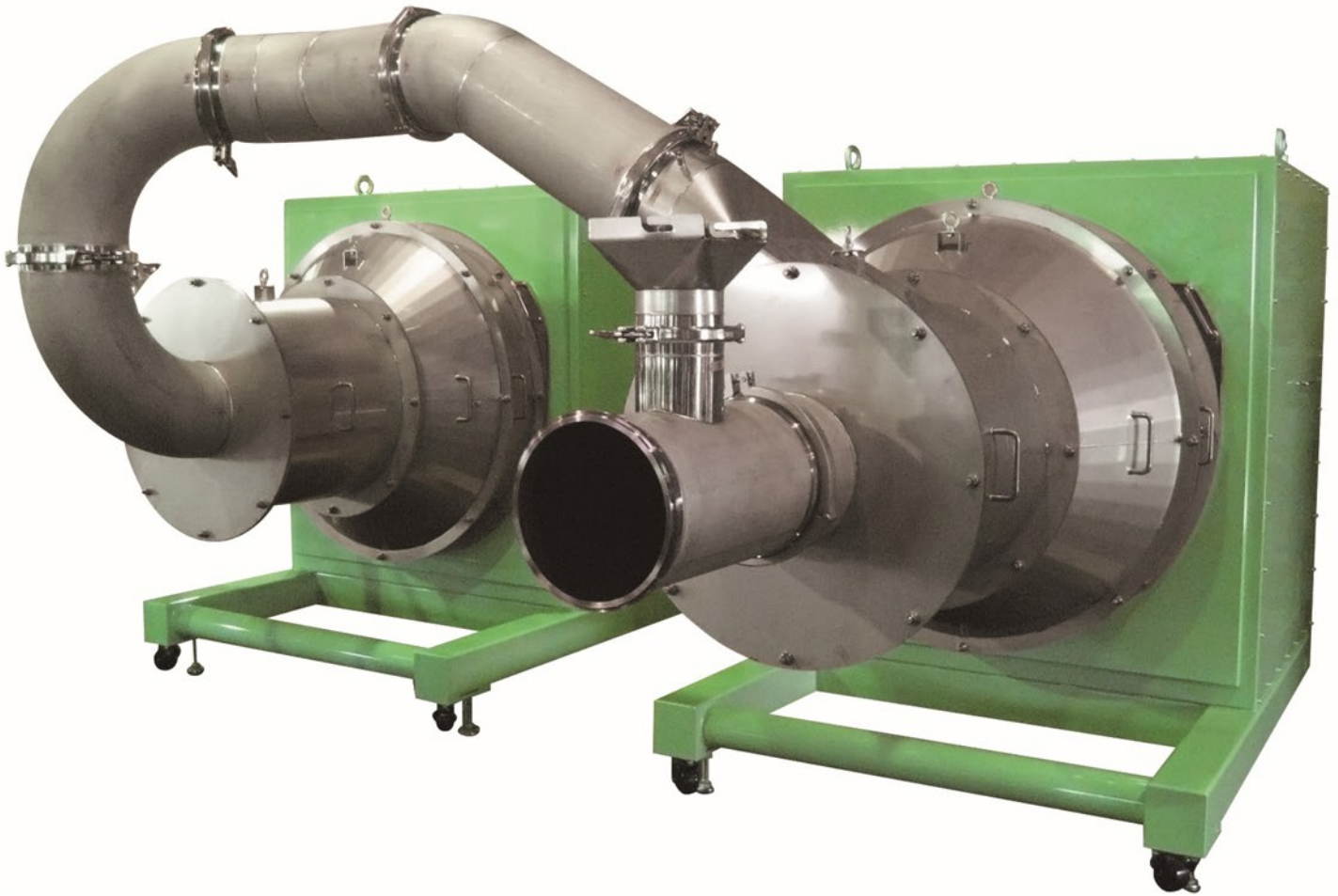
Model	Grinding Motor	Grinding Capacity	Fine powder Recovery unit	Input port size	Supply device Supply volume	Utility	Occupied area Device mass
MP/BI/AIBIM 2-350	2.2kw	2~5 kg/h	Batch type	21×36mm	Electromagnetic Feeder 7L	AC200V·3-Phase·20A Supply air None	L 2600 H2200 W800 280kg
MP/BI/AIBIM 10-550	7.5kw	10~20 kg/h	Batch type	21×46mm	Electromagnetic Feeder 60L	AC200V·3-Phase·100A Supply air 0.5MPa 15Nℓ/min	L 3000 H2200 W3100 570kg
MP/BI/AIBIM 20-700	15kw	30~60 kg/h	Continuity	36×63mm	Electromagnetic Feeder 60L	AC200V·3-Phase·150A Supply air 0.5MPa 240Nℓ/min	L 4000 H4000 W4000 2300kg
MP/BI/AIBIM 70-1000	55kw	100~200 kg/h	Continuity	46×131mm	Electromagnetic Feeder 60L	AC200V·3-Phase·500A Supply air 0.5MPa 270Nℓ/min	L 6000 H4500 W6000 3700kg

- ◆ Processing amount may vary significantly depending on the raw material and target particle size. Thinning e stated grinding capacity should only be viewed as a guide.
- ◆ Continuous butterfly valve discharge is available as an option.
- ◆ The supply air is used for the butterfly valve and the automatic air pulse jet for removing the filter.
- ◆ The equipment will be delivered on-board, and transportation costs, machine installation, electrical work, and air piping work will be charged separately.

Low-temperature drying and grinding mill

《 Dries and fine grinding water-containing raw material 》

※ Raw materials with a water content value of 15% or more



Dries and grinding any materials instantly
while retaining ingredient characteristics!

- Moisture evaporates instantly in less than 1.0 seconds from drying to grinding to recovery.
- Drying at low temperature (100°C or less) makes it a powder with a higher level of taste, flavor, and color.

◆ Low-temperature drying and grinding mill

- Centrifugal Dryer add Mill (CDM)
- CDM—SP Type Liquid raw material input type
- CDM—SJ Type Slurry raw material input type

Easy dries and grinding from food drying to waste disposal!



- ◆ Dries and grinding within 1.0 seconds (the time the raw material is inside machine)
- ◆ In most cases, raw materials are dried at low temperatures no higher than 100°C.
- ◆ Effective powdering is possible by minimizing alteration and deterioration of raw material components due to heat.

1. This technology is a simple, compact, highly efficient and easy-to-maintain dries and grinding device that simultaneously crushes and dries.
2. It is an environment-friendly technology that enables the reuse of resources by separating and collecting resources and waste.

Raw materials and various input machines that can be input

We have a lineup of input machines suitable for the condition of raw materials! (Solid / liquid / slurry)

Electromagnetic feeder type
for solid raw materials

Ingredients with relatively
low water-content



Screw feeder type
for solid raw materials

Ingredients with relatively
high water-content



Spray type
for liquid raw materials



Slurry jet type
for slurry raw materials



※Patented
technology

Main raw materials available



【 Food department 】

- * Okara (compressed)
- * Vegetable scraps and other food residues (Non-standard product vegetables and fruits)
- * Used tea leaves and coffee grounds
- * Fisheries processing residue, livestock processing residue, etc.

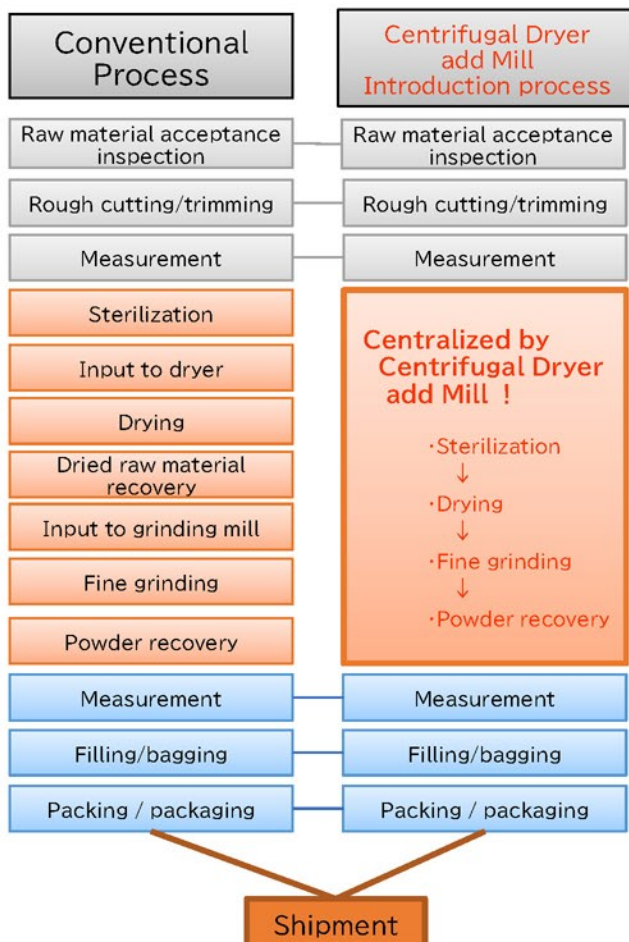
【 Industrial department 】

- * Oil-soluble raw material
- * Lignite
- * Calcium hydroxide
- * Sawdust(Bark tip) etc.

Reduction of work process

Centralized from drying to fine grinding !

It is also possible to reduce the process.

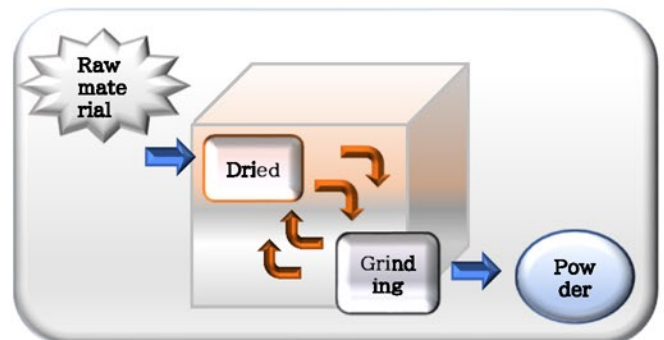


Drying - Grinding cycle

Dried ⇔ grinding time is 1.0 seconds or less!

(the time the raw material is inside machine)

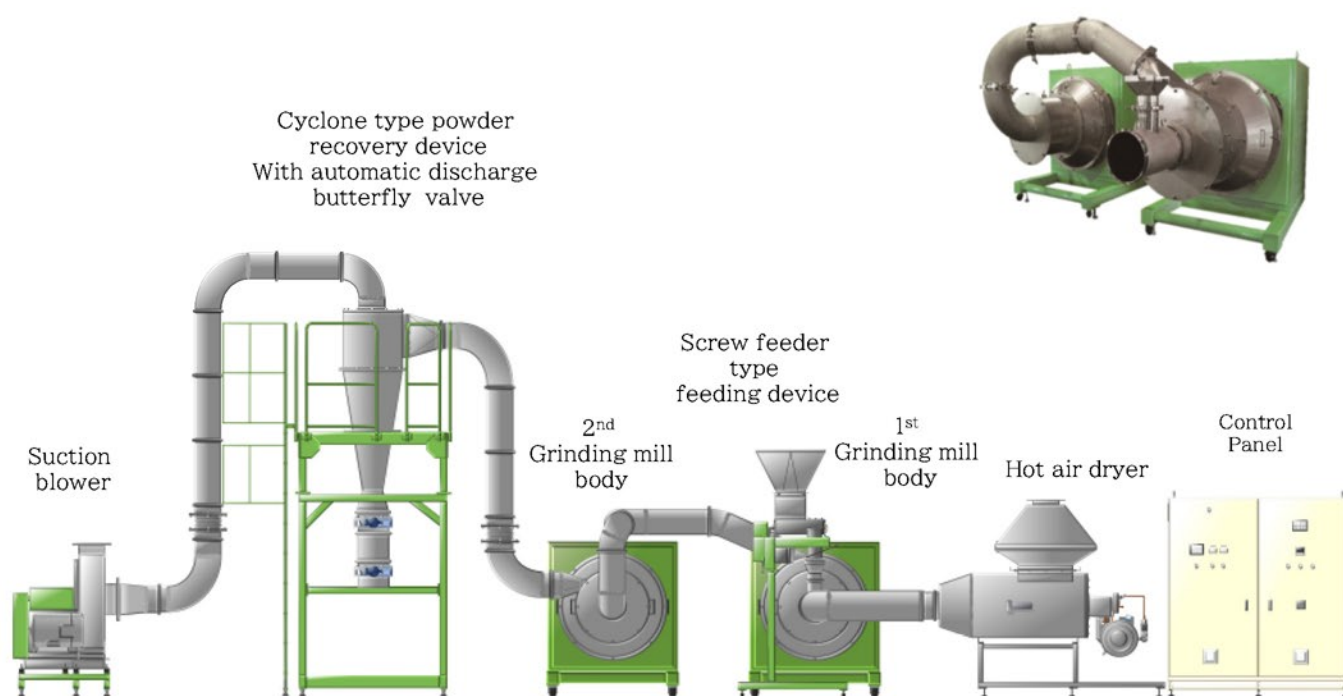
1. Raw material particles collide with each other in a high-speed swirling airflow.
2. Increasing of the raw material surface area from fine grinding enabled instantaneous drying.
3. Since dried particles are easier to fine grinding, they are fine grinding into even finer particles.



- A bactericidal effect can be expected at the same time from the drying ⇔ crushing cycle.
- General viable bacteria count 300 or less, E. coli negative, etc.

Low-temperature drying and grinding mill System configuration

【 Unit example : CDM70-1000W 】



Model	Grinding Motor	Grinding Capacity	Fine powder Recovery unit	Input port size	Supply device Supply volume	Utility	Occupied area Device mass
CDM2-350W	2.2kw (2Units)	2~5 kg/h	Batch type	φ 21	Screw Feeder 16L	AC200V·3-Phase·175A	L 3000 H2200 W3000 980kg
CDM10-550W	7.5kw (2Units)	10~20 kg/h	Batch type	φ 47	Screw Feeder 16L	AC200V·3-Phase·225A	L 4500 H2200 W4000 1300kg
CDM20-700W	15kw (2Units)	30~60 kg/h	Continuity	φ 72	Screw Feeder 115L	AC200V·3-Phase·225A LPG 6.3m³/h Supply air 0.5MPa 100Nℓ/min	L 5000 H4000 W9000 3300kg
CDM70-1000W	55kw (2Units)	100~200 kg/h	Continuity	φ 133	Screw Feeder 115L	AC200V·3-Phase·700A LPG 17m³/h Supply air 0.5MPa 250Nℓ/min	L 7500 H5000 W9000 4300kg

- ◆ Grinding capacity may vary significantly depending on the raw material and target particle size. The stated grinding capacity should only be viewed as a guide.
- ◆ Continuous butterfly valve discharge is available as an option.
- ◆ The equipment will be delivered on-board, and transportation costs, machine installation, electrical work, air and gas piping work will be charged separately.
- ◆ Since the Centrifugal Dryer add Mill does not have a filter, it is recommended to install an aftertreatment device such as a dust recovery device if necessary.



【Manufacturer / Distributor】

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【Agency】