Creating prosperous future through

Your ideal partner in powder processing operations, from planning to after-purchase

As an integrated manufacturer of powder and granule machines and plants, we draw on our extensive technology and know-how accumulated over many years to create the optimal conditions for all types of powder processing.

We offer effective solutions to the various requests from our clients through our highly advanced equipment and accurate service, from carry-in tests at our Powder Treatment Technical Center, to our response for commissioned manufacturing and maintenance services.
Particulate Technology services.
## Powder and Granule Machines

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Delivered more than 10,000 Machines, “FM
High-speed mixing blade generates strong mixing capacity and Ideal
(Toner external additive processing, surface coating treatment, highly

Mixers & Granulators Series

FM Mixer (Model FM)
High-performance fluid mixer
- 10 liters - 1,000 liters
- 2.2KW - 190KW
- Plastics, pharmaceuticals, foodstuffs, cosmetics, ceramics, etc.

Big Mixer (Model FM)
High-performance fluid mixer
- 1,500 liters - 8,000 liters
- 35KW - 300KW
- Simple mixing, heating, and mixing, pellet coloring, granulating, drying, degassing, defoaming

Cooler Mixer (Model FD)
Cooling mixer
- 40 liters - 4,700 liters
- 3.7KW - 55KW
- For cooling in combination with Model FM, or for simple mixing as a single unit

Continuous FM Mixer (Model FM-C)
Continuous mixer
- 20 liters - 500 liters
- 3.7KW - 37KW
- Large treatment capacity from small unit
- Directly connectableextruder

Mechano Hybrid (Model MH)
Complex equipment to create new powders
- 20 liters - 600 liters
- 5.5KW - 190KW
- Ultrahigh-speed dispersion grinding complex unit
Mixer” is a partner of Your Particle Design for high-performance processing, distributed processing etc.

**Upper-Drive Mixer (Model UM)**

Upper drive fluid mixer
- 2 liters - 500 liters
- 0.75KW - 90KW
- Faultless sealing
- Kneadable materials, hazardous materials such as radioactive wastes
- Multiple tank sharable

**Cooling Blender (Model RM)**

Cooling blender
- 40 liters - 4,000 liters
- 0.75KW - 37KW
- For cooling in combination with Model FM

**Multi-Purpose Mixer (Model MP)**

Multi-purpose compact mixing grinder
- 2 liters - 6.5 liters
- 2.2KW
- 10,000min⁻¹
- Multi-purpose Experimental Equipment

**FM Mixer RC Type (Model RC)**

Applicable for Pharmaceuticals, Cosmetics and Food
- 5 liters - 20 liters
- 1.5KW - 2.2KW
- Easy disassembly type
- Pharmaceuticals, Cosmetics, Food, etc.

**Granule Mixer “Ryu-O” (Model TM)**

Spherical granulation from dry powder
- 25 liters - 1,900 liters
- 2.2/0.75KW - 150/37KW
- Ceramics, metallic powder, ferrite, pigment, pharmaceuticals, food
We meet your requirements for ultra fine range of machines and extensive accuracy.

**Wet-type media grinding machine series**

### SC Mill (Model SC)

- Wet-type large volume circulation type grinding mill
- Large volume circulation grinding and dispersion using small media
  - 92 liters - 1,000 liters
  - 3.7KW - 55KW
- Paint, ink, toner, ceramics, pigments, etc.

![SC Mill (Model SC)](image1)

### SC Mill (Model SC-L)

- Wet-type large volume circulation type grinding mill
  - SC100L-SC650L Model
- Grinding and heating of long-wearing materials (alumina, silica, carbide, etc.) that are preferred in low speed operations
- Dispersion, etc. of paint, light calcium carbonate, high-performance pigments, various nanoparticles
- High-capacity treatment such as calcium carbonate grinding

![SC Mill (Model SC-L)](image2)

### MSC Mill (Model MSC)

- Media agitation wet-type ultrafine grinding mill
- High-performance grinding and dispersion mill achieving nano-level grinding and dispersion performance.
  - 0.32 liters
  - 3.7KW
- Grinding and dispersion at the submicron and nano level for various types of inks, specialized ink, paint, pigment, color toner, PZT, ITO, titanium oxide, various metal oxides, and glass.

![MSC Mill (Model MSC)](image3)

### SC Mill (Model SC50/16)

- Large volume circulation-type grinding mill
  - Grinding and dispersion of pigments, ink, paint, ceramics, inorganic materials, etc.

![SC Mill (Model SC50/16)](image4)

### MSC Mill (Model MSC50)

- Media-agitation, wet-type ultrafine grinding and dispersion machine
  - Grinding and dispersion of various types of inks, specialized ink, paint, pigment, color toner, PZT, ITO, titanium oxide, barium titanate, calcium carbonate, various metal oxides, various metals, glass, etc.
Wet grinding and dispersing with a broad mulated technological know-how.

**Wet Attritor (Model S)**
- Wet-type media agitation batch system (Thin Shaft)
  - 0.75 liters - 1.200 liters
  - 0.2KW - 37KW
  - Wet-type ultrafine grinding and dispersion of ceramics, ferrite, carbide, ink, paints, etc.

**Wet Attritor (Model NS)**
- Wet-type media agitation batch system (Thick Shaft)
  - 5.3 liters - 1.200 liters
  - 0.75KW - 55KW
  - Wet-type ultrafine grinding and dispersion of ceramics, ferrite, carbide, ink, paints, etc.
  - The shaft can be cooled down

**Wet Attritor (Model SA)**
- Wet-type media agitation batch system
  - Lift-up type

**Handy Mill (Model HM)**
- Color change is easy.
- Wet-type media agitation batch system
  - 5 liters - 500 liters
  - 0.25KW - 37KW
  - Various kinds of ink, paint, ceramics, pharmaceuticals, etc.
  - Ideal for producing a wide variety in small lots
  - Dedicated vessel not required
  - Premixing, dispersing and preparation can be performed in same vessel.
  - Temperature can be easily controlled.
  - Rapid and uniform dispersing process is possible.

**MY Mill (Model MY)**
- Wet-type horizontal continuous grinding mill
  - 10 liters/h - 2,000 liters/h
  - 2.2KW - 90KW
  - Small balls of 0.3mm diameter can be used and larger sizes are possible.

**Attritor (Model MA01SC)**
- Wet-type media agitation grinding mill
  - Pharmaceuticals, food, ceramics, metal powder, ferrite, pigments, pesticides, etc.
Optimal for the mechanical alloying and mechano-chemical processing

**Dry-type media grinding machine series**

**Dry Attritor (Model D)**
- Dry-type media agitation batch system
- Has a powerful impact force exceeding grinding and is suitable for treating new materials.
- Alloys and amorphous substances can also be produced mechanically.
- 0.75 liters - 1,000 liters
- 0.4KW - 150KW
- Processable with pressure reduction and displacement system in an inert gas environment
- Manufacturing of dispersible reinforced alloys, grinding of metals, ceramics and pigments, etc.

**Dynamic Mill (Model MYD)**
- Dry-type horizontal continuous ultrafine grinding mill
- 2.0 kg/h - 2,000 kg/h
- 3.5KW - 400KW
- Ceramics, ferrite, ore, metallic powder, foodstuffs, fertilizers, livestock feeds
- Sub-micron grinding is possible
- Small size with large grinding capacity
- Grain size and distribution can be controlled.
- Mechano-chemical effect can be obtained.
- Easy maintenance
- Contamination resistant-type is available.

**Attritor (Model MA01D)**
- Dry-type media agitation grinding mill
- Laboratory Machine specification for Dry Attritor

**Dynamic Mill (Model MYD5-XA)**
- Dry-type continuous ultrafine grinding mill
- Dry-type grinding processing of high-purity alumina, fused-alumina, barium titanate, ferric oxide, ferrite, silicon nitride, silicon carbide, siliceous sand, carbon, baddeleyite, perlite, metallic powder, chalk, PZT, silicon-boron, mineral stone, etc.

**Dry-type fine grinding mill, apprlicable up to sub-micron particle size**

**Fine Mill (Model SF)**
- Dry-type media agitation grinding mill with classification function
- 2kg/h - 100kg/h
- 22KW - 30KW
- Easy to control grain size, and sharp grinding.
- Various glass, alumina, nitriding silicon, ceramics, silica, and inorganic materials
Optimal equipment for the fine grinding of temperature and contamination sensitive materials

Dry-type no-media grinding machine series

Stream Mill (Model ST)

Airflow system fine grinding mill

Strong swirling flow generating collision between the raw material, autogenous grinding machine
- Rice, tea leaf, soy, wheat, barley, coffee beans, food, pharmaceuticals, vitamin, herbal medicine, glass, polyethylene, talc, wood chips, toner etc.

Fluidized-Bed Jet Mill (Model CGS)

High performance jet mill with built-in classifier
- 2 μm - 70 μm
- 50 m³/h - 5,100 m³/h
- Highly sensitive raw material resin, wax, toner, etc.
- High purity materials, rare earthes, ceramics, etc.
- Abrasive materials
- Graphite, talc, etc.

Classifier Mill (Model CSM)

Percussion fine grinding mill with built-in classifier
- 8 μm - 180 μm
- 5.5Kw - 160Kw
- Heat sensitive raw material resin, wax, toner, powdery paint, etc.
- Mineral materials and stones, limestone, siliceous, carbonaceous stones
- Lactose, starch, ammonium phosphates, etc.
Dry-type no-media grinding machine series

Centrifugal Mill (Model CUM)

Dry-type grinding mill that can perform cold grinding
- 3.7KW - 200KW
- Various types of resin and pellets (LDPE, PS, Nylon, etc.), aromatics, cocoa, pigments, wood, bamboo, carbon fiber

Grinding disc

Ultra Centrifugal Mill (Model UCM)

Dry-type compact continuous grinding machine
Ultra Centrifugal mill is a continuous grinding machine that supplies materials from an electromagnetic feeder to a cyclone that collects ground matter, developed into a compact unit.
- Plastic (PP, LDPE, HDPE, PS, PA, etc.) food, spices, medicinal agent, wood powder, rubber, inorganic materials

Lab equipment

Dry-type Classifier

Classifier (Model CFS)

State-of-the-art single rotor horizontal classifier
- 30kg/h - 14,000kg/h
- 4KW - 90KW
- Classification
  - 2μm - 60μm
- Toner, powder paints
High-speed in-line processing
Emulsifier-dissolver with a pump-like properties

Wet-type no-media grinding machine series

**Trigonal (Model SM)**

Wet-type fine grinding mill not requiring media
- 1m³/h - 100m³/h
- 7.5KW - 250KW
- Rubber, asphalt, paper, fiber, chemicals, foodstuffs, wastes

**Slasher (Model SR)**

High-speed disperser not requiring media
- 1.2m³/h - 30m³/h
- 1.5KW - 45KW
- Emulsification and dispersion of foodstuffs, cosmetics, pharmaceuticals and chemicals

Classification List of Grinder series

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Weima Shredder (Model WLK)

Centrifugal Mill (Model CUM)

Handy Mill (Model HM)

Dry Attritor (Model D)

Dynamic Mill (Model MYD)

Fine Mill (Model SF)

Trigonal (Model SM)

Slasher (Model SR)

MSC Mill (Model MSC)

SC Mill (Model SC)

Attritor (Model MA)

MY Mill (Model MY)

CS Cutter (Model CS)

ESL

FNG

 Sesso

Classification List of Grinder series

- Sensible range
  - Steam
  - Spray
  - Rain drop

- Visible range
  - Insecticide powder
  - Plant spores
  - Rice bran
  - Wheat
  - Corn

- Bacteria
  - Powdered milk
  - Pollen

- Diameter of the hair
  - Tobacco smoke

- Diameter of gas molecule
  - Virus

- The diameter of the hair
The advantages of rolling and extruding have been integrated in this kneader-pelletizer

Powerful compression and shear enable highly distributed processing

KNEADEX (Model MOS)

Open roll continuous kneader-pelletizer
- Roll diameter: 120-4 mm - 500-4 mm
- 22KW - 97KW
- Color toner, phenol resin forming material, powder paint, thermoplastic resin, magnetic powder, thermoplastic elastomer, ceramics
- Continuous roll kneading reduces labor requirements
- The easy-to-clean open roll type unit improves productivity (with rear roll open and shut device)
- Pelletizing and sheet lifting
- Thorough safety measures (Emergency stop, roll opening)

Surfer Kneader (Model MS)

Open high-shear two-shaft screw kneader-pelletizer
- Continuous kneader pelletizer that achieves high capacity and high dispersion
- Screw diameter
  - Front: 111 mm - 333 mm
  - Back: 88 mm - 267 mm
- 4.5KW - 90KW
- Toner, powder paint, heat-hardening resin compounds, thermoplastic compounds, magnetic material, rubber, woody resin, special adhesive material, etc.
- Reliable processing performance comparable to an extruder
  - Doubled value by increased capacity and cost-reduction
- Increased carrying capacity by the screw, and over-flow on the bank part has been eliminated.
- Pelletizing and sheet lifting.
- The easy-to-clean open roll type unit improves productivity.

KNEADEX (Model MOS100-500)

Open roll continuous kneader
- Heat-kneading of monochrome toner, color toner, thermoplastic resin, heat-hardening resin, plastic magnets, powdered paint, magnetic materials, natural/synthetic rubber, woody material, special adhesive agents, etc.

Compact cooling and solidification equipment

Optimal for after treatment of Kneadex and Extruder

Belt Drum Flaker (Model MBD)

Cooling, solidification and destruction of molten materials
- Diameter of cooling drum: 400-4 mm or over
- 20kg/h - 400kg/h
- Powdery paint, toner, ink, paint, resin, foodstuffs, etc.
- Molten materials in a sheet-like state are securely placed on the belt. This gives very high cooling efficiency and the unit is compact.
High performance drying system utilizing the capability of “FM Mixer”

Normal Pressure Drying System

Drying system in normal pressure
- Simple system
- By using inert gas, measures to prevent oxidation is possible
- The sterilization is possible by high-temperature drying
- Easy collection of solvent

Vacuum Drying System

Flow type mixer and condenser combined into vacuum drying equipment unit
- 20Torr-760Torr liters
- Suitable for low temperature drying
- Effective for temperature-sensitive materials
- The greater heat transfer enable to save time

Dehumidified Air Drying System

Drying system using the dehumidified air
- Blowing the dehumidified air of low dew point (30°C) enable to dry up to 50ppm
- Drying crystal of PET resin etc.
Plant equipment contributing to efficient automated production lines and labor-sa

Large Silo
- Storage of PVC, calcium, carbonate, etc

Non-Bridge Tank
- Storage of bridge-prone powder
- Forced discharge by agitator

Vessel Reverser
- Storage and transportation of pharmaceuticals, foodstuffs and cosmetics

Swing Lifter
- Washing is easy, classification goes smoothly
- Batch vessel, lifting, swinging, attachment and detachment

Pigment Feeder
- Automatic feeding of a small quantity of additive

High-Density PAC Feeder
- High-density plug conveying of PVC, calcium carbonate, ferrite, zinc, iron oxide, etc
handling of diverse powders,

Auto-Blender

- Coloring mixer with automatic weighing
- Automatic weighing of a small quantity of additive

Continuous Concentrated Low-speed Conveyor System

ZPC System
- Conveyor equipment of pellet powder by continuous low-speed conveyance

MAS Feeder

- High-performance measuring feeder
- 60 liters - 1,800 liters
- Conveying and weighing of PVC, calcium carbonate, talc, titanium, iron powder, carbon, ABS, etc.

Weighing Pressure Feeder

- High-performance measuring feeder
- Weighing pressure feeding of powders and liquids
Powder and granule plants with proven track records supported by extensive Models and accumulated technology

Our engineering can propose a lot of things

- Confident in our high quality, low cost, short delivery time Plant Construction
- We embody the concept of customer
- Based on our unique technology, we have developed peripheral technology

1. Consultation and planning
2. Research and Development
3. Design
4. Manufacturing
5. Construction
6. Test Run
7. Maintenance and After service

Technical support and advise to your business
Performing test to acquire the basic data of the material, analyze the optimal treatment process
From Process design, Utility design, Piping design, basic to detail design etc. Offering the optimal plant and equipment

Total Engineering for plant equipment and facilities

ISO 9001 Certified
Quality control and Process control
Installation, piping, wiring, instrumental work
Quality control, Process control and Safety control

Case Examples of System Proposal

- **Electronic Components / Batteries**
  - Electronic materials grinding equipment
  - Battery production facilities
- **Pigment / toner**
  - Black toner manufacturing equipment
  - Color resist grinding system
- **Paper**
  - Coating solution for paper manufacturing facilities
- **Resin**
  - Engineering Plastics manufacturing facilities
  - EVA Resin blending equipment
  - Wood plastic compound production
  - PVC compound production
- **Catalyst**
  - Raw material grinding equipment
  - Working Machine
  - Carbide grinding and drying facilities
- **Pharmaceuticals / food**
  - Herbal medicine manufacturing facilities
  - Plaster manufacturing facilities
  - Bath powder manufacturing facilities
  - Portable body warmer manufacturing facilities
  - Tea leaf grinding facilities
  - Chocolate manufacturing facilities
- **Cosmetics**
  - Powder surface modification / Dry / Solvent recollection equipment
  - Materials mixing facility
Examples of System Proposal

■ Color Toner Manufacturing System

Generally, color toner is made using the same manufacturing process as black toner. However, in the case of color toner a higher degree of kneading dispersion and finer granule size are required.

Regarding kneading dispersion, we employ our own Kneadex and this is very effective.

In the area of grinding and classification, we have introduced a fluid bed jet mill and a classifier, and this has led to us being able to offer even more reliable color toner manufacturing plants.

For Surface Treatment, using FM Mixer enables to attach the additives to the toner particles.

■ Continuous Slurry Making, Course Grinding and Fine Grinding System

Conventionally, many grinding mills are needed for calcium carbonate grinding.

This flow uses high-efficiency grinding mills in each grinding process, so the number of grinding mills can be reduced, resulting in an energy-saving process.

The high-performance SC mill was developed by our company to be used for the fine grinding. A drastic reduction in electricity cost in comparison to conventional systems has been achieved.

Also, it is easy to adapt to changes in grain size of the grinding product.

(Applications)
Calcium carbonate, Barium titanate, Ferrite, Various metal, Oxide, various ceramics, various highly concentrated slurry etc.

■ Metal Powder Grinding and Drying System

Using our company’s Attritor and FM Mixer, we are proposing effective grinding and drying material system.

For the grinding of high-density metal powder, the attritor which forces to stir balls enables to grind effectively.

Strong circulation and shearing power generated by FM Mixer will promote the evaporation rate and heat transfer and enable to dry more effectively.

(Applications)
Tungsten carbide, Samarium cobalt, neodymium, Titanium carbide, various metal powder etc.

■ Dry-type Fine Grinding System

Using Dry-type media agitation grinding mill with classification function “Fine Mill”, proposing the effective dry type fine grinding.

Integrating classifier into the mill, discharging the finely ground low material without delay, we have achieved a significant improvement in grinding efficiency.

(Applications)
Various glass, Alumina, Nitrogen neodymium, Graphite, Silica, Battery materials, Cosmetics, Pharmaceuticals, Food, Titanium carbide, various metal powder etc.
Powder Treatment Technical Center

Equipped with the latest advanced technology, we seek out and create the next generation of products

Utilizing our state-of-the-art equipment, we respond to the needs of the new age

We focus our efforts on developing and manufacturing products for the next generation, and under the motto of “Responding to powder related needs with advanced technology” we respond to the changing structures of society and consumers.

Our R&D system in the powder and granule processing sector consists of the Development Group and the Powder Treatment Technical Center at the Tochigi Engineering Factory, and these work in close cooperation to ensure an effective and integrated response to the needs of the new age.

We collect essential data from newly developed processes and equipment to expedite the develop-ment of new applications.

A finely tuned response to all your needs

The Powder Treatment Technical Center was established in May 1987 as a vital key element in the development of powder and granule equipment and plants.

We are able to respond to bring-in tests, sample manufacturing and production on commission.

For such requests, please contact the Chemical Machinery Department of the headquarters and any operations office, or the Powder Treatment Technical Center of Nippon Coke & Engineering Co., Ltd.
## Overview of the equipment installed in the Powder Treatment Technical Center

Items in parentheses ( ) are being prepared for commissioned processing.

<table>
<thead>
<tr>
<th><strong>Mixing, dispersing and cooling equipment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>FM Mixer ........................................FM10C/I, FM20C/I, FD20DK, FM150J/I, FD150G/K, (FM300F, FD300D/K)</td>
</tr>
<tr>
<td>Continuous FM Mixer ..........................FM-C20B</td>
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<tr>
<td>Multi-purpose Mixer ..........................MP5</td>
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<tr>
<td>Mechano-hybrid ..........................MH2, MH20, MH150</td>
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<table>
<thead>
<tr>
<th><strong>Grinding, dispersing and reaction equipment</strong></th>
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</thead>
<tbody>
<tr>
<td>Attritor (Wet batch type) ..................MA01, MA1S, MA10S, MA15S, NS1, NS15, (MA60S)</td>
</tr>
<tr>
<td>MY Mill (wet continuous - horizontal-type) ....MY10</td>
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<tr>
<td>Trigonal (wet medialess continuous type) ...STR110</td>
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<tr>
<td>Slasher (wet medialess continuous type) ....SR140</td>
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<tr>
<td>Dry attritor (Dry batch type) ...........MA1D, (MA30D)</td>
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<tr>
<td>Dynamic Mill (Dry type continuous) ........MY5D, MY25D, (MY50, MY100)</td>
</tr>
<tr>
<td>Dynamic Mill (Dry, continuous, contamination-resistant) ....MY5DXA, MY25DXA</td>
</tr>
<tr>
<td>SC Mill (Circulation type) ..................SC50, SC100, SC220, SC220L, (SC320)</td>
</tr>
<tr>
<td>MSC Mill (Circulation type) ................MSC50, MSC100, MSC220</td>
</tr>
<tr>
<td>Fine Mill ..........................SF15, SF30, (SF100)</td>
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<td>Handy Mill ..........................HM05</td>
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<table>
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<tr>
<th><strong>Pelletizing and drying equipment</strong></th>
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<tbody>
<tr>
<td>Vacuum Drying System ..................</td>
</tr>
<tr>
<td>FM Mixer Type ........................FM20BX</td>
</tr>
<tr>
<td>FM Dryer Type ........................FMD20, FMD150</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Transportation, weighing and distribution equipment</strong></th>
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<tbody>
<tr>
<td>MAS feeder system ..................................Transportation and weighing equipment</td>
</tr>
<tr>
<td>PAC feeder system ................................High density pressure feed device</td>
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<tr>
<td>MPC System ................................Concentrated low-speed conveyor system</td>
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<table>
<thead>
<tr>
<th><strong>Grinding, pelleting, and separation equipment</strong></th>
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<tbody>
<tr>
<td>Centrifugal mill ................................CUM300</td>
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<tr>
<td>Ultra centrifugal Mill ........................UCM150</td>
</tr>
<tr>
<td>Jet mill .......................................CG916, CGS50</td>
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<tr>
<td>Classifier mill ................................CSM260</td>
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<tr>
<td>Classifier ......................................CF8</td>
</tr>
<tr>
<td>Weima ........................................WLK10/45, WLK18/2X75 SJ</td>
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<tr>
<td>(CS cutter (grinding, cutting device) ........CS400/600)</td>
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<tr>
<th><strong>Kneading</strong></th>
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<tbody>
<tr>
<td>KNEADEX (Open roll continuous extruder) ......MOS100, MOS160, MOS240, (MOS210)</td>
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<tr>
<td>Surfer Kneader ................................MS100, MS160</td>
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<tr>
<th><strong>Cooling and solidification</strong></th>
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<tbody>
<tr>
<td>Belt Drum Flaker ...............MBD55-70</td>
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* A number of tests can be performed by the combination of the above equipment. For bring-in tests, please inform us of the purpose of the test so that we can prepare the optimum equipment and conditions for your test. Regarding the material to be handled, please inform us of safety precautions required in terms of hazardous and toxic materials.

<table>
<thead>
<tr>
<th><strong>Analysis and measurement devices and instruments</strong></th>
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</thead>
<tbody>
<tr>
<td>1. Grain size distribution measurement device ..........MT3000, UPA</td>
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<tr>
<td>Horiba, Co., Ltd. ...............LA920</td>
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<td>Otsuka Electronics Co., Ltd. ....ELS</td>
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<tr>
<td>2. Inline Measuring Instrument ....AXR II M</td>
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<tr>
<td>3. Coulter counter ..................</td>
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<td>4. Electron microscope ...........</td>
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<td>5. Micro-microscope ..............</td>
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<tr>
<td>6. Color differentiation gauge ....ZE2000</td>
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<td>7. Powder tester ..................PT-D3000VPH</td>
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<tr>
<td>8. Surface area measuring instrument ....Flow soap 2300</td>
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<td>9. Powder tester ..................SS-100</td>
</tr>
<tr>
<td>10. Viscometer ......................BH type, BM type</td>
</tr>
<tr>
<td>11. Infrared moisture meter ..........EE-280MOC type</td>
</tr>
<tr>
<td>12. Electronic balance ...............</td>
</tr>
<tr>
<td>13. Electromagnetic screen vibration warmer ...........</td>
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</tbody>
</table>

* We also offer a broad spectrum of other equipment and instruments for analysis, measurement, recording, etc. in many fields.
Mixing - Drying - Granulation - Grinding
We provide total support to all aspects
We solve all your powder problems

Nippon Coke & Engineering is an integrated powder and granule equipment and plant manufacturer with over 40 years of experience in this sector. Utilizing our extensive experience and know-how accumulated over many years, we offer a power and granule processing service on a commission basis. We offer a very flexible system able to respond to small amounts of powder from 100 to 200kg to mass production quantities of 10 to 20 tons in the areas of mixing - drying - granulation - grinding to meet the requirement of customers.

Requests by our clients are handled as the following.

1. **A sample shipment is desired in order to gauge market response.** Assistance is provided all the way through until an actual full-scale production line is established.

2. **Small-lot production for research development is provided until the final product is obtained.**

3. **When a large capital investment risk is involved, consignment production for risk aversion can be arranged.**

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**Advantages for Customers**

- **Sample shipment to test market trends**
  - We provide integrated support services up to the point when the new product production line is operational.

- **Sample shipment for R&D**
  - We also undertake production of small lots for research purposes

- **Production on commission to reduce clients’ risks**
  - We adopt a flexible stance to both short and long-term production

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**Nippon Coke & Engineering**

- **Raw materials**
- **The required product**
of powder processing

Applicable models

### Mixing / Drying

**FM Mixer**

This is a typical machine able to provide high quality processing of plastics, pigments, ferrite, toner etc.

### Grinding

**SC Mill**

Wet-type cyclic ultrafine grinding mill that grinds ceramics, pigment, inks, etc., into submicron sizes.

**Fine Mill**

The dry-type ultrafine grinding mill which grinds various glass, ceramics, etc., into few micron unit, and classifies.

**Dynamic Mill**

This is a dry-type continuous fine grinding mill used to grind ceramics, pigments, ferrite, carbon, fertilizer, and animal feed down to a unit size of several microns.

**Centrifugal Mill**

This mill grinds various resin pellets (LDPE, PS, Nylon, etc.) at ambient temperature down to several hundred microns in size.

### Granulation

**TM Mixer**

This machine performs effective granulation of ceramics, hard ferrite, etc.

### CS Cutter

This is a high performance cutter able to grind plastic, film, sheets, pipes etc. to a powder size of several millimeters.

### Weima Shredder Grinding Mill

This mill can grind a diverse range of items including large plastic objects, roll film, wood objects, etc. to a powder of 10 to 50 mm.

---

**Examples of Processing**

**Mixing / Drying**
- Coupling and drying of inorganic materials, coating processing of pigments and additives for resins
- Fatty acid processing of calcium carbonate, etc.

**Granulation**
- Ceramics, hard ferrite, soft ferrite, zeolite

**Grinding**
- Ferrite, zirconia, barium titanate
- Inorganic and organic pigments
- Metal powders such as iron, nickel and copper, etc.
- Carbon, thermosetting resin
Transportation Guide

- Tohoku Highway: From Tochigi IC, 10 min. by car
- Tohoku Shinkansen: Get off at Oyama Station, 25 min. by taxi
- Tobu Railway: Nikko-Kinugawa Line, Get off at Tochigi Station, 15 min. by taxi
- Utsunomiya Line, Get off at Yasu-Hirakawa Station, 7 min. on foot

To Sendai
Tohoku Highway
Tochigi IC

To Nikko
Tobu-Nikko Line

Powder Treatment Technical Center
Live Garden
Nippon Coke & Engineering Co., Ltd.
Tochigi Engineering Factory
Powder Treatment Technical Center

Chemical Machinery Department

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