

Professional
Powder Equipment
Manufacturer



Powder
Equipment



Milling
Technology



Powder
Materials

TENCAN

Product Brochure



SAND MILL

Production type sand mill

TC-FT

Production type nano sand mill for high-volume wet grinding to particle sizes below 200nm. Ideal for lithium battery materials, paints, inks, and pharmaceuticals with high efficiency.

<https://www.planetaryballmills.com/products/grinding-series/sand-mill/production-type-sand-mill.html>



Product Overview

Production type nano sand mill for high-volume wet grinding to particle sizes below 200nm. Ideal for lithium battery materials, paints, inks, and pharmaceuticals with high efficiency.



TC-FT5 Nano Sand Mill

Case Analysis

Nano Grinding

Output Particle Size
Below 200 nm

Replaceable
Grinding Chamber &
Feed System

Suitable for
Mass Production



Direct Manufacturer
[Click to Get a Grinding Solution](#)





TC-FT150 Nano Sand Mill

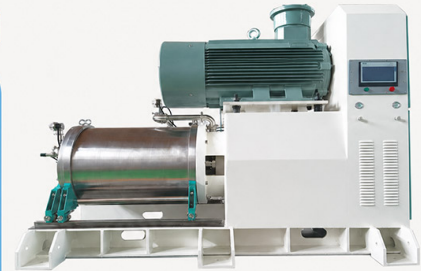
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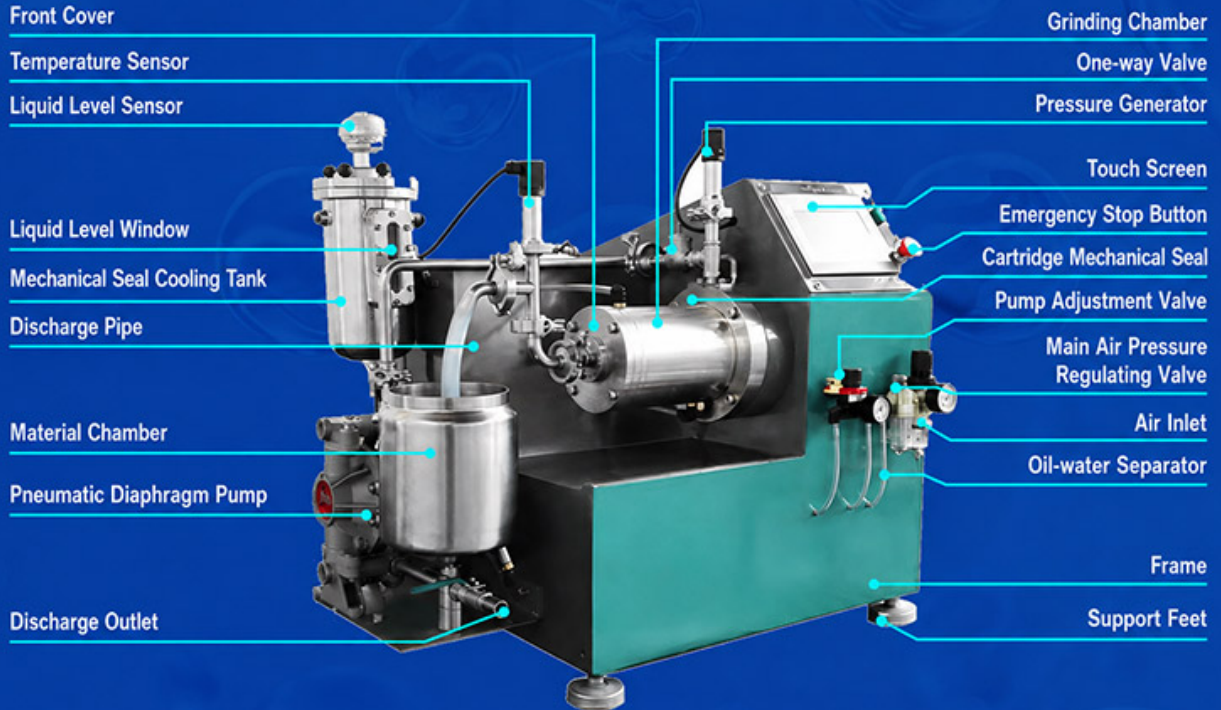
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Product Introduction

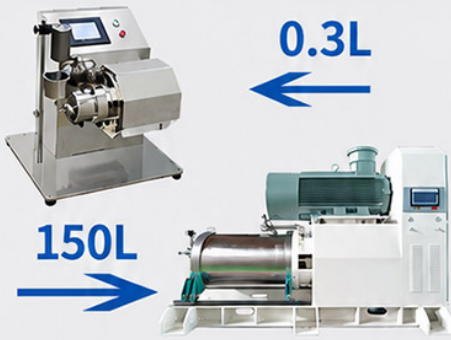
The mass-production nano sand mill is a high-efficiency grinding equipment specially designed for industrial mass production. It is mainly used to disperse solid particles to the nanometer level (usually up to 200nm or less). It is widely used in high-precision fields such as lithium battery materials, coatings, inks, and medicine. Its core design focuses on high productivity, continuous operation stability and low energy consumption. The structure uses a large-capacity grinding chamber, high-strength wear-resistant materials (such as tungsten carbide, zirconia) and an intelligent control system to support long-term continuous operation. Through dynamic separation technology and optimized grinding media distribution, the equipment can achieve uniform nano-scale particle crushing and dispersion to meet industrial-level production needs.

Grinding Series Nano Sand Mill Overview



Grinding Series

Features of Production-Type Nano Sand Mills



Pin-Type High-Efficiency Grinding Structure

Suitable for nano-scale grinding in high-flow continuous and circulation production. After commissioning, production efficiency can be increased by 30–50%.

Wide Range of Applications

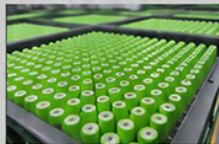
Compatible with experimental requirements for various solvent formulations, new materials, and process performance.



Semiconductor Materials



Electronic Ceramics



Lithium Batteries



Nanomaterials

Flexible Replacement of Grinding Chamber Materials

Select core structural components of different materials according to the materials being processed (no contamination, low wear).

Optional materials: Tungsten Carbide / Polyurethane / Zirconia / Silicon Carbide / Alumina



Silicon Nitride



Polyurethane



Zirconia

Large Screen Filtration Area

Smooth discharge, high grinding efficiency

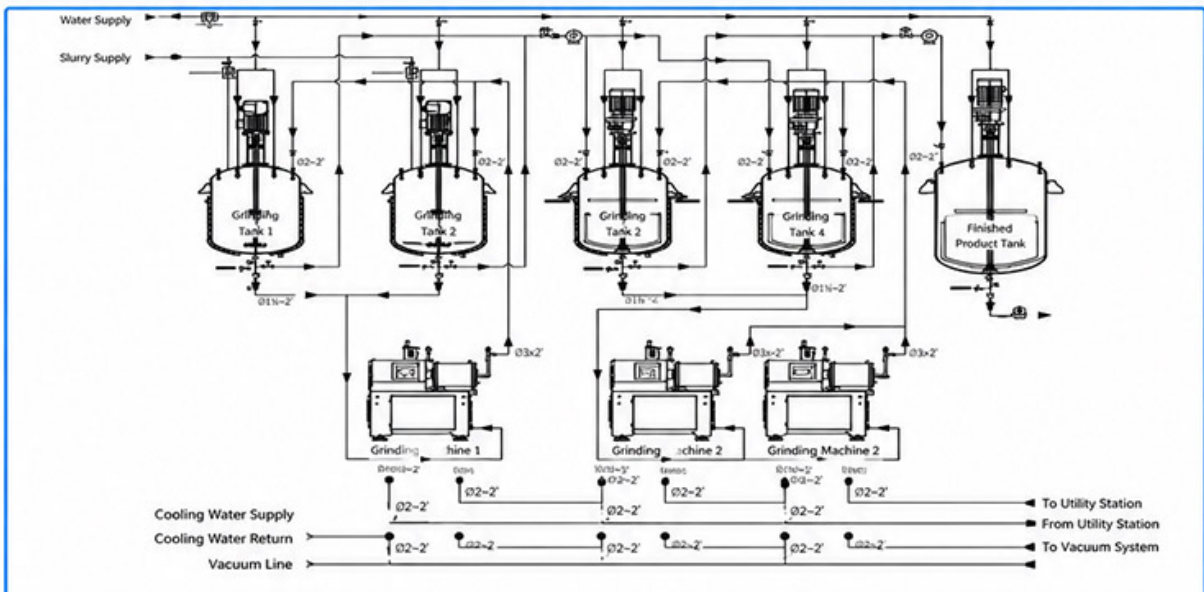
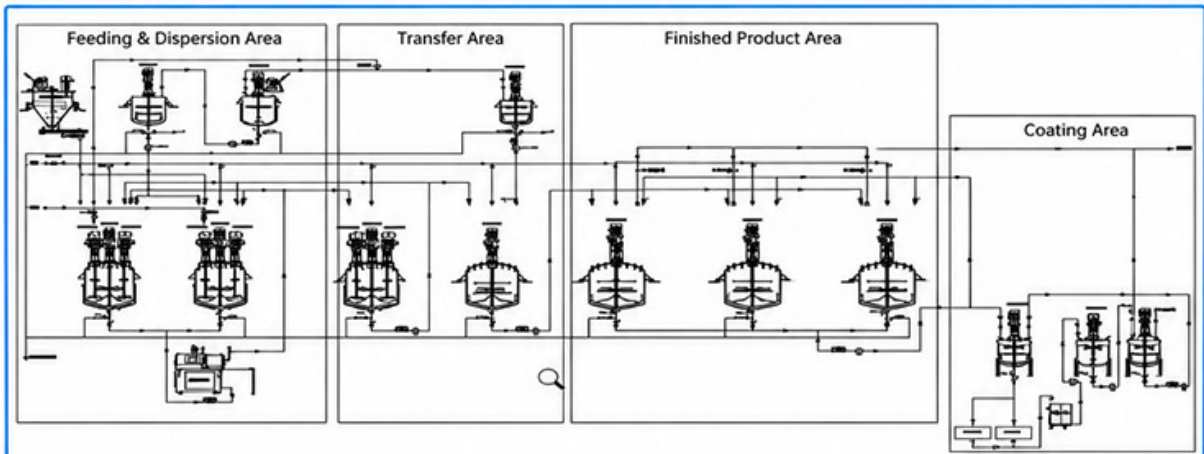


Wide Slurry Viscosity Range

Suitable for viscosities below 30,000 cps

Grinding Series

Intelligent EPC System Wet Grinding Production Line



Mass-produced nano sand mills mainly serve the following industries:

1. **New energy field** : Nano-grinding of lithium battery positive and negative materials (such as lithium iron phosphate, ternary materials) to improve battery energy density and cycle life.
2. **Chemicals and Coatings** : Dispersion of high-precision color paste, ceramic ink, nanopigment, and preparation of special coatings (such as magnetic coatings, heat-insulating coatings).
3. **electronic materials** : Ultra-fine processing of MLCC (multilayer ceramic capacitor) slurry and electronic ceramic powder.
4. **Pharmaceuticals and Cosmetics** : Homogeneous dispersion of pharmaceutical nano-preparations and functional cosmetic raw materials.
5. **Special materials** : Dispersion of carbon nanotubes and graphene slurries and synthesis of functional nanomaterials.

Technical parameters

model	Applicable	convey power	Sealed form	separated form	Grinding barrel net volume (L)	Motor power (KW)	Number of revolutions (r/min)	Linear speed (m/s)	Processing batch size (L)	Media size (mm)	Processing capacity (kg)	Weight (kg)	Overall dimensions (mm)
TC-FT5	Wet process pilot test and small mass production	pump	mechanical seal	static screen separation	5	15	1470	12.9	20-150	0.2-2.0	100mm-2μm	500	1510*910*1600
TC-FT10	Wet process pilot test and small mass production	pump	mechanical seal	static screen separation	10	22	1100	12.7	30-300	0.2-2.0	100mm-2μm	700	1510*910*1600
TC-FT30	mass production	pump	mechanical seal	static screen separation	30	45	828	13.7	100-1000	0.2-2.0	100mm-2μm	1800	1770*1050*1940
TC-FT60	mass production	pump	mechanical seal	static screen separation	60	75	596	13.4	200-2000	0.2-2.0	100mm-2μm	3500	2250*1450*1830
TC-FT150	mass production	pump	mechanical seal	static screen separation	150	160	450	13.4	800-6000	0.2-2.0	100mm-2μm	6600	4300*2000*2420

- **Choose according to production capacity needs :**

- Small-scale mass production (500-2000L/h): Choose medium-sized equipment with a cylinder volume of 15-60L and a main motor power of 22-45kW.
- Large-scale continuous production (>5000L/h): Priority is given to large-scale equipment with a cylinder volume of more than 100L, equipped with high-power motors (≥90kW) and automatic feeding systems.

- **Adapt according to material characteristics :**

- **High viscosity materials** : Choose a horizontal sand mill or a large-flow pumping system to ensure material fluidity.

- **Pollution prevention needs** : Use ceramic or polyurethane grinding chamber and separator to avoid metal ion contamination.
- **Additional functionality considerations** :
 - **Temperature control sensitive** : Optional dual-circulation cooling system or heating jacket to accurately control material temperature.
 - **Automation integration** : Priority is given to models that support intelligent control systems (such as PLC + touch screen) to facilitate linkage with other equipment in the production line.
- **Energy consumption and maintenance costs** :
 - Compare the unit energy consumption of the equipment (kW·h/ton) and the replacement frequency of wearing parts, and choose a model with long maintenance cycle and low energy consumption.

Working Principle

1. The grinding media is accelerated by the rotation of the rotor to the inner wall of the grinding barrel. The grinding media moving toward the barrel wall will collide with the grinding media or grinding materials close to the inner wall of the grinding barrel. The resulting collision can be used to disperse and crush the materials.
2. Under the action of centrifugal force, the grinding material is close to the inner wall of the grinding barrel and receives the pressure and shearing force of the adjacent medium to disperse and break.
3. Due to the different distances between the grinding media and the axis, the obtained speeds are different, resulting in speed differences. Collisions will occur during the movement to break the materials.
4. In the early stage of grinding, the particle size is large, and impact crushing plays the main role. As the grinding time increases, the ground material gradually becomes finer, and at this time, friction, shearing and crushing mainly occur in the grinding barrel.

Product Features

- **High productivity and stability :**

- The processing capacity can reach more than 2000L/h, supporting continuous or cyclic production mode to meet large-scale needs.
- Use high-strength wear-resistant materials (such as carbide, ceramics) and double-end mechanical seals to extend equipment life and reduce downtime maintenance.

- **Intelligent control :**

- Integrated PLC control system and touch screen operation interface support parameter preset, real-time monitoring and data recording to ensure process repeatability.

- **High performance design :**

- Dynamic separation technology (such as gap separator) enables rapid separation of grinding media and materials to avoid blockage and leakage.
- The forced cooling system (water cooling or air cooling) controls the grinding temperature to prevent heat-sensitive degradation of materials.

- **Wide adaptability :**

- It can handle materials with a viscosity range of 20mPa·s to 20000mPa·s, and supports a variety of grinding media (0.05-2.0mm zirconia beads, silicon carbide beads).
- The modular design allows the grinding chamber material (such as polyurethane, ceramic) to be replaced to avoid cross-contamination of materials sensitive to metal contamination.

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.