TSUKISHIMA HOLDINGS

TSK TSUKISHIMA KIKAI

PRIMIX

TSUKISHIMA HOLDINGS GROUP

TSUKISHIMA HOLDINGS ASEAN R&D CENTER

Contributing to the world with environmental technologies

TSK ENGINEERING (THAILAND) CO., LTD.

Established in 1993 by Tsukishima Holdings Co., Ltd. (formerly Tsukishima Kikai Co., Ltd.). TSK ENGINEERING (THAILAND) CO., LTD. Provides engineering, procurement and construction (EPC), maintenance, and after-sales services for chemical and foodstuffs plants in Thailand and Southeast Asia.

The ASEAN R&D Center supports the development and optimization of production processes in Thailand for the food, agriculture, biotechnology, next-generation automotive, biofuel, and biochemical industries. Through laboratory and pilot-scale testing, we provide end-to-end support from research and development to demonstration-scale facilities.

Group Corporate Policy

1. To make contribution to the society, the company will dedicate to the industry development and environmental protection by making advantage of its leading edge technology.

1. Primarily targeting satisfaction of market demand, the company will provide best products and services possible to customers.

1. While adhering to originality and vitality-based sustainable development, the company is proud to be a profitable enterprise that deserves the loyalty of its staff.

Facility Overview

We provide testing facilities for filtration and washing, grinding, and emulsification/high-speed mixing, supported by analysis and evaluation capabilities.

We help identify technical challenges and develop optimal process solutions through testing and verification.

Our expertise covers (1) fine particle filtration and cleaning, (2) grinding and size reduction, and (3) emulsification and high-speed mixing. From laboratory testing to pilot-scale validation, we support smooth equipment implementation and reliable operation.

Basic Study & Laboratory Testing

Collection of fundamental process data using vacuum leaf filtration tests and laboratory-scale high-speed mixers.

Pilot Testing

Process verification using BoCross Filter, CYCLONE MILL, and AGI-HOMO MIXER under pilot-scale conditions.

Evaluation & Optimization

Proposal of optimal process solutions based on analytical and testing results.

Facility Overview

Equipment

(Filtration) BoCross Filter
Vacuum filtration test unit for BoCross Filter

(Milling) CYCLONE MILL

(Homogenization) AGI-HOMO MIXER
LABOLUTION
HOMOGINIXING MIXER MARK II 2.5

(Viscosity, density, moisture content)
Various types of analytical equipment/instruments

LABOLUTION

BoCross Filter

CYCLONE MILL

AGI-HOMO MIXER

Laboratory

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BoCross Filter

BoCross filter is a microfiltration (MF) and ultrafiltration (UF) device that applies the principle of dynamic cross flow filtration. An agitator installed on the filtration surface continuously renews the filter cake layer (cross-flow filtration), preventing clogging of the filtration surface and enabling high-concentration filtration. Applicable to high concentration, filtration, washing, solvent exchange or classification of nano-sized particle slurry.

BoCross MicroScreen (Membrane Filtration)

MF/UF filtration, separation, and washing of solids with particle sizes of 0.01 μm and above.

BoCross Dynamic (Metal Mesh)

Filtration, separation, washing, and wet classification of particles ≥ 5 μm.

BoCross Filter

Features

- Available in sanitary specifications suitable for food and pharmaceutical applications.
- Maintains excellent filtration performance even with high-concentration and high-viscosity slurries.
- Enables high-concentration thickening of slurries.
- Allows particle classification at high solids concentrations.
- Suitable for dilution and washing of soluble impurities.
- Allows solvent replacement from aqueous to to organic solvent systems.
- Produces clear filtrate with no solid content.
- Maximum filtration pressure: 0.6 MPaG
- Maximum operating temperature: 100°C (standard), up to 200°C (special applications).
- Supports both continuous and batch processing.
- The sealed design allows safe handling of volatile solvents.
- Compatible with a wide range of solvents by selecting appropriate filter media, including highly corrosive applications.

BoCross Filter

Example of Red Wine Concentration

Before and After Concentration (Red Wine)

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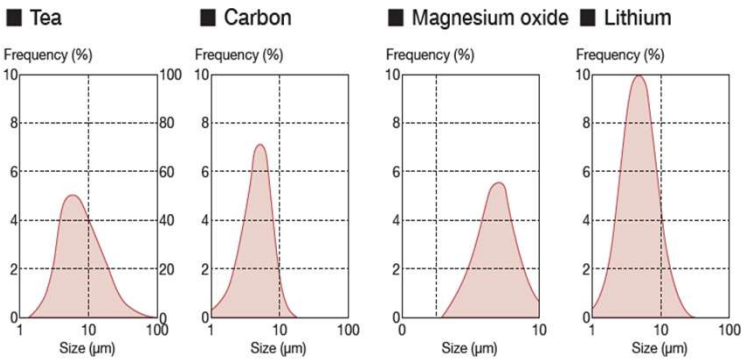
CYCLONE MILL

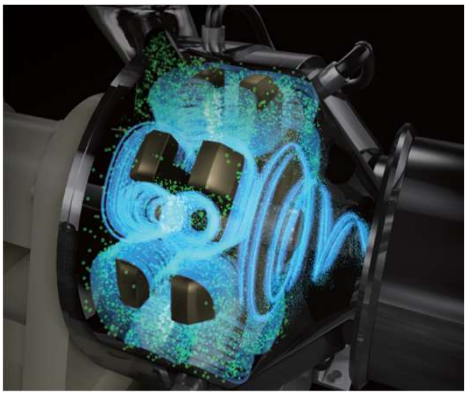
The airflow generated by high-speed counter-rotating impellers promotes efficient particle collision and dispersion, achieving uniform ultrafine grinding down to the submicron range. By utilizing a non-contact particle-to-particle collision mechanism within the airflow, the system minimizes heat generation and contamination, making it ideal for processing heat-sensitive materials.

Features

- Stable product quality and high production efficiency achieved through optimized parameter control
- Non-contact grinding mechanism minimizes the risk of contamination
- Capable of producing extremely uniform ultrafine particles
- Simple machine structure allows easy cleaning and reduces product retention
- Highly efficient design that minimizes both capital investment and operating costs

CYCLONE MILL





Air flow image

Application Examples

- **Grains**: rice, buckwheat, soybeans, whole wheat, mixed grains (dried)
- **Teas**: tencha, green tea, hojicha, black tea (dried)
- **Foods**: garlic, ginseng, Agaricus mushrooms (dried)
- **Food waste**: calcined scallop shell calcium, shiitake mushroom residues, scallop shells (dried)
- **Seasonings**: granulated sugar, brown sugar
- **Animal-derived materials**: earthworms, animal oil cake
- **Cosmetics**: Cosmetic raw materials
- **Industrial materials**: platinum, titanium, cement, rock salt, activated carbon, feldspar, titanium dioxide
- **Electronic materials**: battery cathode and anode materials

PRIMIX high speed mixers

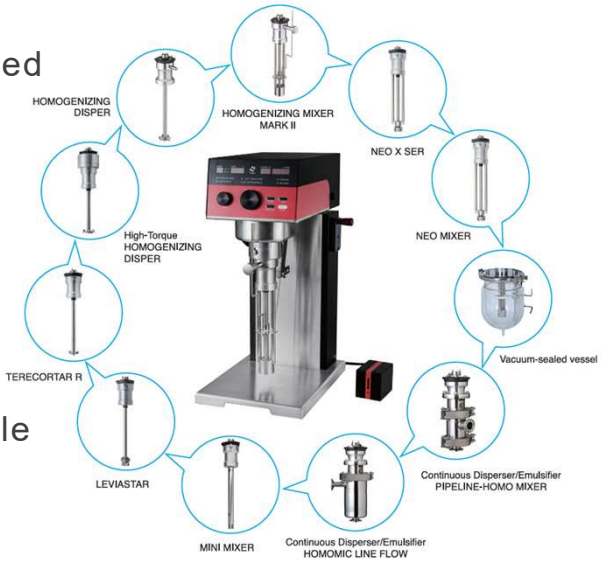
(PRIMIX Corporation: Member of the TSUKISHIMA HOLDINGS Group and a leading manufacturer of high-speed mixers.)

Ultra-High Speed Multi-Use Mixing System
LABOLUTION

LABOLUTION is a laboratory-scale high-speed mixing, dispersing, and emulsifying system equipped with a wide range of features for research, development, testing applications.

Features

- Maximum speed of 22,000 rpm
- Interchangeable mixing heads for batch, continuous, and vacuum processing
- Feedback-controlled motor maintains stable rotational speed under varying loads
- Standard temperature monitoring system
- SD card data logging for rotational speed, mixing load, and temperature measurements



LABOLUTION

Vacuum Emulsifier Machine
AGI-HOMO MIXER

Compact vacuum emulsifying and dispersing system designed for pharmaceutical and cosmetic applications

- Paddle mixer with wall scrapers ensures efficient and uniform mixing, even for high-viscosity products such as creams and sunscreens
- Hard-glass vessel with jacketed heating and cooling capability; vacuum processing available
- Proven scale-up track record up to 10,000 L, suitable for a wide variety of formulations and process conditions

AGI-HOMO MIXER

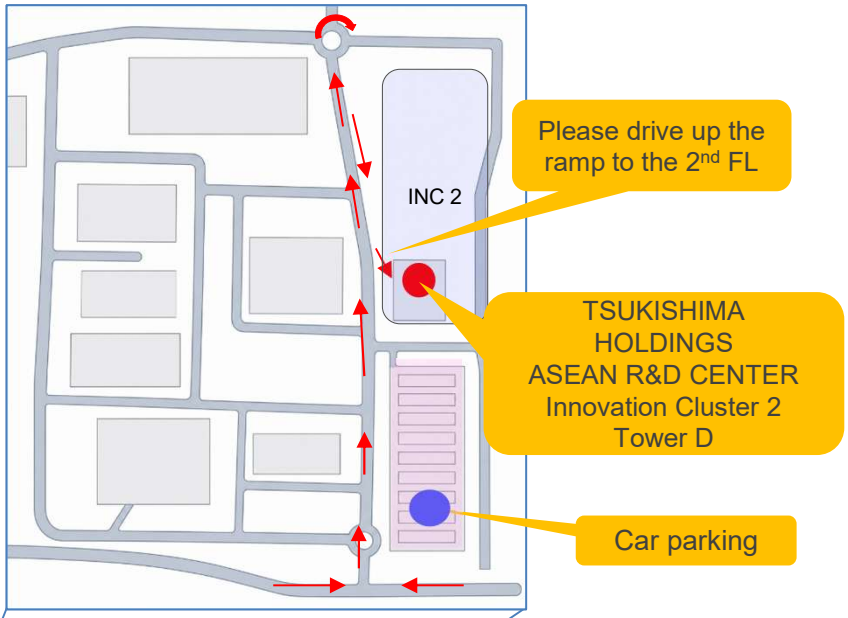
Applications

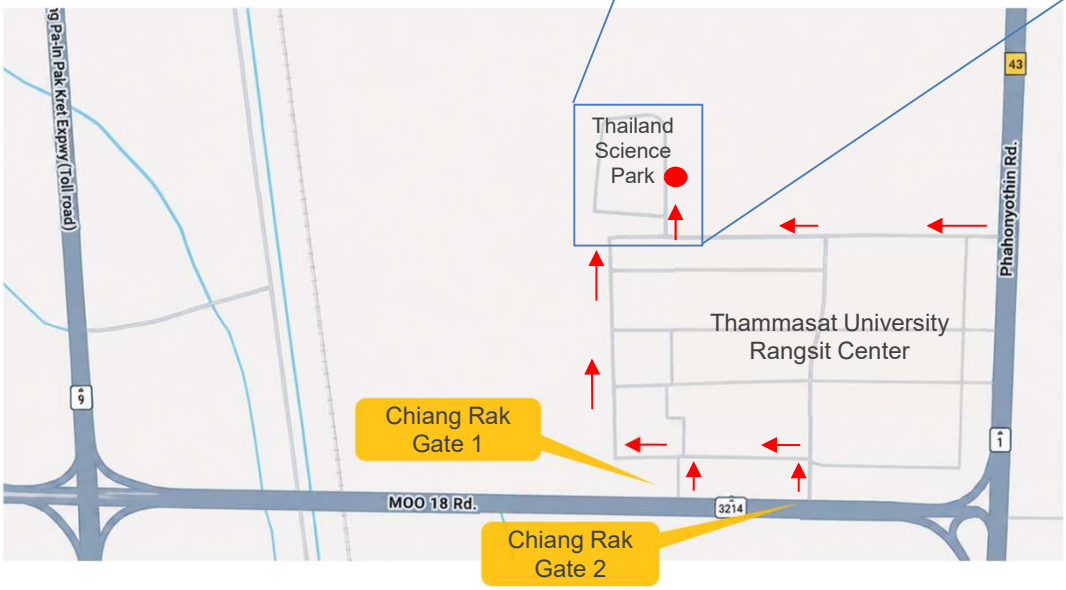
- **Cosmetics**: Skincare/hair care products, hair colorants, and makeup cosmetics
- **Chemicals**: Inks, toners, resins, ceramic/metallic materials
- **Pharmaceuticals**: Creams, ointments, ophthalmic ointments, gel ointments, jelly formulations, and lipid emulsions
- **Foods**: Ice cream, dressings, sauces, seasonings, and functional foods
- **Electronics**: Ceramic materials, metallic materials, and IT-related materials.
- **Energy&Environment**: Lithium-ion batteries, fuel cells, all-solid-state batteries

Access / Contacts

Kindly follow the red arrows and proceed straight ahead. At the second roundabout, please make a U-turn. Then, take the slope in front of Innovation Cluster 2 (INC2). Once you arrive at the 2nd-floor drop-off area, please contact us. Kindly park your vehicle in the parking area adjacent to INC2.

When visiting our R&D Center, please make an appointment with us in advance by phone or through the "Contact Us" page on our website.





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