

Plastics Auxiliary Equipment & System Solutions



PET Systems Application



Introduction of PET

PET is a short form of polyethylene terephthalate and it belongs to thermoplastic polyester and is a polymer of phthalic acid (PTA) and ethylene glycol (EG), which has very stable chemical property.

PET container has great usability and especially good in physical mechanics, chemical resistance and reliable hygiene. PET bottle has good barrier properties against non-polar gas like oxygen and carbon dioxide and it is obviously better than usual material, such as PS, PE or PP does. Comparing with those materials, PET also has great barrier properties against water vapor and fragrant-keeping. Therefore, it is a well-known material in plastic industry and PET bottle is favored by most people as for its transparency, hardy, and easy for storage and transportation. As compare with PE, PP or PVC bottle, PET bottle is lighter, more harden and transparent with permeability-resistance.

PET has great cold-resistance. Even under -20°C cold ambient temperature, it can also has very good toughness.

PET is chemically stable and are oil, acid and alkali resisting. Therefore, it can be used for packaging.

The hygiene reliability has been accepted by most people and confirmed by PDA to directly used in food and medicine packaging.

The cost of PET is cheaper and almost equal to general plastic material like polyethylene and polypropylene. As PET has great intensity and can be designed into thin container to reduce the unit consumption. The wasted PET bottle can be grinded for recycle use and is mainly used in many profitable plastic products, such as PET fiber, pesticide bottle, packaging belt and etc.



PET systems

PET material is well-used in textile fiber, food and chemical packaging. Tape stripes, industry thread, heat-resistant dishware. Air bubble and chapping will happen due to its high moisture content.

With this drying demand and the development on plastic industry, SHINI provide a series of secured and reliable drying and dehumidifying technologies for PET molding and other PET product manufacturer.

SHINI's PET system has great technology to meet various application needs.

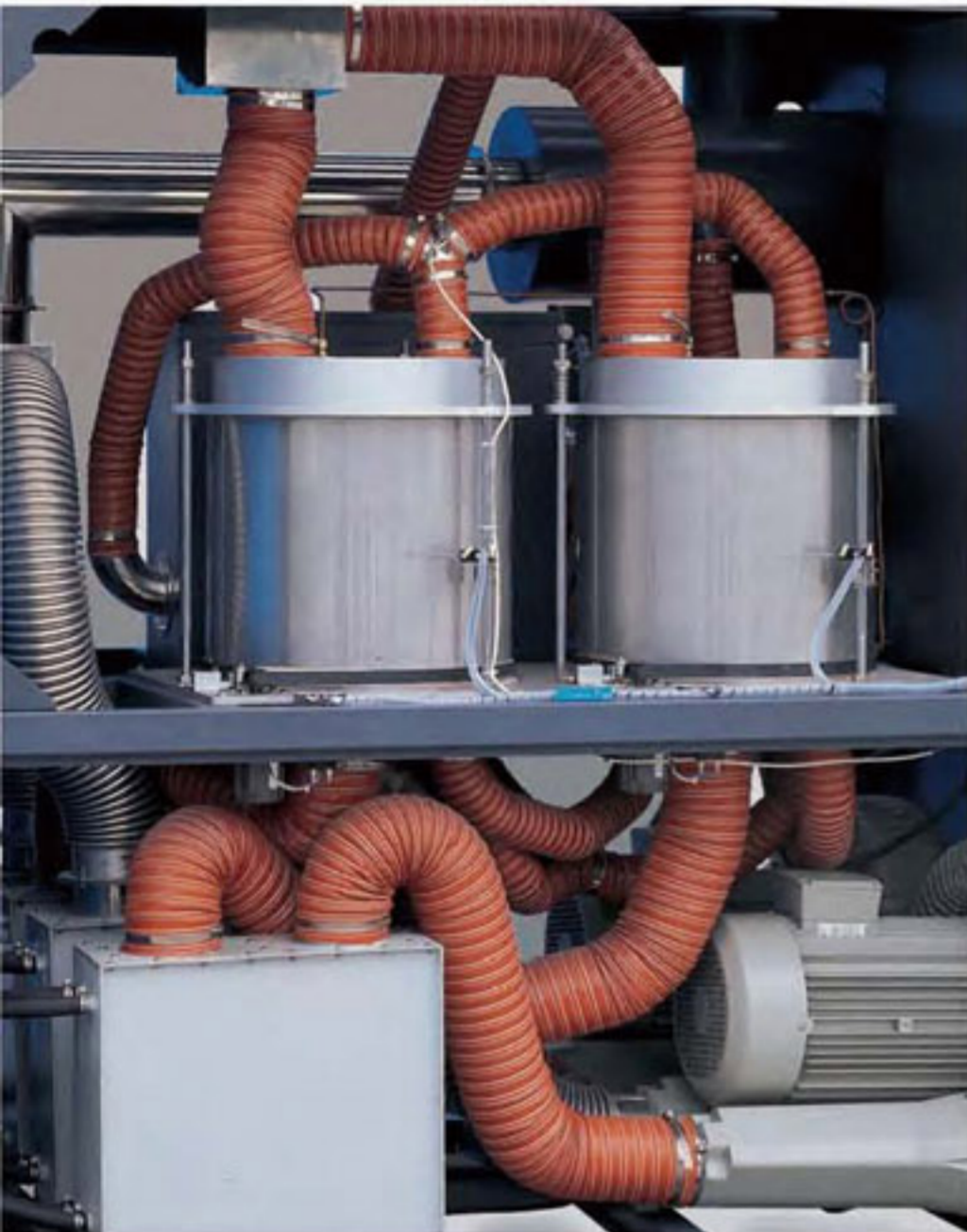


Drying and Dehumidifying

During the PET processing, drying and dehumidifying is the most vital procedure. The drying and dehumidifying effect will greatly decides the quality of the product. SHINI made dehumidifier, dryer and crystallizer ensure the product quality and production efficiency.

Features

- Initial moisture content could be above 2000 PPM When material is conveyed from material barrel or material tank to the hopper dryer. SHINI made dryer has fully complied with PET drying principle and offers drying air in above 180°C and its unique down-blowing designed for even heat distribution and diffuser to ensures adequate drying.
- SHINI made dehumidifier adopts honeycomb rotor principle, which deliver consistent air flow ensuring continuously low dew point to -40°C or -50°C. Combination with hopper dryer to ensure impeccable product quality and efficiency. Maximum capacity of the hopper can be as large as 8000L while maximum air volume of the dehumidifier can be as much as 4000 m³/hr.
- PID temp. Control system is adopted as standard equipment on the dehumidifier to ensure the accuracy in temperature controlling. Besides we also offer PLC control station and LCD touch screen panel interface. The more humanized operation makes it user-friendly. In the PET drying and dehumidifying system, dew-point is crucial to the quality of the product. Optional dew-point monitor can let you monitoring the actual reading while in production.



Honeycomb Rotors



Standard control panel with dew-point monitor installed



Touch screen (optional)



Drying and Crystallizing



SHINI insulated drying hoppers adopt hot-air down blowing design. Hot air is conducted to the bottom of the hopper through a diffuser down-blowing pipe, then it flow upward to be evenly spread within material hopper. During this process, Dry air makes full contact with the materials to ensure that they can be evenly and sufficiently dried.

Features

- Particularly made hot air down blowing pipe could evenly spread air flow to keep a consistent temperature in the material hopper to increase efficiency.
- Overheat protector ensure that the machine is working reliably.
- Digital P.I.D control and LED display.
- Main power switch is installed for emergency stop.





SCR Crystallizers

Before PET producing, uncrystallized PET materials has to be crystallized before drying and dehumidifying process. In normal case, customer will purchase crystallized PET material from material supplier, but now it is showing that more and more customers producing uncrystallized PET material and handle it on their own in order to reduce cost. Besides using the uncrystallized material, customer can also consider using grinded inferior product and make it use with virgin material to greatly save the cost. This processing way now is popular in bottle, flake and extruding industry.

Features

- This system including heating device, insulation hopper, heavy duty agitator components and accurate thermocouple sensor. When uncrystallized material or grinded flake drops into hopper, the agitator starts to work to prevent the materials forming together and decrease the inferior ratio. During the mixing, it adopts process heating and temperature control to crystallize the material. The crystallized material can be conveyed to storage hopper or directly to the hopper dryer for drying.
- Constant speed mixer make no materials forming during the crystallizing process;
- Raw material can be dried under high temperature and standard hopper drier will be ready for use;
- Dual overheat protection device to decrease human error or mechanical accident.
- P.I.D temperature controller is equip can accurately control the process temperature.
- Increase the proportion of recycled material in the virgin PET material.
- Equipped with main power switch to ensure safety.
- May also equipped with dehumidifier to dehumidify directly.
- Hopper receiver and magnetic base can equip as optional.
- Auger feeder to ratio output the crystallized raw materials can be also purchase as optional.

Optional accessories

Pneumatic three-way valves:

In the feeding system, the pneumatic three-way valve is fixed at the air-exhausting outlet that may convert loop to form a closed loop circulating system to avoid moisture absorption, also to avoid the pollution of raw material by exposing to ambient air.

Filters:

In the dehumidifying and drying system, the air filter may be equipped to prevent the ambient air dust from entering into the honeycomb of the dehumidifier directly, influencing the dehumidifying and drying effects, life of honeycomb and avoiding the system affecting its normal performance.

Condensers:

In large dehumidifying and drying system, a condenser can be equipped at dehumidifier's process air outlet to ensure the dehumidifying and drying effect and cooling down the dry air for low temperature material application.



Feeding and Conveying

SHINI feeding and conveying series products meet all application requirements in PET field. No matter large outdoor silos, indoor small medium hopper or insulated hopper placed on moldings machine, we offer as per your requirement.

A series of vacuum blower could apply to fulfill customer need.

Feeding capacity up to more than 2000 kg/hr.

Based on the principle "Central raw material feeding to ensure full automatic operation", we provide various kinds of parts to achieve the central feeding of PET raw material and flakes. For example, the Euro central hopper receiver, receiver with photoelectric sensor, central filter, central operation station, central distribution station, pipe fittings and other hardware etc., all of those form a raw material feeding system.

Features

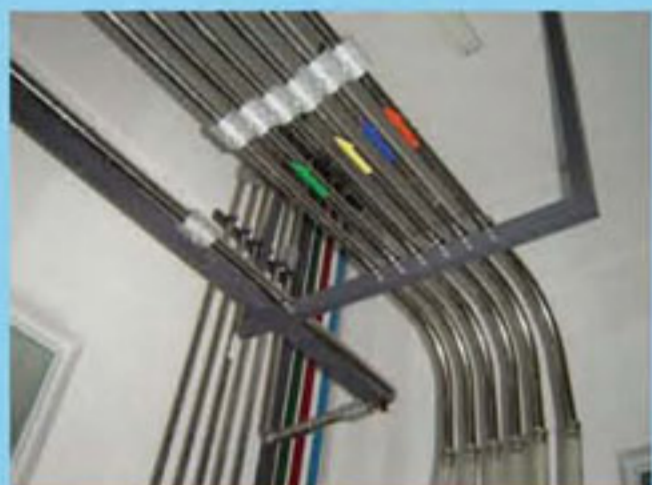
- Compact in design with great suction power and easy for installation.
- No contamination and no waste on material.
- Easy material changing and cleaning.
- Expandable and modifiable for system conveying.



Vacuum Generators



Central Filters



Pipe Lines



Storage Silos



SGB Gravimetric Blenders

Dosing and Mixing

In PET system, proportional mixing of masterbatch, color additive, regrinded or virgin materials is often needed. SHINI made dosing and mixing equipments. For example, volumetric blender and gravimetric blender can meet different application needs required from customer and they are best equipments for realizing no waste on materials.



Features

- Can process up to 4 materials component;
- Adopt the advanced gravimetric dosing and auto calibration technology ensures the accuracy;
- Internal dismountable design makes it easier for cleaning;
- Memory storage function, store up to 56 recipes;
- Optional motor driven auger can be selected when require with small amount throughput.



SCM Volumetric Dosers

Features

- Adopts microprocessor control, intelligent and auto calibrations function;
- 50 recipes can be stored at the control system;
- Adopts brushless DC motor to dose out the material and ensures accuracy.
- All material contact surface are made from stainless steel;
- Specially made SCM for PET system has adopted the cooling water circulation to avoid the master batch melting at surrounding of screw housing .
- Double-color SCM can realize the application of 2 kinds of master batch or additives. This model also has main hopper and mixing chamber to make the mixing evenly.

Cooling and Heating

The Heating and cooling series are developed on basis of many years' accumulated cooling designs & manufacturing experiences are able to control the temperature, flow and pressure accurately and achieve the maximum cooling effects. Now there are two types: air-cooling type and water-cooling type. They are applicable to the cooling field in industry with a maximum of 1,243,600 kcal/h and are perfect selections in the cooling system of modern industry. They can reduce temperature quickly, control temperature steadily to satisfy customers' requirements without influencing the surrounding environment.



SICC-W water-cooled central chilling units

Features

- SICC-W series water-cooled central chilling units utilize Germany-made twin screw compressor, featuring long bearing life, can make sure continuous operation.
- Two energy saving modes are designed to meet customers requirements.
- Extendability of the controller makes upgrade of both hardware and software more easier.
- "Watchdog" technology makes microprocessor able to automatically diagnose and clear the troubles.
- 512K memory for programs and 128K off-power data storage.
- Remote control function turns on/off the machine according to preset timer.

Features

- SICC-A series air-cooled central chilling units utilize hermetic scroll compressor as main body, thus having excellent technical characteristics, and are suitable to various cooling media, such as R22 and R407C.
- The Euro-made motor of the fans offer high efficiency and water-proof.
- The condenser adopts magnesium and aluminum alloy fans with strong rigidity, air pressure and flow resistance.
- It is also controlled by advanced microcomputer controller which has great function and better performance than the single chip unit in the industrial chilling.



SICC-A air-cooled central chilling units



SICC-A



SICC-W

Granulating and Recycling

SHINI SG-14/24/16/20/23/30/36/50 series granulators are applicable to granulating of all kinds of recycled plastic products such as pre-forms and bottles. They can help you regrind and recycle products efficiently and save energy.



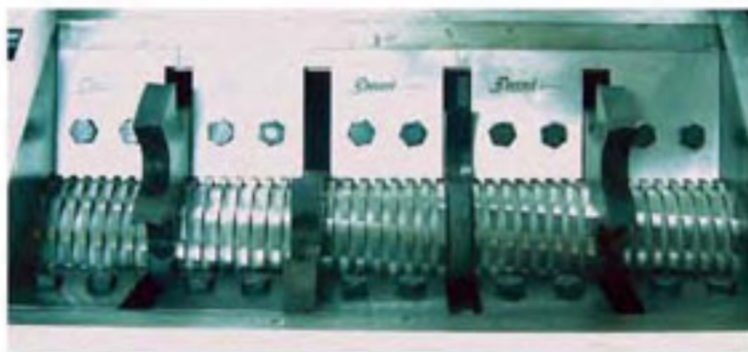
Sprues and Regrind

Features

- Sound-proof design ensures low noise level;
- Centralized control design makes operation easier;
- Openable cutting chamber makes cleaning easier;
- Feed throat can be closed for safe operation;
- Multi-safety device ensures no damage to machine and operator;
- Adopts high pressure blower to convey material and make sure there is no remain in storage box and cutting chamber.
- Adopts cyclone dust-separator for removal of dust from regrind.
- Optional fixed blade and fly wheel can be selected to increase its granulating capacity when granulating the heavy and thick materials.



Regrind



Teeth cutters



Staggered blades



Paddle blades



SG-24



SG-20



SGF-29



SG-30

The products are equipped with double security devices and make its operation security completely complied with the European Security Standard. All places where are likely to generate noise are insulated by sound-proof materials. Noise level of all types are at about under 90 dB(A).



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