SICR

Shini Integrated Crystallizer

Date: Aug., 2024

Version: Ver. A (English)

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1. General Description

📖 Please make a careful study of this operation manual in order to prevent personal injuries and damage of the machine.

The series of SICR Integrated Crystallizer is used for constant crystallization of PET regrinds or pellets, and processed materials can then be dried and dehumidified directly, which can largely reduce the purchase costs.

This system mainly consists of heating elements, insulated hopper, mixing assembly, loading device and conveying device. After un-crystallized PET materials or granules fed into the hopper, the system starts crystallization with mixing together to prevent materials blocking and reduce product defect rate.

The crystallized plastics will be sent to the material storage hopper from the hopper bottom or directly to the drying hopper for drying and reuse.

Picture 1-1: SICR-160U

All service work should be carried out by a person with technical training or corresponding professional experience. The manual contains instructions for both handling and servicing. Chapter 6, which contains service instructions intended for service engineers. Other chapters contain instructions for the daily operator.

Any modifications of the machine must be approved by SHINI in order to avoid personal injury and damage to machine. We shall not be liable for any damage caused by unauthorized change of the machine.

Our company provides excellent after-sales service. Should you have any problem during using the machine, please contact the company or the local vendor.

Shini Hotline Service:

Headquarter and Taipei factory:

Tel: + 886 (0)2 2680 9119

Shini Plastics Technologies (Dongguan), Inc.:

Tel: +86 (0)769 8331 3588

Shini Plastics Technologies (Pinghu), Inc.:

Tel: +86 (0)573 8522 5288

Shinden Precision Machinery (Chongqing), Inc.:

+86 (0)23 6431 0898

1.1 Safety Regulations

⚠ Note！

Please abide by the safety guide when you operate the machine so as to prevent damage of the machine and personal injuries.

1.1.1 Safety Signs and Labels

⚡ All electrical components should be installed by qualified electricians. Turn off main switch and control switch during repair and maintenance.

⚡ Warning! High voltage!

This mark is attached on the cover of the control box.

⚠ Warning! Be careful!

Be more careful when this mark appears.

⚠ Attention!

No need for regular inspection because all the electrical parts in the control unit are fixed tightly!

1.1.2 Transportation and Storage of the Machine

Transportation

1) SICR series are packed in crates or plywood cases with wooden pallet at the bottom, suitable for quick positioning by fork lift.

2) After unpacked, castors equipped on the machine can be used for ease of movement.

3) Do not rotate the machine and avoid collision with other objects during transportation to prevent improper functioning.

4) The structure of the machine is well-balanced, although it should also be handled with care when lifting the machine for fear of falling down.

5) The machine and its attached parts can be kept at a temperature from -25℃ to +55℃ for long distance transportation and for a short distance, it can be transported with temperature under +70℃.

Storage

1) SICR series should be stored indoors with temperature kept from 5℃ to 40℃ and humidity below 80%.
2) Disconnect all power supply and turn off main switch and control switch.
3) Keep the whole machine, especially the electrical components away from water to avoid potential troubles caused by the water.
4) Plastic film should be used to protect the machine from dust and rains.

Working environment

Indoors in a dry environment with max. temperature +45℃ and humidity no more than 80%.

Do not use the machine

1) If it is with a damaged cord.
2) On a wet floor or when it is exposed to rain to avoid electrical shock.
3) If it has been dropped or damaged until it is checked or fixed by a qualified serviceman.
4) This equipment works normally in the environment with altitude within 3000m.
5) At least a clearance of 1m surrounding the equipment is required during operation. Keep this equipment away from flammable sources at least two meters.
6) Avoid vibration, magnetic disturbance at the operation area.

Rejected parts disposal

When the equipment has run out its life time and can't be used any more, unplug the power supply and dispose of it properly according to local code.

Fire hazard

⚠ In case of fire, CO_2 dry powder fire extinguisher should be applied.

1.2 Exemption Clause

The following statements clarify the responsibilities and regulations born by any buyer or user who purchases products and accessories from Shini (including

employees and agents).

Shini is exempted from liability for any costs, fees, claims and losses caused by reasons below:

1) Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.

2) Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and machine faults caused by irresistible natural disasters including fire, flood, storm and earthquake.

3) Any operational actions that are not authorized by Shini upon machine, including adding or replacing accessories, dismantling, delivering or repairing.

4) Employing consumables or oil media that are not appointed by Shini.

2. Structure Characteristics and Working Principle

2.1 Working Principle

Turn on the main power switch and feeding hopper switch, the system will start to feed materials. When the material level is higher than the level switch, the main control box will stop sending signals to the vacuum generator and feeding hopper, and the hopper will stop feeding. Turn on the system switch, select the required crystallization mode, and the machine starts to crystallize.

After selecting the initial crystallization mode, the system starts the crystallization cycle. By default, the system carries out circulating crystallization by segmental temperature control. When the crystallization temperature reaches the "discharge valve opening temp.", and the cycle time also reaches the set value, the feeding hopper starts to suck the materials. When the material level in the crystallization hopper is lower than the level switch, the feeding hopper also starts to fill, and both run continuously; When the crystallization temp. reaches the " discharge valve closing temp. ", the hopper stops feeding, and the system starts continuous crystallization mode. The system starts continuous crystallization mode; When the crystallization temperature reaches the set value of "discharge valve opening temp." again, the conveying hopper and feeding hopper will also work again.

Select the continuous crystallization mode, and the system will crystallize directly and continuously without circulation according to set temp.
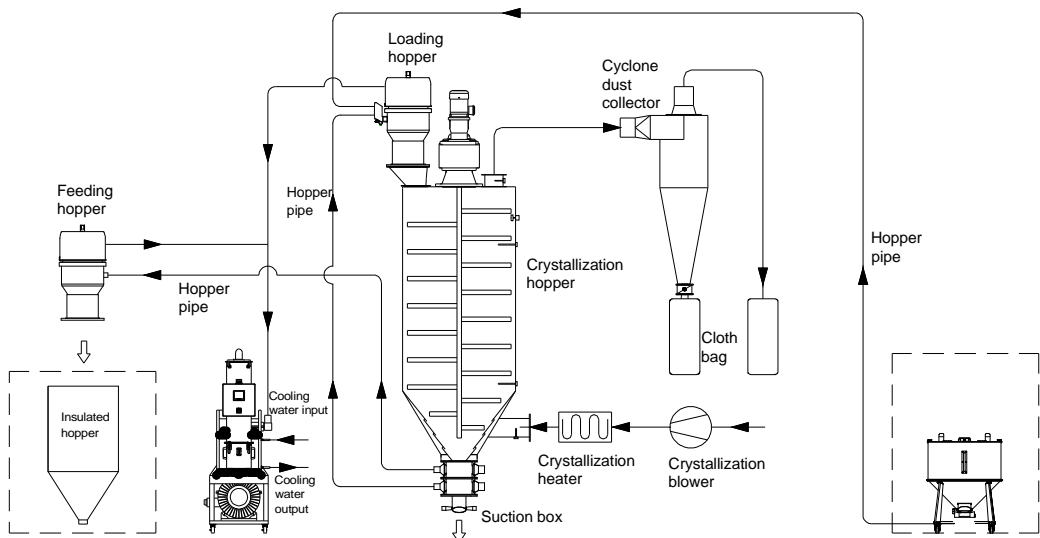
Picture 2-1: Working Principle

3. Installation and Debugging

This series of models only could be applied in working environment with good ventilation.

Before installation, please read this chapter. Install the machine by the following steps!

⚠️ **Power supply should be fixed by professional technicians only**!

3.1 Installation of SICR
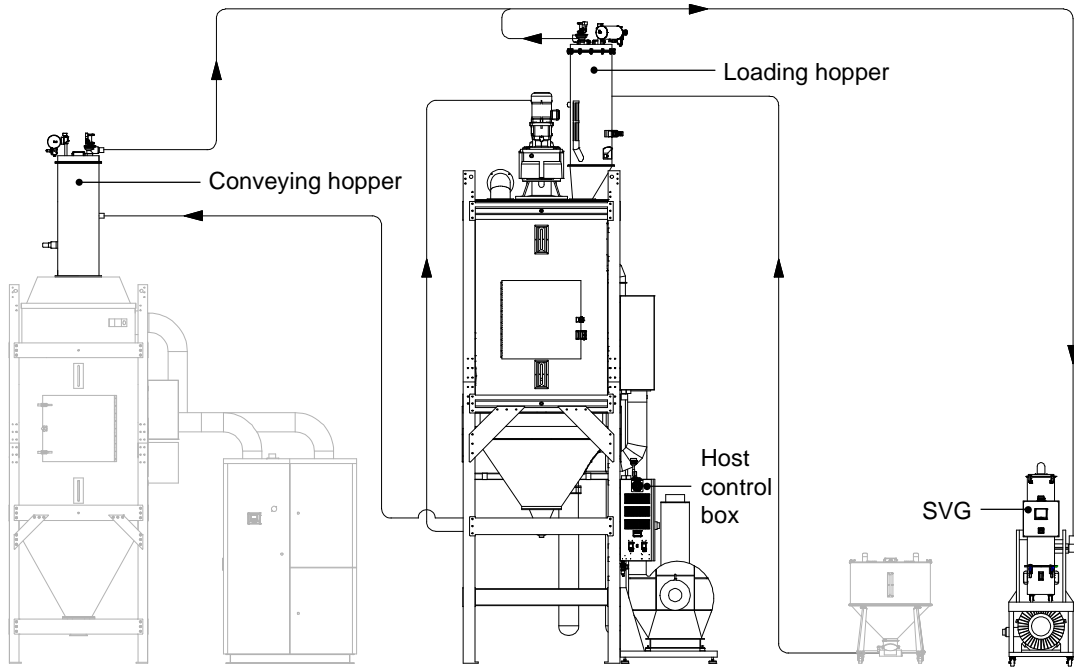
Picture 3-1: Installation of SICR

Notices of Wiring:

1) The loading hopper connector is connected with the feeding signal interface on the host control box, as shown in Picture 3-1-1.

2) The feeding hopper connector is connected with the suction signal interface on the host control box, as shown in Picture 3-1-1.

Picture 3-1-1: Feeding and Suction Signal Interface

3) The suction box connector is connected with the suction box signal on the main control box, the upper layer of the suction box is connected to the right signal, the lower layer of suction box is connected to left signal, as shown in Picture 3-1-2.

4) The SVG connector is connected with the SVG signal on the main control box, as shown in Picture 3-1-2.

5) The proportional valve connector is connected with the metal connector on the main control box, as shown in Picture 3-1-2
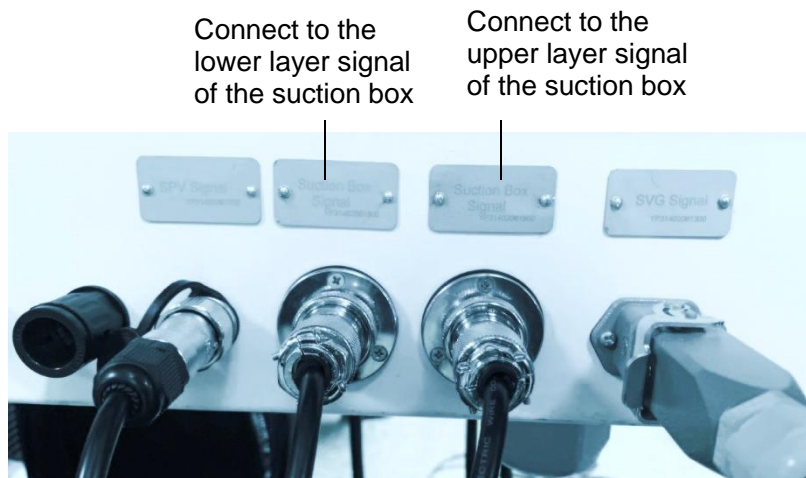
Picture 3-1-2: Proportional Valve/ Suction Box/SVG Signal Interface

6) The blower wiring should be indicated as per the reserved wiring from the control box, as shown in Fig. 3-1-3, and correspond one-to-one with the labels inside the blower wiring box;

7) The mixing motor wiring on the feeding hopper corresponds one-to-one with the wiring of 201, 202, and 203 on the terminal block, as shown in Fig. 3-1-4.

Picture 3-1-3: Blower wiring label
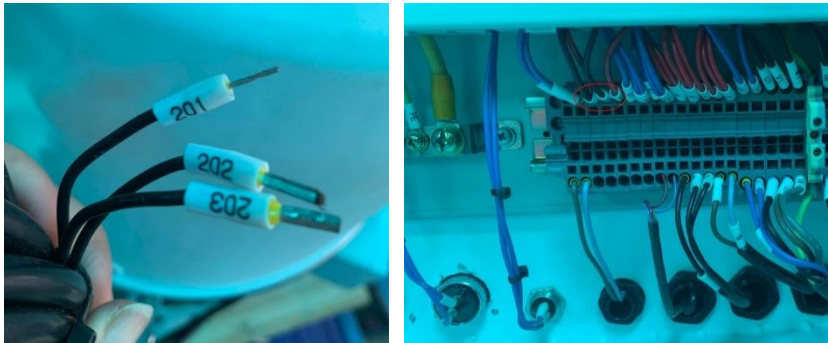
Picture 3-1-4: Mixing motor wiring of feeding hopper

Notice for suction box assembly:

Please remove the fixed shaft flange at the hopper bottom first before installing the suction box here, as shown in Picture 3-1-3 and Picture 3-1-4.
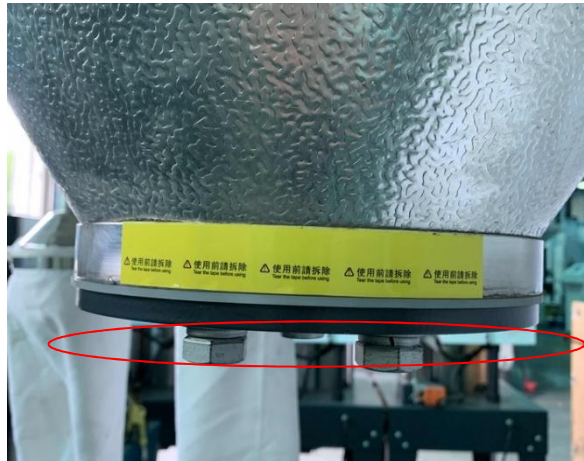
Picture 3-1-3: Suction Box Assembly Position

Picture 3-1-4: After Suction Box Assembly

Picture 3-2: Machine Installation Distance

⚠ Note!

Keep the machine 1M from the combustible distance.

3.2 Cooling Water Connection

This series of model is required to connect the cooling water before startup, and the connecting port is located at the back of the vacuum generator.

Water outlet

Water inlet
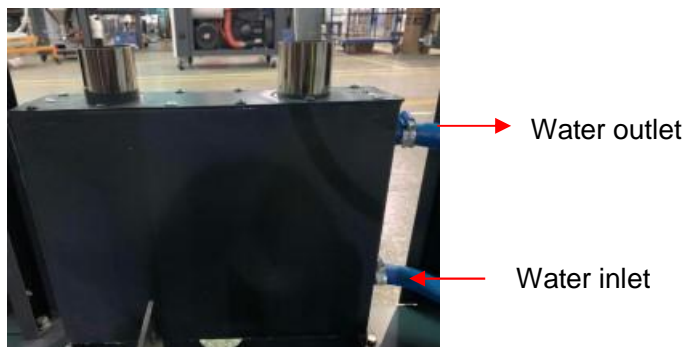
Picture 3-3: Cooling Water Pipe Connection

3.2.1 Cooling Water Connection

Before machine startup, it's necessary to connect the cooling water. To ensure

the efficient machine operation, please follow below recommendations:

1) For easy maintenance and safety, it must install a ball valve both at the cooling water inlet and outlet of the machine;

2) The water pipe diameter should not be less than the diameter of cooling water inlet and outlet;

3) In terms of water quality, it's suggested to pour water into the pipe after sedimentation or filtration, so as to avoid reducing machine performance due to sediment accumulated on the cooler pipe wall.

Table 3-1: Cooling Water Specification

Temp. difference between the inlet and outlet	Cooling water pressure	Cooling water temp.	
5℃	3~5kgf/cm²	10~30℃	
Recommended cooling water flow and interface pipe diameter			
Model	Cooling Water Flow（L/min）	Interface Size	
		Inlet	Outlet
SVG-5HP-C	25	Φ16	Φ16
SVG-10HP-C	40	Φ16	Φ16
SVG-20HP-D-C	60`	Φ16	Φ16

3.3 Power Connection

1) Make sure voltage and frequency of the power source comply with those indicated on the manufacturer nameplate, which is attached to the machine.

2) Power cable and earth connections should conform to your local regulations.

3) Use independent electrical wires and power switch. Diameter of the wire should not smaller than those used in the control box.

4) The electrical wire connection terminals should be tightened securely.

5) The machine requires a 3-phase 4-wire power source, connect the power lead (L1, L2, L3) to the live wires, and the earth (PE) to the ground.

6) Power supply requirements:
Main power voltage: ±5%
Main power frequency: ±2%

7) *Specific power supply specifications please refer to the schematic model.*

3.4 Compressed Air Connection

Table 3-2: Compressed Air Specifications

Items	Range	Specifications
Quality grade	335	(According to GB/T13277-1991, the concentration of solid particles is not greater than 5mg/m3, the dew-point temperature is -20℃, and the oil content doesn't exceed 25mg / m3)
Air supply pressure (bar)	5~8	--
Air flow (L/hr)	5~30	--
Pipe size	Φ8	air pipe, SICR-900U and below models
	Φ10	air pipe, SICR-900U and above models

4. Application and Operation

4.1 Description of Control Panel

4.1.1 Initial Page of the System

After the system is powered on, the touch penal displays initial page. As below figure:

Click the < English > or < Chinese > button at the screen bottom to select English or Chinese, and then enter the crystallization monitoring screen.

SHINI

SCR Crystallizer
PLC version number.1.0
HMI version number:1.0

中文   English

Picture 4-1: System Initialization Page

4.1.2 Crystallization Monitoring

The crystallization monitoring screen is shown in the figure below:
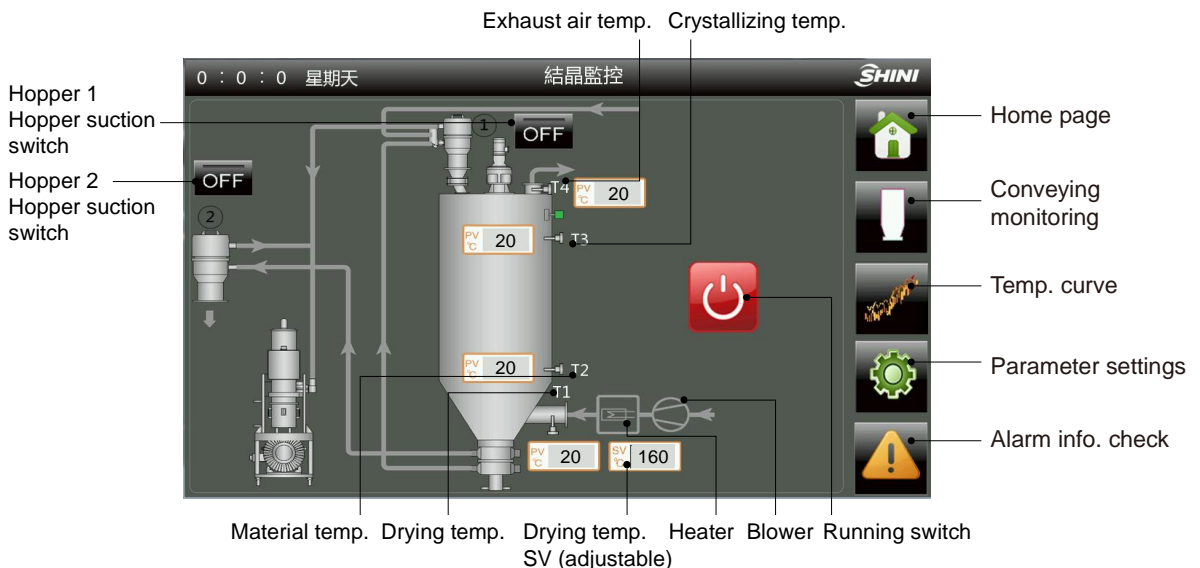
Picture 4-2: Crystallization Monitoring Screen
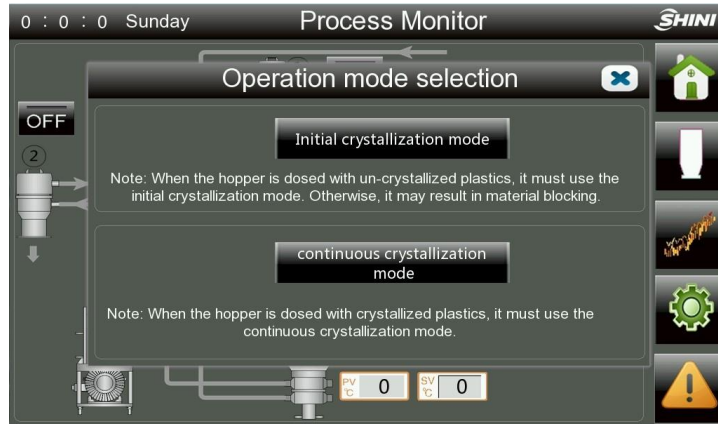
Picture 4-3: Mode Selection Screen

Table 4-1: Crystallization Monitoring Screen

Name	Function	Description
Running switch	Button	Crystallization start switch
Home page	Button	Return to the startup interface
Conveying monitoring	Button	Enter conveying monitoring interface
Temp. curve	Button	Enter temp. curve monitoring interface
Parameter settings	Button	Enter system parameter interface
Alarm info. check	Button	Enter system alarm display interface
Exhaust air temp.	Only display	Display the exhaust air temp. variation
Crystallizing temp.	Only display	Display the crystallization temp. variation
Material temp.	Only display	Display the material temp. variation
Drying temp.	Only display	Display the drying temp. variation
Drying temp. SV (adjustable)	Adjustable +display	The user sets the temperature according to actual demands
Heater	Only display	Display the heater's working condition.
Blower	Only display	Display the blower's working condition.
Hopper 1 hopper suction switch	Button	Enable the suction function of hopper 1
Hopper 2 hopper suction switch	Button	Enable the suction function of hopper 2

4.1.2.1 Startup System

Click the <Button of Switch>, the machine will pop up the mode selection screen,

and it will start to run after selecting corresponding mode; When the running switch displays ON status, and the crystallization system will start to run.

4.1.2.2 Shutdown System

Click the < Button of Switch > to make it in OFF state, then the heater stops heating, and the blower and mixing motor stop working after 3Min delay.

4.1.3 Conveying Monitoring

Click the <Convey. Monitoring> button on the "crystallization monitoring" screen to enter the conveying monitoring screen, as shown in the picture below:
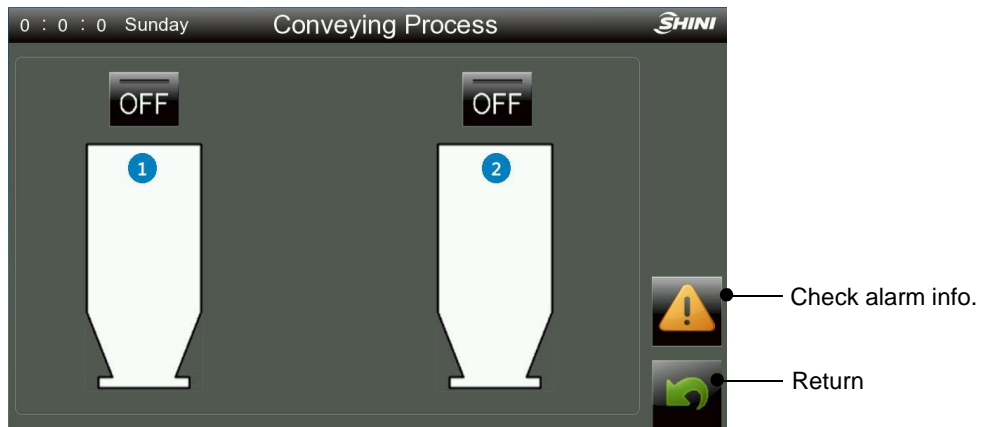
Picture 4-4: Conveying Monitoring
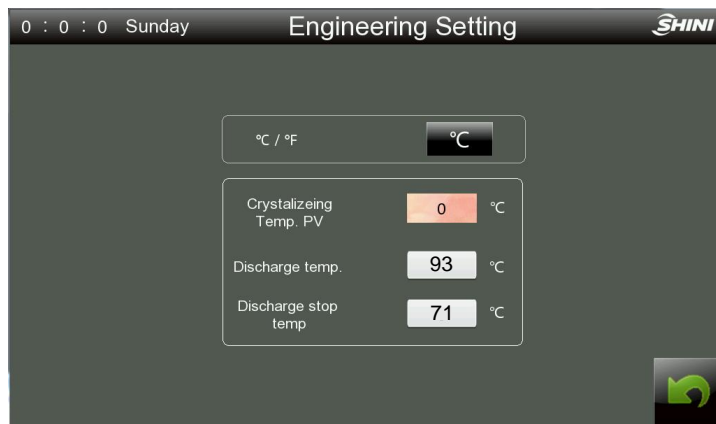
Picture 4-5: Project Setting Screen

Hopper 1 is the feeding hopper of SICR, and hopper 2 is the conveying hopper of the SICR. Click the suction switch of corresponding hopper on the crystallization monitoring screen to start the suction. When the hopper of SICR is short of materials, turn on the suction button of hopper 1 and the SVG will start immediately to suck the materials from external material storage tank into the hopper of SVG till the materials reach the high level in the hopper, and then it will stop. When the

machine running time reaches the "circulation time" and the crystallization temperature rises to the "discharge valve opening temp.", turn on the suction button of hopper 2, and the SVG will start immediately to suck the materials out of the hopper of SICR till the crystallization temperature reaches the "discharge valve closing temp.", and then the suction will stop. Click the middle area of any hopper to enter the conveying parameter setting screen.

0 : 0 : 0 Sunday	Conveying Parameter		SHINI
Receiver No.	NO.1	NO.2	
Conveying Time(S)	15	15	
Line Cleaning Time(S)	10	10	
Material Empty Counter	3	3	→ Next page
			↩ Return
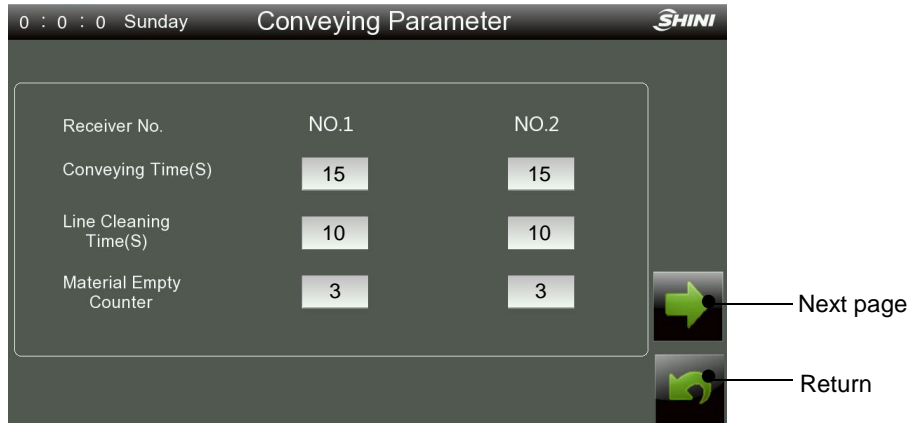
Picture 4-6: Primary Conveying Parameter Settings

⚠ Attention!

The parameters have been preset in the factory before delivery. Therefore, it doesn't need reset generally. In particular, the conveying time should not be set too long to avoid pipeline blocking.

Conveying time (1~999S)

When the system detects the hopper is lack of materials, it will time the shortage signal at once. When it lasts for 3 secs., the PLC will output a driving signal to make the SVG suction blower run to fill the hopper of SICR. Meanwhile, it will time the suction, and when it reaches the suction time, the loading will stop; then it will increase once of the suction time.

Material shortage times (1~999)

When feeding the hopper of SICR, the system will limit the times of material suction if the material shortage signal is lasting. When it reaches the set suction times, the system will stop feeding the machine; And sends an suction fault alarm signal to

remind the user to check whether the material storage tank is short of materials or other suction faults.

Shut-off time (1~999S)

Shut-off valve opening time in each suction; The time corresponds to the material amount discharged by the hopper of SICR. The longer the time, the more materials will be discharged. Shutting off the materials can avoid materials remaining in the pipe and empty the pipe.

⚠ *Attention!*

The shut-off time should not be too long, otherwise materials in the pipe will not be totally eliminated that remained in the material pipe, thus affecting the drying effect.

In the primary conveying screen, click the < Next > button to enter the advanced feeding parameter screen. In order to avoid accidental operation of the employee that may cause abnormal production, it's necessary to enter the password (3333) when entering the advanced feeding screen.
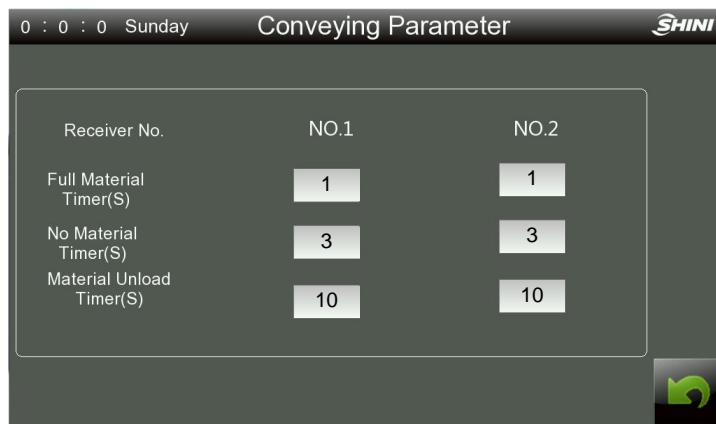
Picture 4-7: Advanced Conveying Parameter Settings

Table 4-2: Description of Advanced Conveying Parameter Settings

Name	Description
Full material detection time (unit: S)	After once suction, the system detects that the material level lasts for this time, it judges the suction of material is successful (Factory default: 1S).
Material shortage detection time (unit: S)	When the system detects the suction hopper is lack of materials, it will time the shortage signal. When it lasts for this time, the system judges that it is in shortage state (Factory default: 3S).
Material discharge detection time (unit: S)	The time for judging the material level signal after once hopper suction of the materials (Factory default: 10S).

4.1.4 Temperature Curve Monitoring

Click the <Temp. Curve> button in the "crystallization monitoring" screen to enter the temperature trend screen, as shown in the picture below:

Picture 4-8: Temperature Curve

4.1.4.1 Data Export Steps

Click the < Data Export > button to export the temperature data to the U disk.
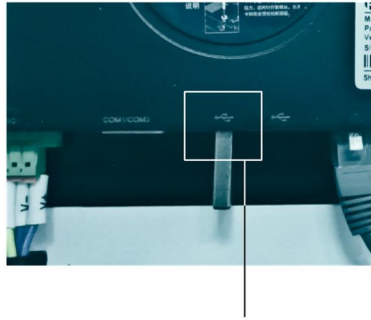
U-disk interface

Picture 4-9: U-disk Insertion Diagram

	A	B	C	D	E	F	G	H
1	2021/6/1	8:44:11	37	45	37	70		
2	2021/6/1	8:44:15	37	45	37	70		
3	2021/6/1	8:44:18	38	45	37	70		
4	2021/6/1	8:44:22	37	45	37	70		
5	2021/6/1	8:44:26	38	45	37	70		
6	2021/6/1	8:44:29	38	45	37	70		
7	2021/6/1	8:44:33	38	45	37	70		
8	2021/6/1	8:44:36	38	45	37	70		
9	2021/6/1	8:44:40	38	45	37	70		
10	2021/6/1	8:44:44	38	45	37	70		
11	2021/6/1	8:44:47	38	45	37	70		
12	2021/6/1	8:44:51	38	45	37	70		
13	2021/6/1	8:44:54	38	45	37	70		

Notes:

C：Drying temp.　　D：Crystallizing temp.　　E：Exhaust air temp.　　F：Material temp.

Picture 4-10: Data Export Example (File format: CSV)

⚠ *Attention:*

When downloading the data, please use the U-disk format: FAT32. The suggested U-disk volume is 16G or less.

Date export time: 5~10S

In order to prevent data loss, it's forbidden to plug and unplug the U-disk during data export.

4.1.5　Parameter Settings

Click the < Parameter Setting > button in the "crystallization monitoring" interface to enter the parameter setting interface. When setting relevant parameters, it needs to enter the password to determine whether the user's level is qualified (Operator: 3588; Administrator: 3333).

When the password is entered incorrectly, the user can't enter the interface, and system will pop up the password box to let the user enter the password again. Click <Return> button to get back to the crystallization monitoring interface.
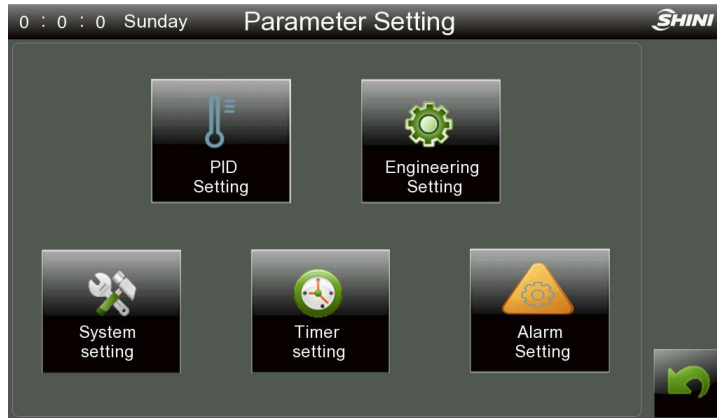
Picture 4-11: Parameter Setting Screen

4.1.5.1 Temperature Setting

Click the < PID Setting > button in the "parameter setting screen", and the system will pop up the setting screen shown in the picture below:
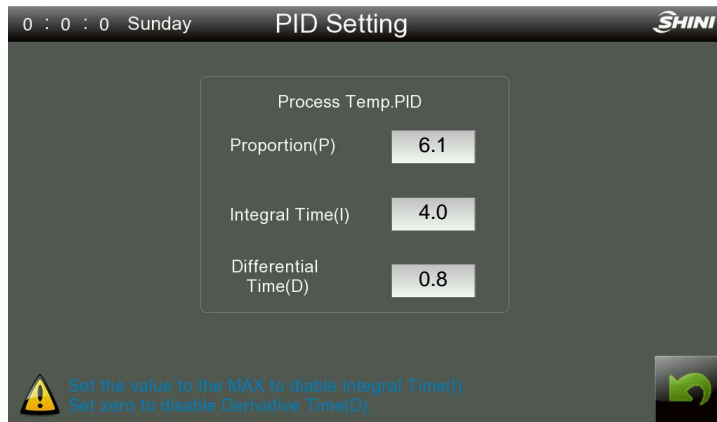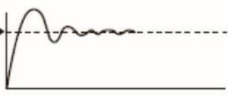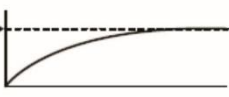
Picture 4-12: PID Setting Screen

It can set the P.I.D parameters of drying temperature control;

When temperature control is incorrect, it can adjust the P.I.D temperature-control parameter manually to reach the max. control effect.
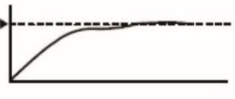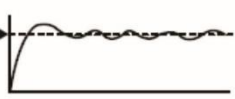
When adjusting the proportion (P):

Table 4-3: Adjustment of Proportion (P)

P increases		After the oscillation, the curve will be settled and back to setup point.
P decrease		The curve increases gradually in order to maintain a long reliable period against over oscillation.
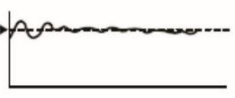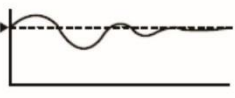
When adjusting integral time (I):

Table 4-4: Adjustment of Integral Time (I)

I increases		For default value requires a longer time for steady status. But, it still has over pulse/under pulse and oscillation occurs.
I decrease		After the occurrence of over pulse/under pulse and oscillation, but the curve tends to rise rapidly.

When adjusting differential time (D)

Table 4-5: Adjustment of Different Time (I)

D increases		Over pulse/under pulse and steady time become less, but the curve has small oscillation.
D decrease		Over pulse/under pulse increases, the duration for setup value requires certain time.

4.1.5.2 Project Setting

In the "parameter setting" screen, click the <Project Setting> button to enter the project setting screen, which is used to set the hopper discharge parameters of SICR.
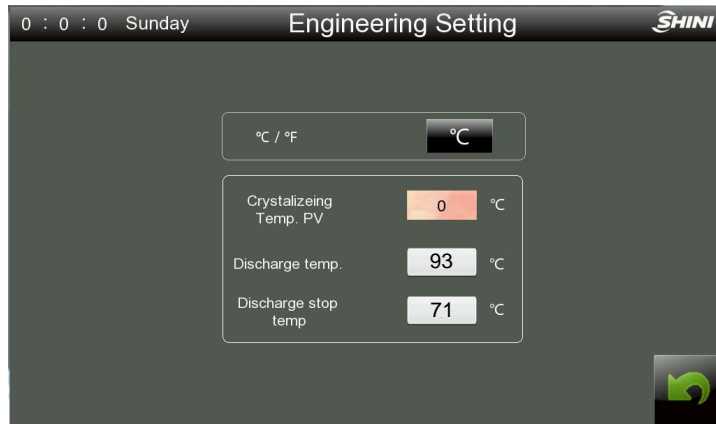
Picture 4-13: Project Setting Screen

The system temp. unit can be switched between   /℃ freely ;

When the "crystallization temp. PV" reaches the "discharge valve opening temp.", the hopper 2 start to suck and the SICR hopper starts to discharge;

When the "crystallization temp. PV" reaches the "discharge valve closing temp.", the hopper 2 stops sucking and the SICR hopper stops discharging;

4.1.5.3 System Setting

Click the <system setting> button in the "parameter setting" screen to enter this screen to set:

1) "Brightness adjustment" adjusts the brightness of the touch screen;
2) "System delayed downtime": the default minimum time is 3 mins. If the input value is less than 3 mins., the system will prompt the user to re-enter the value.
3) "Circulation time": the hopper of SICR is allowable to discharge when the system runs to this time,
4) "PLC time setting"
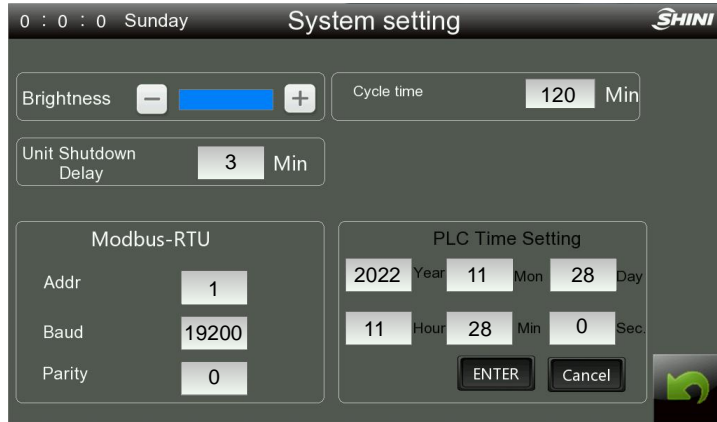
Picture 4-14: System Setting Screen

Table 4-6: Modbus Rtu Comm. Parameters

Parameter	Default	Setting Range
Station address	1	1-247
Baud rate	19200	9600/19200
Parity check	0	no parity, odd parity, even parity check

4.1.5.4 Weekly Timer Setting Screen

Click the <Weekly Timer" button in the "parameter setting" menu to enter the weekly timer setting screen, as shown in the figure below:
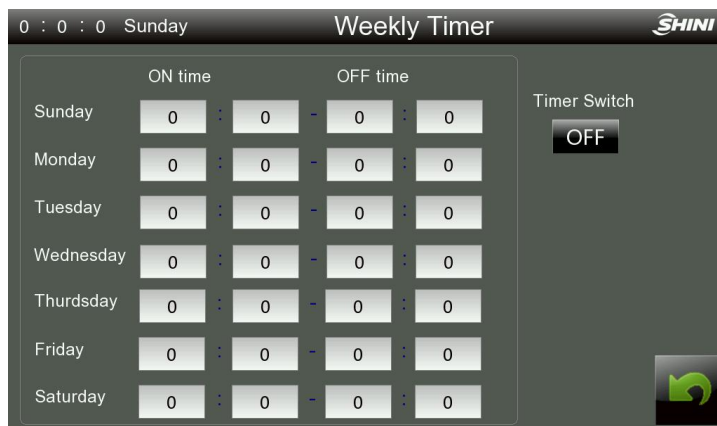
Picture 4-15: Weekly Timer Setting Screen

Prompt: Press the < OFF > button to turn on the machine after setting the weekly timer ON/OFF.

4.1.5.5　Alarm Setting

Click the < Alarm Setting > button in the parameter setting screen to enter the alarm setting. Click the < Return > button to return to the parameter setting interface.
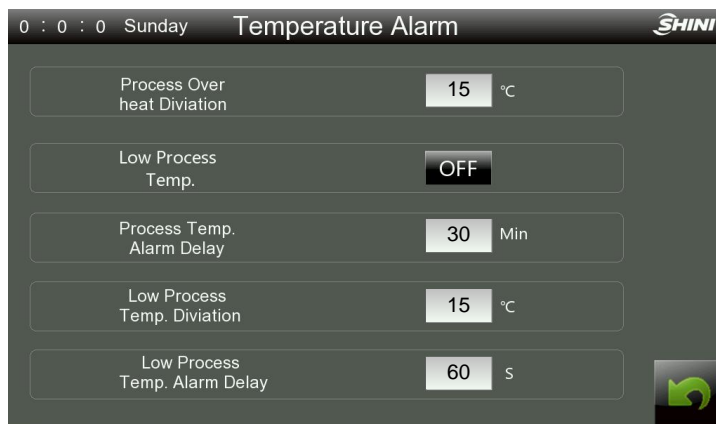
Picture 4-16: System Alarm Setting Screen

Overheat deviation: Input the overheat deviation (factory default: 15 ℃). During system operation, the system will give overheat alarm immediately after detecting that the PV value exceeds the sum of the SV value and overheat deviation value.

Function principle of failure alarm: Turn on the low temperature alarm switch and input the heating failure alarm delay time; If the controlled PV temperature fails to reach the set value SV -5℃ within the heating failure alarm delay time, the system will issue a heating failure alarm at once, which won't dismiss the alarm until the controlled PV temp. reaches or even exceeds the set SV temp. - 5 ℃. Low temperature alarm: input the low temperature deviation value (factory default: 15 ℃) and the low temperature alarm delay time (factory default: 60S). After the system runs, and the PV temp. rises to the SV value, when the system detects that the PV temp is lower than the SV value - low temperature deviation value and lasts for the low temperature alarm delay time, the system will give the low temperature alarm. When the system detects that the PV value is greater than the SV value - low temperature deviation value, the system will cancel the low temperature alarm.

4.1.6　Alarm Logs Check

Click the < Alarm Logs Check > button at the "crystallization monitoring" screen bottom to enter the alarm logs check screen, and the example is shown in the

picture below:

Click the < Data Export > button to export the data to the U disk.

⚠️ *Attention:*

When downloading the data, please use the U-disk format: FAT32.
The suggested U-disk volume is 16G or less.

Date export time: 5~10S

In order to prevent data loss, it's forbidden to plug and unplug
the U-disk during data export.

Picture 4-17: Alarm Logs Screen

1) When the alarm logs exceed the display area, click the scroll up and down buttons to check all the alarm contents.

2) Troubleshoot according to the displayed alarm logs.

3) Press <Return> button to exit the alarm logs screen;

4) Press <Reset> button to dismiss the alarm and restore;

5. Trouble-shooting

Fault	Possible Reasons	Solution
Turn on the power, the screen doesn't on, and the system can't run.	1. The main power switch is disconnected.	1. Connect the main power switch.
	2. Power circuit fault.	2. Check the power circuit.
	3. Control circuit fuse burnt.	3. Check the circuit, and replace the fuse.
	4. Control transformer broken.	4. Replace the transformer.
The screen is on, but the system can't run.	1. The timer switch button is ON.	1. Reset the timer switch button and restart.
Turn on the power, the reverse phase indicator is on, and the buzzer alarms.	1. Low power voltage.	1. Check the power.
	2. Power phase shortage.	2. Check the power inlet wire.
	3. Power phase connection fault.	3. Replace the position of any two power inlet cables.
The crystallizing hopper is short of materials, and hopper No.1 (loading hopper) can't suck.	1.The connector between the hopper No.1 (loading hopper) and host unit is loose	1. Check the connector of hopper No.1 (loading hopper)
	2. Hopper No.1 (loading hopper) switch is OFF.	2. Check whether the switch of hopper No. 1 in the feeding monitoring on the panel is ON.
	3. The reed switch of hopper No.1 (loading hopper) fails.	3. Check the reed switch or replace it.
	4. Hopper No.1 (loading hopper) discharge plate error.	4. Check the discharge plate of the hopper, and reset it manually.
	5. The vacuum generator power is off or the connector is loose.	5. Check the power switch or connect.
	6. Proportional valve fault.	6. Check the wiring of the proportional valve's air pipe or corresponding solenoid valve.
	7. The materials are used up.	7. Check and add materials.
The crystallizing hopper is full, and hopper No.1	1. The reed switch of hopper No.1 (loading hopper) fails.	1. Check the reed switch or replace it.

(loading hopper) can't stop.	2. The level switch on the crystallizing hopper is abnormal.	2. Check the level switch circuit or replace it.
Hopper No.2 (conveying hopper) suction alarm	1. In crystallization temp. detection, the thermocouple circuit is abnormal.	4. Check/replace the thermocouple under the level switch.
	2. The solenoid valve of suction box is abnormal.	5. Check and replace the solenoid valve.
	3. Air pipe disconnected.	6. Check the air pipeline.
	4. Hopper No.2 (conveying hopper) is turned off.	6. Check whether the switch of hopper No. 2 in the feeding monitoring on the panel is ON.
	5. Vacuum generator circuit fault.	7. Check the power switch or wiring.
Materials in the crystallizing hopper are discharged without crystallization.	1. Incorrect setting of discharging temp.	1. Project setting parameters: the factory default of the discharging valve closing temp. is 71 ℃.
	2. In crystallization temp. detection, the thermocouple is abnormal.	2. Check/replace the thermocouple under the level switch.
	3. Machine working time is set too short.	3. Factory default : 120min
Blower overload alarm	1. Phase loss	1. After checking the circuit, press the Reset button on the loader.
Mixing motor overload alarm	1. Phase loss	1. After checking the circuit, press the Reset button on the loader.
	2. Mixing motor blocked.	2. Check the mixing motor.
	3. Hopper blocked.	3. Check and clean through the sight glass.
Crystallization blower	1. Thermal overload relay tripped.	1. Check and replace.

doesn't work	2. Blower contactor doesn't close.	2. Check whether it is burnt, confirm and replace.
	3. Power phase loss.	3. Check and replace.
	4. Blower motor burnt.	4. Check and replace.
Mixing motor doesn't run.	1. Thermal overload relay tripped.	1. Check and replace.
	2. Mixing motor contactor doesn't close.	2. Check whether it is burnt, confirm and replace.
	3. Power phase loss.	3. Check and replace.
	4. Mixing motor is burnt.	4. Check and replace.
Drying overheat alarm	1. Heater contactor coagulated.	1. Check whether it is burnt, confirm and replace.
	2. Thermocouple error.	2. Check and replace.
	3. EGO/ Temp. protector failure.	3. Check and replace.
Drying low temp. alarm	1. Heater contactor fault or can't close	1. Check and replace.
	2. Thermocouple fault.	2. Check and replace.
	3. Pipe heater damage.	3. Check and replace.

6. Maintenance and Repair

SICR-160U

Check whether the proportional valve works normally.
Cycle: daily.

Check the working status of the gear box.
Cycle: monthly.

Clean the cloth bag of the cyclone dust collector.
Cycle: daily.

Check the working status of the level switch.
Cycle: daily.

Check the working status of the blower.
Cycle: daily.
Clean the inside and outside of the blower (especially the air channel at the inlet), remove foreign objects from the blower blades to avoid blower damage.
Cycle: weekly
Check whether the screws and nuts are loose;
Cycle: weekly

Check if the safety switch works properly.
Cycle:daily.

Clean the filer.
Cycle: weekly

Check whether the main power switch works normally.
Cycle: daily.
Check whether all cables and wire connectors are loose.
Cycle: weekly
Check whether the contactor switch works normally.
Cycle: daily.

Check whether the heating box is loose;
Cycle: monthly.

Check whether the heat-resistant are pipe is damaged, leaking, or loose.
Cycle: half a year checking.

Check whether the main power switch and timer are normal.
Cycle: daily.
Check whether the temperature controller switch is normal.
Cycle: daily.
Check all cables and wire connectors if they are loose.
Cycle: weekly
Check whether the solenoid switch works normally.
Cycle: daily.
Check if the thermocouple works properly.
Cycle: daily.

Check whether the blower works normally.
Cycle: daily.

Check whether the suction box works normally.
Cycle: daily.

Check the gear motor's working status. Cycle: monthly.

Check the level switch's working status. Cycle: monthly.

Filter cleaning. Cycle: weekly.

Check whether the main power switch works normally. Cycle: daily.
Check whether all cables and wire connectors are loose. Cycle: weekly.
Check whether the contactor switch works normally. Cycle: daily.

Check whether the blower works normally. Cycle: daily.

Check whether the heat resistant air pipe has damage, air leakage and looseness. Cycle: half a year.

Filter cloth bag cleaning. Cycle: daily

Check whether the main power switch and timer work normally. Cycle: daily.
Check whether the solid-state relay switch is normal. Cycle: daily.
Check whether all cables and wire connectors are loose. Period: weekly inspection.
Check whether the contactor switch works normally. Cycle: daily.
Check whether the thermocouple works normally. Cycle: daily.

Clean the inside and outside of the blower, and remove the foreign matters on the blower blades to avoid blower damage. Cycle: daily.

6.1 Filter Bag

Regularly clean the filter (Once a week).

Cleaning steps:

1) Open the clamp and remove the filter bag.
2) Use compressed air to clean the filter bag.
3) Reinstall the filter bag according to the opposite order after cleaning.

6.2 Blower

1) Clear up inside and outside of the blower at times. If there are too much dirts accumulated on the blower, the function of the blower will be affected, such as temperature rising, reduced air volume and higher noise level due to vibration. All the above factors are liable to cause mechanical problems.

2) The bearing, seal ring and silencer are all consumable parts. They should be replaced after a period of time. And also the fans, covers, and metal grids need to be changed when necessary.

6.3 Filter

Regularly clean the filter (Once a week).

Cleaning steps:

1) Open the filter barrel cover, and remove the filter.
2) Use compressed air to clean the cover and filter.
3) Clean the barrel wall with an air gun rag.
4) Reinstall the filter according to the opposite order after cleaning.

> ***Note: Don't drop any sundries into the barrel when taking out the filter.***

6.4 Maintenance Schedule

6.4.1 About the Machine

Model _____ SN _____ Manufacture date _____

Voltage_____ Φ _____V Frequency _____ Hz Power _____ kW

6.4.2 Check After Installation

☐ Check that the conveying pipes are tightly locked.

☐ Check that the material clearance door is firmly closed.

☐ Check that the conveying pipes are correctly connected.

Electrical Installation

☐ Voltage: _____ V _____ Hz

☐ Fuse melting current: One-phase: _____ A   Three-phase: _____ A

☐ Check the phase frequency of power supply.

☐ Check rotating direction of the blower.

6.4.3 Daily Checking

☐ Check the switches of the machine.
☐ Check the performance of the machine.

6.4.4 Weekly Checking

☐ Check all the electrical wires.
☐ Check if there are loose electrical connections.
☐ Check and clean air filter.
☐ Check motor overload relay.

6.4.5 Monthly Checking

☐ Check that the pipe heater is working properly.
☐ Check the performance of blower.
☐ Check the functions of electrical components.

6.4.6 Half-yearly Checking

☐ Check if there are damages of heat-resistant hose or not.
☐ Check the process heater.
☐ Check the blower.

Appendix

Table: SICR Comm. Address

40000	blower running signal	R
40001	mixing motor running signal	R
40002	heater contactor running signal	R
40003	heater solid-state running signal	R
40004	system running signal	R
40005	buzzer running signal	R
40006	alarm light running signal	R
40007	vacuum breaking valve running signal	R
40008	loader running signal	R
40009	shut-off valve 1 running signal	R
40010	shut-off valve 2 running signal	R
40011	diaphragm valve 1 running signal	R
40012	diaphragm valve 2 running signal	R
40013	spraying valve 1 running signal	R
40014	spraying valve 2 running signal	R
40015	filling valve running signal	R
40016	discharge valve running signal	R
40017	drying temp. PV	R
40018	hopper temp. PV	R
40019	crystallization temp. PV	R
40020	exhaust temp. PV	R
40021	machine running time PV	R
40022	machine shutdown countdown time PV	R
40023	drying temp. SV	R/W
40024	hopper 1 suction time SV	R/W
40025	hopper 1 shut-off time SV	R/W
40026	hopper 1 shortage times count SV	R/W
40027	hopper 2 suction time SV	R/W
40028	hopper 2 shut-off time SV	R/W
40029	hopper 2 shortage times count SV	R/W
40030	discharge valve open time SV	R/W

40031	discharge valve shutdown temp. SV	R/W
40032	discharge valve unloading time SV	R/W
40033	discharge valve stop temp. SV	R/W
40034	system running switch	R/W
40035	hopper 1 suction switch	R/W
40036	hopper 2 suction switch	R/W
40037	intermittent discharge mode switch	R/W
40038	direct heating mode switch	R/W
40039	temp. transfer switch	R/W