Tube Ice Machine
Operation Instruction

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CAUTION

Danger!!!	Improper handling may cause dangers, such as serious as serious personal injuries and even death accidents.
Attention!!!	Improper handling may cause dangers, such as light or moderate personal injuries and equipment accidents.

Danger!!!

- Never enter the evaporator casually when the ice machine is running!
- While the ice machine is running or stopping, never approach the red pipes to avoid being scorched.
- In the course of service, never forget to ensure that the machine has completely stopped and the main power supply disconnected before performing other operations.
- In case of long-term standstill, please disconnect the main power switch to avoid Hazards of electric shock.

In case of sudden external power cutoff, disconnect main power switch and check power supply. Electricity mustn't be recovered in case of abnormalities. Make sure that every motor rotates in the correct direction before starting.

Attention!!!

- Only those specially trained and experienced in the maintenance and operation of refrigeration equipment can operate the system.
- It is a must to switch on the main power and other electric switches including switch of emergency stop 6 hours before starting ice maker in order to start the heater of crankcase in the compressor ensuring the temperature inside crankcase 5℃ higher than ambient temperature. Because low temperature inside crankcase may cause serious damage of compressor.
- The pressure in high pressure side must be 15-15.5bar when ice making mode is running; too low pressure will severely influence the ice dump while too high pressure will enormously lower the ice making efficiency.
- Carefully read through the instructions and understand all items contained so as to correctly install, connect, function, operate and maintain. Following the standards specified in the file is very important to realizing rated performance and keeping the operators safe.
- Carefully read through the operating instructions, strictly follow standards and carry out maintenance and service in the charge of adequate operators..
- This manual must be kept by the actual final user
- The technical standards contained herein are subject to change without separate notice.
- ◆ The operator on duty should keep watching over the functioning of distribution box and operation table as failure indicator lights, and timely solve problems detected.

INTRODUCTION

This introduction outlines the correct procedures for operating and maintaining your refrigeration plant.

This plant is a product of long-lasting experience of our engineers and technicians in the field of refrigeration technologies. It has been assembled with care at our modern manufacturing site. Although only high quality components were used which have proved to be highly reliable even under difficult operating conditions, a minimum of preventive maintenance is necessary in order to keep the plant operative and to minimize the costs for repair and maintenance.

Please bear in mind that, only when the following instructions are followed conscientiously can the rated performance of the installation be reached. Please read these instructions carefully before operating the plant. You are sure to get satisfactory answers after carefully reading through these operating instructions.

1. Personnel

Appoint one capable chief operator who is fully responsible for the proper operation of the plant. The chief operator and other people in charge of repair, maintenance, starting and stopping the plant should be experienced in the field of refrigeration. Basic knowledge in the filed of electric installations is highly recommended.

Improper manipulation of the major components of the plant especially the electrical ones can cause damage and reduce its efficiency.

2. Basic safety instructions

All staff involved with the operation of the plant must be familiar with the safety regulations for refrigerant plants. Make sure that these persons thoroughly understand and follow the instructions thoroughly.

1. Parts of the refrigerant cycle are under high pressure. Do not open pipes or components improperly.

2. Parts of the components heat up during operation. Be particularly careful when approaching components of the high-pressure discharge diction of the compressor.

3. Manipulation at the refrigerant and electrical cycles must be carried out only by authorized and experienced staff.

4. No operating any equipment of ice machine except professionals.

5. Do not smoke in the refrigeration plant.

6. Gaseous refrigerant has a higher specific density than the ambient air. In case of refrigerant leakage the ground has to be ventilated in order to avoid up of an oxygen-poor atmosphere.

Before any manipulation at active components and components particularly before opening of covers of active components, make sure that the appliance has been switched off correctly.

The following rules must be followed:

1. Switch off the component (Main switch)

2. Secure against reconnection

3. Check for tension

4. Protect/cover adjacent components

Special procedures have to be followed for work at the ice generator.

1. Disconnect electricity and push the button of emergency stop for performing any maintenance to the ice machine.

2. When required to work inside the ice machine, there must be a standby person outside of the machine.

3. Operating stuff and power supply

3.1 Power Supply

Depending on the region and the customer, the ice machine may use different levels of voltage.

In China, our machine electricity standard is as follows.：

Power：Alternating current 380V3P+N 50Hz

Control：Alternating current 220V1P+N 50Hz

Control：Direct current 24V

Please make sure that the installation site is full of power and the main line voltage cannot be lower than 380V. When the line voltage is lower than 380V, the machine will not make enough ice.

When the line voltage is lower than 360V, it is forbidden to turn on the ice machine, Low voltage (commonly known as undervoltage) is easy to burn the compressor, motor and other equipment.

Please refer to the machine nameplate for specific voltage standard.

- Because the voltage is too low to burn the machine, it is not in my company's warranty scope.

3.2 Water

3.2.1 Cooling water（Cooling water type machine）

Cooling water is the water used to cool the ice machine system. It is not the same system as the water used to make ice, In principle, cooling water also needs tap water, but according to the actual situation, in order to save cost, the cooling water can use other water without alkali, salt and caustic. Such as well water, water, mountain spring and natural water.

3.2.2 Ice making water

Please use the standard tap water, pure water, water and other fresh water as the machine's ice water.

- Different water specifications may cause build-up of scale and/or rust in the water circuit, Furthermore, the productivity of the ice plant and ice transparency may be severely affected.

3.3 Refrigerant

The ice plant is designed for use with refrigerant R22 andR404a.What kind of refrigerant do you need? Please consult Icema company, ask for help.

3.3.1 R22 Refrigerant

R22—If it reveal to the air, it will do great damage to the ozonosphere, influence the environment. But the function it is similar to the R404A, now the developed counties prohibit to use it. But the developing country is widely used, price is good.

3.3.2 R404 Refrigerant

R404A—Environmental refrigerant, no pollution to the air, good function, safety operation, but price is high, Europe and America is widely used.

◆ Prohibit the same machine using different type of refrigerant.

4. Start-up of the ice plant

In order to heat the oil in the crankcase, to evaporate the refrigerant mixture in the oil, at least 8 hours before the compressor runs, it must be connected to the power supply, turn on the main switch and other electrical switches, including the emergency stop, Ensure the temperature is higher than in the compressor crankcase above 5 ℃ ambient temperature.

Please follow the following steps.:

1. Make sure the water and electricity are fully connected.;
2. Make sure the crankcase temperature is higher than the ambient temperature.;
3. Check that each manual valve is in the correct position.;
4. Manually run each step (if any), and all work properly;
5. Press the Reset button before pressing the start button;

The machine needs to be watched for at least 10 minutes after the machine is started, If there are abnormal noises, loud noises, violent shaking, etc. Please press the emergency stop button immediately ,do not start up again before the failure is ruled out.

◆ Repeatedly open an ice machine with faults, the damage to the machine is beyond the warranty of our company.

5. Operation monitoring of ice machine

The operation of ice making machine needs to pay attention to the following items.:

1. Observe whether the voltage current is within the parameters specified in the machine nameplate;
2. High pressure should be on：10bar～18bar，High pressure should be on：1.0bar～4bar；

3. The compressor has no abnormal sound, all other motors are operating normally.

6. Stop ice machine

There are two kinds of stopping machine: Emergency stop and Normal stop

6.1 Emergency stop

1. Purpose of emergency shutdown： emergency shutdown only occurs when equipment and life safety hazards occur.
2. Emergency Stop mode: press the "Emergency Stop" button on any part of the machine to achieve the purpose of stopping the machine in an instantly.
3. When starting the machine, please confirm that the emergency has been ruled out before the emergency stop, and the machine is in the correct state.
4. After every emergency stop, please restart the machine at least 5 minutes.

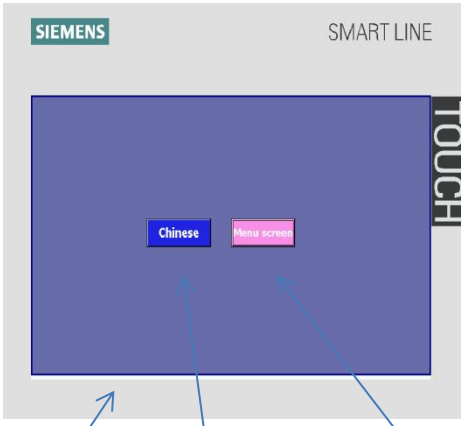
6.2 Normal stop

The normal Stop of the ice machine is to press the "Stop" button of the machine in the case of normal ice making, The machine gradually stops each process step in accordance with the scheduled stop sequence and time.

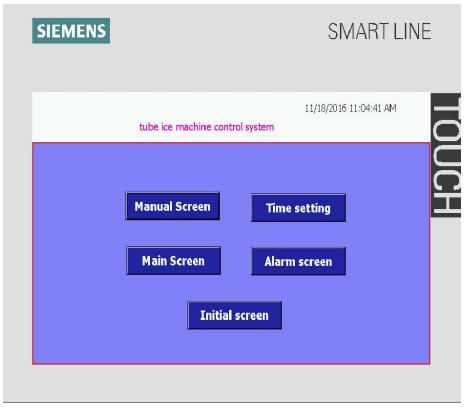
- Normal shutdown will not occur system pressure impact. Therefore, it is advisable not to use the emergency stop button to stop the machine under normal circumstances.

7. Instruction of control cabinet

7.1 Screen

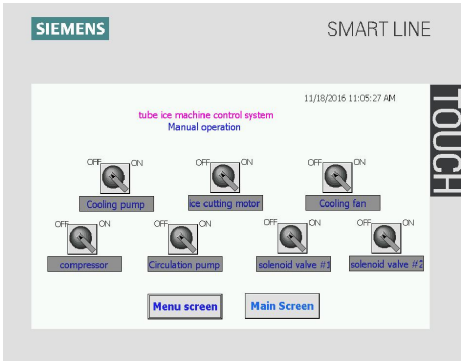


Starting Screen　　Choosing Language　　Menu screen button



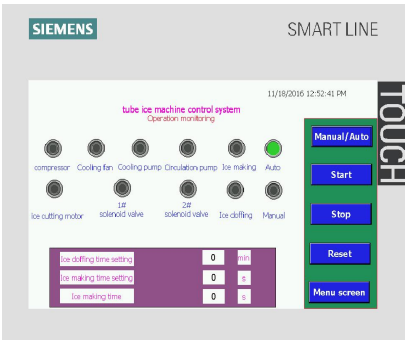
Menu Screen

From the menu screen, you can enter different sub-menu.



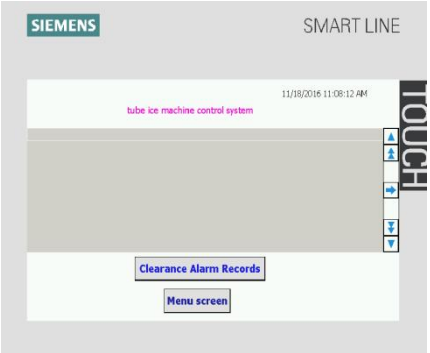
Manual screen

Manual screen can start one single motor or electromagnetic valve, it is used in trial run, please do not use the control button usually.



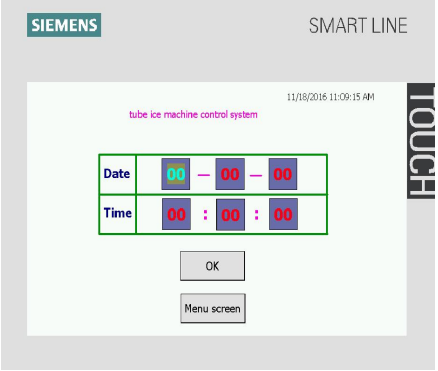
Main screen

Main screen can keep watch on the operation situation of motor units, start and stop the motor units, set time of making ice and dropping ice.



Warning screen

Warning screen is used for checking warning item on time and history warning item, also for cleaning up warning record.



Time setting screen

Time setting is used to set time.

8 Operating instruction

8.1 The ice machine has broken down, Then the motor unit will stop urgently and the fault indicator light is on, after the operator arrives at the scene, the "alarm screen" inside the touch screen will check the alarm, then troubleshoot, then press the "reset" button, and then the ice machine can be started again（Failure to start the ice machine）.

8.2 Touch screen main screen set value.

The user can manually set the ice time of the main screen and the setting value of the deicing time,（Factory setting is 1200 seconds）,time to take off the ice（The factory is set to 5 minutes）,the customer can set the actual conditions of ice and deicing.

9 Normal Trouble shooting

Disturbance	Status	Treatment
Motor overload	Motor stops suddenly，system fault light（System Error）flashing or on	1.Check the motor 3-phase whether it is balanced； 2. Transmission parts whether stuck, ,whether lack of phase, poor pressure, whether it is loose.
High and low pressure fault	Motor stops suddenly，system fault light（System Error）flashing or on	1. Check the motor pressure higher or lower; 2. Whether the electrical connection part is disconnected, whether the high and low voltage switch contacts are in good condition. 3. Whether the air-cooled or water-cooled condenser is normal. 4.Whether the refrigerant is leaking.。
Machine can not be opened	Machine can not be opened	1. Check whether the power supply is abnormal and the button is in good condition.； 2. Whether there is motor overload, whether the electrical connections are disconnected or loose.， Whether the PLC is energized（PLC has AC and DC power）
Power supply abnormity indicator light is off	Close the power button, the light is off, system does not run	Whether there is wrong position of 3-phase,whether the stopping button suddenly is good.

- ◆ Regular maintenance of the equipment can greatly reduce the occurrence of failure.，If the motor sound is abnormal, check whether the connecting wires are loose and keep the equipment clean.

- The fault indication of each series of ice machine produced Icema company is different according to different models. Please refer to the random manual, electrical drawing or call our after-sales service department.
- After service mobile phone：Mr.Liu 18116308679　　Mr.Li 18818296298

Attached(Electric equipment drawing)