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ICE TECHNOLOGIES
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ITALY

icelab

SMART ICE BAGGING SYSTEM

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Friostar has been specialized for over 40 years in the design and installation of plant and machinery for production, storage and packaging of ice, in all its forms.

The consolidated experience in the international arena, reliability and a high degree of technical skills allow us to offer an efficient and precise design, using the most cutting-edge tools and materials.

icelab

is an innovative system for semi-automatic storage and packaging of ice, suitable to produce bags of ice in small and medium quantities.

FUNCTIONING

Ice makers are installed on top of ICE LAB and the ice fills the deposit 24/7 without the need of any operator.

When ready to pack, simply place a bag under the output hopper and press the pedal. The previously-set quantity of ice will be automatically dosed. The filled bag will be closed by an operator with a sealer and stored in a cold room. In the larger version, the bag is opened and filled automatically, ready to be sealed without the operator.

VANTAGGI

PACKAGING IN STANDING POSITION
for better comfort of the operator. No bending over needed to collect the ice

NO CONTACT
between operator and ice

ICE PACKAGING COMPLIANT WITH HACCP RULES
and without risk of contamination

PACKAGING SPEED
and dosing precision

Compliant for contact with food
(REG.EU 1935/2004 & FDA FOOD CONTACT)

CE

FEATURES

- MODULAR SYSTEM gradually expandable with additional ice making modules
- Suitable for any existing ice maker
- Self-supporting structure without the need to build additional structures to support the ice makers
- ICE LAB Can be installed in any environment without any masonry work
- PLUG & PLAY monobloc system: it is ready for use and can be repositioned at any time
- Contact with food plastic surfaces to avoid any deformation of the ice cube
- Sealed environment to avoid any external contamination
- Slow ice handling to avoid any damage to the product and increase its quality
- Completely water resistant so as to always have a clean and dry laboratory
- Design to minimize breakage of the ice cubes
- Coating with materials suitable for contact with food
- System for separating ice flakes and dosing ice cubes only
- Washability of all surfaces in contact with ice
- Adjustable volumetric dosing unit 1,5 ÷ 2,5 kg

PRODUCTION CAPACITY

Module	Storage capacity	N° of ice makers that can be installed	External dimensions	Installed power	Power supply
ICE LAB 8	800 kg	2	cm 170 x 200 x 190h	0.5 Kw	400V 3N 50Hz
ICE LAB 10	1000 kg	4	cm 300 x 200 x 230h	1.0 Kw	400V 3N 50Hz
ICE LAB 20	2000 KG	6	cm 450 x 200 x 230h	1.0 Kw	400V 3N 50Hz
ICE LAB 30	3000 KG	10	cm 800 x 200 x 230h	2.0 Kw	400V 3N 50Hz

Upon request	• Double deposit with shared dosing unit to pack 2 types of ice • Visually controlled dosing system where precision is not required • Single-phase 230 V power supply

ENERGY SAVING

Ice is not water!
Ice is made of water but its intrinsic value is the electricity needed to produce it.

Any machine to produce 1 kg of ice needs almost 3 kg/liters of water and the remaining 2 kg/liters are usually discarded. It is drinking water, usually treated and above all cold, therefore it is a precious product for which a lot of electricity has already been used.

Through the ICE LAB technology, we can optimize costs and resources, thus recovering the waste water and reintroducing it into the production circle, so that every liter of incoming water becomes ice.
For the same reason, it uses the cold coming from ice scraps and melt water to recover more energy.
The exclusive hermetic storage system also allows optimal storage by minimizing melting and avoiding ice deterioration.

OPTIONAL EQUIPMENT

Integrated water treatment system	Complete system with softener and reverse osmosis filters.
Recycling of waste water	If a reverse osmosis system is installed, this system allows waste water recovery and its reuse for ice production, with an energy recovery of over 20% compared to a standard configuration.
Reuse of meltwater	Meltwater is collected in a suitable tank, together with discarded flakes.
Pre-cooling of the production water	Water is pre-cooled in order to both reduce the ice generator temperature difference and increase its productivity.
Ice drying system	High-performance system that allows the sub-cooling and drying of the ice cube before packaging.
Automatic bag opening	System that allows the opening of the bag below the outlet hopper, without the need to manually position the bag and thus speeding up packaging.
Vending machine	Possibility of controlling the ice dosage with prepaid systems with rechargeable magnetic key.
Washing and sanitizing system	System that allows automatic washing and sanitizing of the entire deposit. Thanks to PLC with TOUCH panel (HMI with SIEMENS technology) it is possible to set the dosage of the detergent, the subsequent rinsing and dosage of the sanitizer, in compliance with HACCP regulations.
COMPLEMENTARY EQUIPMENT	• Continuous welding machine • Dater for production lot and expiry date • Printer • Storage trolleys

AUTOMATION

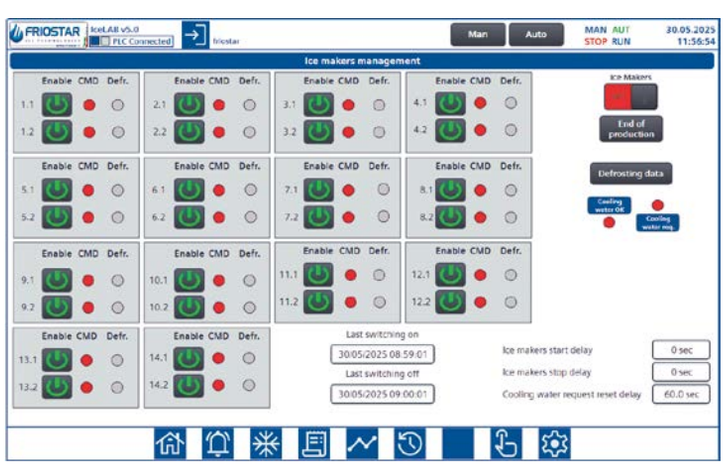
ICELAB is available also in automatic version, in compliance with the guidelines of 4.0 industry. The control is entrusted to a Siemens PLC complete with 7” or 10” Touch 7 HMI. Thanks to the integration of a VPN connection through a designated router inside the machine it is possible to manage the system remotely and change its operational logic. Remote connection also allows constant monitoring of functioning and performance, as well as diagnostics and service.

Automatic control also allows to:

- **Single out blocked or low-yield ice machines**
- **Calculate the daily consumption of electricity and water**
- **Calculate the number of bags produced**
- **Start or stop the ice production, both via weekly timers and manually via remote**
- **Monitor production and packaging times**
- **Check external components (refrigeration cells, water treatment units, cooling towers, etc.)**
- **Communicate with management software via OPC-US (custom interaction required).**

Thanks to the detection of these parameters, the system is able to calculate the daily cost of each kilogram of ice produced.

Management of manual motor movements



Selection of ice makers to be enabled