



TAECHANG ICE

The purpose of TAECHANG ICE is to provide new ice technology for consumers who use ice by realizing new technology of ice industry and enormous capital and research.



CEO Message

TAECHANG ICE is the corporation which consider about water, the very precious material, for our customer's use.

With firm foundation as Water R&D corporation in 2004 and developed unique technique in 2009, TAECHANG ICE developed distinctive ice making process that make ice with running water through spinning. Also we created world's only sandglass shape ice to have worldwide patent.

As we established TAECHANG ICE in April, 2016 we advanced in ice-making industry and we will make our own promise to provide our customers with best product.

CEO Kang Nam Young

Company History

~2007	Refrigeration and Air conditioning R&D Laboratory
2010 ~ 2013	Exhibition & Participation in Trade Missions <ul style="list-style-type: none"> • Vietnam(Hanoi) EXPO (2010) • China(Guangzhou) Spring Canton Fair (2010) • Ho Chi Minh Chungcheongnam-do Excellent product Business meeting (2011) • Chungcheongnam-do Nanjing Excellent product Exhibition (2012) • Chungcheongnam-do North America Trade Mission (2012) • Chungcheongnam-do China Third Trade Mission (2012) • Cheonan South Asia Trade Mission (2013)
~2016	Patent Possession Status <ul style="list-style-type: none"> • Ice-Making Module Patent(2016) • China Patent(2016)
~2017	New Vision <ul style="list-style-type: none"> • GO GLOBAL (2017) • Plant Registration (2017) • TAECHANGICE Co., Ltd. Establishment of corporate conversion (2016) • - TAECHANG ENG Co., Ltd. transfer to subsidiary

STRATEGIES



- Realize world's only sandglass shape ice of TAECHANG ICE
- Have self-developed evaporator which is very important in freezer
- Have product line in small and big freezer with freezing units.
- Partner of Korea Institute of Industrial Technology



Facility Retention

Automated assembly zig line

- Through precise assembling with automated assembly zig line, we minimized the defective proportion.

Brazing and heat processing

- With automated assembly facility, we have automated facility that can create stainless module or metal module and now producing products that are very good in lucidity and heat processing.



TAECHANG ICE Creative, Innovative Management

TACHANG ICE is the company that have self-developed patent which do not just mimic other company's freezer.

| Creative, Innovative Management |

Purpose of TACHANG ICE's establishment is to provide our customer a clear ice that can be used in various use through eco-friendly technology development and research in ice industry.

TAECHANG ICE is the corporation which consider about water, the very precious material, for our customer's use. With firm foundation as Water R&D corporation in 2004 and developed unique technique in 2009, TAECHANG ICE developed distinctive ice making process that make ice with running water through spinning.

Also we created world's only sandglass shape ice to have worldwide patent. As we established TAECHANG ICE in April, 2016 we advanced in ice-making industry and we will make our own promise to provide our customers with best product.

| Business field |



Taechang Ice freezing module is 100% made in Korea from raw material processing to product release..

Automated assembly zig line

Through precise assembling with automated assembly zig line, we minimized the defective proportion

Brazing and heat processing

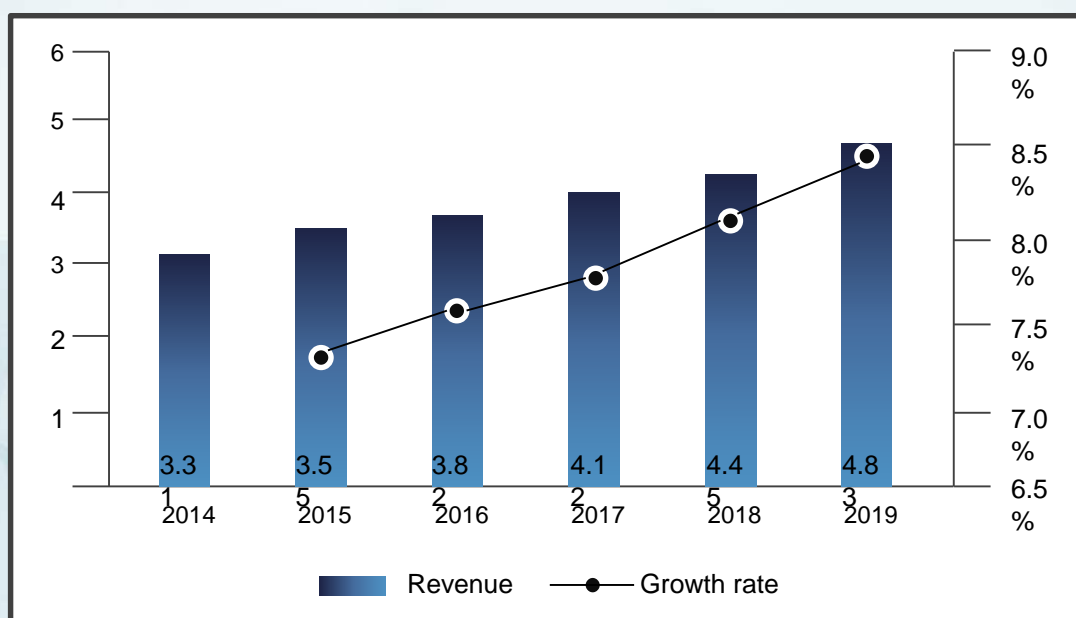
With automated assembly facility, we have automated facility that can create stainless module or metal module and now producing products that are very good in lucidity and heat processing.

World freezer market

World's freezer market is prospected to grow gradually during 2014-2019. Although U.S market governed market in 2014, but Asia-pacific region showed the fastest rate of growth in above period. During prospected period, the annual growth rate of market is estimated to reach 7.9%.

Growth of market got affected by various factors like increase in ice usage in drink. Not only that, worldwide expansion of fast food chain increase the demand of freezer. Increase of necessity to store foods that are easy to be spoil is prospected to increase the demand of ice for storing and freezing foods.

| Market size and prospect |



Size of Market

3.31 billion dollar

Compound Annual Growth Rate

7.9%

	2014	2015	2016	2017	2018	2019	remarks
Market size	3.31	3.55	3.82	4.12	4.45	4.83	
Growth rate(%)		7.2	7.6	7.8	8.2	8.5	7.9

World's freezer market was estimated in 3.31 billion dollars in 2014 and expected to reach annual growth rate of 7.9% and finally to be 4.83 billion dollars in 2019. Such growth was made from the worldwide expansion of food chain and supermarket.

For example, retail chains like ASDA, Walmart, Tesco, Sainsbury or so are expanding one's business to developing nations. The demand of freezer is increasing since the necessity of storing foods are easy to be spoiled got increased.

Expanding ice market

Because of global warming, average temperature in summer got higher and summer season got longer to resulted in increase of ice demand. Demand of ice in various markets like restaurant, apparel, retail-food, housing is increasing in these days.

| World's freezer market in 2014-2019 by users |

	2014		2015	2016	2017	2018	2019	
	market (100million dollar)	share (%)	market (100million dollar)	market (100million dollar)	market (100million dollar)	market (100million dollar)	market (100million dollar)	share (%)
Restaurant	12.1	37.0	13.2	14.2	15.4	16.9	18.6	38.5
Medical	10.6	32.0	11.4	12.2	13.1	14.0	15.0	31.0
Retail, food	4.0	12.0	4.3	4.6	5.0	5.5	6.0	12.5
Housing	3.0	9.0	3.2	3.5	3.8	4.2	4.6	9.5
Etc.	3.3	10.0	3.4	3.6	3.8	4.0	4.1	8.5

It is able to find that domestic demand of ice is increasing. For example, CVS market can be the answer. Below articles our from internet newspapers' contents.

CVS's 'ice market' grew in 100 billion won size

According to CU's analysis about 5 years of ice sale, it shows sale increase of 15.7% in 2013, 16.4% in 2014, 21.7% in 2015, and 33.2% in 2016 to show gradual growth. Especially 1st quarter of sales showed 43.3% of increase in sale than last year. Cup ice showed growth rate around 10% in 2013~2014, 22.8% in 2015, 38.2% in 2016, and 56.9% of increase in 1st quarter this year.

.....

Not only the sales of cup ice but sales of normal ice showed rising curve. Except the last year's case that supply got controlled by the ice shortage, annual growth rate of 5 years shows about 20% which is very high.

Would ice chaos approach.. price of CVS ice is rolling

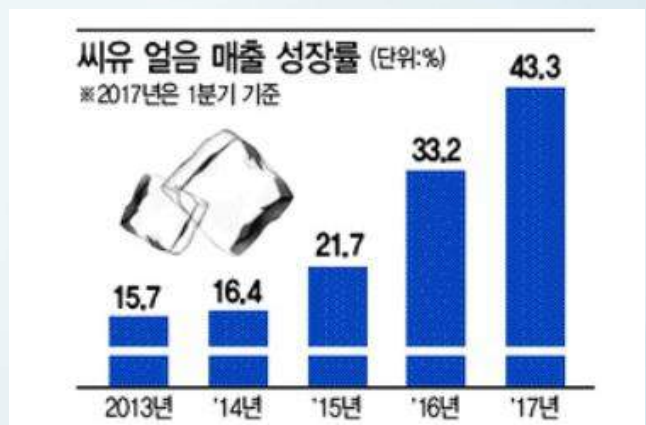
.....

◇Ice sales growth in 5 years

The reason why CVS companies raise price of cup ice and introducing big size ice is because demand of ice is increasing. According to CU's analysis about 5 years of ice sale, it shows sale increase of 15.7% in 2013, 16.4% in 2014, 21.7% in 2015, and 33.2% in 2016 to show gradual growth. Especially 1st quarter of sales showed 43.3% of increase in sale than last year. Cup ice showed growth rate around 10% in 2013~2014, 22.8% in 2015, 38.2% in 2016, and 56.9% of increase in 1st quarter this year.



<Choongang 2017>



<E-daily 2017>

ICE MAKER



| Features |

1. Got patent as the world's only ice maker.
2. Through developing unique ice making method, it used very transparent ice by utilizing the natural's freezing point.
3. By forming sandglass shape without molding, it have nickname of 'sexy ice' which highlight the display factor.
4. Shape of ice is very unique and let drink cool very fast and also good at keep it cool.
5. Freezing unit is individual unit to be used as freezer for purifier, refrigerator, vending machine or so which use cooling machine and have advantages to be developed in various derivatives.
6. Particularly purifying effect can be achieved in freezing process since it have filtration factor which filter calcium compound without filter.

● 10kg

Standard	Specification
Name of product	SG10S
Daily output(kg/day)	12kg/1day
Refrigerant	134A
Electricity	220V, 60Hz
Shape of ice	Sandglass Ice
Freezing time	15min.
Size(WxLxH)	285x455x474(mm)

● 30kg

Standard	Specification
Name of product	SG30S
Daily output(kg/day)	27kg/1day
Refrigerant	410A
Electricity	220V, 60Hz
Shape of ice	Sandglass Ice
Freezing time	25분
Size(WxLxH)	633x506x870(mm)

- Above product can be changed through product improvement.
- Condition : Outdoor temperature 21°C Water temperature 18°C
- Water that do not contain salinity and other impurities

TAECHANG ICE Module

Shapes of ice that used in CVS's ice cup is diverse like crack ice, cube ice, or nugget ice or so. What used most in these days is crack ice but demands of other shape got driven as the ice market got extended. As the demand of CVS ice cup is increasing, company which made light but big ice is expected to have competitiveness in market.



| Hygiene of ice module |

Ice module is made of SUS316 which is used in making spoon and chopsticks so it is permanent, safe, and economic since it do not require replacement.

| Distinctive ice-making process |

ICE MODULE can filter out impurities in water through spinning in the module.

| Water's freezing point |

With principal that 'water freeze fast when it is pure', it eliminate impurities of water through spinning to meet the freezing point faster than other companies' product.

| Able to make more than 2 ices in one pipe |

Other ice-hole type module must use cutting machine in cutting the ice but our product can make many ices in one pipe through our own core technology.

| Ice module in various shapes |

It can control module's shape with base of 4 pipes in 1st stage and can be utilized widely in design and good in space utilization.

It can be used for diverse use like purifier, refrigerator, vending machine or other which use cooling machine without limitation.

Ice Module Features

There are many ways to generate ice.

Taechang Ice Co., Ltd.'s ice-making module is different from the existing method.

MODULE
01

Rotating Method of Freezing and Cooling Water

By rotating the water in the ice-making module,
A clear and transparent sand-glass appearance will be produced.

MODULE
02

The ice shape is the most important factor

The shape of ice should be efficient for various drinks and uses.
The world's only ice form, sandglass Ice, is shaped to fit these need elements and has a Visual beauty that can further enhance your style.

MODULE
03

Safe Ice Module

The material of the module uses SUS316L to implement safety and hygiene at the same time.
This is a spoon-like material used at our table.

MODULE
04

Form of Module Outside Space Limit

The developed ice-making module is able to increase and decrease the number of modules in the 1st stage 4 pipes, so the stylization of design and space is high.
It can be combined with various types of products and you can make cold water of direct water type freely when applying ice water purifier.

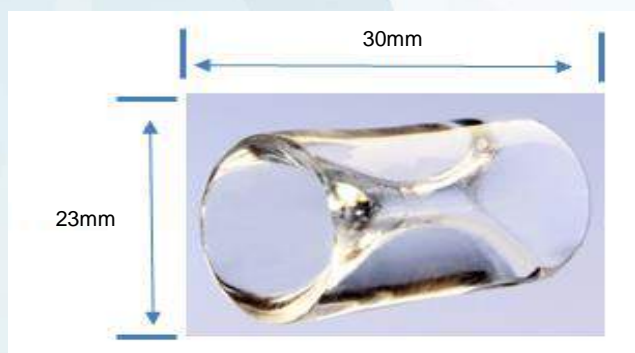
MODULE
05

Two or more ice from one pipe without separate molding

The existing ice-hole type module can cut the ice only by using the cutting machine, Unique core technology allows the creation of multiple ice from one or more pipes in two or more stages.

The only sand glass ice in the world

Clear, clean ice produced by the independent technology of Taechang Ice Co., Ltd.



- | Spec. |
- Refrigerant : R-134A
 - Diameter : 23 mm
 - Length : 30mm
 - Weight : 7 g

The size and length of ice can be changed depending on the application of refrigerant and refrigeration cycle.

- Length : 30 ~ 35mm
- Weight : 6 ~ 8 g

- The above Specification : refrigerant 134a / outside temperature 21°C / water temperature 18°C

- ✓ As soon as the temperature reaches the maximum temperature at which the ice starts to cool, clear ice is produced.
- ✓ When drinks are used, both ends of the ice are cold so that both ends are thin, and the solid center part keeps the coolness for a long time.



CRACKED ICE

| Crack Ice Maker |

- The thickness of ice crushed ice is 7mm~14mm, and the thickness can be adjusted according to the application.
- The production volume is higher than that of other ice making machines due to the use of binary evaporator.
- It can be used in various fields such as aquatic products, food processing, hospitals, building.
- Used material SUS316 which is same with spoon, chopstick to be safe and also economic since it do not get rusty.
- Able to freeze sea water and also can control the thickness.
- It's ice have natural shape to have strength in product's preservation and transportation.
- 500kg, 1ton



Example
(Livestock, product, fish storage)

	Ice production	Cooling system	Deicing system	ICE	Deicing speed	Outer material
Head Company	1ton(ton/day)	Air-cooled	Direct cooling (flowing water)	Robust and transparent	7~9 minutes	Stainless steel or Powder coating
Other Company	1ton(ton/day)	Air-cooled	Fresh water (water freezing)	Opaque by air layer formation	15~20 minutes	

※Taechang ice' Ice Maker(1ton standard)

Ice Module Features

※Adjustable from 1 to 4 stages



TM34 (Three-stage form)

Pipe quantity : 4

Length : 170mm



TM38U (Three-stage form)

Pipe quantity : 8

Length : 170mm



TM38B (Three-stage form)

Pipe quantity : 8

Length : 170mm

Taechang Ice Co., Ltd.

354-46, Mojeon 1-gil, Seonggeo-eup, Seobuk-gu, Cheonan-si, Chungcheongnam-do, 31042, Korea
T. +82-41-414-8110 **F.** +82-41-414-8112 **E.** pjw3146@icesolution.co.kr **W.** www.icesolution.co.kr