



ABI CO., LTD.

<http://www.abi-net.co.jp>

“Why don’t you upgrade your existing quick freezer to the machine with leading edge technology by having it retrofitted with CAS system.



Brand Mark

Results obtained by a combination of a quick freezer and CAS system.

As shown above, by combining a quick freezer and CAS technology, water and red food coloring are evenly crystalized. Freshness of food is preserved because of no damage on the cell walls and membranes as in the picture.



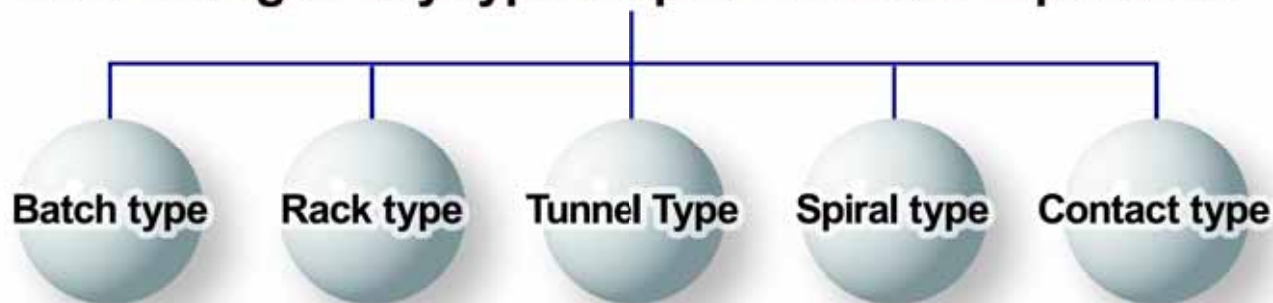
Quick freezing without applying CAS function.

Water and red food coloring are separated. The picture shows the reason how freezing damage affects the cell of food.

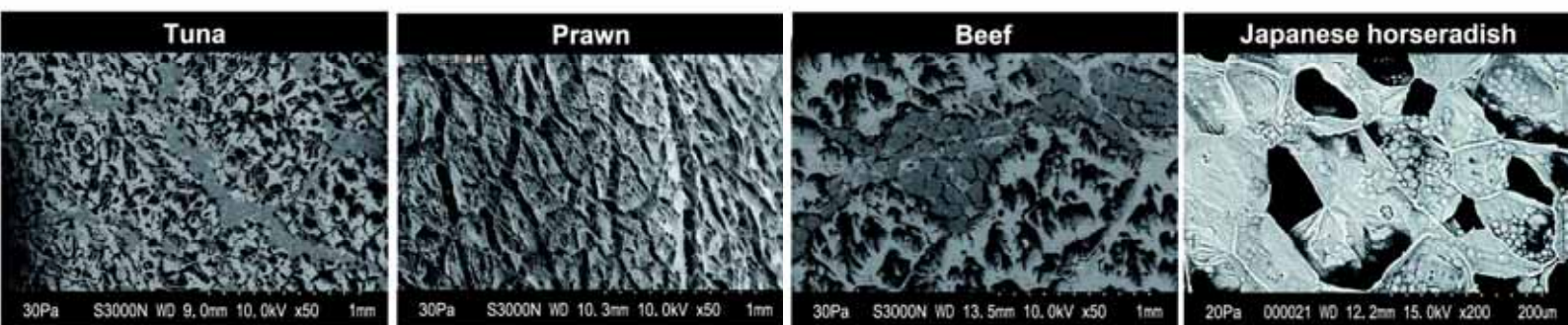
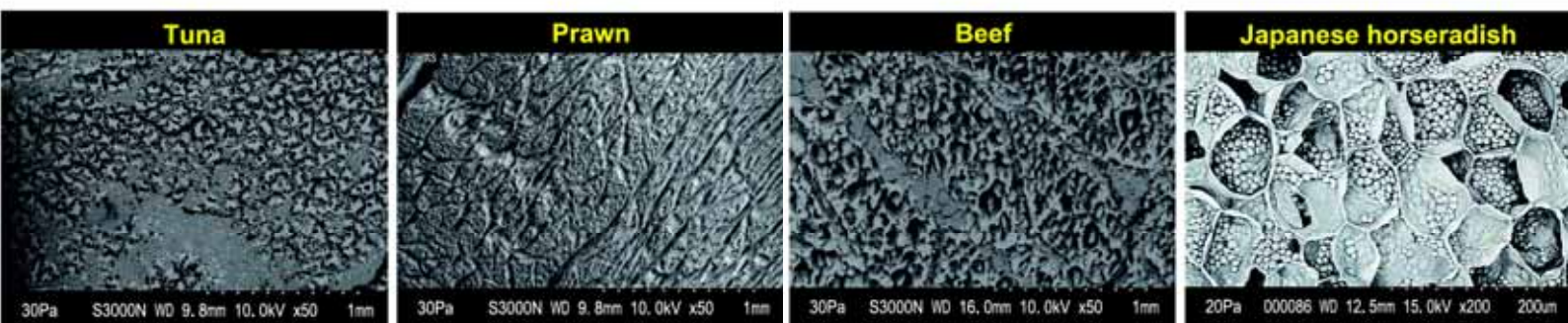


“The World’s First system” that does not damage the cellular tissues. Freshness and tastiness can be dramatically improved by combining the **“System with your existing quick freezer”** with CAS system.

Retrofitting to any type of quick freezers is possible.



**Difference on cell structure shows this big difference between freezing by a quick freezer with CAS function (shown above) and freezing by a quick freezer only (shown below).
Tastiness called for by consumers can be materialized.**



The objective of a quick freezer is to freeze the items.
The reason why it is hard to remain fresh exists in this aspect.
Cells and freshness of food don't revive when frozen by a quick freezer.

Pictures taken December, 2008 in collaboration with Hitachi Ltd. Electron Microscope Laboratory.

ABI's Cells Alive Technology (CAS Technology) is a technology that was born from Medical Science.

“Keep the cells tissues alive”

Results obtained by these experiments

Technology development by the donated humane ovaries.

ABI's technology development has advanced this far.

Upon completion of the technology, an era will come when a healthy baby can be delivered to a patient who received cancer treatment.

日本経済新聞

2007年(平成19年)8月20日(月曜日)

卵巣傷めず凍結保存

医薬基盤研など がんの新治療法期待

医薬基盤研究所・霊長類医学研究センター(茨城県つくば市)は京野アトククリニック(仙台市)、冷凍・冷蔵装置のアーヒー(千葉県我孫子市)と共同で、卵巣をそのまま凍結保存する技術を開発した。食品保存で使われている凍結法を応用、卵巣を傷つけないよう、卵巣には水分が多く含



News report in “The Nikkei”,

Freezing ovaries without damage

Joint development by The Tsukuba Primate Research Center, National Institute of Biomedical Innovation and ABI CO.LTD.

Expected New Method for Treatment of Cancer

Cryo-preserved legs of a mouse are recovered as in the picture below. Advancement CAS technology has come this far.

This system originating from medical science is being used to maintain freshness of fishery products produced by fishery cooperatives.

It owes to the combination of “High Super Shock Freezer with CAS function” and “Freezing Food stocker with Oscillating Harmonic system” that the fishery products keeps practically fresh state after being preserved for three years.



CAS凍結、マウスで実験

組織細胞再生を確認

ABI and Professor Matsuda of Kyoto University, the core center for medical science and care has begun collaborative research on blood preservation technology.

- ① Research and develop on preservation technique of genome elucidation, and storage system.
- ② Research and develop on techniques of utilizing heart iPS cells and storage system.
- ③ Research and develop on blood preservation technology and its storage system.
- ④ Research and develop on preserving technology for organs which can preserve from 24 hours up to 50 hours while 2 hours can only be preserved at the moment.



(From the right)

Kyoto University

Fumihiko Matsuda, Professor and director of the core center for medical science and care.

Professor, Masatoshi Hagiwara

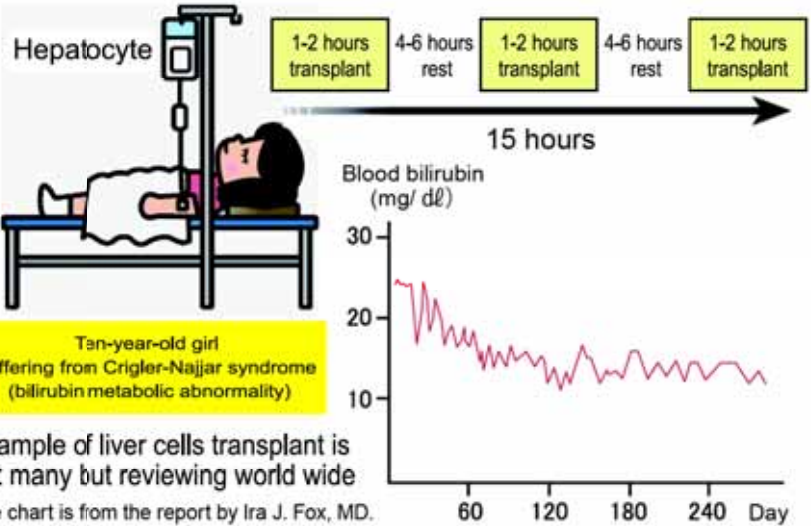
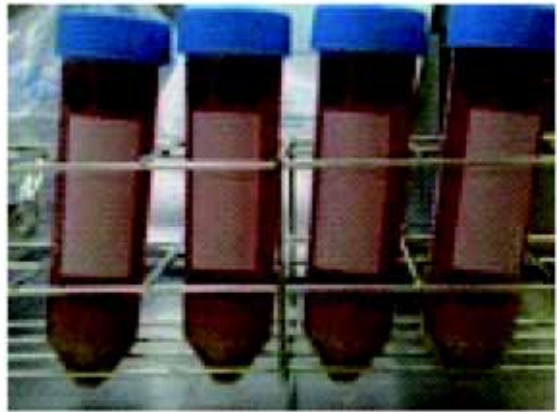
Associate professor, Tatsuaki Tsuruyama

(at ABI laboratory)

Materialization Program for liver cell transplant to children

Establishment of transplant reclamation treatment instead of live liver transplant

Ethical Committee No.210 Jyunichiro Fujimoto (representative) et al.
 Study for establishment of culture of human liver cells aiming at cells treatment and preserve method



Liver Cells after Thawed



Cells survival ratio 71.1% very good result

	Live cells separated	Live cells ratio
Recipient	7.3×10^9	90.3
Recipient	7.3×10^8	73.0
Recipient	1.2×10^{10}	81.5
Surplus donor	8.3×10^7	71.2

by Dr. S. ENOSAWA (National Center for Child Health and Development)

“CAS” has been applied to Nursing Care Food and Hospital Food Expansion of possibility by using CAS

Joint development for Nursing Care food is proceeding between ABI CO. LTD. and Mukogawa Women's University. “Become healthy by taking proper diet” is the slogan of this project. ABI CO. LTD. and Mukogawa Women's University have been practicing joint research that started from food analysis like this five years before.

ABI CO. LTD. has been lending a Quick Freezer with CAS function free of charge for joint research on nutrition and or quality of CAS frozen food at The Food Science and Nutrition Studies Laboratory at Mukogawa Women's University.

ABI CO. LTD. is contributing to their studies on their “Support for the Elderly Project.” Mukogawa Women's University is promoting a project to support nutrition of the elderly and for improvement of their diet.

They are also supporting the elders by stimulating motivation for self-reliance of the elders themselves.



- Joint study on development of safe food without using food additives or any food stabilizer.
- Maintaining health by proper combination of food. Joint development of health Baby food, or food for children.
- New CAS equipment or preservation method
- Development by uniting Food Science, Physical Chemistry, Medical Science



At the 70th Anniversary of “The Society of the Leading Chefs of Tokyo”,

Mr. Norio Owada, President of ABI CO. LTD. made a lecture about a story regarding the birth of CAS machine and his philosophy about cooking.

The 70th Anniversary of “The Society of the Leading Chefs of Tokyo” was held at Hotel Grand Pacific Le Daiba. Mr. Owada was invited as a guest of honor. He made a lecture about his philosophy saying, that the food processed by CAS machine keeps tastiness because it doesn't destroy the cell membrane. He emphasized CAS-processed food should be counted as medicine. CAS technology has its origins in medical science and is now flourishing into the world of cooking. The technology of cooking keeps you healthy and he described how it has been applied in the world of medicine. He also expressed appreciation to some of the leading chefs of Japan for having approved of superiority of CAS Frozen food materials and also thanked them for having declared that they would continue using CAS with recognition of CAS FRESH materials as fresh, not frozen food. He commented that he would continue his efforts to promote CAS FRESH food materials and will manage to develop small size freezer with CAS function and small size freezing food stocker with oscillating harmonic system.



July 14, 2013

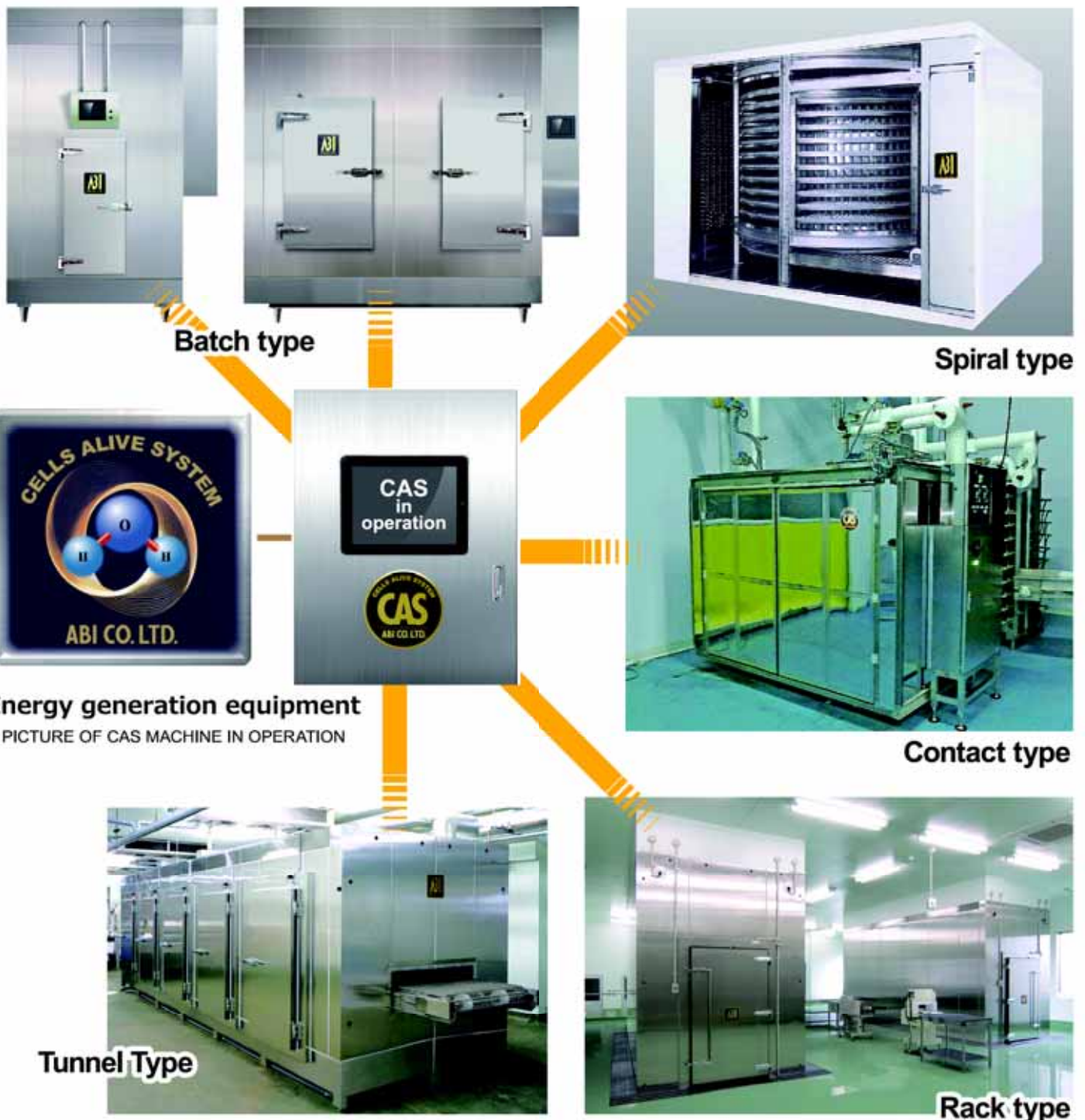
CAS can be retrofitted to any kind of quick freezers.
 CAS can maintain quality resulting extension of shelf life,
 without deterioration and losing original freshness, flavor, color, etc.

Super High Freezing System with CAS function (-50°C)

CAS technology consists of 8 energies combination.

About 100 years passed since Mr. Birdseye from United States brought up quick freezing theory. Forbes, an American business magazine pointed out that no new technology except merely freezing has been appeared within the past century. There is no doubt that ABI's High Super Quick Freezing system and the ones manufactured all over the world are based on Mr. Birdseye theory.

However, Quick Freezing System of ABI is the world first technology CAS retrofitted, which makes cell alive system, almost fresh after thawing, which had not been thought of or experimented by anybody. It is said that this technology greatly extend the benefit of the customers in a big difference.



Energy generation equipment
 PICTURE OF CAS MACHINE IN OPERATION

Quick Freezer with CAS function (10 Tray type)



The photograph is for illustrative purpose only.

● Dimensions	W1225 × D1310 × H2080 (mm)
● Chamber Temperature	-55℃ ~ -40℃
● Freeze System	Air blast
● Installation	On the floor / Compressor separate placement
● Insulation Panel	In / Out side Stainless304
● Pitch	50mm~100mm variable
● Dimension of Tray	400 × 600 (600 × 600 as an option)
● Defrost	Heater (with drying performance)

Please note that this outline would be changed without advance notice.

Quick Freezer with CAS function (20 Tray type)



The photograph is for illustrative purpose only.

● Dimensions	W2300 × D1450 × H2275 (mm)
● Chamber Temperature	-55℃ ~ -40℃
● Freeze System	Air blast
● Installation	On the floor / Compressor separate placement
● Insulation Panel	In / Out side Stainless304
● Pitch	50mm~100mm variable
● Dimension of Tray	400 × 600 (600 × 600 as an option)
● Defrost	Heater (with drying performance)

Please note that this outline would be changed without advance notice.

Quick Freezer with CAS function (1~3 Rack type)



The photograph is for illustrative purpose only.

● Chamber Temperature	-55℃ ~ -40℃
● Freeze System	Air blast
● Installation	Digging Type
● Insulation Panel	In / Out side Stainless304
● Pitch	100mm fixing
● Dimension of Tray	400×600 (600×600 as an option)
● Rack Dimensions	680×880×1700 (in case of tray 400×600 type)
● Defrost	Heater (with drying performance)

● Racks



Please note that this outline would be changed without advance notice.

Quick Freezer with CAS function (4 Rack type)



The photograph is for illustrative purpose only.

● Chamber Temperature	-55℃ ~ -40℃
● Freeze System	Air blast
● Installation	Digging Type
● Insulation Panel	In / Out side Stainless
● Pitch	100m fixing
● Dimension of Tray	400×600 (600×600 as an option)
● Rack Dimensions	680×880×1700 (in case of tray 400×600 type)
● Defrost	Heater (with drying performance)

● Racks



Please note that this outline would be changed without advance notice.

Tunnel Quick Freezer with CAS function



The photograph is for illustrative purpose only.

● Chamber Temperature	-55℃ ~ -40℃
● Freeze System	Air blast
● Insulation Panel	In / Out side Stainless304
● Freezing Capacity	300kg type~1,000kg type
● Defrost	Heater (with drying performance)

Please note that this outline would be changed without advance notice.

Spiral Quick Freezer with CAS function



The photograph is for illustrative purpose only.

● Chamber Temperature	-55℃ ~ -40℃
● Freeze System	Air blast
● Insulation Panel	In / Out side Stainless304
● Freezing Capacity	500kg~1,000kg
● Defrost	Heater (with drying performance)

Please note that this outline would be changed without advance notice.

Illustration of handling and operating with Quick Freezer with CAS function (Tray Type)

● Image of inside of chamber

● Staff working with the system



Pitches of trays are variable, so you can put trays depending on the products.

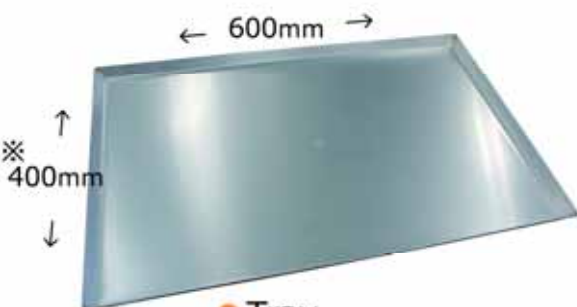


Illustration of handling and operating with Quick Freezer with CAS function (Rack Type)

● Image of inside of chamber

● Staff working with the system

● Racks



● An illustration of putting products on the tray
Tray : 400×600



● Tray
(made by aluminum which is light and strong)
※600×600 as an option

Freezing Stocker with Harmonic Oscillating Function

Storage Function is changing from freezing to stock preservation function. Therefore, innovation of new facilities is necessary. ABI proposes Cold Warehouse Freezer operating with Harmonic Oscillating function and long term lossless preservation function.

Following the proper results of 5-year-preserved products experiments, ABI proposes long-term preservation with almost fresh taste after thawing.



Freezer freezing stocker with Harmonic Oscillating function



Large size freezing warehouse freezer with harmonic oscillating function (2000m x 6m)

This function has the following features

- ①Magnetic field is provided in freezing chamber
- ②Having efficient thermal storage system
- ③Quality deterioration does not occur because the magnetic field uniformly passes through the products
- ④Having antioxidant function
- ⑤Having antibacterial function



The major cause of oxidation and freezing burn are incurred by re-crystallization during storage. After this problem was solved, ABI proposed stock preservation. Even after 1, 3 or 5 years preservation, food can be stored stable, tasty and fresh after thawing.



Large size freezing Auto rack system with harmonic oscillating function



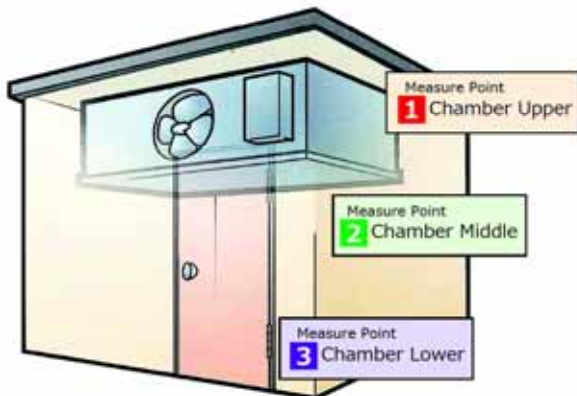
Reach-in type freezing showcase with harmonic oscillating function (Adopted by Okay Store)

Benefits that customers can eat fresh constant quality without any loss

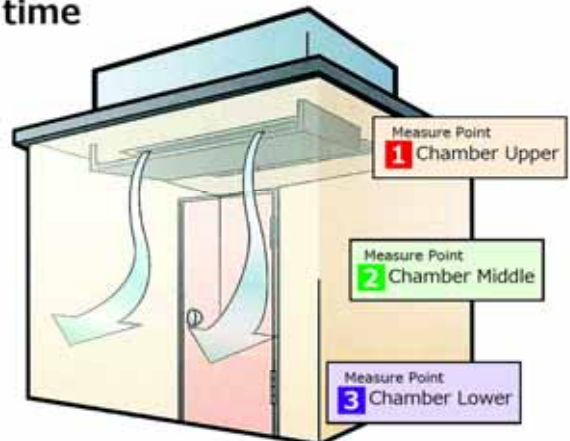
HARMONIC STORAGE FUNCTION AND ITS FEATURES

Even Fishery Products in frozen conditions, chamber temperature would rise due to defrosting and opening of doors, which causes quality deteriorations. Cold air created by Harmonic function and Harmonic Energy to hit the Products, the coldness goes through and products temperature is prevented to rise. Therefore, you can eat fishes in fresh conditions without quality deterioration.

- No change of quality of frozen foodstuff
- Flexible responses from 30 m³ in accordance with necessity of clients
- Space saving setting up
- Recovery to set temperature in short time

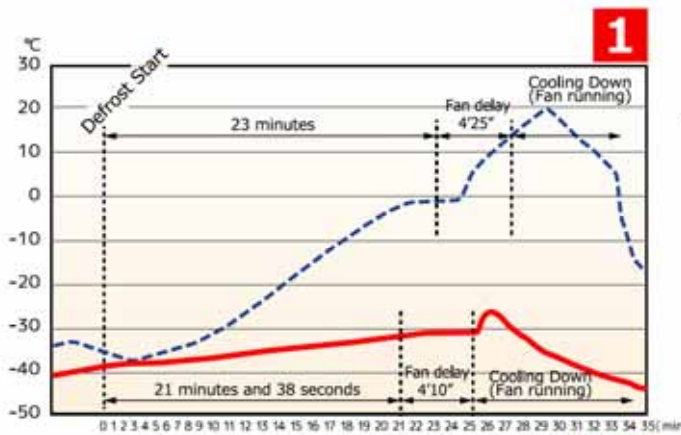


● Freezer Stocker



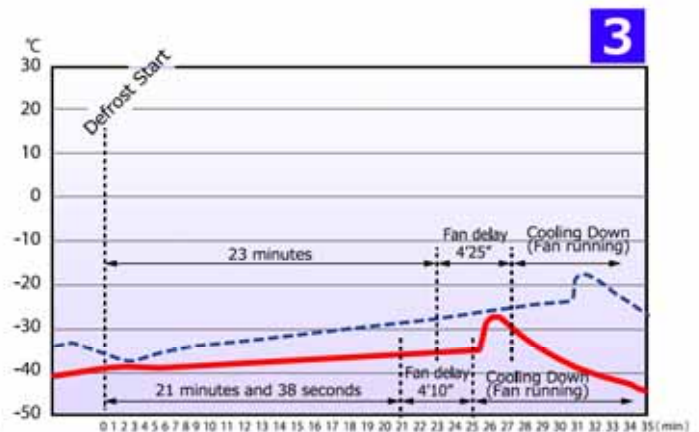
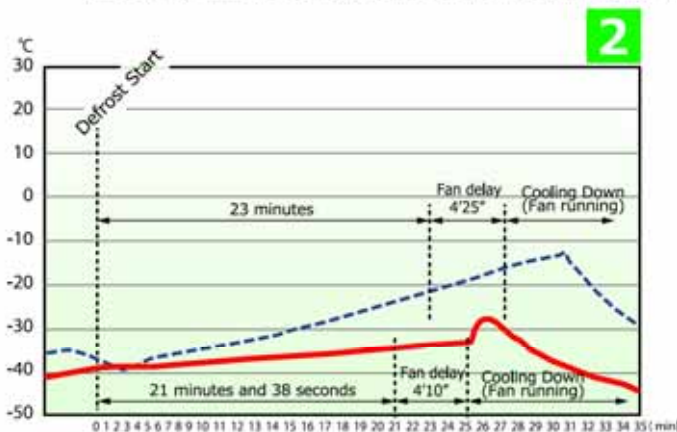
● Harmonic Stocker

Useful application of Harmonic Storage Function of ABI
 High efficiency of defrost materializes Energy Saving
 (*Refer to following chart for chamber temperature rise at defrost)



Temperature comparison at defrosting
 (30m² Harmonic Stocker)

- Evaporator present style
- Harmonic Storage Freezer



*Data at collaboration R&D with Mitsubishi Electric Co., Ltd.

Freezing Stocker with Harmonic Oscillating System (4 Door type)



The photograph is for illustrative purpose only.

● Dimensions	W2100 × D1400 × H2700 (mm)
● Chamber Temperature	−35℃ ~ −40℃
● Electric Capacity	3 phases 200V 5.3kW / single phase 100V
● Insulation Panel	In / Out side Stainless304
● Pitch	50~100(mm) variable
● Dimension of Tray	400 × 600 (600 × 600 as an option)
● Tray	56 trays

Please note that this outline would be changed without advance notice.

Freezing Stocker with Harmonic Oscillating System (10 Door type)



The photograph is for illustrative purpose only.

● Dimensions	W4560 × D1500 × H2700 (mm)
● Chamber Temperature	−35℃ ~ −40℃
● Electric Capacity	3 phases 200V 5.3kW / single phase 100V
● Insulation Panel	In / Out side Stainless304
● Pitch	50~100(mm) variable
● Dimension of Tray	400 × 600 (600 × 600 as an option)
● Tray	140 trays

Please note that this outline would be changed without advance notice.

Large size freezing warehouse with harmonic Oscillating System



The photograph is for illustrative purpose only.

● Capacity	100m ² ~ 330m ² 16.6t ~ 53.2t
● Electric Capacity	53.9kW ~ 89.9kW (depends on capacity)
● Temperature of inside	−35℃ ~ −40℃

Please note that this outline would be changed without advance notice.

Long Term Freshness Maintaining Refrigerator

Everybody has been dreamed of but never materialized freshness maintaining refrigerator, not only to keep freshness of perishable foodstuff like vegetables and fruits, but also can store meat, fish and food in fresh conditions. Everybody agrees it is ideal to be able to maintain foods and foodstuff, 3 days rather than 1 day, half a month rather than 3 days, 3 months rather than half a month.

ABI has developed such function taking over 35 years and attained for important foodstuff without losses, deliciousness being reserved in freshness condition.

ABI's HIMURO type freshness maintaining refrigerator is superior in heat accumulation ratio which is provided inside and inner walls of store room. Risen temperature by door open for loading/unloading of foods will quickly be recovered by immediate release of accumulated heat.

FEATURES:

- Always inside temperature is kept to set temperature
- Ethylene gas which vegetable and fruit emitting is resolved and eliminated
- Airborne bacteria affecting food stuff and food is eliminated
- Nanotechnology applied moisture generator, 95%~98% mist is constantly kept in the refrigerator
- Save energy, save electricity design



Freshness maintained Refrigerator
—— Medium Type



Freshness maintained Refrigerator
—— Smaller Type



Freshness maintained Refrigerator
—— Larger Type



Freshness maintained Refrigerator
—— Multi Door Type (6Door)



JAPAN 2010

CAS Suffolk lamb in 2010 APEC, JAPAN

CAS frozen Suffolk lambs were served at 2010 APEC Summit Meeting which was held in Yokohama, Japan as main dish for dinner. This Suffolk lamb was grown and CAS frozen by Shizuo Farm in Hokkaido.



Hotel and restaurants around the country primarily in Tokyo and Osaka, deliver delicate taste of mutton to their customers. Furthermore, CAS frozen food is served as the main dish of the passengers of first and business class.



Dishes prepared with CAS traveled the oceans to the Culinary Olympics held in Germany

The 22nd International Exhibition of Culinary Art was held in Germany in 2008. Chef Yamada represented Japan in the Individual Division at this event which is held once every four years. He prepared his cuisine with the use of CAS technology and extremely surprised the other chiefs from around the world. This surprise was even more when he took the "Bronze Medal" at this event.



Preliminary arrangement for varied frozen ingredients was done in Japan ▶



Cell Alive System Technology is evaluated and trusted by Nations and Official Organizations as the leading edge for 21st Century. By long-term preservation of agriculture, fishery and stockbreeding industry products, CAS can make it possible to fight against world population increase crisis.

[JAPAN CREATION AWARDS]

- **Sharp** (1994 Developing Technology Award)
Accumulated technology for Liquid Crystal

- **Panasonic** (1998 Development Award)
Nickel-Hydrogen Battery for Electric Cars

- **ABI (2009 Development Award)**

CAS Technology of ABI is highly evaluated as the technology of changing the fresh foods commonsense.



Sculpture designed by Taro Okamoto



3rd Tsukuba Venture Award, Tsukuba Time Machine Award
[NPO Tsumugi Tsukuba]



Certified as one of the 300 strongest small-medium sized enterprises
[Ministry of Economy, Trade and Industry]



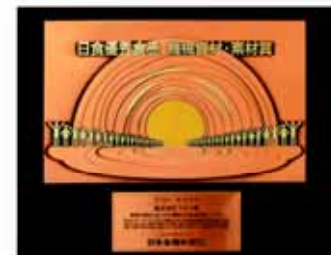
Certified as one of the 88 best collaborations between agriculture, commerce and industry
[Ministry of Agriculture, Forestry and Fisheries, Ministry of Economy, Trade and Industry]



34th Invention Award, Nikkan Kogyo Shinbun Award
[The Japan Society for the Advancement of Inventions, Nikkan Kogyo Shinbun]



3rd Monozukuri-Japan Award, Special Award
[Ministry of Economy, Trade and Industry]



12th Nisshoku Excellent Food Machine /Material Award, Machine Category
[Japan Food Journal Co., Ltd.]



Small and Medium Enterprise Agency Award, Encouragement Award
[Japan Institute of Invention and Innovation, Small and Medium Enterprise Agency]



14th Ando Momofuku Award, Outstanding Award
[Ando Foundation]



Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology
[Ministry of Education, Culture, Sports, Science and Technology]



Nine District and Prefecture Shining Industrial Technology Award
[Nine District and Prefecture Leader Conference]



Entrepreneur of the Year 2010, Japan Challenge Spirit Category Finalist Award



"Application of CAS for Food Industries and Medicine" published at the International Symposium on Freezing Cells, and Proof of Technical Rating received.



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