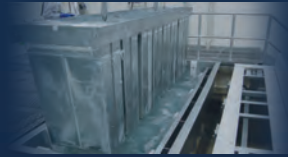


NewTon

Premium NH₃ / CO₂ Cooling System







Shaping Refrigeration Systems for Tomorrow

An industrial use refrigeration system has a lifespan of several decades. Precisely because you will rely on this equipment for a long time, it must always live up to your expectations.

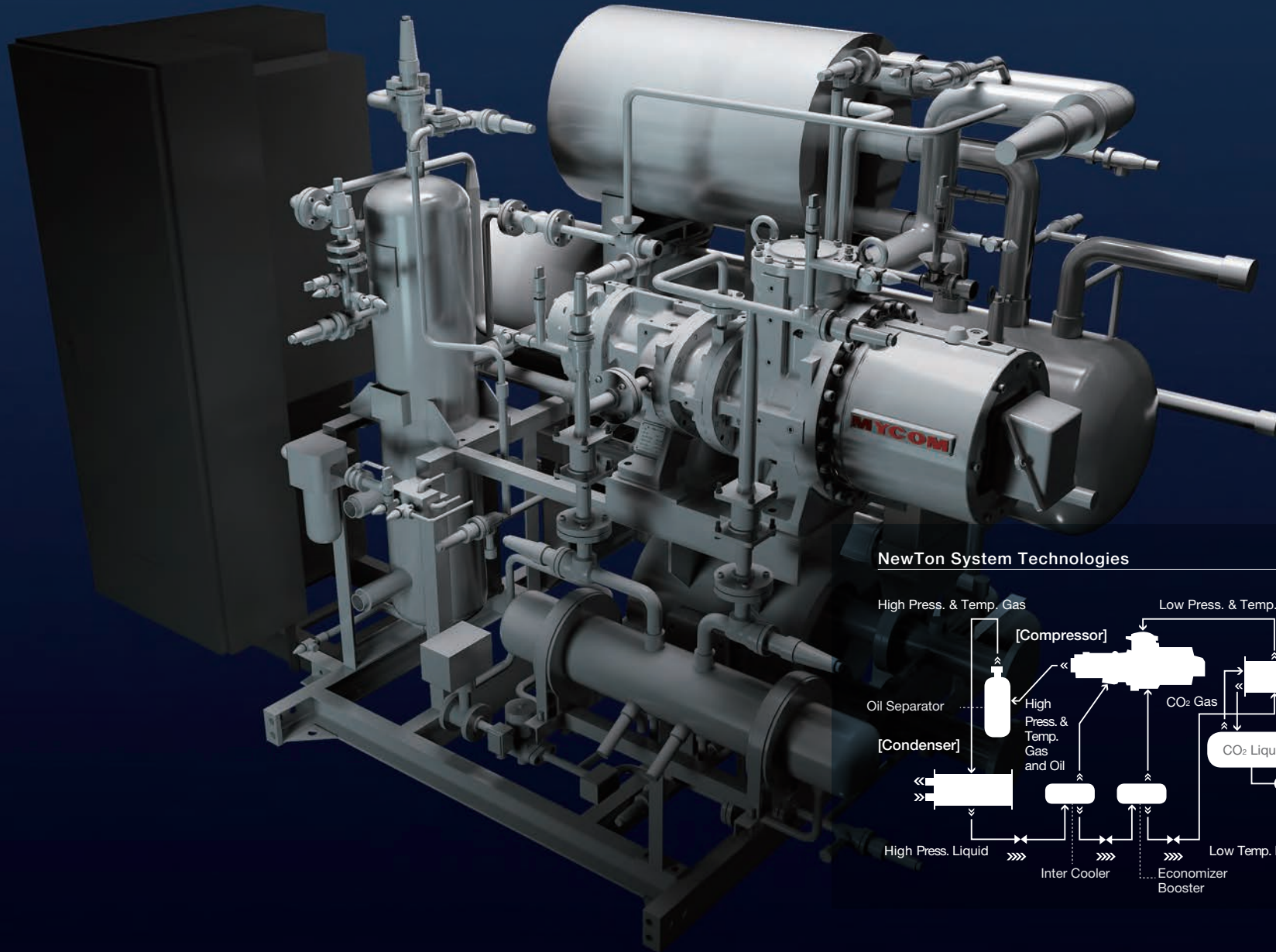
Where is the world heading?
How will the cold chain alter?
How will your business develop?

In order to respond to these needs, based on the concepts of natural refrigerants, energy saving, and ease of use, we at Mayekawa drew on all the technologies that we had developed to create a part of the future.

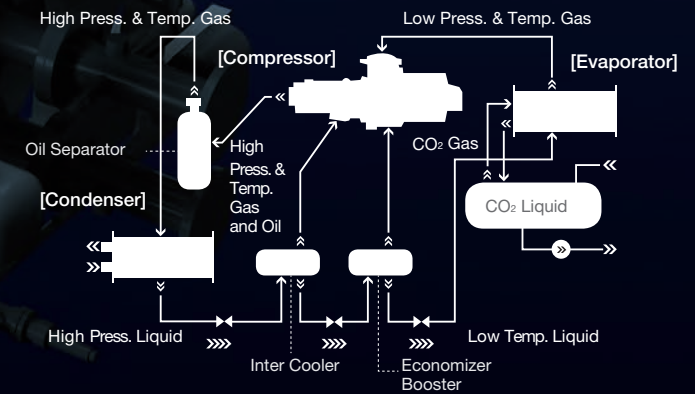
This is NewTon.

Mayekawa since **1924.**

A leap forward for industrial use Refrigeration systems



NewTon System Technologies

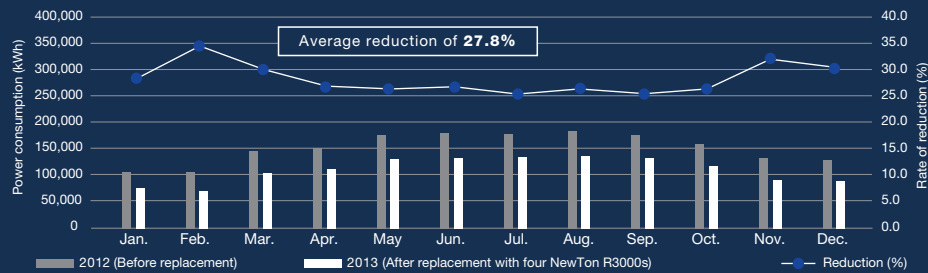


Attaining high efficiency, designed specifically for each type of use.

In order to always operate at high efficiency, we developed specialized models suited to each end use, and came up with appropriate coolants. While consuming little power, they exhibit great capacities. Whether used for storage, ice making, freezing, or in any other field of use, they contribute to energy saving and a reduction in running costs.

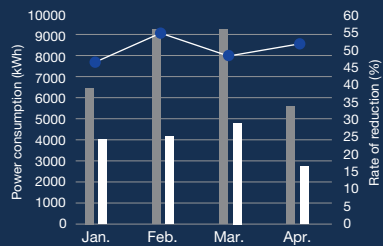
For cold storages NewTon R / NewTon C

Comparison of the electric power consumption before and after switching to NewTon



* Electricity consumption is for the whole factory (including elevators and lighting)
 * Capacity 39,200 m³

For ice arenas NewTon S

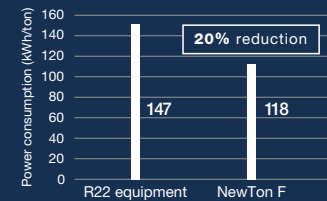


* The two facilities are three-sheet curling facilities in the same area

For freezers NewTon F

Energy saving achieved by switching from R22 equipment to NewTon F

Example of use with frozen cooked food
 Comparison of electricity consumption by the cooling equipment used in the production of 1 ton of frozen food



* In the comparison, the R22 equipment and NewTon F were each used in combination with a freezer.
 NB) The volume of electricity consumed may vary according to food product type, temperature upon introduction into the equipment, and freezer type.

Peace of mind is the key to higher quality cooling.

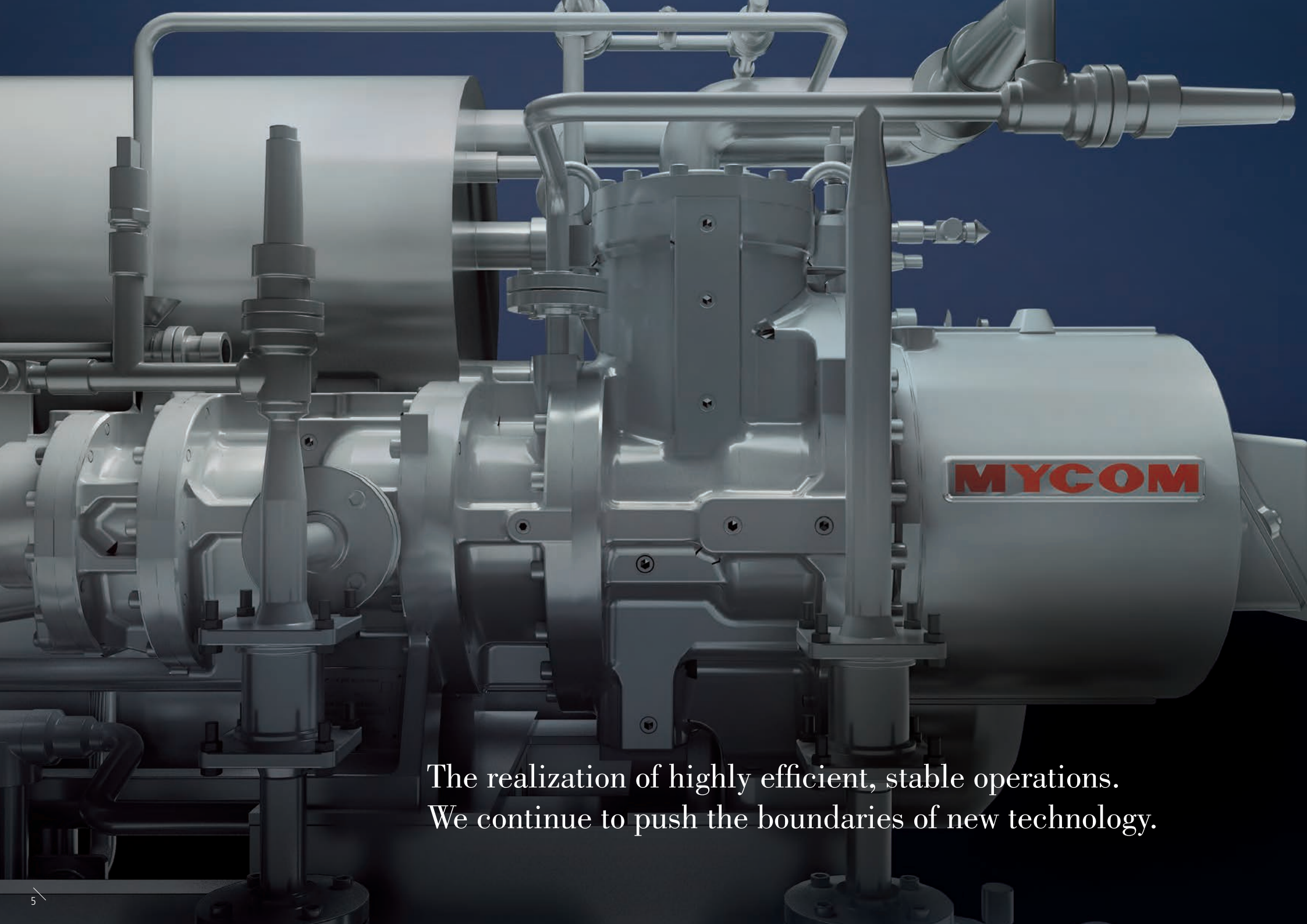
You want to cool your products in an environmentally friendly way, with peace of mind. We have used ammonia and CO₂, natural refrigerants which do not contribute to the destruction of the ozone layer or global warming, and have minimized the risk of ammonia leakage. Moreover, we have installed a remote monitoring system and a predictive maintenance diagnostic system. All this brings an unparalleled level of safety and peace of mind.

5 elements behind high quality cooling



Their compact style makes for a smooth introduction.

By packaging together our system, we have greatly reduced the on-site installation work, avoiding potential problems. Our high quality products reach you just the way they left the factory, wherever you are in the world.



The realization of highly efficient, stable operations.
We continue to push the boundaries of new technology.

Energy-Saving

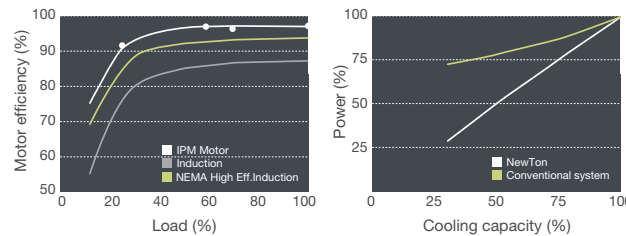
Each part - the compressor, heat exchanger, and motor - is a distillation of cutting edge technologies, achieving energy saving.

□ Semi-hermetic screw compressor

Equipped with a high performance IPM motor

Installation of a synchronous IPM motor reduces power consumption loss. Moreover, an inverter is used to drive the motor, and the speed of revolution is set at 4,500 rpm (5,600 rpm in some cases). Stepless regulation of the speed of revolution by partial loading is included as a standard feature, delivering energy saving.

* IPM motor: Interior Permanent Magnet Synchronous Motor



Use of screw rotors with a new type of more efficient profile

The use of a new profile involving high-level production techniques decreases internal leakage, achieving high efficiency and noise reduction.



□ Shell and plate heat exchanger

A high performance, compact, next-generation heat exchanger

Not only has this equipment been made more compact, the surface area available for heat exchange has increased compared with the conventional shell and tube model, making heat exchange possible even with small differences in temperature.

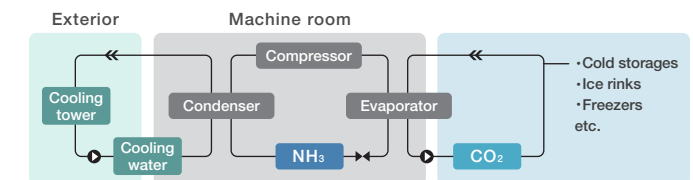


Safety

Minimal risk of ammonia leakage.

□ Ammonia/CO2 indirect cooling method

The ammonia can be contained in the machine room alone



Low ammonia charge quantity

The employment of an indirect cooling method and a high performance heat exchanger minimizes the amount of ammonia used. The charge quantity of the NewTon R-3000 is 25 kg.

Line-up

We offer a broad line-up of NewTon models specifically for different needs and uses. Compared with general-use machines, they are streamlined and efficient, creating an optimal cooling environment.

For Cold storages and Ice plants

NewTon R / NewTon C

An optimal environment for each type of use and item stored.
Depending on the required temperature, R and C can also be used in combination.

An overall reduction of around 50% in electricity consumed by the cooling equipment

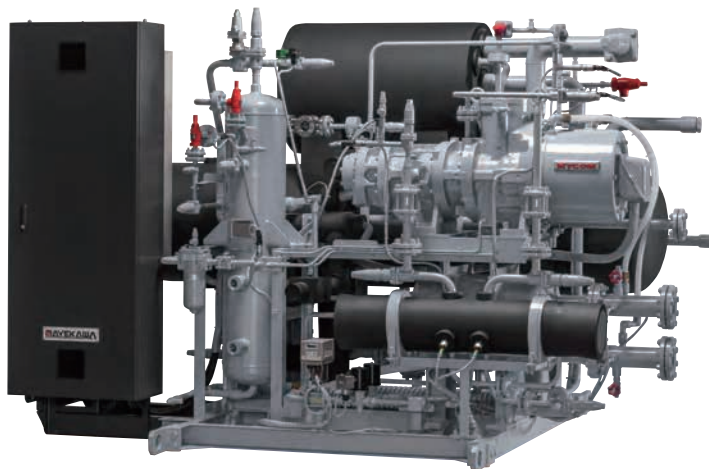
60% to 70% of electricity used in cold storage is used by the cooling equipment. By switching to NewTon, you can greatly reduce your electricity consumption.

Install new equipment without stopping operations

Because this cooling equipment is so compact, it can easily be transported in a cargo elevator, and you can switch it over without needing to shut down your cold storage.

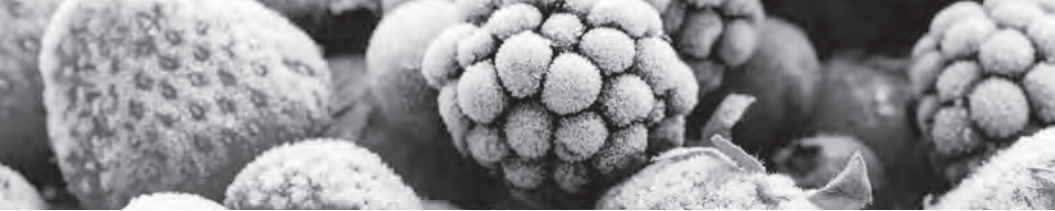
Remote monitoring and scheduled operations become possible

You can monitor operations remotely from an office or observation room, via a computer or touch panel. Centralized control and scheduled operations are also supported.



		NewTon R-3000	NewTon R-6000	NewTon R-8000	NewTon C
CO ₂ supply temperature		-32°C	-32°C	-32°C	-5°C
Cooling capacity [※]		94.7kW	189.4kW	270.0kW	237.0kW
Motor kW		45kW	90kW (45kW×2)	120kW	70.4kW
C.O.P.		2.10		2.25	3.37
Power source	For motor	AC380 to 480V×50/60Hz			
	For control	AC200 to 240V×50/60Hz			—
Refrigerant		AC200 to 220V×50/60Hz			
Refrigerant		Primary: Ammonia(R717), Secondary: CO ₂ (R744)			
Compressor	Type	Semi-hermetic compound screw			Semi-hermetic single stage screw
	Drive method	400V class: Matrix converter/200V class: VFD			VFD
	Motor type	IPM motor			
Ammonia charge		21kg	42kg(21kg×2)	60kg	50kg
Outer dimensions		L2,780×W2,050×H2,050mm	L5,000×W2,050×H2,100mm	L4,200×W2,950×H2,650mm	L3,100×W2,100×H2,650mm
Net weight		2,550kg(type without receiver)	6,500kg	7,900kg	4,800kg(type without receiver)

※ in the case of cooling water at 32°C



For Freezers

NewTon F

A specialist freezer model for food processing plants.
Its efficient operations support increased productivity.

Reducing frost formation on the evaporator coil maintains high operational efficiency

Inside the unit is liquefied carbon dioxide gas (CO₂), giving peace of mind

Decreasing the difference between the air temperature inside the freezer and the evaporating temperature of the coil reduces frost formation on the latter. This prevents deterioration in the functionality of the refrigeration system.

An efficient response to load change by controlling the speed of revolution

		NewTon F-300	NewTon F-600	NewTon F-800
CO ₂ supply temperature		-42°C	-42°C	-42°C
Cooling capacity*		70kW	140kW	170kW
Motor kW		43kW	86kW (43kW×2)	100kW
Power source	For motor	AC380 to 480V×50/60Hz		
	For control	AC200 to 240V×50/60Hz	—	
Refrigerant		Primary: Ammonia, Secondary: CO ₂ (R744)		
Compressor	Type	Semi-hermetic compound screw		
	Drive method	400V class: Matrix converter/200V class: VFD		
	Motor type	IPM motor		
Ammonia charge		20.7kg	42kg(21kg×2)	60kg
Outer dimensions		L2,780 × W2,050 × H2,050mm	L5,000 × W2,050 × H2,100mm	L4,200 × W2,950 × H2,650mm
Net weight		2,990kg	6,500kg	7,900kg

※ in the case of cooling water at 32°C

For Ice arenas

NewTon S

Always in top condition for ice sports.
We bring you an “eco arena”, environmentally friendly and easy to run.

An annual overall reduction of around 50% in the electricity consumed by the cooling equipment

Using liquefied carbon dioxide gas (CO₂), which has low viscosity and high heat-transporting density, as the coolant for the rink cuts the pump's power usage to around 1/10. Moreover, new cooling pipes with excellent heat conductivity shorten the time needed for freezing which conserves electricity.

Creating uniformly high-quality ice conditions

Eliminating the temperature difference between the CO₂ delivered to the ice rink and that returning to the cooling unit solves the problem of uneven temperatures on the surface of the ice. Furthermore, optimal operational control allows you to maintain the appropriate ice quality and uniform ice temperature for each type of sport.

Fully automated operations allow precise ice rink management.

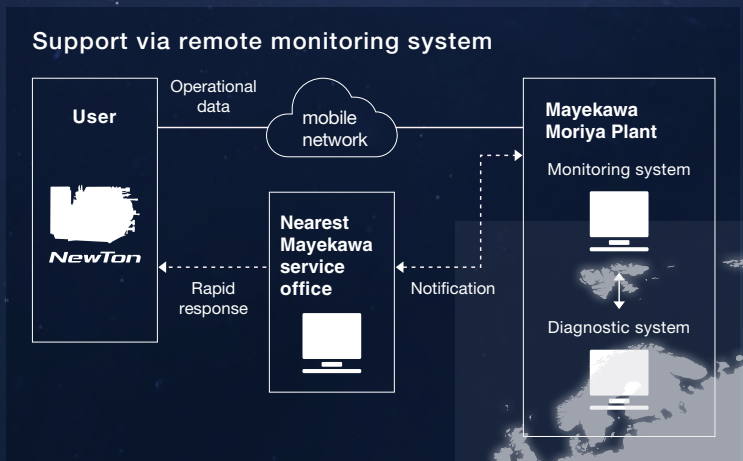
- ◇ Controlled ice temperatures appropriate for each type of sport
- ◇ Centralized control and scheduled operations through remote monitoring
- ◇ Accumulation of data on ice temperature, equipment status, etc.

		NewTon S
CO ₂ supply temperature		-11°C
Cooling capacity*		185kW
Motor kW		63kW
Power source	For motor	AC380 to 480V×50/60Hz
	For control	AC200 to 220V×50/60Hz
Refrigerant		Primary: Ammonia, Secondary: CO ₂ (R744) Semi-hermetic single stage screw
Compressor	Type	Semi-hermetic single stage screw
	Drive method	VFD
	Motor type	IPM motor
Ammonia charge		50kg
Outer dimensions		L4,040 × W2,230 × H2,650mm
Net weight		6,000kg

※ in the case of cooling water at 32°C

With intensified support for our customers around the world, we aim to be your preferred partner

At our factories, based on data obtained from our remote monitoring system, we analyze the operational status from operational trends and absolute evaluation, and make diagnoses for predictive maintenance. With planned maintenance and the early discovery of abnormal data, we support the prevention of potential trouble.



Our Customers

Many refrigeration and cold storage facilities have already installed or upgraded to NewTon series models.

CLK COLD STORAGE COMPANY LTD.



Wholesome Harvest Baking



Young-Sun Frozen Foods Co., Ltd.



Thai Yokorei Co., Ltd., Bangpakong distribution center phase II



Toyo Suisan Kaisha, Ltd., Chubu distribution center



Maruha Nichiro Logistics, Inc., Kawasaki No.3 logistics center



Examples of new installations For Cold Storage	Capacity (m ³)	Number of NewTons (units)	Date installed (year)
Toyo Suisan Kaisha, Ltd., Chubu distribution center	88,900	9	2009
Maruha Nichiro Logistics, Inc., Kawasaki No.3 logistics center	79,200	4	2014
PT.Adib Global Food Supplies	29,200	1	2013
		1	2014
Young-Sun Frozen Foods Co., Ltd.	22,000	2	2013
		2	2016
Thai Yokorei Co.,Ltd.,Bangpakong distribution center phase II	63,900	5	2015
CLK COLD STORAGE COMPANY LTD.	40,600	3	2016
Examples of new installations For Freezer			
Wholesome Harvest Baking	—	2	2016

Examples of upgrades	Capacity (m ³)	Years in operation (years)	Previous equipment		Date upgraded (year)	Number of NewTons (units)	Reduction in electricity consumption (%)
			Refrigerant	Compressor			
Tokyo Toyomi Refrigeration Co., Ltd., Funabashi distribution center	50,000	29	HCFC-22	Screw	First stage of work 2008 Second stage of work 2009	8	31.1
Niigata Reizo Co., Ltd.	11,100	33	HCFC-22	Reciprocating	2009	2	41.2
K.R.S. Corporation, Marugame office	18,100	27	HCFC-22	Reciprocating	2009	2	24.9
Sensui Reizo Co., Ltd.	6,810	38	HCFC-22	Screw	2009	2	29.3
Maruha Nichiro Logistics, Inc., Funabashi logistics center	39,200	24	HCFC-22	Reciprocating	2013	4	22.0
Maruha Nichiro Logistics, Inc., Chikuko logistics center	27,800	26	HCFC-22	Reciprocating	2014	3	—
Maruha Nichiro Logistics, Inc., Rokko logistics center	38,600	24	HCFC-22	Screw	2014	2	—

* The power consumption listed in this table are those for the entire cold storage facility, including office appliances, lighting, and conveyor equipment.

* The power consumption have been calculated based on bills from electricity companies.



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* Subject to change without notice.

Cat.No.PD173 01201508 -17.05