

Green Cooling in Health Cold Chain

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Health Cold Chain - Introduction



Cold chain is a continuous temperature-controlled solution designed to preserve different items. It is widely used in our daily life as well as in health fields. The health cold chain covers a big temperature range as shown below.



Health Cold Chain – Why We Need It?

Cold chain plays an important role in the life-cycle of medical items. Take vaccine as an example, vaccines must be continuously stored in a limited temperature range – from the time they are manufactured until the moment of vaccination. This is because temperatures that are too high or too low can cause the vaccine to lose its potency (its ability to protect against disease). Once a vaccine loses its potency, it cannot be regained or restored.

By using proper cold chain, the optimal usability period of stored items could be achieved.

Name	Storage Temp.	Usability*
Biological Sample	-190°C	Multi years
Virus Sample	-80°C	6 months
Plasma	< -30°C	1 year
Whole Blood	2 ~ 6°C	35 days
Vaccines	2 ~ 6°C	3 years
Medicines	2 ~ 8°C	3 years



* For reference only. Usability varies due to different natures.

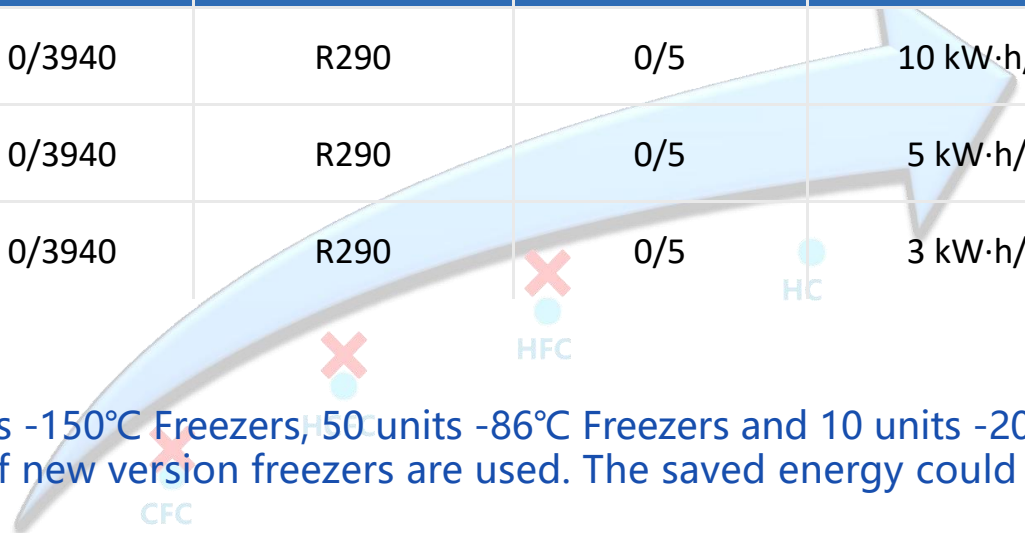
Green Cooling in Health Cold Chain - New Refrigerant



Cooling is a basic need, but **Green Cooling** is the only truly sustainable option to protect the climate and ensure the well-being of people at the same time. As a leading manufacturer of cold chain equipment with environmental consciousness, Haier Biomedical has been striving to achieve climate-friendly cooling in different aspects.

In recent years, we have gradually switched the refrigerants used in our cold chain equipment to Hydro-carbon (HC) refrigerants with low GWP. By using **natural refrigerants** in appliances with high energy efficiency, we can reduce emissions and energy consumption significantly, which is in line with the UN SDG and Montreal Protocol.

Series	Old Refrigerant	ODP/GWP	New Refrigerant	ODP/GWP	Energy Saved
-150°C Freezer	R404a	0/3940	R290	0/5	10 kW·h/day
-86°C Freezer	R404a	0/3940	R290	0/5	5 kW·h/day
-20°C Freezer	R404a	0/3940	R290	0/5	3 kW·h/day



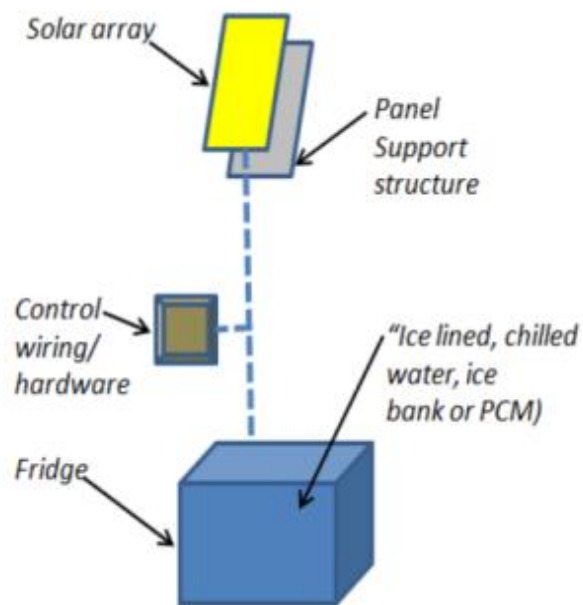
Example: For a bio-bank owning 10 units -150°C Freezers, 50 units -86°C Freezers and 10 units -20°C Freezer, energy consumption of 138,700 kW·h will be reduced per year, if new version freezers are used. The saved energy could support the lighting of over 5,000 homes in rural areas for 1 year!



Green Cooling in Health Cold Chain – SDD Technology



Besides natural refrigerants, new technology has also been adopted by us to achieve green cooling - solar direct drive (SDD) technology is important one. Solar Direct Drive cold chain equipment is the new generation system bypassing the use of battery and charge controller, making the application of solar power cleaner than ever. The users get free from the trouble of replacing and recycling the battery and charge controller and avoid potential pollution.



- Do not require a battery to store energy
- Do not require electricity and can be used in rural areas where sunshine is abundant
- Do not require solar charge regulators
- Easy installation
- Easy maintenance
- Cheaper in comparison to the battery powered systems

Up to now, Haier Biomedical has supplied over 150,000 units vaccine cold chain equipment to countries all over the world. In their 10-year life time, carbon emission of 109500 tons will be reduced, equal to the neutralization of 4,500 mu adult forests. (1 mu = 0.165 acre)

New Health Cold Chain

Medical refrigerator and freezer are typical cold chain, while cooling technology could also be found in many other medical equipment, such as transport cooler, refrigerated centrifuge and freeze-thaw machine.

With the promotion of green cooling initiative and awakening of environmental consciousness, the industrial upgrading is taking place in the health field. More and more manufacturers have turned to natural refrigerants and adopted new technology like intelligent frequency conversion to reduce the emissions and energy consumption.

Upholding the concept of “building a prosperous industry in the long run with green mountains and fresh air” , Haier Biomedical has been proactively engaged in building a more beautiful world, where human and nature coexist harmoniously. We are committed to building a shared future for all life on the earth with China’ s scientific and technological strengths, so as to make life better and the planet greener!

