Haier Biomedical
Intelligent Protection of Life Science

— September, 2023 —
Newsletter

Haier Biomedical A Success at ArabLab 2023!

ArabLab 2023 was concluded successfully on September 21, 2023, at the Dubai World Trade Center. As the professional event of laboratory instruments and testing equipment in the Middle East, it serves as a vital trade platform for industries involved in laboratory technology, biotechnology, life sciences, high-tech automated laboratories, and data processing. Haier Biomedical, a global ecological brand of life science and medical innovation, has dedicated years of efforts and established a strong presence in laboratory scenarios. At this exhibition, the company continued to highlight its technological advantages, showcasing its latest laboratory products and solutions, thereby demonstrating its dedication to meeting the core of its user needs in the field of life science to support our partners globally.

This year's ArabLab has attracted more than 1,000 exhibitors and 8,000 attendees hailing from over 120 countries worldwide. Through product explanations and interactive demonstrations, Haier Biomedical's team introduced several innovative technologies and performance benchmarks that surpassed those of competing products in the market to international attendees. The audience showed great interest, spending time with the team to learn more and actively participating in the enthusiastic and interactive atmosphere.

Haier Biomedical's busy booth

At the exhibition, Haier Biomedical showcased its latest innovation, the portable liquid nitrogen BIO-2T, garnering significant attention from attendees. This product is suitable for deep cryogenic transfer within sample banks, filling the gap in the market for transferring small batch samples under deep cryogenic conditions, and compatible with various sample sizes, including, among others, 1.2 ml, 1.5 ml, 1.8 ml, 2.0 ml, and 5.0 ml. Weighing only 3 kg, it is lightweight, making it effortless to carry by hand during transfers. It is also equipped with a temperature monitoring system, visualization management of storage space temperature, and real-time monitoring of sample safety within the tank, all features widely praised by the attendees.

Some of the products exhibited by Haier Biomedical @ArabLab

The exhibition featured renowned biomedical products from leading global biomedical companies. Haier Biomedical at this event has provided Middle East, South Asia and African distributors, clients, and laboratory personnel with a comprehensive understanding of its solutions and future development plans. In the future, the company will continue to further enhance innovation, research and development, aiming to foster in-depth exchanges and discussions with professionals in the field of laboratory equipment, and jointly explore the development of the laboratory equipment industry, ultimately building a global community of health for all.

Turkish Health Ministry Endorses Haier Biomedical!

In response to the increasing trade liberalization and economic globalization, Chinese medical device enterprises, including Haier Biomedical, have accelerated their expansion of international presence under the new “dual circulation” development strategy. With a strong focus on innovation and localization, Haier Biomedical has embarked on a unique path towards international success, and managed to navigate the challenging and volatile global market with steady progress.

Previously, the company has secured the contract for Turkey's Public Health project, marking a significant milestone in its expansion into the Middle East market. A total of 45 sets of HYC-290 medicine cabinets have been successfully deployed across 27 different public health departments in Turkey, delivering Haier Biomedical solution to the Turkish people, thereby safeguarding their well-being.

This latest line of Pharmacy Refrigerators is designed with a precise temperature control system, guaranteeing a consistent internal temperature range of 2°C to 8°C, with an accuracy of 0.1°C for temperature adjustments. These refrigerators also adopt hydrocarbon refrigeration technology, which does not cause harm to the ozone layer, and have a fault alarm design, providing round-the-clock protection for the safety of stored medicines.

The product received recognition and commendation from the official overseeing Türkiye's health sector as soon as it was put into use, stating that they are highly satisfied with the solution, as “it provides reliable temperature control that ensures the safe storage of our medicines and accommodates the different cold storage requirements specific to pharmaceuticals.”

Haier Biomedical, as a global manufacturer and supplier of comprehensive cold chain solutions, consistently remains at the forefront of the market, actively seizes opportunities for development, and delivers exceptional products and services to its global partners.

Safety Considerations in A Liquid Nitrogen Cryo Preservation Room

Liquid nitrogen (LN_2) plays a vital role in the world of assisted reproductive technology, as the go-to cryogenic agent for storing precious biological materials, such as eggs, sperm, and embryos. Offering extremely low temperatures and the ability to maintain cellular integrity, LN_2 ensures the long-term preservation of these delicate specimens. However, handling LN_2 poses unique challenges, due to its extremely cold temperature, rapid expansion rate and the potential risks associated with oxygen displacement. Join us as we delve into the essential safety measures and best practices necessary to maintain a secure and efficient cryo preservation environment, safeguarding staff, and the future of fertility treatments.

◇ Minimising Risks in the Operation of a Cryogenic Room

There are various risks associated with the handling of LN_2, including explosion, asphyxiation, and cryogenic burns. Since the volume expansion ratio of LN_2 is about 1:700 – meaning that 1 litre of LN_2 will vaporise to produce about 700 litres of nitrogen gas – great care needs to be taken when handling glass vials; a nitrogen bubble could shatter the glass, creating shards capable of causing injury. Additionally, LN_2 has a vapor density of about 0.97, meaning it is less dense than air and will pool at ground level when the temperature is very low. This accumulation poses an asphyxiation hazard in confined spaces, depleting the oxygen level in the air. Asphyxiation hazards are further compounded by the rapid release of LN_2 to create vapor fog clouds. Exposure to this intensely cold vapour, particularly on the skin or in the eyes – even briefly – can lead to cold burns, frostbite, tissue damage or even permanent eye damage.

◇ Best Practices

Every fertility clinic should carry out an internal risk assessment regarding the operation of its cryogenic room. Advice on how to carry out these assessments can be obtained in the Codes of Practice (CP) publications from the British Compressed Gases Association.1 In particular, CP36 is useful to advise on the storage of cryogenic gases onsite, and CP45 gives guidance on the design of a cryogenic storage room.[2,3]

◇ NO.1 Layout

A cryogenic room's ideal location is one that offers the greatest accessibility. Careful consideration of the placement of the LN_2 storage container is required, as it will require filling via a pressurised vessel. Ideally, the liquid nitrogen supply vessel should be located outside of the sample storage room, in an area that is well ventilated and secure. For larger storage solutions, the supply vessel is often connected directly to the storage vessel via a cryogenic transfer hose. If the layout of the building does not allow the supply vessel to be located externally, extra care must be taken during handling of the liquid nitrogen, and a detailed risk assessment needs to be carried out, encompassing monitoring and extraction systems.

◇ NO.2 Ventilation

All cryogenic rooms must be well ventilated, with extraction systems to prevent nitrogen gas build-up and protect against oxygen depletion, minimising the risk of asphyxiation. Such a system needs to be suitable for a cryogenically cold gas, and linked to an oxygen depletion monitoring system to detect when the oxygen level drops below 19.5 per cent, in which case it will initiate an increase in the air exchange rate. Extract ducts should be located at ground level while depletion sensors must be placed approximately 1 meter above the floor level. However, exact positioning should be decided after a detailed site survey, as factors such as room size and layout will affect the optimal placement. An external alarm should also be installed outside of the room, providing both audio and visual warnings to signify when it is unsafe to enter.

◇ NO.3 Personal Safety

Some clinics may also choose to equip employees with personal oxygen monitors and employ a buddy system whereby people will only ever enter the cryogenic room in pairs, minimizing the amount of time a single person is in the room at any one time. It is the responsibility of the company to train employees on the cold storage system and its equipment and many choose to have employees undertake online nitrogen safety courses. Staff should wear the appropriate personal protective equipment (PPE) to safeguard against cryogenic burns, including eye protection, gloves/gauntlets, suitable footwear, and a lab coat. It is essential for all staff to undergo firstaid training on how to deal with cryogenic burns, and it is ideal to have a supply of lukewarm water close by to rinse off the skin if a burn has occurred.

◇ NO.4 Maintenance

A pressurized vessel and LN_2 container have no moving parts, meaning that a basic annual maintenance schedule is all that is required. Within this, the condition of the cryogenic hose should be checked, as well as any necessary replacements of safety release valves. Staff should continuously check that there are no areas of frosting – either on the container or on the feeder vessel – which could indicate an issue with the vacuum. With careful consideration of all these factors, and a regular maintenance schedule, pressurizedvessels can last for up to 20 years.

◇ Conclusion

Ensuring the safety of a fertility clinic's cryo preservation room where LN_2 is used is of utmost importance. While this blog has outlined various safety considerations, it is essential for each clinic to conduct its own internal risk assessment to address specific requirements and potential hazards. Partnering with expert providers in cold storage containers, such as Haier Biomedical, is crucial to meet cryostorage needs effectively and safely. By prioritizing safety, adhering to best practices, and collaborating with trusted professionals, fertility clinics can maintain a secure cryo preservation environment, safeguarding both staff and the viability of precious reproductive materials.

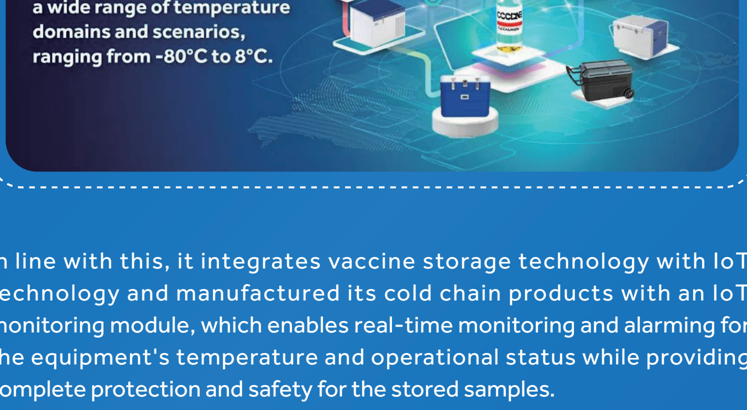
Develop Cold Chain Logistics to Build Immunity Barriers

Vaccine cold chain refers to the refrigeration equipment used for storing and transporting vaccines, which is crucial in maintaining the quality of vaccines throughout their journey from the manufacturer to the vaccination unit. Key to a well-established cold chain system is cold chain equipment that exhibits exceptional performance and reliability, which play a vital role in ensuring the availability, safety, and effectiveness of vaccines.

Haier Biomedical, as the world's leading provider of life sciences and medical innovation scenario solutions, has long been committed to developing global cold chain solutions for vaccines, which cover a wide range of temperature domains and scenarios, ranging from -80°C to 8°C. By leveraging the Internet of Things (IoT) full-process traceability platform, the company also achieves the desired functionalities of monitoring and control of the vaccine's to the “last mile” with the entire cold chain process. This comprehensive approach ensures the safety and efficacy of vaccines, thereby contributing to the establishment of a global immunity barrier.

◇ Leading Digital Intelligence Reform
Comprehensively Safeguarding Cold Chain Security

In terms of vaccine transportation, Haier Biomedical has created a comprehensive solution for vaccine transportation scenario, which entails a refrigerated vehicle with a temperature range of 2°C to 8°C with excellent thermal insulation performance, high reliability, robust carrying capacity, and high degree of informationization; a lightweight and portable transport cooler that enables multi-temperature control due to its ability to carry different temperature storage media, and ensures exceptional temperature control over extended periods of time using advanced vacuum insulation technology, making it ideal for use in various transportation settings, even those that are subject to frequent changes and challenging conditions; the mini ULT freezer that can maintain a consistent temperature of -80°C for extended periods, conveniently connect to a 24V (DC) vehicle power supply, and has excellent temperature uniformity and long holdover time, making it suitable for long-distance transportation of vaccines and allowing for ample time to ensure the safe and efficient transfer of vaccines across different regions.



In line with this, it integrates vaccine storage technology with IoT technology and manufactured its cold chain products with an IoT monitoring module, which enables real-time monitoring and alarming for the equipment's temperature and operational status while providing complete protection and safety for the stored samples.

Meanwhile, with a display module, information storage and processing module, and BIMS system, the company's cold chain storage equipment can accurately identify and record the sample storage location based on the sample label using the scanning system. Users are now able to achieve one-click synchronization and one-second access when viewing and accessing samples, which greatly reduces the time required for their work.

◇ Strictly control product quality
Commitment to the Brand's Corporate Social Responsibility

During product development, the company's design and R&D teams conduct a thorough analysis of the user requirements and offer competitive solutions tailored to their specific needs, always prioritizing the users' requirements and creating value for them. Meanwhile, during its R&D planning, the company establishes test standards based on specific user requirements. In collaboration with the quality authority, the company undertakes research and testing to ensure the quality of its products, which not only ensures the quality of the product R&D, but also validates the outcomes, aligning them with the specific needs of users.

Haier Biomedical is committed to upholding the principle of “respect for life” and follows a client-centric approach in the endeavor to foster a comprehensive healthcare ecosystem in collaboration with all stakeholders. The company maintains strict control over their product quality, implements a responsible supply chain, prioritizes their users' needs, and strives to serve the fields of life science and medical innovation with concrete actions. The whole-process quality system is established with the aim to meet user needs and deliver optimal user experiences, and continuously enhances both the system itself and the overall quality to ensure “zero product defects and zero user complaints.” As of the end of 2022, the product defect rate has dropped by 33% year-on-year, which is a commendable progress that garnered widespread acclaim from satisfied users.

◇ Adherence to Green Transformation
Holding the Red Line of Low-carbon Products

The company also embraces a development philosophy centered around “green, technology, and innovation,” and has formulated a comprehensive development strategy that is driven by green technology and innovation. Drawing on its experience in sustainable development, Haier Biomedical has been making significant strides in upgrading its cold chain equipment and innovating its technology in a green and low-carbon way, with a strong commitment to low-carbon and high-efficiency development. Furthermore, the company has adopted HC refrigerant for its entire range of products in the vaccine cold chain, positioning it as a pioneering force in the pursuit of carbon neutrality, and significantly contributing to the green initiative and the dual-carbon goals.

In terms of cold chain product materials, Haier Biomedical strictly adheres to the laws and regulations, diligently evaluates the qualifications of its suppliers, and continuously enhances its procurement process and mechanism to ensure the selection of renewable and recyclable materials for its parts and components. Over time, the company has steadily increased the proportion of renewable and recyclable materials in its procurement, further contributing to environmental preservation. Through its own initiatives, Haier Biomedical has emerged as an industry leader, spearheading the adoption of green and low-carbon practices and harnessing the power of technological innovation to drive carbon reduction efforts, which cemented its position as a frontrunner in the industry’ s green transformation and development.

As science and technology continue to advance, there is a growing demand among people for health care, and an increasing number of people are opting to enhance their personal protection through vaccination. This trend is expected to drive a continuous rise in the demand for vaccine cold chain services. As a result, the vaccine cold chain industry is poised to enter a new phase of competition and mutually beneficial development. Through the technology ecological model, Haier Biomedical will continue to enhance and refine its scenario program, stay at the forefront of global low-temperature cold chain advancements, contribute “Haier Biomedical Power” to the global public health crisis preparation and prevention efforts by leveraging the immunity barrier it has built, and innovate the vaccine cold chain industry, with the ultimate goal of benefiting the well-being and health of mankind.

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