



Hanshow Sustainability Report

2021 – First Edition



Hanshow's digital solutions allow for businesses to be more efficient, profitable, and sustainable. By making sustainability a priority from the supply chain to product shipment to the product lifecycle to recycling, Hanshow addresses reducing the environmental impact of its business through the entirety of its operations.

Sustainability factors into both Hanshow's own operations and to the sustainability benefits Hanshow products provide to retailers. The below report and plan highlight the achievements in sustainability made by Hanshow to date and broad plans for carrying this momentum forward for even more impacting initiatives.



The Hanshow Sustainability Report assesses the company's sustainability progress in three sections:



1. Enabling energy and resource reductions for businesses



2. Reducing emissions and environmental impacts through the supply chain



3. Hanshow operations and emissions reductions



1. Enabling Energy and Resource Reductions for Businesses

1.1 Electronic Shelf Label Product Design

Hanshow's electronic shelf labels (ESL) are designed for easy repair and maximum longevity. This ensures that the ESLs are not recycled or discarded before significant use over a long lifespan.

Nebular ESL: The Nebular ESL series has an industry-leading battery life of up to 15 years, meaning almost no additional paper or other laminated resources need to be expended for retail pricing displays for well over a decade. The flexible ion battery design is fully encased and non-replaceable in order to ensure product integrity and longevity. This allows retailers to add a key component of sustainability to their operations.

In 2022 Hanshow released a prototype of its first solar powered ESL, Nebular Lux, which allows for an extended ESL lifecycle with an even smaller battery that is recharged through solar cells. This allows for even more price updates and usage out of the ESL without draining battery power. It also is a key step in the beginning of phasing batteries and their associated waste out of the ESL product sphere.



/ Hanshow's first solar-powered electronic shelf label, Nebular Lux

Stellar and Nowa ESL: Other Hanshow ESL designs including the Nowa and Stellar series involve replaceable batteries. These batteries have a lifespan of between 5 and 10 years, and the ESL casing can be opened to replace the batteries or repair the ESL as needed, allowing for continued use of the product at least until its technology systems become outdated.

Goals:

1. Hanshow aims to have a solar powered ESL on the market at commercial scale by 2024, and in the long term eventually eliminating the need for batteries or electric power supply in its IoT products.
2. Hanshow is committed to providing a cost-effective ESL on the market by 2024 with external casing that is made from recycled plastic.

1.2 Reducing Paper Consumption

Hanshow's ESL and other digital retail solutions allow businesses to reduce or eliminate the use of paper displays. An average-sized supermarket store network uses around 1 million sheets of paper a year for price labels. This equates to roughly 100 trees per year just for price labels. Spread this across the over 30,000 stores that have installed Hanshow solutions, and the paper reduction benefits are immense.

In addition to retail clients, Hanshow also provides ESLs for use as conference and exhibition table signs and other signage for dozens of major events, further reducing the need for paper consumption. These digital solutions that eliminate paper waste are further applicable across a broad range of settings from offices to hospitals and other areas of commerce.

Goals:

Initiate a client case study in 2022 to obtain specific figures on paper reductions from adopting ESL and use this as a selling point for retailers to meet their sustainability targets.

1.3 Cloud Technology Adoption



Managing digitization through a SaaS eliminates the need for expensive and energy intensive local infrastructure. Hanshow encourages our clients to adopt a cloud-based network in order to realize reductions in investment, infrastructure, and energy consumption. Hanshow promotes the use of a SaaS that runs on the Microsoft Azure cloud platform. Microsoft Azure has been shown to increase energy efficiency by up to 93% and carbon reduction efficiency by 98% compared to local infrastructure solutions. By 2022, Hanshow has 155 SaaS servers for Azure in Europe and 358 globally.

Goals:

Increase the amount of global SaaS servers for Hanshow clients to at least 450 by 2025.

1.4 Reducing Food Waste

Throwing out expired and unsold food is a problem as old as the food retail industry itself. This not only results in lost sales but is also an increasingly dramatic problem of wasting resources in a crowded world.

The United Nations report that we waste 1.3 billion tons of food annually, accounting for a third of the total amount of food produced. Food waste is a cause of 6 percent of greenhouse gas emissions, three times the emissions from aviation. Effective strategies to reduce food waste in this sector can have tremendous implications for the health of our planet.

Hanshow electronic shelf labels and other digital retail solutions such as Lumina LCD screens allow for a practice known as dynamic pricing which allows stores to program automatically discounted prices at specified times to sell off soon-to-expire food items. This has been shown to reduce food waste by around 30%, especially fresh food items.

Other solutions involving AI and IoT provide improved real-time updates, inventory monitoring, and shelf-life management to all help businesses improve their product expiry tracking and move inventory before it expires and goes to waste.

Adoption of dynamic pricing and other waste reduction methods are subject to Hanshow's retail client management decisions. Hanshow technology, however, does provide the tools to achieve dynamic pricing.

Goals:

Initiate a pilot dynamic pricing food waste reduction study across multiple store locations with a major retail client by 2023 in order to accurately measure the amount of food waste that can be reduced using digital technology. This will serve as a selling point for more retailers to adopt such measures.



2.Reducing emissions and environmental impacts through the supply chain

2.1 Reducing waste in packaging and shipping

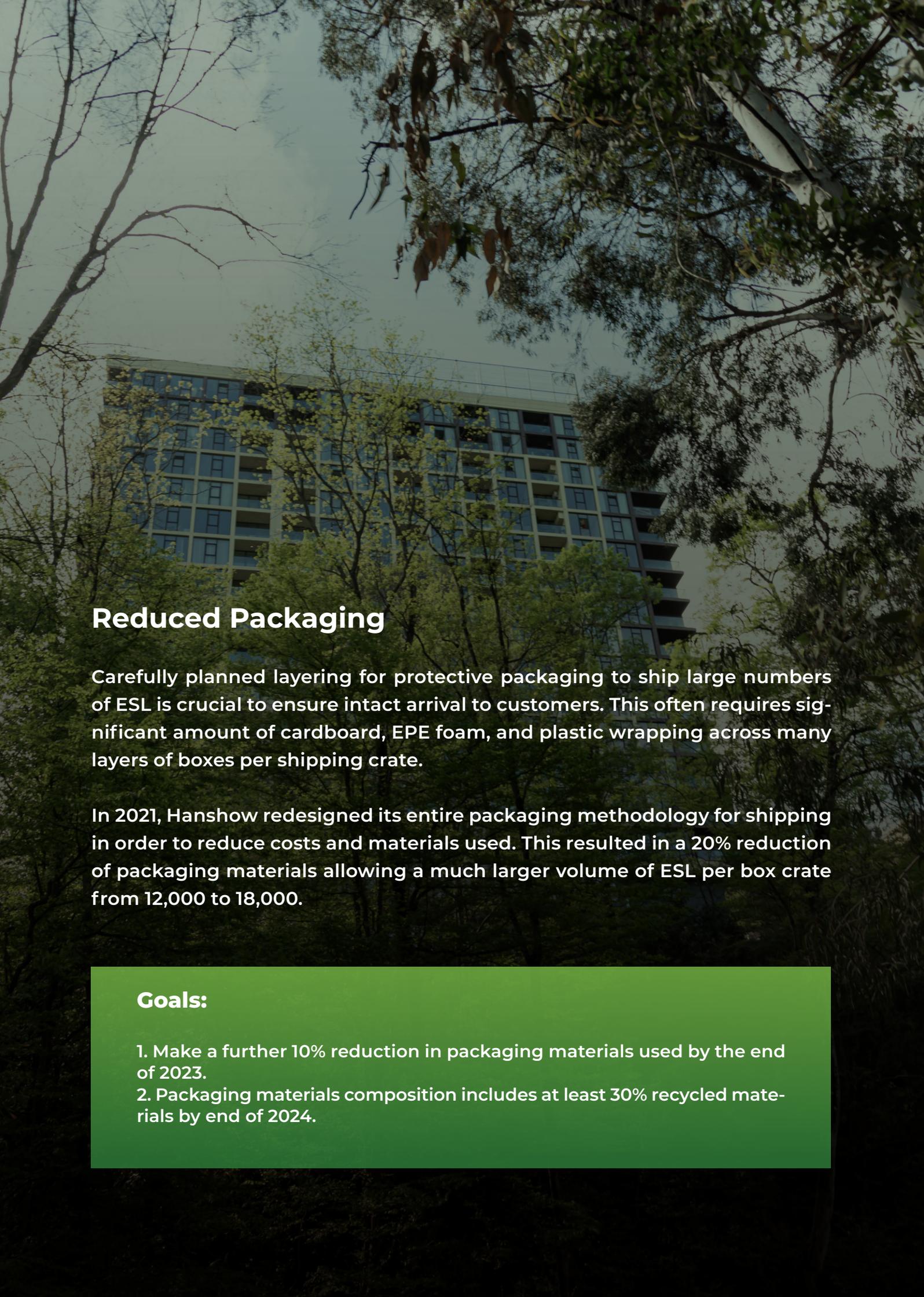
Hanshow ESLs and other digital products must be shipped great distances from production facilities in Asia to customer markets around the world. This requires careful planning and packaging to ensure these products arrive undamaged from extensive handling and exposure to the elements such as rain, wet or humid warehouses and shipping containers or extreme temperature changes. With shipments of ESLs sometimes in the millions, these products must arrive on time according to customer requirements and completely intact. Despite the challenges this poses, Hanshow is working hard to reduce the environmental impact from this process through both its method of transport, warehousing, and packaging.

2.2 Shipping and delivery

When possible, Hanshow chooses to ship by sea freight. This is a much more efficient shipping method compared to air freight, requiring roughly 1/50 the amount of fuel and energy to move the same amount of goods. This is, however, a client decision, but Hanshow has optimized operations for sea freight, and proposes this as the priority shipping method.

2.3 Effective Warehousing

In order to streamline the delivery process and increase efficiency while reducing the amount of energy needed for transport, Hanshow set up a warehouse in Amsterdam in 2020 to serve as its European distribution hub. This enables Hanshow to consolidate deliveries throughout the continent and significantly reduce logistics costs and pollution generated from inefficient transport planning.



Reduced Packaging

Carefully planned layering for protective packaging to ship large numbers of ESL is crucial to ensure intact arrival to customers. This often requires significant amount of cardboard, EPE foam, and plastic wrapping across many layers of boxes per shipping crate.

In 2021, Hanshow redesigned its entire packaging methodology for shipping in order to reduce costs and materials used. This resulted in a 20% reduction of packaging materials allowing a much larger volume of ESL per box crate from 12,000 to 18,000.

Goals:

1. Make a further 10% reduction in packaging materials used by the end of 2023.
2. Packaging materials composition includes at least 30% recycled materials by end of 2024.



/ Electronic shelf labels for repair and recycling at ESAT in France

Sustainable Buying Practices

Hanshow relies on a number of upstream partners to provide components and technology for our products. We have selected these suppliers carefully, and they will sign a code of conduct with Hanshow to assure they have responsible environmental and social practices. This ensures Hanshow's business operations from both the upstream and downstream sides of its business limit negative impacts on the environment.

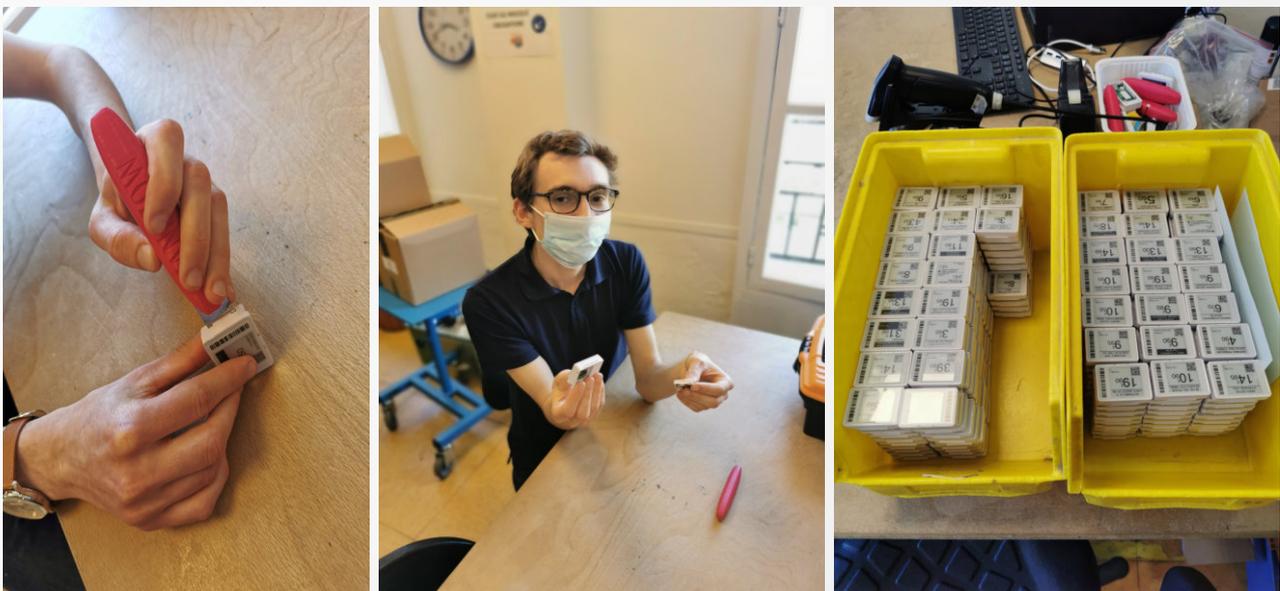
Battery Recycling

Proper disposal of Waste from Electric and Electronic Equipment (WEEE) prevents chemical pollution of soil, water, and air, and in turn the impacts on health of people and ecosystems. In 2020, it has been estimated that battery recycling has helped to prevent 2.4 mil tonnes of CO2 emissions from being released into the atmosphere.

As a company that annually produces millions of electronic devices containing batteries, Hanshow and its clients have the responsibility to properly handle this waste according to regulations in each locality where we work to minimize environmental impacts. Two examples below from Hanshow subsidiaries in the Netherlands and France where we have significant business operations clearly show how Hanshow works to address WEEE recycling.

Hanshow France collaborates with European recycling leader Paprec and ESAT (medico-social establishment aimed at protection and professional integration for people with disabilities). Hanshow's Stellar and previous ESL models use coin batteries allowing for retailers to replace the battery once it expires. These expired batteries are sent to Paprec for proper disposal and recycling. Hanshow's latest ESL model, Nebular, contains an encased battery for a longer lifecycle that is unable to be replaced. Once Nebular products expire or need repair\replacement they are sent to ESAT where workers open the labels with a special 3D-designed tool and collect the batteries in a special bin, which thereafter is picked up by the specialists from Paprec.

Paprec operates 8 plants throughout France which collect and recycle 100,000 tonnes of WEEE every year. After sorting, saline and alkaline batteries are shredded and all recyclable materials are recovered by designated facilities. The resulting raw materials are used in the metal industry or reused in batteries for electric and hybrid cars.



/ Demonstrating how to open the labels with special tools.

Hanshow Netherlands complies with Dutch regulations for recycling batteries and accumulators, and is partnering with the local recycling front-runner Stibat. Hanshow ESL batteries are sent to one of the 25,000 collection points across the Netherlands for processing. The recycling process takes place both at home and abroad, in Belgium, Germany, and France. This process includes separating the batteries into steel, zinc, manganese, and cadmium. Living up to the best principles of circular economy, the extracted metals are then used to produce bikes, flashlights, cutlery, and other metal products. There is an “Eco test” mapping the environmental impact of every stage of the recycling process, starting from the transport stage.

This process in France and the Netherlands is typical of how Hanshow complies with WEEE in markets where we work. As a key component of sustainability, Hanshow will continue to tighten oversight of its waste management operations and work with the most reputable recycling companies in each market.



/ ESAT provides training and job opportunities for people with disabilities in France.



3. Hanshow operations and emissions reductions

3.1 ISO 14001 Environmental Management Systems Certification

ISO 14001 is intended for use by an organization seeking to manage its environmental responsibilities in a systematic manner that contributes to the environmental pillar of sustainability. Hanshow is honored to hold ISO 14001 certification for environmental management systems, along with ISO 9001 certification for quality management systems.

QUALITY MANAGEMENT SYSTEM CERTIFICATE ISO 9001



QUALITY MANAGEMENT SYSTEM CERTIFICATE
 Certificate No: 21620Q0823R05

We hereby certify that the organization:
HANSHOW TECHNOLOGY CO.,LTD
 Unify The Social Credit Code: 913304110542237527

Registered Address: 1st floor and 4th floor of Building 1, 7th floor of Building 5, Photovoltaic Technology Innovation Park, 1288 Kanghe Road, Xiuzhou District, Jiaxing City, Zhejiang Province
 Business Address: 4th floor of Building 1, Photovoltaic Technology Innovation Park, 1288 Kanghe Road, Xiuzhou District, Jiaxing City, Zhejiang Province
 Production Address: 7th floor of Building 5, Photovoltaic Technology Innovation Park, 1288 Kanghe Road, Xiuzhou District, Jiaxing City, Zhejiang Province

Is in conformity with Quality Management System Standard:
GB/T 19001-2016/ISO 9001:2015
 The certificate is valid to the following product(s)/service
 Production, R&D and sales of Electronic shelf labels; R&D and sales of digital signage; Smart devices (AI cameras,sensors), Smart shopping carts, Self-service cash registers,electronic scanning devices,electronic shelf label remote controls,AP devices,Anchor sales

The effectiveness of the Certificate is subject to QR Code in the lower left corner.Meanwhile,you can search the website of certification body: www.hyjz-rz.com.cn,or search the CNCA website: www.cnca.gov.cn

Date of issue: 22-05-2020
 Date of change: 02-02-2021
 Date of expiry: 21-05-2023

ISSUE: *Tian Yan Hou*




Beijing Huanyu Jiuzhou Certification Co.,Ltd.
 Room 113,Building 10,No.A-1, South Xijiu Road,Fengtai District,Beijing
 Website:www.hyjzrz.org.cn

ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE ISO 14001



ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE
 Certificate No: HYJZ21E03456R0M

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HANSHOW TECHNOLOGY CO.,LTD
 Unify The Social Credit Code: 913304110542237527

Registered Address: 1st floor and 4th floor of Building 1, 7th floor of Building 5, Photovoltaic Technology Innovation Park, 1288 Kanghe Road, Xiuzhou District, Jiaxing City, Zhejiang Province
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 Production Address: 7th floor of Building 5, Photovoltaic Technology Innovation Park, 1288 Kanghe Road, Xiuzhou District, Jiaxing City, Zhejiang Province

Is in conformity with Environmental Management System Standard:
GB/T 24001-2016/ISO 14001:2015
 The certificate is valid to the following product(s)/service
 Production, R&D and sales of Electronic shelf label; R&D and sales of Digital signage; Smart devices (AI cameras, sensors), Smart shopping carts, Self-service cash registers,electronic scanning devices,electronic shelf label remote controls,AP devices,Anchor sales and related environmental management activities

The effectiveness of the Certificate is subject to QR Code in the lower left corner.Meanwhile,you can search the website of certification body: www.hyjz-rz.com.cn,or search the CNCA website: www.cnca.gov.cn

Date of issue: 02-02-2021
 Date of expiry: 01-02-2024

ISSUE: *Tian Yan Hou*




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3.2 Emissions reductions and carbon neutrality

Hanshow understands the threats to all aspects of life brought by the climate crisis. Any consideration of business sustainability must put addressing climate change through emissions reductions as a centerpiece of its business planning. As a young, rapidly growing company in a highly competitive industry, and despite making real improvements to on sustainability from its own operations and to empowering clients to increase sustainability through solutions it provides, Hanshow has yet to comprehensively calculate its own carbon emissions levels.

This is a significant undertaking that requires third-party evaluation and dedicated staff to manage the process. Moving forward, any gains in emissions reductions and target setting must be based on baselines of the company's current emissions levels. With this in mind, Hanshow is laying the groundwork for beginning this calculation. The process is as follows:

- 1. By the end of 2022, Hanshow will assign a dedicated employee to begin the emissions calculation process and select a third-party vendor to complete the assessment.**
- 2. Based on the assessment results, Hanshow leadership will evaluate which areas of the company's operations have the highest levels of emissions and what steps can be taken to start making reductions as part of an emissions reduction action plan.**
- 3. By the end of 2023, an emissions reduction action plan will begin implementation.**
- 4. Hanshow emissions assessments will then be carried out every two years moving forward to measure progress and adjust targets accordingly.**
- 5. By 2035 Hanshow aims to be fully carbon neutral in its operations.**

Hanshow

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