空气过滤材料的市场、挑战和机遇

Market, Challenges and Opportunities on Air Filtration Materials

TECHNOLOGY
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干净空气+高效节能市场趋势

（一）、行业情况综述

我国《第十四个五年规划和 2035 年远景目标纲要》提出推动绿色发展，促进人与自然和谐共生，强调深入开展污染防治行动，持续改善环境质量，加快发展方式绿色转型，全面提高资源利用效率，大力发展绿色经济，构建绿色发展政策体系，制定 2030 年前碳排放达峰行动方案，努力争取 2060 年前实现碳中和，推动经济社会发展全面绿色转型，建设美丽中国。

党中央、国务院印发的《中共中央国务院关于完整准确全面贯彻新发展理念做好碳达峰碳中和工作的意见》明确指出：

加快形成绿色生产生活方式。大力推动节能减排，全面推进清洁生产，加快发展循环经济，加强资源综合利用，不断提升绿色低碳发展水平；

大力发展绿色低碳产业。加快发展新一代信息技术、生物技术、新能源、新材料、高端装备、新能源汽车、绿色环保以及航空航天、海洋装备等战略性新兴产业；

大力发展节能低碳建筑。持续提高新建建筑节能标准，加快推进超低能耗、近零能耗、低碳建筑规模化发展。大力推进城镇既有建筑和市政基础设施节能改造，提升建筑节能低碳水平。

《中共中央关于制定国民经济和社会发展第十四个五年规划和二〇三五年远景目标的建议》，将“民生福祉达到新水平”作为“十四五”时期我国经济社会发展的主要目标之一。实现这一经济社会发展目标，必须坚持以人民为中心的发展思想，进一步解决人民群众最关心最直接最现实的利益问题，推动高质量发展、创造高品质生活，不断实现人民对美好生活的向往。

中共中央、国务院印发了《扩大内需战略规划纲要（2022 - 2035 年）》，纲要指出我国经济由高速增长阶段转向高质量发展阶段实施，通过增加高质量产品和服务供给，满足人民群众需要，促进人的全面发展和社会全面进步，推动供需在更高水平上实现良性循环。

全球对绿色、环保、节能要求的不断提升，高质量发展、高品质生活的多种需求为“干净空气”和“高效节能”领域创造更多的发展机遇。工业与民用、医疗、电子、农牧业、室内空间、军工、航空航天等领域对“干净空气”和“高效节能”产品应用需求将稳步上升。

Clean Air + high-efficiency and Energy-saving Market Trends

(1) Overview of the industry situation

China's "Outline of the 14th Five-Year Plan and the Long-term Goals for 2035" proposes to promote green development, promote harmonious coexistence between man and nature, emphasize in-depth pollution prevention and control actions, continuously improve environmental quality, accelerate the green transformation of development methods, comprehensively improve resource utilization efficiency, vigorously develop green economy, build a green development policy system, formulate an action plan for peaking carbon emissions before 2030, strive to achieve carbon neutrality before 2060, promote comprehensive green transformation of economic and social development, and build a beautiful China.

The Opinions of the CPC Central Committee and the State Council on Complete, Accurate and Comprehensive Implementation of the New Development Concept and Doing a Good Job in Carbon Peaking and Carbon Neutrality issued by the CPC Central Committee and the State Council clearly pointed out:

Accelerate the formation of green production and lifestyle. Vigorously promote energy conservation and emission reduction, comprehensively promote cleaner production, accelerate the development of circular economy, strengthen the comprehensive utilization of resources, and continuously improve the level of green and low-carbon development;

Vigorously develop green and low-carbon industries. Accelerate the development of a new generation of information technology, biotechnology, new energy, new materials, high-end equipment, new energy vehicles, green environmental protection, aerospace, marine equipment and other strategic emerging industries;

Vigorously develop energy-saving and low-carbon buildings. Continue to improve the energy-saving standards of new buildings, and accelerate the large-scale development of ultra-low energy consumption, near-zero energy consumption and low-carbon buildings. Vigorously promote the energy-saving transformation of existing buildings and municipal infrastructure in cities and towns, and improve the energy-saving and low-carbon level of buildings.

The Proposal of the Central Committee of the Communist Party of China on Formulating the 14th Five-Year Plan for National Economic and Social Development and the Long-Range Objectives for 2035 regards "people's livelihood and well-being reaching a new level" as one of the main goals of China's economic and social development during the 14th Five-Year Plan period. To achieve this goal of economic and social development, we must adhere to the people-centered development thinking, further solve the most direct and realistic interests of the people, promote high-quality development, create a high-quality life, and constantly realize the people's yearning for a better life.

The CPC Central Committee and the State Council issued the Outline of the Strategic Plan for Expanding Domestic Demand (2022-2035), which pointed out that China's economy will shift from a high-speed growth stage to a high-quality development stage, meet the needs of the people by increasing the supply of high-quality products and services, promote comprehensive human development and social progress, and promote a virtuous circle of supply and demand at a higher level.

The continuous improvement of global requirements for green, environmental protection and energy saving, and the multiple needs of high-quality development and high-quality life have created more development opportunities in the fields of "clean air" and "high efficiency and energy saving". The demand for "clean air" and "energy-saving" products in the fields of industry and civil, medical, electronics, agriculture and animal husbandry, indoor space, military industry, aerospace and other fields will steadily rise.

干净空气领域

先进制造、产业升级将持续拉动干净空气稳健发展

近年来，随着中国先进制造业的快速发展，对干净空气的需求增长加快，且生产环境的洁净要求越来越高，在国产化替代目标驱动下，以半导体为代表的高端新兴制造领域逐渐成为中国经济发展的新增长点，驱动中国经济由粗放式向高质量发展。洁净室工程作为高端制造领域上游不可或缺的重要基础设施，有望迎来发展红利阶段。其中半导体、集成电路、生物医药和军工行业等预计将成为洁净室工程的主要应用领域，推动行业持续向好发展。未来，随着下游行业对洁净室等级要求的提高，对洁净室工程行业提出了更高的要求，市场需求逐渐向节能、空气分子物污染控制、洁净、防微震、纳米尺度等高端技术应用发展。

随着产业结构不断升级，经济结构不断转型和对空气质量要求不断提升，与干净空气相关的食品生产、医疗健康、现代农业和畜牧养殖等领域的应用将更加广泛。以产业升级促进环境升级，不仅能践行高质量绿色发展目标，还能为企业重塑核心竞争力。公司为不同使用场景用户提供专业的定制化产品、解决方案和工程落地，为行业创造出更加有力的增长动力，也为多产业升级提供了更多的可能，助力开启“干净空气”行业的新篇章。

美好生活为“干净空气”需求带来新的发展机遇

随着工业的不断发展，环境污染、水污染、大气污染接踵而至，干净空气成为大家呼吸的痛点，时刻影响着我们的生活。民众对环境污染所带来的隐患表现出前所未有的焦虑和关注，尤其近年来对空气质量安全的关注和认知逐步提升，干净空气产品能为民众提供持续洁净空气、自由呼吸，为民众的健康保驾护航。健康的生活环境，清新的室内空气，能给予现代人以更多的生活内涵，符合大众追求和向往的美好生活。

Clean air field

Advanced manufacturing and industrial upgrading will continue to drive the steady development of clean air

In recent years, with the rapid development of China's advanced manufacturing industry, the demand for clean air has accelerated, and the requirements for clean production environment are getting higher and higher. As an indispensable and important infrastructure in the upstream of high-end manufacturing, clean room engineering is expected to usher in a stage of development dividends. Among them, semiconductors, integrated circuits, biomedicine and military industries are expected to become the main application fields of clean room engineering, promoting the continuous development of the industry. In the future, with the improvement of the downstream industry's requirements for clean room grades, higher requirements are put forward for the clean room engineering industry, and the market demand will gradually develop to high-end technology applications such as energy saving, air molecular pollution control, cleanliness, microseismic prevention, and nanoscale.

With the continuous upgrading of the industrial structure, the continuous transformation of the economic structure and the continuous improvement of the requirements for air quality, the application of clean air related to food production, medical health, modern agriculture and animal husbandry will be more extensive. Promoting environmental upgrading with industrial upgrading can not only fulfill the goal of high-quality green development, but also reshape the core competitiveness of enterprises. The company provides professional customized products, solutions and engineering implementation for users in different use scenarios, creating a more powerful growth momentum for the industry, providing more possibilities for multi-industry upgrading, and helping to open a new chapter in the "clean air" industry.

A better life brings new development opportunities to the demand for "clean air".

With the continuous development of industry, environmental pollution, water pollution, and air pollution have followed, and clean air has become a pain point for everyone to breathe, affecting our lives at all times. People have shown unprecedented anxiety and concern about the hidden dangers caused by environmental pollution, especially in recent years, the attention and awareness of air quality safety have gradually improved, and clean air products can provide people with continuous clean air, breathe freely, and escort people's health. A healthy living environment and fresh indoor air can give modern people more life connotations, which is in line with the public's pursuit and yearning for a better life.

高效节能领域

在绿色低碳社会，节能降耗是实现绿色生活方式的主要路径之一。推动能源资源高效利用，用更丰富的优质生态产品绿色创新转型的载体，为美好生活充电，为美丽中国赋能，以满足人民日益增长的美好生活的需要。这不仅影响中国绿色经济复苏和高质量发展，还将引领全球经济技术变革的方向以及改善全球气候环境。

随着节能低碳生活与绿色消费的提出，消费者环保理念和健康意识的提高，绿色家电将成为我国发展的重要方向。绿色环保不仅代表着一种健康的社会生活方式，更是一种可持续的经济发展战略，节能将是产业持续发展的核心变量之一。家电厂商对于家电产品的节能环保方面创新不断，不断追求能耗降低，还向减量化、轻型化、便携化等其他的节能创新方向发展。

在二十大“发展绿色低碳产业，倡导绿色消费”这一时代背景下，作为节能减排的重要方式，绿色建筑的重要性进一步提升。从目前的建筑方式来看，装配式+被动房建筑、钢结构以及光伏建筑一体化等细分领域都是绿色建筑中的主要发展方向，为我国绿色建筑提供了弯道超车的机会。

随着城镇化进程不断加快，我国绿色建筑占新建建筑比重会逐渐提升，新型高效建筑保温材料行业将形成一个新的产业群，带来更多的市场机遇。国家不断出台的政策目标对建筑行业提出新的要求，激发出丰富的市场机遇。作为碳排放量占比较高的行业之一，绿色建筑意味着行业内生产方式、技术水平、材料选择、商业模式等均将面临革新，未来更加高效、环保的节能材料产品将拥有更多机会。

High efficiency and energy saving field

In a green and low-carbon society, energy conservation and consumption reduction are one of the main ways to achieve a green lifestyle. Promote the efficient use of energy resources, and use more abundant high-quality ecological products as a carrier of green innovation and transformation to charge a better life and empower a beautiful China to meet the growing needs of the people for a better life. This will not only affect the recovery and high-quality development of China's green economy, but also lead the direction of global economic and technological change and improve the global climate and environment.

With the proposal of energy-saving and low-carbon life and green consumption, and the improvement of consumers' environmental protection concept and health awareness, green household appliances will become an important direction of China's development. Green environmental protection not only represents a healthy social lifestyle, but also a sustainable economic development strategy, energy conservation will be one of the core variables of sustainable industrial development. Home appliance manufacturers continue to innovate in energy conservation and environmental protection of household appliances, constantly pursue energy consumption reduction, and develop in other energy-saving innovations such as reduction, lightweight, and portability.

In the context of the 20th National Congress of the Communist Party of China (CPC) "developing green and low-carbon industries and advocating green consumption", the importance of green buildings has been further enhanced as an important way to save energy and reduce emissions. From the current construction method, prefabricated + passive house buildings, steel structures and photovoltaic building integration and other subdivisions are the main development directions in green buildings, providing opportunities for green buildings in China to overtake on curves.

With the acceleration of urbanization, the proportion of green buildings in new buildings in China will gradually increase, and the new and efficient building insulation materials industry will form a new industrial group, bringing more market opportunities. The continuous policy objectives of the state have put forward new requirements for the construction industry and stimulated abundant market opportunities. As one of the industries with a high proportion of carbon emissions, green building means that the production methods, technical level, material selection, business model, etc. in the industry will face innovation, and more efficient and environmentally friendly energy-saving material products will have more opportunities in the future.

“深耕技术产品 服务双碳战略”

‘Developing technological product in service of the dual carbon strategy ’

实现碳达峰碳中和，也是党中央统筹国内国际两个大局作出的重大战略决策。习近平总书记强调：“实现‘双碳’目标，不是别人让我们做，而是我们自己必须要做。”我国已进入新发展阶段，做好“双碳”工作是推动高质量发展的必然要求，是加强生态文明建设的战略举措，是维护能源安全的重要保障。

Achieving carbon peak and carbon neutrality is also a major strategic decision made by the Central Committee of the Communist Party of China to coordinate both domestic and international situations. Xi Jinping emphasizes: "To achieve the 'dual carbon' goal, we should not wait for it to be done by others, but we must do it ourselves. China has entered a new stage of development, and doing a good job in the "dual carbon" work is an inevitable requirement for promoting high-quality development, a strategic measure to strengthen ecological civilization construction, and an important guarantee for maintaining energy security.

公司围绕“深耕技术产品、服务双碳战略”，研发绿色健康产品，将绿色理念贯穿产品全生命周期，发挥自身核心材料优势，专注主营业务，不断调结构、提高度、扩市场，持续为用户提供“系统、全面、完整、可靠、稳定”的“低碳无尘空间”解决方案与技术产品。

The company focuses on "Developing technological product in service of the dual carbon strategy ", develops green and healthy products, runs the green concept throughout the entire product lifecycle, leverages its core material advantages, focuses on its main business, continuously adjusts its structure, improves its efficiency, expands its market, and continues to provide users with "systematic, comprehensive, complete, reliable, and stable" low-carbon and dust-free space "solutions and technical products.

三大低碳无尘空间
Three Low-carbon and Dust-free Spaces

- 固定空间　Fixed Space
- 移动空间　Mobile Space
- 工业空间　Industrial Space

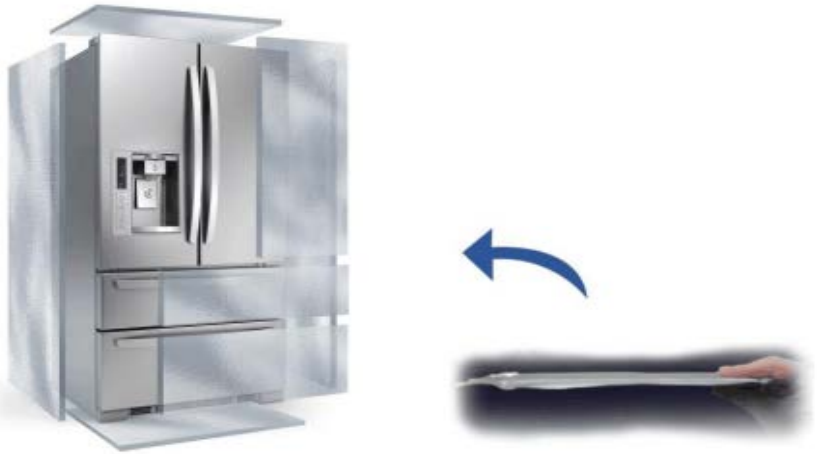

固定无尘空间
Fixed Dust-free Space

应用领域
Application

家居无尘空调
Household Dust-free air Conditioning

公共空间空气系统
Public Space Air System

建筑保温
Building Insulation



冰箱等家电保温
Insulation for Household Appliances such as Refrigerators

固定无尘空间（一）

经济的发展、空气问题的持续出现、大众对美好生活的向往推动了室内空气质量要求的提升。在短期内，对现有空调系统以及空气质量改善设备和服务（如通风设备、空气清洁产品和空气过滤器）的需求不断增加，从长远来看，通过专注于为用户提供增值和高空气质量解决方案的室内空气质量解决方案的需求持续增加。

（1）相关政策

国家卫生健康委员会《室内空气质量标准》编制说明：（1）人们每天大约有 80%以上的时间是在室内度过的，所呼吸的空气主要来自于室内，与室内污染物接触的机会和时间均多于室外；（2）室内污染物的来源和种类日趋增多，造成室内空气污染程度在室外空气污染的基础上更加重了一层；（3）为了节约能源，现代建筑物密闭化程度增加，由于其中央空调换气设施不完善，致使室内污染物不能及时排出室外，造成室内空气质量的恶化。

健康建筑应用指南（WELL & Healthy Buildings Application Guide）指出，建筑的空气、水、营养、光线、健康、舒适和精神等影响人类健康和福祉。《健康建筑评价标准 T/ASC 02-2016》中，室内 PM2.5 日平均浓度不高于 25ug/m3，PM10 日平均浓度不高于 25ug/m3，CO2日平均浓度不大于 900ppm。

根据世界卫生组织（WHO）发布的信息，全球十分之九的人呼吸被污染的空气，每年有 700万例过早死亡与空气污染有关，其中室内空气污染导致的死亡按疾病分解的数据：34%–脑卒中；26%–缺血性心脏病；22%–慢性阻塞性肺病；12%–儿童急性下呼吸道感染；6%–肺癌。

Fixed Dust-free Space Ⅰ

Economic development, the continuous emergence of air problems, and the public's yearning for a better life have promoted the improvement of indoor air quality requirements. In the short term, there is an increasing demand for existing air conditioning systems, as well as air quality improvement equipment and services such as ventilation equipment, air cleaning products, and air filters, and in the long term, the demand for indoor air quality solutions that focus on providing value-added and high air quality solutions to users.

(1) Relevant policies

The National Health Commission's "Indoor Air Quality Standards" explains: (1) People spend more than 80% of their time indoors every day, and the air they breathe mainly comes from indoors, and the opportunities and time of contact with indoor pollutants are more than those outdoors; (2) The sources and types of indoor pollutants are increasing day by day, resulting in a heavier level of indoor air pollution than outdoor air pollution; (3) In order to save energy, the degree of airtightness of modern buildings increases, and due to the imperfection of its central air-conditioning ventilation facilities, indoor pollutants cannot be discharged outdoors in time, resulting in the deterioration of indoor air quality.

The WELL & Healthy Buildings Application Guide states that the air, water, nutrition, light, health, comfort, and spirit of buildings affect human health and well-being. According to the "Healthy Building Evaluation Standard T/ASC 02-2016", the daily average indoor PM2.5 concentration is not higher than 25ug/m3, the daily average concentration of PM10 is not higher than 25ug/m3, and the daily average concentration of CO2 is not more than 900ppm.

According to information released by the World Health Organization (WHO), 9 out of 10 people in the world breathe polluted air, and 7 million premature deaths are related to air pollution every year, of which the data on deaths due to indoor air pollution broken down by disease: 34% – stroke; 26% – ischemic heart disease; 22% – Chronic obstructive pulmonary disease; 12% – Acute lower respiratory tract infections in children; 6% – lung cancer.

固定无尘空间（一）

（2）行业趋势

随着我国社会与经济的发展，人民群众对美好生活的向往推动了诸多行业的发展进步。人们对室内环境品质，尤其是家居环境品质的关注度快速提升。暖通系统（HVAC），即采暖、通风、空气调节系统，对维护室内环境品质起着重要作用，良好的暖通系统配置对室内空气质量也有着积极作用。

现代人类，尤其是城市人口，绝大多数时间都在室内度过，室内空气质量对大众影响甚大。根据美国环保总局数据，室内空气质量比室外糟糕约 5 倍。二十世纪 70 年代空调系统普及之后，出现了病态建筑综合症（Sick Building Syndrome, 简称 SBS），指不是由疾病或者很确定的病理引起的，人员在建筑内不同停留时间后对健康或者舒适的不良反应。研究证明，病态建筑综合症主要是因为室内空气污染严重、二氧化碳浓度过高、光照不良、热舒适度缺乏等造成。

在暖通空调机组中，一般采用液体气化制冷的原理（即冷媒）为空气调节系统提供所需冷量，用以抵消室内环境的热负荷;制热系统为空气调节系统提供所需热量，用以抵消室内环境冷暖负荷。通风系统进气口通常会吸入灰尘颗粒、化学污染物、有害病毒和细菌及其他有毒颗粒，这些物质会被过滤器捕获或是停留在通风管道及其他区域，可能会导致严重的健康风险。因此，保持通风系统处于良好的清洁状态和卫生条件有助于避免系统中堆积有害颗粒物扩散。

新风系统是由新风换气机及管道附件组成的一套独立空气处理系统，新风换气机将室外新鲜气体经过过滤、净化，通过管道输送到室内。新风系统还细分为单向流、双向流和置换送风等多种模式。置换通风是一种前沿的通风技术，可使人停留区具有较高的空气品质、热舒适和通风效率，同时也可以节约建筑能耗。

Fixed Dust-free Space Ⅰ

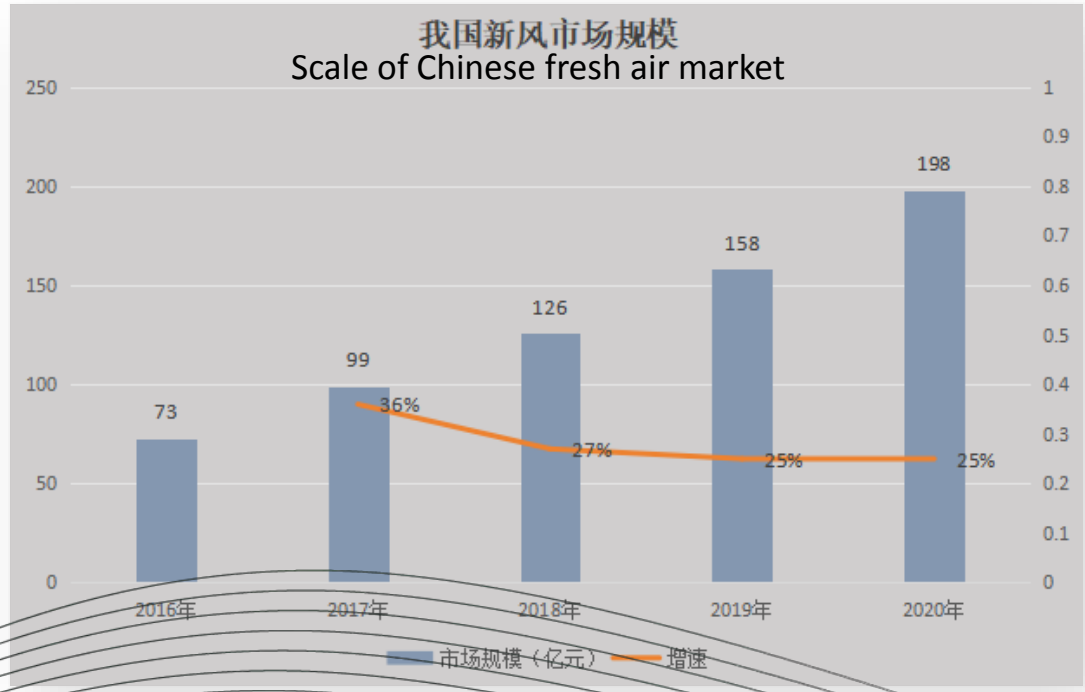
(2) Industry trends

With the development of China's society and economy, the people's yearning for a better life has promoted the development and progress of many industries. People's attention to the quality of indoor environment, especially the quality of home environment, is increasing rapidly. The HVAC system, that is, the heating, ventilation, and air conditioning system, plays an important role in maintaining the quality of the indoor environment, and a good HVAC system configuration also has a positive effect on indoor air quality.

Modern humans, especially urban populations, spend most of their time indoors, and indoor air quality has a great impact on the public. According to the U.S. Environmental Protection Agency, indoor air quality is about 5 times worse than outdoors. After the popularization of air conditioning systems in the 70s of the twentieth century, Sick Building Syndrome (SBS) appeared, which refers to the adverse reaction to the health or comfort of people after staying in a building for different periods of time, not caused by disease or a well-established pathology. Studies have proved that sick building syndrome is mainly caused by severe indoor air pollution, high carbon dioxide concentration, poor light, and lack of thermal comfort.

In HVAC units, the principle of liquid gasification refrigeration (i.e., refrigerant) is generally used to provide the required cooling capacity for the air conditioning system to offset the heat load of the indoor environment. The heating system provides the heat required by the air conditioning system to offset the heating and cooling load in the indoor environment. Ventilation system air intakes often inhale dust particles, chemical contaminants, harmful viruses and bacteria, and other toxic particles that can be trapped by filters or lodge in ventilation ducts and other areas, potentially posing serious health risks. Therefore, keeping the ventilation system in a good state of cleanliness and hygienic conditions can help avoid the build-up of harmful particulate matter in the system and the spread.

The fresh air system is an independent air handling system composed of fresh air ventilator and pipeline accessories, and the fresh air ventilator filters and purifies the outdoor fresh gas and transports it to the room through the pipeline. The fresh air system is also subdivided into multiple modes such as unidirectional flow, two-way flow and replacement air supply. Displacemental ventilation is a cutting-edge ventilation technology that enables high air quality, thermal comfort and ventilation efficiency in occupied areas, while also saving energy consumption in buildings.



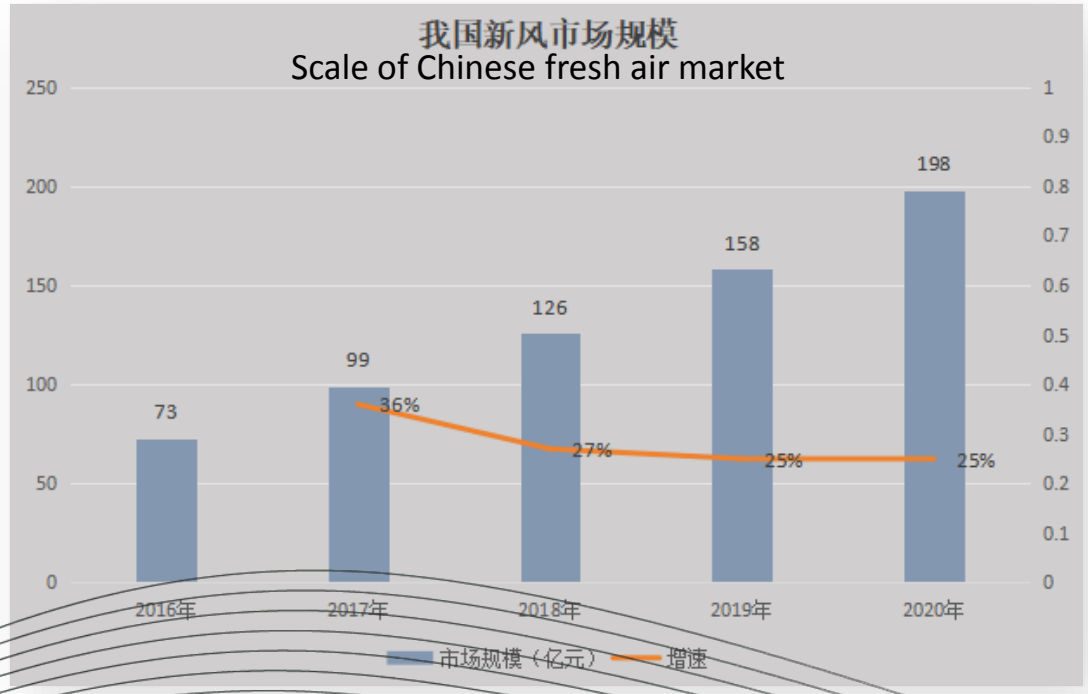
在舒适空间领域，室内空气质量是极易被忽略的。我们更关注地面是否清洁，是否有及时洗手更衣，而我们忘记了最关键的一点——呼吸。无论你是谁，无论你在哪，每个人的呼吸是无差别的，我们对干净空气的需求是无差别的。

室内空气并不像我们想的纯粹，除含氧气、二氧化碳、氮气等常规气体外，还存在很多我们容易忽略的物质，如灰尘、扬尘、花粉、颗粒物、重金属、放射性元素等。随着人们对自身健康越来越重视，对于生活空间的空气净化升级刻不容缓

再升科技凭借多年深耕“干净空气”技术和材料的优势，为舒适空间提供“低碳无尘空间”的解决方案与技术产品。广泛应用于民用住宅、商用办公场所、社交场所、绿色家电等固定场景。

根据中商产业研究院数据，2016至2020年，我国新风系统市场规模由73亿元增至198亿元。尽管过去几年我国新风系统市场规模呈持续增长趋势，但其渗透率依旧较低，长期成长空间较大。

clean and whether we wash hands and change clothes in a timely manner, but we have forgotten the most crucial point - breathing. No matter who you are or where you are, everyone's breathing is indistinguishable, and our demand for clean air is indistinguishable.



Indoor air is not as pure as we think. In addition to conventional gases such as oxygen, carbon dioxide, nitrogen, there are also many substances that we easily overlook, such as dust, dust, pollen, particulate matter, heavy metals, radioactive elements, etc. As people attach increasing importance to their own health, it is urgent to upgrade the air purification in their living spaces

With the advantages of years of deep cultivation of "clean air" technology and materials, Zaisheng Technology provides "low-carbon and dust-free space" solutions and technical products for comfortable spaces. Widely used in fixed scenarios such as civil residences, commercial office spaces, social spaces, and green home appliances.

According to data from the China Academy of Commerce and Industry, from 2016 to 2020, the market size of China's fresh air system increased from 7.3 billion yuan to 19.8 billion yuan. Although the scale of China's fresh air system market has shown a continuous growth trend in the past few years, its penetration rate is still low and there is a large room for long-term growth.

再升科技在固定无尘空间（一）

目前国内的室内空气质量和舒适度一般由暖通空调机组、新风系统、地暖系统等单个或者多系统解决。多系统叠加使用，存在对室内层高占用大，使用能耗高、噪音大，美观度不够，易造成室内二次污染等问题。公司子公司再升净化，依托 20 年干净空气领域的丰富经验，组建专业团队，针对高端民用市场，打造再升家居舒适无尘空调。

再升家居舒适无尘空调将新风净化、制冷制热、除湿加湿、变风量智能监测、智能控制集合于一套系统，为用户提供定制化全屋舒适系统，结合公司丰富的“干净空气”材料、专业的设备和一流的技术，力求为用户营造节能、无尘、安静、富氧、美观、智管的高品质生活，努力抓住消费升级、物联网高速发展的趋势，推动干净空气，向用户端发展，提供服务，找准企业定位和竞争优势，在舒适家居领域搭建系统集成生态。

再升家居舒适无尘空调系统的“无尘”，是指运用再升科技丰富的干净空气材料和技术，高效去除空气中的颗粒污染物和气体污染物，保障空调管道无灰尘积累，无需如传统中央空调系统需要进行管道清灰等维护。再升科技干净空气材料赋能，高效净化室内空气，去除颗粒污染物和气体污染物,保障人均新风量，针对具体设计要求，采用定风量/变风量末端，精确、自动控制不同房间和区域的新风量。不同于空气净化器只是室内空气循环净化，也不同于新风系统的中效净化少量送风，再升无尘空调系统可以持续引入室外干净新鲜空气，排除室内过量二氧化碳，让人睡眠中不缺氧，氧足精神享受生活。

再升无尘舒适家居空调系统可与再升科技保温玻璃棉产品系有机结合，打造居住环境舒适宜人、室内空气质量优异、能耗近乎零的房屋。综合考虑在建筑布局、朝向、体形系数和使用功能方面的需求和建筑所在地的气候条件，保温玻璃棉产品系用于建筑非透明维护结构，可以优化建筑整体气密性，提高建筑隔热保温性能，减少室内外能量传递，降低建筑制冷取暖能耗。随着我国生态文明建设的不断深入，全社会对绿色建筑的理念、认识和需求逐步提高。公司将紧跟政策方向，紧抓技术提升，增加产品产能，不断满足绿色建筑市场需求。

Zisun in Fixed Dust-free Space Ⅰ

At present, indoor air quality and comfort in China are generally solved by single or multiple systems such as HVAC units, fresh air systems, and floor heating systems. The superimposed use of multiple systems has problems such as large occupation of indoor floor height, high energy consumption, high noise, and insufficient aesthetics, which is easy to cause indoor secondary pollution. Relying on 20 years of rich experience in the field of clean air, the company's subsidiary Zaisheng Purification has set up a professional team to create a comfortable dust-free air conditioner for the high-end civilian market.

Zaisheng Home Comfort Dust-free Air Conditioner integrates fresh air purification, refrigeration and heating, dehumidification and humidification, intelligent monitoring of variable air volume and intelligent control into one system, providing users with customized whole house comfort system, combining the company's rich "clean air" materials, professional equipment and first-class technology, and striving to create a high-quality life of energy saving, dust-free, quiet, oxygen-rich, beautiful and intelligent management for users, and strive to seize the trend of consumption upgrading and rapid development of the Internet of Things, promote clean air, develop to the user side, and provide services. Find out the company's positioning and competitive advantages, and build a system integration ecology in the field of comfortable home.

The "dust-free" of Zaisheng's home comfortable dust-free air conditioning system refers to the use of Zaisheng Technology's rich clean air materials and technologies to efficiently remove particulate pollutants and gas pollutants in the air, ensure that the air-conditioning pipeline is free of dust accumulation, and does not need to be maintained such as pipeline cleaning as the traditional central air-conditioning system. Zaisheng Technology is empowered by clean air materials, efficiently purifies indoor air, removes particulate pollutants and gaseous pollutants, and ensures the per capita fresh air volume. Unlike the air purifier, which only purifies indoor air circulation, and also purifies a small amount of air supply with the medium efficiency of the fresh air system, the dust-free air conditioning system can continuously introduce clean and fresh outdoor air to eliminate excess carbon dioxide indoors, so that people can sleep without oxygen and enjoy life.

Zaisheng's dust-free and comfortable home air conditioning system can be organically combined with Zaisheng Technology's thermal insulation glass wool products to create a house with a comfortable and pleasant living environment, excellent indoor air quality and near-zero energy consumption. Considering the needs of the building layout, orientation, body shape coefficient and use function and the climatic conditions of the building location, the thermal insulation glass wool product is used for the non-transparent maintenance structure of the building, which can optimize the overall air tightness of the building, improve the thermal insulation performance of the building, reduce the energy transfer between indoor and outdoor, and reduce the energy consumption of building cooling and heating. With the deepening of China's ecological civilization construction, the concept, understanding and demand of the whole society for green buildings have gradually improved. The company will closely follow the policy direction, grasp the improvement of technology, increase product capacity, and continuously meet the demand of the green building market.

家居舒适无尘空调

Home Comfortable and Healthy Air Conditioning

俗称的空调，实际上指的是冷气，而非专业术语“空气调节”，冷气是建筑体降温的方法之一，虽然普遍使用，却不是最好的方法。

The commonly known air conditioning actually refers to cold air, rather than the professional term "air conditioning". Cold air is one of the methods for cooling buildings, although widely used, it is not the best method.

而真正意义上的空调是空气调节系统，能够处理室内空气的温度、湿度、洁净度和气流速度的技术，可使某些场所获得具有一定温度和一定湿度的干净空气，以满足用户的舒适需求。

In the true sense, air conditioning is an air conditioning system that can handle the temperature, humidity, cleanliness, and airflow speed of indoor air,

It can provide clean air with a certain temperature and humidity in certain places to meet the comfort needs of users.

Customization
Design
Construction
Intelligent Pipeline

定制 设计 施工 智管

再升无尘空调，干净空气品牌中的“爱马仕”

Zisun home comfortable and healthy air conditioning, Top luxury among clean air brands

始终关爱着您的空气环境，让每一次呼吸都成为至臻体验，

让您和家人无限乐享纯净呼吸。

把奢侈品带回家，把您的干净空气带回家。

Always caring for your air environment, making every breath a perfect experience, allowing you and your family to enjoy pure breathing infinitely.

Bring luxury goods home, bring your clean air home

家居舒适无尘空调
Home Comfortable and Healthy Air Conditioning

私人定制、用心追求的独特体验；

无尘 - 内置 HEPA 过滤器，HEPA 是目前国际公认最好的高效过滤器， 对于 0.1 微米和 0.3 微米的有效率达到 99.97%；

静音 - 内机外置室内无风机，无噪音，解决了室内设备叠加所产生的噪音与空间挤占的困扰；

节能 - 智能捕获温度、湿度、PM2.5、二氧化碳浓度 等指标的变化，按需送风,节能效率高达30%。

A unique experience that is customized and pursued with dedication;

Dust free - built-in HEPA filter, HEPA is currently internationally recognized as the best high-efficiency filter, with an efficiency of 99.97% for 0.1 μ m and 0.3 μ m;

Mute - The internal unit is equipped with an external indoor fan without noise, which solves the problem of noise and space occupation caused by the superposition of indoor equipment;

Energy saving - Intelligent capture of changes in temperature, humidity, PM2.5, carbon dioxide concentration and other indicators, on-demand air supply, with an energy-saving efficiency of up to 30%.

Composite Melt-blown Filtration Material

高效低阻复合熔喷滤料

高效低阻复合熔喷滤料采用无毒无味的聚丙烯颗粒，经高温加热-熔融-喷丝-牵引等工序，通过独特的静电驻极技术处理后的熔喷材料与其他过滤材料进行骨架复合成型，既克服了熔喷自身强力小的缺点，又发挥了其优良的过滤性能，从而达到完美的综合过滤效果。

Composite melt-blown filtration material is made from polypropylene granules with heating, melting, blowing and tracking process. After electrostatic electrizing, the melt-blown material will be composed with boning material which will solve its low strength problem and keep its high filtration performance to have a great filtration result.

是民用级空气净化材料的首选，符合大众需求，创造洁净生活。

It Is A Premier Choice For Civil Air Filtration Use.

- 优异的机械性能，硬挺度、抗拉强度、抗撕破能力出色
  Excellent mechanical properties, excellent stiffness, tensile strength and tear resistance
- 超低风阻，节能风力
  Low air resistance
- 国际领先静电驻极技术，续航使用寿命（一般建议周期3-6个月）
  International leading electrostatic electret technology, long service time (3-6 months)
- 低成本，高效率
  Low cost, high efficiency
- 性能延展性强，使用范围广
  Various application environment

Application Area

应用领域

广泛用于家用空气净化器、吸尘器、汽车空调、口罩防尘等。

Domestic air purifier, vacuum cleaner, car air conditioning, mask.

固定无尘空间（二）

（1）相关政策

《第十四个五年规划和 2035 年远景目标纲要》提出对推行新型城市建设，推广绿色建材、装配式建筑和钢结构住宅，建设低碳城市，强调加快发展方式绿色转型。住房和城乡建设部将绿色建筑定义为“在全寿命期内节约资源、保护环境、减少污染，为人们提供健康、适用、高效的使用空间，最大限度地实现人与自然和谐共生的高质量建筑”。

新版《绿色建筑评价标准》（GB/T51356-2019）确立了“以人为本、强调性能、提高质量”的绿色建筑发展新模式，提出了“安全耐久、健康舒适、生活便利、资源节约、环境宜居”的指标体系。绿色建筑要综合考虑各地的气候特点、地理环境、自然资源等因素，采用适宜的外墙外保温体系、外窗保温隔热系统、通风系统、自然采光、太阳能与建筑物一体化、绿色建材和智能
控制等各项技术。

2022 年 3 月，《住房和城乡建设部关于印发“十四五”建筑节能与绿色建筑发展规划的通知》指出，到 2025 年，城镇新建建筑全面建成绿色建筑，建筑能源利用效率稳步提升，建筑用能结构逐步优化，建筑能耗和碳排放增长趋势得到有效控制，基本形成绿色、低碳、循环的建设发展方式，为城乡建设领域 2030 年前碳达峰奠定坚实基础。

更广泛的绿色建筑定义包含设计、建造或运营中减少或消除负面影响，并能对我们的气候和自然环境产生积极影响的住宅、办公室、学校、医院等各类用途建筑。其包括使用绿色能源，良好的室内环境，使用无毒无害的建筑材料，高质量的建筑设计和适应气候变化。

Fixed Dust-free Space Ⅱ

(1) Relevant policies

The "Outline of the 14th Five-Year Plan and the Long-Range Objectives Through the Year 2035" proposes to promote the construction of new cities, promote green building materials, prefabricated buildings and steel structure housing, build low-carbon cities, and emphasize accelerating the green transformation of development methods. The Ministry of Housing and Urban-Rural Development defines green buildings as "high-quality buildings that conserve resources, protect the environment, reduce pollution, provide people with healthy, applicable and efficient use of space, and maximize the harmonious coexistence of man and nature".

The new version of the "Green Building Evaluation Standards" (GB/T51356-2019) establishes a new model of green building development that is "people-oriented, emphasizing performance, and improving quality", and proposes an index system of "safety and durability, health and comfort, convenience of life, resource conservation, and livable environment". Green buildings should comprehensively consider the climatic characteristics, geographical environment, natural resources and other factors, and adopt appropriate external wall insulation system, external window insulation system, ventilation system, natural lighting, solar energy and building integration, green building materials and intelligence
control and other technologies.

In March 2022, the Notice of the Ministry of Housing and Urban-Rural Development on Printing and Distributing the 14th Five-Year Plan for Building Energy Conservation and Green Building Development pointed out that by 2025, new buildings in cities and towns will be fully built into green buildings, building energy utilization efficiency will be steadily improved, building energy consumption structure will be gradually optimized, and the growth trend of building energy consumption and carbon emissions will be effectively controlled, basically forming a green, low-carbon and circular construction and development mode, laying a solid foundation for carbon peak before 2030 in the field of urban and rural construction.

The broader definition of green building encompasses buildings for all types of uses, including homes, offices, schools, hospitals, etc., that are designed, constructed, or operated to reduce or eliminate negative impacts and have a positive impact on our climate and natural environment. It includes the use of green energy, a good indoor environment, the use of non-toxic and harmless building materials, high-quality building design and adaptation to climate change.

固定无尘空间（二）

（2）行业趋势

根据中国建筑节能协会《中国建筑能耗研究报告（2020）》，建筑运行阶段占全国能源消费总的比重为 21.7%，建筑运行阶段碳排放占全国碳排放的比重为 21.9%。

根据加利福尼亚大学洛杉矶分校论文《用于节能建筑围护结构的相变复合材料（Phase Change Composite Materials for Energy Efficient Building Envelopes）》指出，各类商用和民用建筑中，采暖和制冷等需求消耗的能源占建筑运行消耗总能源的三成以上。

建筑运行中，建筑墙体的隔热性能对建筑能耗和室内舒适度有显著影响。建筑围护结构中的保温层，可以减少室内热量向室外散失，降低建筑采暖和制冷的能耗，提高建筑的舒适度。建筑保温材料的性能受外部环境的影响，例如冷暖空气中的水蒸气在保温层的冷凝会引起材料恶化，缩短使用寿命，滋生霉菌等不良影响。

常见的建筑保温材料有机材料、无机材料和复合材料，如珠岩板、聚苯颗粒板、硬质发泡聚氨酯、岩棉、矿棉、玻璃棉、气凝胶等，而玻璃棉因具备优异吸音保温性能，质轻柔软、平价易获、生物安全，具备良好的市场前景。

Fixed Dust-free Space Ⅱ

(2) Industry trends

According to the China Building Energy Consumption Research Report (2020) by the China Association of Building Energy Efficiency, the building operation stage accounts for 21.7% of the country's total energy consumption, and the carbon emissions in the building operation stage account for 21.9% of the national carbon emissions.

According to the UCLA paper "Phase Change Composite Materials for Energy Efficient Building Envelopes", in all types of commercial and residential buildings, the energy consumed by heating and cooling needs accounts for more than 30% of the total energy consumed by building operations.

During building operation, the thermal insulation performance of building walls has a significant impact on building energy consumption and indoor comfort. The insulation layer in the building envelope can reduce the loss of indoor heat to the outside, reduce the energy consumption of building heating and cooling, and improve the comfort of the building. The performance of building insulation materials is affected by the external environment, such as the condensation of water vapor in the cold and warm air in the insulation layer, which will cause the deterioration of the material, shorten the service life, and breed mold and other adverse effects.

Common building insulation materials organic materials, inorganic materials and composite materials, such as pearl stone board, polyphenylene particle board, rigid foamed polyurethane, rock wool, mineral wool, glass wool, aerogel, etc., and glass wool has excellent sound absorption and thermal insulation performance, light and soft, affordable and accessible, biosecurity, with good market prospects.

再升科技在固定无尘空间（二）

公司为打破国外垄断，围绕高品质生活，积极布局再升家居舒适无尘空调系统，研发生产建筑节能材料。目前，再升家居舒适无尘空调系统团队积极开展工作，持续推行产品研发，为诸多客户打造节能、静音、无尘的舒适家居环境。

围绕服务于绿色建筑的隔热保温需求，依托再升科技在超细微纤维玻璃棉的技术研发实力和行业品牌优势，潜心研发和生产更节能、更环保、更高效的高端玻璃棉，为绿色建筑提供出色的建筑保温解决方案。

公司开发出系列以微纤维玻璃棉为核心材料的绿色建筑保温产品，包含烤箱保温棉、彩色玻璃棉、工业保温玻璃棉等多种产品，具有优异的物理性能、良好的导热系数、轻质阻燃、低吸水性。其可广泛用于家用电器、公共建筑、农业畜牧业、智慧化厂房等建筑保温领域，也能与装配式建筑、BIPV（Building Integrated Photovoltaic, 光伏建筑一体化)、被动房、NET-ZERO 建筑（Net Zero Energy Building，近零能耗建筑）等应用配套。公司将积极拓展、推广绿色建筑保温产品应用，为绿色建筑领域贡献力量。公司的超细微纤维玻璃棉均匀细长，长径比适中，机械性能优异，具备良好的吸音隔热性能。

公司微纤维玻璃棉是绿色环保、生物安全的产品，已取得欧洲矿棉产品认证委员会（European Certification Board for Mineral Wool Products，简称 EUCEB）非致癌认证和德国弗劳恩霍夫应用研究促进协会（Fraunhofer-Gesellschaft，简称 Fraunhofer）实验室生物降解性认证。公司的微纤维玻璃棉通过了 RoHS 和 REACH 的检测，并取得认证。基于公司的超细微纤维玻璃棉的多种优良特性，公司深度挖掘材料潜力，研发生产出系列用于绿色建筑领域的产品。

再升无尘舒适家居空调系统可与再升科技保温玻璃棉产品系有机结合，打造居住环境舒适宜人、室内空气质量优异、能耗近乎零的房屋。综合考虑在建筑布局、朝向、体形系数和使用功能方面的需求和建筑所在地的气候条件，保温玻璃棉产品系用于建筑非透明维护结构，可以优化建筑整体气密性，提高建筑隔热保温性能，减少室内外能量传递，降低建筑制冷取暖能耗。随着我国生态文明建设的不断深入，全社会对绿色建筑的理念、认识和需求逐步提高。公司将紧跟政策方向，紧抓技术提升，增加产品产能，不断满足绿色建筑市场需求。

Zisun in Fixed Dust-free Space Ⅱ

In order to break the monopoly of foreign countries, the company actively layout the home comfort dust-free air conditioning system around high-quality life, and develop and produce energy-saving materials for buildings. At present, Zaisheng home comfortable dust-free air conditioning system team is actively working and continuing to implement product research and development, creating an energy-saving, silent and dust-free comfortable home environment for many customers.

Focusing on serving the thermal insulation needs of green buildings, relying on Zaisheng Technology's technical research and development strength and industry brand advantages in ultra-fine fiber glass wool, we have concentrated on the research and development and production of more energy-saving, more environmentally friendly and efficient high-end glass wool, providing excellent building insulation solutions for green buildings.

The company has developed a series of green building insulation products with microfiber glass wool as the core material, including oven insulation cotton, colored glass wool, industrial insulation glass wool and other products, with excellent physical properties, good thermal conductivity, light flame retardancy, low water absorption. It can be widely used in household appliances, public buildings, agricultural animal husbandry, intelligent workshops and other building insulation fields, and can also be matched with prefabricated buildings, BIPV (Building Integrated Photovoltaic), passive house, NET-ZERO Energy Building (Net Zero Energy Building) and other applications. The company will actively expand and promote the application of green building insulation products and contribute to the field of green building. The company's ultra-fine fiber glass wool is uniform and slender, with a moderate length-diameter ratio, excellent mechanical properties, and good sound absorption and heat insulation performance.

The company's microfiber glass wool is a green and biosafe product, which has obtained the European Certification Board for Mineral Wool Products (EUCEB) non-carcinogenic certification and the German Fraunhofer-Gesellschaft (Fraunhofer) laboratory biodegradability certification. The company's microfiber glass wool is tested and certified by RoHS and REACH. Based on the company's ultra-fine fiber glass wool a variety of excellent characteristics, the company deeply explores the potential of materials, develops and produces a series of products for the field of green buildings.

Zaisheng's dust-free and comfortable home air conditioning system can be organically combined with Zaisheng Technology's thermal insulation glass wool products to create a house with a comfortable and pleasant living environment, excellent indoor air quality and near-zero energy consumption. Comprehensively considering the needs of building layout, orientation, body shape coefficient and use function and the climatic conditions of the building location, thermal insulation glass wool products are used in building non-transparent maintenance structures, which can optimize the overall air tightness of the building, improve the thermal insulation performance of the building, reduce indoor and outdoor energy transfer, and reduce the energy consumption of building cooling and heating. With the deepening of China's ecological civilization construction, the concept, understanding and demand for green buildings in the whole society have gradually improved. The company will closely follow the policy direction, grasp the improvement of technology, increase product capacity, and continuously meet the demand of the green building market.

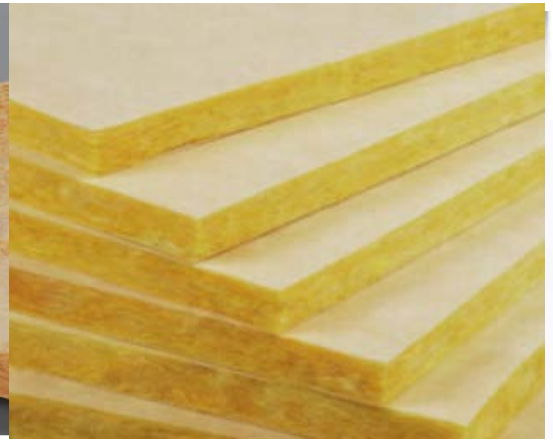
Glass wool insulation material
玻璃棉保温材料

再升玻璃棉保温产品采用再升科技独有的先进超细离心棉生产技术，并在各环节传统生产工艺上进行了一系列的改良升级。相比于普通玻璃棉厂商，我们的产品生产制造过程大幅减少了资源的损耗和废弃物的排放，专利技术制造出更均匀细长的玻璃纤维，长径比适中，反弹性优异，保温吸音性能更加卓越。

我们坚持“取与自然，回归自然”，采用特制环保胶粘剂，产品无有害气体释放，手感柔软舒适，不扎手、不致敏、可降解，具有生物安全性。

The Glass Cotton Insulation Product adopts the advanced ultra-fine centrifugal cotton production technology unique to Zaisheng Technology, and has undergone a series of improvements and upgrades in traditional production processes at various stages. Compared to ordinary glass wool manufacturers, our product production and manufacturing process significantly reduces resource loss and waste discharge. Patented technology produces more uniform and slender glass fibers with moderate aspect ratio, excellent resilience, and superior insulation and sound absorption performance.

We adhere to the principle of "taking from nature and returning to nature", using specially made environmentally friendly adhesives. The product has no harmful gas release, a soft and comfortable feel, is not prickly, non allergenic, and biodegradable, and has biological safety.



产品检测认证

BCCA

BCCA

EUCEB CERTIFICATE

BCCA, independent Certification Body designated by the scheme owner EUCEB, declares that all requirements have been met to attest that the products to which the right to use the EUCEB Trademark is granted and that are manufactured by

Chongqing Zaisheng Technology Corp.,Ltd.
no 1, Chanyi Road, Huixing Street, Yubei District CN - 401120 Chongqing

in the plant situated at

Dazhou City, Sichuan Province - China

are made of fibres with a chemical composition that lies within the chemical range of the reference fibre

Mineral Wool Glass Microfiber

that has successfully been tested

in accordance with Note Q of the Regulation (EC) No 1272/2008 of the European Parliament and of the Council as currently in force

as given in report No 02G16009 of 21-07-2017.

This certificate is granted on the basis of the Implementation Rules TRA-BEUC-511 for EUCEB Certification of mineral wool products.

N° certificate BEUC-511-21267-430-21268 I Valid from 31-05-2021 until 30-05-2024
Furnace: 7

Issued in Brussels, on 20 April 2021.

ir. B. De Blaere,
President of the General Management
Committee for Certification and Approval

The validity of this certificate can be checked on the website www.bcca.be
Further clarification regarding the scope of this certificate and the applicability of the requirements may be obtained from the certified organisation.

BELGIAN CONSTRUCTION CERTIFICATION ASSOCIATION NPO
FOUNDERS: BBRI AND SECO
RUE D'ARLON 53, B – 1040 BRUSSELS
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EUCEB证书
EUCEB certificate

ilac-MRA CNAS

中国合格评定国家认可委员会

实验室认可证书

（注册号：CNAS L17383）

兹证明：

重庆再升科技股份有限公司技术中心

（法人：重庆再升科技股份有限公司）

重庆市渝北区回兴街道蝉衣路1号，401120

符合 ISO/IEC 17025：2017《检测和校准实验室能力的通用要求》（CNAS-CL01《检测和校准实验室能力认可准则》）的要求，具备承担本证书附件所列服务能力，予以认可。

获认可的能力范围见标有相同认可注册号的证书附件，证书附件是本证书组成部分。

生效日期：2022-11-11
截止日期：2028-11-10

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中国合格评定国家认可委员会证书

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Fraunhofer
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Hannover, July 21, 2017

Confirmation

The biopersistence of Glass microfiber was investigated after intratracheal installation within the following study:

Fraunhofer ITEM study no.: 02G16009
Test substance: Glass microfiber
Sponsor: Chongqing Zaisheng Technology Corp,.Ltd.
No.197 Lianggang Road,
Taishang Industrial Zone
Yubei District, Chongqing, China

Title: The Biopersistence of Man-Made Vitreous Fibre (MMVF) Glass microfiber in Rats after Intratracheal Instillation.
This animal study was conducted in compliance with the Principles of Good Laboratory Practice (German Chemicals Law, §19a Appendix 1, August 28, 2013). The protocol of the European Commission (ECB/TM 27 Rev. 7, 1998) with slight changes according study protocol was followed.
The treatment of rats was performed in March, 2017 by intratracheal instillation of a total dose of 2 mg per rat. The fibre retention data of sacrifice dates up to 3 months after intratracheal instillation were used for analysis.

Following halftime was calculated by the method according to the protocol of the European Commission:

Long fibres fraction (length > 20 µm): **< 40 days**

According to REGULATION (EC) No 1272/2008 (CLP regulation), annex VI, table 3.1, INDEX-no. 650-016-00-2, Note Q, the classification as carcinogen cat. 3 does not apply to the fibre, Glass microfiber because the half-time for fibres longer than 20 µm is below 40 days in this biopersistence study after intratracheal instillation of rats.

Prof. Dr. med. Norbert Krug
Director of Fraunhofer ITEM

Dr. Roman Halter
Study director

德国Fraunhofer-生物可溶性认证
Fraunhofer certificate



Over 340000 ㎡ 500余亩

Sichuan Xuanhan Zhengyuan, integrating R&D, production and manufacturing, has the largest production capacity of microfiber glass wool in Asia

四川宣汉正原，集研发、生产、制造为一体
拥有亚洲最大的微纤维玻璃棉生产能力

建二十万吨规模的超细玻璃纤维工厂

把材料掌控在自己手上

To build a 200000 ton capacity glass microfiber factory

Control the materials in our own hands

拥有亚洲最大的微纤维玻璃棉生产能力

配方独特，质量规模国际领先

拥有基础原料的领先技术

The largest production capacity of micro glass fiber in Asia

Unique formula, international leading quality and scale

advanced technology of basic raw materials

超细玻璃纤维直径最细可达100

超细:直径是头发丝的1/200;

柔软:肤感、不扎手;

生物安全性:已获得非致癌物质标志认证(EUCEB 认证)

符合欧盟无害化要求。

Micro glass fiber diameter can reach 100nm

Superfine: the diameter is 1/200 of the hair; Soft: skin feeling, not touching hands;

Biosafety: it has obtained the non carcinogenic substance mark certification (Euceb certification) and meets the EU harmless requirements.

数字化工厂改造升级

形成对核电、军工、半导体、医疗等产业高档滤纸的饱和和供应能力

Digital factory

Supply capacity of high-grade filter paper for nuclear power, military, semiconductor, medical and other industries

固定无尘空间（三）

绿色家电领域

家用电器是居民能源消耗的第二大来源，占住宅总能耗的 20%以上(供暖后)，且高达 30%的居民碳排放来自于家用电器。通过绿色家电产品结构的升级，尤其是低能耗产品在市场中的推广普及，可以有效降低居民消费端的碳排放。碳中和要求下的家电行业结构面临调整，碳排放高的企业或将面临淘汰，有持续技术创新能力的绿色生产企业迎来行业资源整合的机遇。

2019 年 6 月，国家发展改革委等七部委联合印发的《绿色高效制冷行动方案》对我国空调等制冷产品的市能效水平提出了具体要求。2022 年 8 月，商务部等 13 部门《关于促进绿色智能家电消费若干措施的通知》，提到全面促进智能冰箱洗衣机空调、超高清电视、手机等绿色智能家电消费。提出了要完善绿色智能家电标准，推行绿色家电、智能家电、物联网等高端品质认证，为绿色智能家电消费提供指引。《中国家用电冰箱产业技术路线图(2019 年版)》针对节能明确提出，要实现冰箱节能和基本功能的综合平衡。到 2025 年，冰箱能效水平较 2019 年提高 25%，2030年较 2025 年提高 25%。

自 2021 年 3 月 1 日起，欧盟开始使用新的能效标识。新的标识刻度用 G 到 A 七个字母表示能效层级的递进。首批应用新标识的产品为：电冰箱、洗碗机、洗衣机和电视，其他产品也会陆续加入新版标识系统。在新版能效标识中，许多在旧标识中能获得 A+++标识的产品在新系统中可能只会获得 B 级甚至 E 级的分类，节能技术的创新升级需求将获得更大空间。

Fixed Dust-free Space Ⅲ

Green home appliance field

Household appliances are the second largest source of household energy consumption, accounting for more than 20% of the total energy consumption of homes (after heating), and up to 30% of household carbon emissions come from household appliances. Through the upgrading of the structure of green home appliances, especially the promotion and popularization of low-energy products in the market, carbon emissions at the consumption end of residents can be effectively reduced. Under the requirements of carbon neutrality, the structure of the home appliance industry is facing adjustment, enterprises with high carbon emissions may face elimination, and green production enterprises with sustainable technological innovation capabilities will usher in the opportunity of industry resource integration.

In June 2019, the National Development and Reform Commission and other seven ministries and commissions jointly issued the "Green and Efficient Refrigeration Action Plan", which put forward specific requirements for the municipal energy efficiency level of China's air conditioning and other refrigeration products. In August 2022, the Ministry of Commerce and 13 other departments issued the Notice on Several Measures to Promote the Consumption of Green Smart Home Appliances, mentioning to comprehensively promote the consumption of green smart home appliances such as smart refrigerators, washing machines, air conditioners, ultra-high-definition TVs, and mobile phones. It is proposed to improve the standards of green smart home appliances, promote high-end quality certification such as green home appliances, smart home appliances, and the Internet of Things, and provide guidance for the consumption of green smart home appliances. The "China Household Refrigerator Industry Technology Roadmap (2019 Edition)" clearly states that it is necessary to achieve a comprehensive balance between energy saving and basic functions of refrigerators for energy saving. By 2025, refrigerators will be 25% more energy efficient than in 2019 and 25% better in 2030 compared to 2025.

Since March 1, 2021, the EU has been using the new energy efficiency label. The new marking scale uses the letters G to A to indicate the progression of the energy efficiency hierarchy. The first products to use the new logo are: refrigerators, dishwashers, washing machines and TVs, and other products will be added to the new marking system. In the new version of the energy efficiency label, many products that can obtain the A+++ logo in the old label may only obtain the classification of grade B or even E in the new system, and the innovation and upgrade needs of energy-saving technologies will gain more space.

再升科技在固定无尘空间（三）

冰箱是家电中的重要组成部分，自其百余年前问世以来，其相关技术和要求一直在不断提升。作为冰箱的核心组成部件，其保温层仍然以聚氨酯为主。随着全球范围内对冰箱能耗要求不断提升，二十余年前已有将真空绝热板于冰箱的先例，真空绝热板优异绝热性能逐渐扩展到热水器、电饭锅、热水壶等多种需要绝热保温的家电中。

再升科技生产的高效无机真空绝热板芯材是真空绝热板的核心绝热材料。芯材的热阻系数、物理性能、稳定性等核心指标直接影响了真空绝热板真空度、吸水程度和导热系数，决定了制成的真空绝热板的综合性能和使用寿命。公司的真空绝热板芯材具有导热系数低，保温层厚度薄，体积小，重量轻，制造过程无氟以及容易回收再利用等优势，高效降低家用电器能耗并增加用户使用空间，已广泛用于以高端冰箱为主的多种绿色家电。公司紧抓市场机遇，不断提升产品性能，增加产品产能，以满足不断增长的市场需求。

为拓宽公司高效节能产品种类和应用领域，进一步掌握真空绝热板芯材、吸气剂和阻隔膜三种真空绝热板主要原材料的制备技术，有效提高三种原材料之间的适配性，为全球真空绝热板客户提供更专业更权威的技术服务、优质原材料和更丰富的产品种类服务，公司于 2023 年 4 月增资四川嘉豪达包装制造有限公司并成为其控股股东。未来公司将加快在高端“高效阻隔复合膜和高效吸气剂产品” 的开发进度，通过新材料、新工艺、新技术，提高“高效阻隔复合膜”的抗变形、耐穿刺、耐化学等性能，降低边缘热桥效应，提升绝热性能和使用寿命，助力真空绝热板持续的迭代升级。

Zisun in Fixed Dust-free Space Ⅲ

Refrigerators are an important part of home appliances, and their related technologies and requirements have been continuously improved since their introduction more than 100 years ago. As the core component of the refrigerator, its insulation layer is still dominated by polyurethane. With the continuous increase in the global demand for refrigerator energy consumption, there was a precedent for vacuum insulation panels in refrigerators more than 20 years ago, and the excellent thermal insulation performance of vacuum insulation panels has gradually extended to water heaters, rice cookers, hot water pots and other home appliances that require thermal insulation.

The core material of high-efficiency inorganic vacuum insulation panel produced by Zaisheng Technology is the core thermal insulation material of vacuum insulation panel. The core indicators such as thermal resistance coefficient, physical properties and stability of the core material directly affect the vacuum, water absorption and thermal conductivity of the vacuum insulation board, and determine the comprehensive performance and service life of the vacuum insulation board. The company's vacuum insulation board core material has the advantages of low thermal conductivity, thin insulation layer thickness, small size, light weight, fluorine-free manufacturing process and easy recycling and reuse, efficiently reducing the energy consumption of household appliances and increasing user space, and has been widely used in a variety of green home appliances mainly high-end refrigerators. The company grasps market opportunities, continuously improves product performance, and increases product production capacity to meet the growing market demand.

In order to broaden the company's high-efficiency and energy-saving product categories and application fields, further master the preparation technology of the three main raw materials of vacuum insulation board core material, gas absorber and barrier film, effectively improve the adaptability between the three raw materials, and provide more professional and authoritative technical services, high-quality raw materials and richer product types and services for global vacuum insulation board customers, the company increased its capital in Sichuan Jiahauda Packaging Manufacturing Co., Ltd. in April 2023 and became its controlling shareholder. In the future, the company will accelerate the development progress of high-end "high-efficiency barrier composite film and high-efficiency breather products", improve the anti-deformation, puncture resistance, chemical resistance and other properties of the "high-efficiency barrier composite film" through new materials, new processes and new technologies, reduce the edge thermal bridge effect, improve thermal insulation performance and service life, and help the continuous iterative upgrading of vacuum insulation panels.

VIP Core Materials
VIP芯材

以直径为0.4-3μm的玻璃纤维为主要材料，采用湿法工艺制成的VIP纳米保温绝热材料，具有容重小、导热系数低、弹性好、不燃等特性。该产品质地柔软、手感好、易切裁、便于施工。适用于受空间限制和外观要求高的应用场合，是一种高级保温绝热材料。

Glassfiber VIP core material is made from glass microfiber with diameter of 0.4~3μm by wet laid process. It is characterized by light weight, low thermal conductivity, good flexibility, innocuity, noncombustibility, imputrescibility, aging resistance, stable chemical property and no contamination. This product is soft in texture, good at hand feel, easy to cut, applicable to the area with space restrictions and higher visual appearance requirement. It is an ideal product for advanced thermal insulation.

Dry Method VIP Core Materials
干法VIP芯材

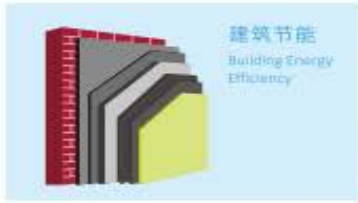
干法VIP芯材是由玻璃纤维直接加压而成的，具有高强度、低导热系数的新型芯材，生产过程不添加化学助剂，无甲醛。与传统工艺相比，干法VIP芯材具备制备成本低，导热系数更低的优点。再升科技拥有国内最先进的干法VIP芯材进口生产线。

Dry method VIP core material is new kind of core material made of glassfiber by hot press with high tensile strength and low thermal conductivity. There is non chemical agents and maldehyde-free in the whole production process. Compared with traditional process, it has the advantage of low production cost and thermal conductivity. Zisun Technology has the most advanced dry method VIP core product line of the country.

Applications 用途

适用于空调、冰箱、制冷设备、建筑节能，各种热力设备及管道的保冷、隔热法兰密封、波纹管隔热、仪器、仪表、电子、化工设备的高效绝热、隔音。

Civil and industrial refrigerators and freezers, cold storage, air conditionger, water heaters, shipping containers, nuclear containment, drying machines, heating ovens roasters, motorcycles, cars, trains, ships, building energy efficiency, etc.




移动无尘空间
Mobile Dust-free Space

应用领域
Application

新能源汽车空气过滤
Air Filtration for New Energy Vehicles

航空航天、高铁空气过滤及隔音保温
Aerospace High-speed Rail Air Filtration and Insulation

电池隔膜
Separators for Battery

冷链运输
Cold-chain transportation and Insulation

移动无尘空间（一）

近几年受外部环境影响，大众越发关注车厢、机舱、船舱等移动空间空气质量安全。新能源汽车结构设计的特点，为其配备大尺寸、高效率的座舱空调滤芯提供了条件。随着新能源汽车的销售量、保有量逐渐增加，新能源汽车的座舱空调滤芯迎来了巨大的市场前景。

（1）相关政策

2021 年 10 月，中共中央、国务院印发了《关于完整准确全面贯彻新发展理念做好碳达峰碳中和工作的意见》和《2030 年前碳达峰行动方案》，其中“碳达峰十大行动”，明确降碳措施。方案要求，重点实施能源绿色低碳转型行动、节能降碳增效行动、工业领域碳达峰行动、城乡建设碳达峰行动、交通运输绿色低碳行动、循环经济助力降碳行动、绿色低碳科技创新行动、碳汇能力巩固提升行动、绿色低碳全民行动、各地区梯次有序碳达峰行动等“碳达峰十大行动”。

国务院办公厅印发《新能源汽车产业发展规划（2021-2035）》中指出，我国新能源汽车进入加速发展新阶段，新能源汽车已成为全球汽车产业转型发展的主要方向和促进世界经济持续增长的重要引擎。

综合国家各种政策，发展新能源汽车是应对气候变化、推动绿色发展的重要战略举措。

（2）行业趋势

据乘用车市场信息联席会报告，2022 年全国新能源汽车累计销量 688.7 万辆，累计同比增长93.4%。截至 2022 年年末，全国新能源汽车保有量达 1310 万辆，占汽车总量的 4.1%。

汽车逐步从代步属性为主的工业品逐步变成功能需求多样化的消费品，消费者的消费体验成为购买行为的重要决定因素，整车厂从过去的“闭门造车”走向直面消费需求。随着大众对高品质生活的越发重视，汽车用户对驾驶过程中的安全、舒适、健康、智能等要求越发提升，因此打造健康、智能的新能源汽车已成为全球多家车企的发展方向，各家企业投入大量资源研发“健康汽车”。新能源汽车因其结构优势，为装配更高性能、更大尺寸、更加快速高效的汽车空调滤芯提供了条件。

已有头部新能源汽车企业提出，因空气污染将减少大众寿命预期而开发了“防生化武器级”汽车，在升级更大尺寸汽车空气滤芯的同时，将过滤标的颗粒物大小从普通 PM2.5 粒径提升至医疗级常用的 PM0.3 微米粒径，并将过滤效率提高至 99.97%，从而实现汽车座舱空气的快速、高效净化。

Mobile Dust-free Space Ⅰ

In recent years, due to the external environment, the public has paid more and more attention to the air quality and safety of mobile spaces such as cabins, engine rooms, and ship cabins. The characteristics of the structural design of new energy vehicles provide conditions for them to be equipped with large-size, high-efficiency cockpit air conditioning filters. With the gradual increase in sales and ownership of new energy vehicles, the cockpit air conditioning filter element of new energy vehicles has ushered in a huge market prospect.

(1) Relevant policies

In October 2021, the Central Committee of the Communist Party of China (CPC) and the State Council issued the "Opinions on Completely, Accurately and Comprehensively Implementing the New Development Concept and Doing a Good Job in Carbon Peak and Carbon Neutrality" and the "Action Plan for Carbon Peaking Before 2030". The plan requires that the implementation of the "Ten Actions for Carbon Peaking" will be focused on, such as green and low-carbon energy transformation actions, energy conservation, carbon reduction and efficiency enhancement actions, carbon peaking actions in the industrial field, carbon peaking actions in urban and rural construction, green and low-carbon transportation actions, circular economy carbon reduction actions, green and low-carbon science and technology innovation actions, carbon sink capacity consolidation and improvement actions, green and low-carbon national actions, and orderly carbon peaking actions in various regions.

The General Office of the State Council issued the "New Energy Vehicle Industry Development Plan (2021-2035)", pointing out that China's new energy vehicles have entered a new stage of accelerated development, and new energy vehicles have become the main direction of the transformation and development of the global automobile industry and an important engine to promote the sustainable growth of the world economy.

Integrating various national policies, the development of new energy vehicles is an important strategic measure to respond to climate change and promote green development.

(2) Industry trends

According to the report of the Passenger Car Market Information Association, the cumulative sales of new energy vehicles in China in 2022 will be 6.887 million units, with a year-on-year increase

93.4%。 By the end of 2022, the number of new energy vehicles in the country reached 13.1 million, accounting for 4.1% of the total number of vehicles.

Automobiles have gradually changed from industrial products with transportation attributes to consumer goods with diversified functional needs, and consumers' consumption experience has become

As an important determinant of purchasing behavior, automakers have shifted from "working behind closed doors" in the past to facing consumer demand directly. With the public to high quality

More and more attention is paid to quality life, and car users have more and more requirements for safety, comfort, health, and intelligence in the driving process

Creating healthy and intelligent new energy vehicles has become the development direction of many car companies around the world, and various companies have invested a lot of resources in research and development of "health."

cars". Due to its structural advantages, new energy vehicles are equipped with higher performance, larger size, faster and more efficient automotive air conditioning filters

The conditions were provided.

Some leading new energy vehicle companies have proposed that they have developed "anti-biochemical weapon grade" because air pollution will reduce the life expectancy of the public

In automobiles, while upgrading the larger size of the automotive air filter, the particle size of the filter target has been increased from the ordinary PM2.5 particle size to the medical one

The PM0.3 micron particle size is commonly used in therapy and increases the filtration efficiency to 99.97%, so as to achieve fast and efficient cabin air in the car

Cleanse.

移动无尘空间（一）

（2）行业趋势

据乘用车市场信息联席会报告，2022 年全国新能源汽车累计销量 688.7 万辆，累计同比增长93.4%。截至 2022 年年末，全国新能源汽车保有量达 1310 万辆，占汽车总量的 4.1%。汽车逐步从代步属性为主的工业品逐步变成功能需求多样化的消费品，消费者的消费体验成为购买行为的重要决定因素，整车厂从过去的“闭门造车”走向直面消费需求。

随着大众对高品质生活的越发重视，汽车用户对驾驶过程中的安全、舒适、健康、智能等要求越发提升，因此打造健康、智能的新能源汽车已成为全球多家车企的发展方向，各家企业投入大量资源研发“健康汽车”。新能源汽车因其结构优势，为装配更高性能、更大尺寸、更加快速高效的汽车空调滤芯提供了条件。

已有头部新能源汽车企业提出，因空气污染将减少大众寿命预期而开发了“防生化武器级”汽车，在升级更大尺寸汽车空气滤芯的同时，将过滤标的颗粒物大小从普通 PM2.5 粒径提升至医疗级常用的 PM0.3 微米粒径，并将过滤效率提高至 99.97%，从而实现汽车座舱空气的快速、高效净化。

Mobile Dust-free Space Ⅰ

(2) Industry trends

According to the report of the Passenger Car Market Information Association, the cumulative sales of new energy vehicles in China in 2022 will be 6.887 million units, a year-on-year increase of 93.4%. By the end of 2022, the number of new energy vehicles in the country reached 13.1 million, accounting for 4.1% of the total number of vehicles. Automobiles have gradually changed from industrial products with transportation attributes to consumer goods with diversified functional needs, and consumers' consumption experience has become an important determinant of purchasing behavior.

As the public attaches more and more importance to high-quality life, car users have more and more requirements for safety, comfort, health and intelligence in the driving process, so creating healthy and intelligent new energy vehicles has become the development direction of many car companies around the world, and various companies have invested a lot of resources in the research and development of "healthy cars". Due to its structural advantages, new energy vehicles provide conditions for assembling higher performance, larger size, faster and more efficient automotive air conditioning filter elements.

While upgrading the larger size of the automotive air filter, the particle size of the filter target will be increased from the ordinary PM2.5 particle size to the PM0.3 micron particle size commonly used in medical grade, and the filtration efficiency is increased to 99.97%, so as to achieve rapid and efficient purification of the car cabin air.

再升科技在移动无尘空间（一）

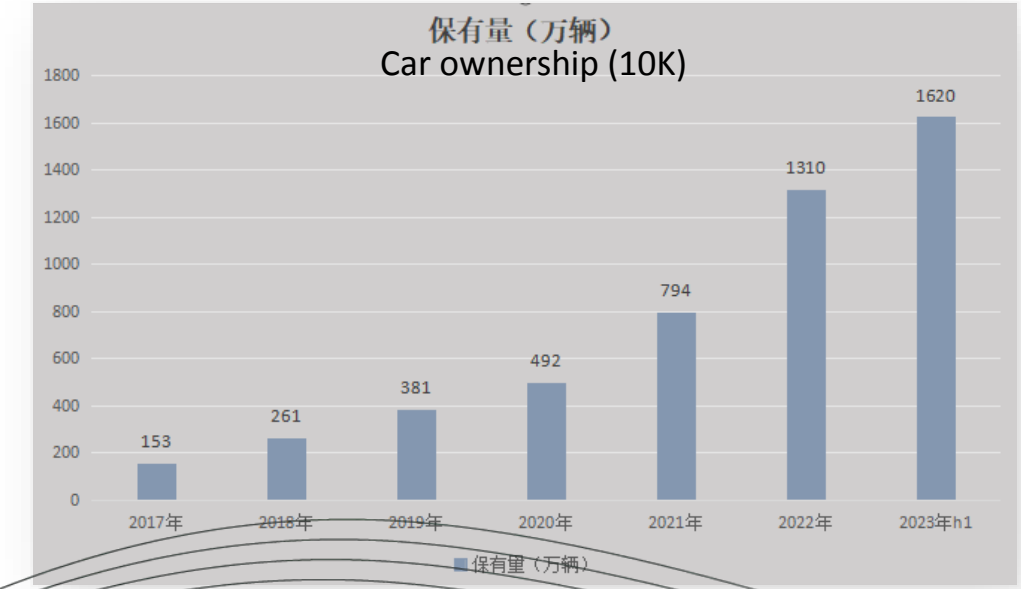
基于再升科技多年深耕“干净空气”技术和材料的优势，公司旗下重庆朗之瑞新材料科技有限公司为汽车座舱空气安全和空气质量提供多种过滤器，有效过滤空气中散播的细小颗粒物、气体污染物以及细菌、病毒、粉尘、气溶胶、植物花粉、霉菌孢子、尘螨排泄物等，对≥0.3μm 的颗粒物过滤效果可达 99.97%及以上，让驾乘人员在车内享受清洁、健康的空气，可防提升驾乘舒适度、保护驾乘人员健康、提升驾驶安全性，同时防止灰尘积聚在空调系统内部，延长其使用寿命。

公司旗下生产的高效膜过滤产品，已被国际知名企业采用，应用于汽车座舱空调滤芯，为众多用户提供稳定、高效、可靠的“干净空气”保障。公司将坚持不懈地挖掘 “干净空气”材料和技术在新能源汽车领域的应用前景，力求为全球新能源汽车用户提供“干净空气”的座舱环境保障。

Zisun in Mobile Dust-free Space I

Based on the advantages of Zaisheng Technology's years of deep cultivation of "clean air" technology and materials, Chongqing Langzhirui New Material Technology Co., Ltd., a subsidiary of the company, provides a variety of filters for automobile cockpit air safety and air quality, effectively filtering fine particles, gaseous pollutants and bacteria, viruses, dust, aerosols, plant pollen, mold spores, dust mite excrement, etc., and the filtration effect of ≥ 0.3μm particles can reach 99.97% or more, so that drivers and passengers can enjoy clean and healthy air in the car. It can prevent and improve driving comfort, protect the health of drivers and passengers, improve driving safety, and prevent dust from accumulating inside the air conditioning system, prolonging its service life.

The high-efficiency membrane filtration products produced by the company have been adopted by internationally renowned enterprises and applied to the cabin air conditioning filter element of the car, providing stable, efficient and reliable "clean air" guarantee for many users. The company will unremittingly explore the application prospects of "clean air" materials and technologies in the field of new energy vehicles, and strive to provide "clean air" cabin environment guarantee for global new energy vehicle users.

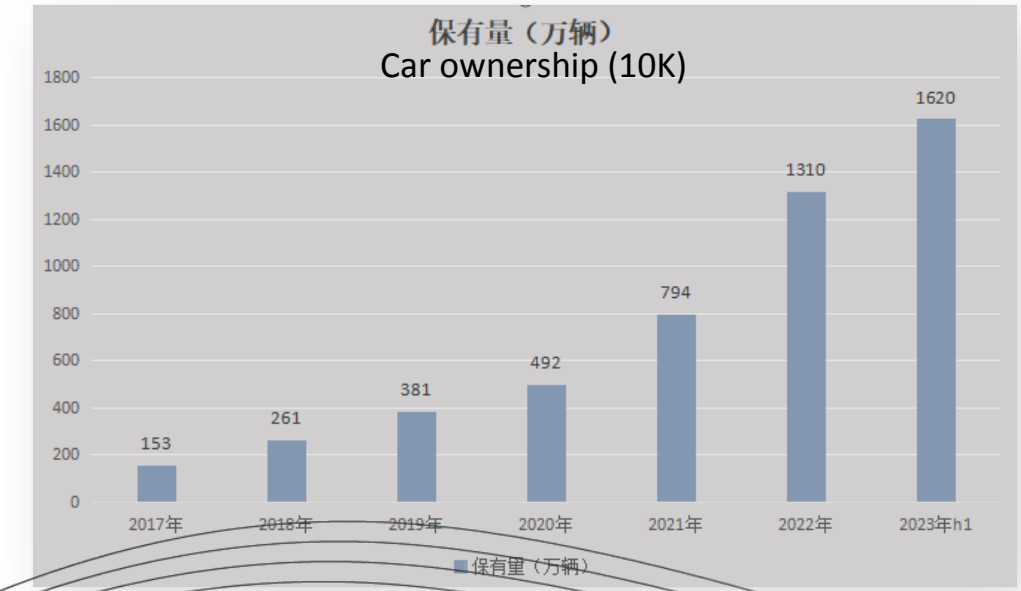


在现代社会，航空航天、公共交通、汽车等移动式舱内空间已经成为了人们日常生产生活中不可或缺的一部分。然而，随着科技交通设备的不断增加，能源消耗和环境污染问题也日益严重，倡节能低碳已经成为了全球关注的焦点。在交通设备工业的发展中，其设备运行的能耗、噪音、舱内的安全性和舒适性等问题也越来越受到重视。

再升科技凭借多年深耕“干净空气”技术和材料的优势，为移动空间提供“低碳无尘空间”的解决方案与技术产品。广泛应用于航空航天领域、新能源汽车领域、公共交通领域、冷链运输等领域。

其中隔音隔热毯等产品应用在移动设备中能达到很好减重目的，良好的吸声降噪特性，降低设备运行过程中的能耗水平。应用于移动设备的空调过滤器相关材料产品，可有效地过滤掉空气中的各种有害物质，提高移动舱内空气质量、人员驾驶安全性、乘客乘坐舒适性、延长移动设备使用寿命。

近年来，世界各国都在推进绿色能源的发展，新能源汽车领域受到广泛关注。据统计，截至2023年6月底，全国新能源汽车保有量达到了1620万辆，占汽车总量的4.9%。这一数字的不断增长，再次展示了国内新能源汽车市场的巨大潜力，所以新能源汽车空气过滤的市场潜力也是随之增长的。



In modern society, mobile cabin spaces such as aerospace, public transportation, and automobiles have become an indispensable part of people's daily production and life. However, with the continuous increase of technological transportation equipment, energy consumption and environmental pollution issues are becoming increasingly serious, and advocating energy conservation and low-carbon has become a global focus of attention. In the development of the transportation equipment industry, issues such as energy consumption, noise, safety and comfort in cabin operation have also been increasingly valued.

With the advantages of years of deep cultivation of "clean air" technology and materials, Zaisheng Technology provides solutions and technical products for "low-carbon and dust-free spaces" in mobile spaces. Widely used in fields such as aerospace, new energy vehicles, public transportation, and cold chain transportation.

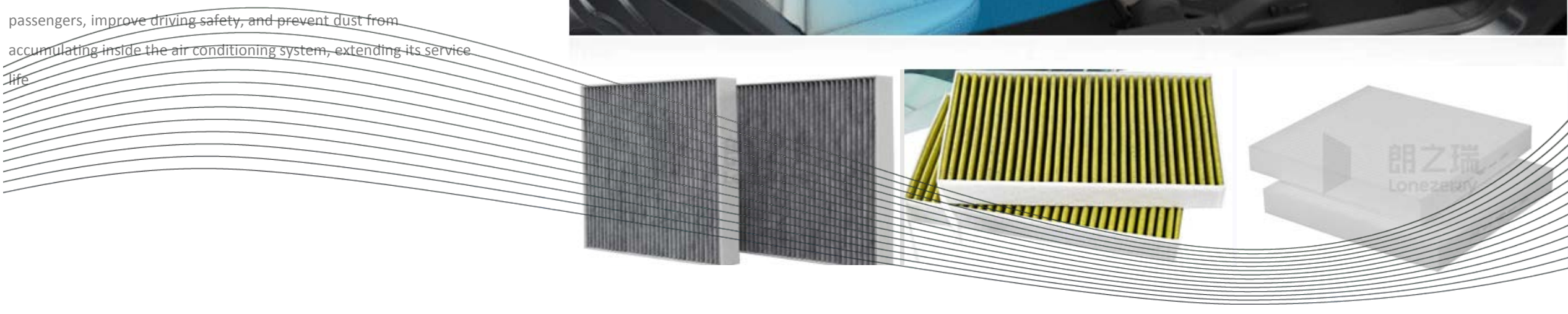
Among them, products such as sound insulation blankets can achieve good weight reduction in mobile devices, with good sound absorption and noise reduction characteristics, and reduce the energy consumption level during equipment operation. The air conditioning filter related material products applied to mobile devices can effectively filter out various harmful substances in the air, improve the air quality in the mobile cabin, driving safety, passenger comfort, and extend the service life of mobile devices.

In recent years, countries around the world have been actively promoting the development of green energy, with new energy vehicles receiving much attention. According to statistics, as of the end of June 2023, the total number of new energy vehicles in China has reached 16.2 million, accounting for 4.9% of the total number of vehicles. The continuous growth of this number once again demonstrates the enormous potential of the domestic new energy vehicle market, so the market potential of air filtration for new energy vehicles is also growing accordingly.

New energy vehicle air filtration products
新能源汽车空气过滤产品

有效过滤空气中散播的细小颗粒物、气体污染物以及细菌、病毒、粉尘、气溶胶、植物花粉、霉菌孢子、尘螨排泄物等，对≥0.3μm的颗粒物过滤效果可达 99.97%及以上，让驾乘人员在车内享受清洁、健康的空气，可防提升驾乘舒适度、保护驾乘人员健康、提升驾驶安全性，同时防止灰尘积聚在空调系统内部，延长其使用寿命。

Effectively filter small particulate matter, gas pollutants, bacteria, viruses, dust, aerosols, plant pollen, mold spores, dust mite excrement, etc. scattered in the air, with a concentration of ≥ 0.3 μ The particle filtering effect of m can reach 99.97% or above, allowing drivers and passengers to enjoy clean and healthy air inside the car. It can prevent and improve driving comfort, protect the health of drivers and passengers, improve driving safety, and prevent dust from accumulating inside the air conditioning system, extending its service life



再升科技在移动无尘空间（二）

民航飞机翱翔在万米高空时，为保证飞行中客舱货舱的温度和舒适性，飞机在蒙皮和衬里之间安装了隔音隔热层，起到反射热辐射或降低热传导的作用，实现机舱内的隔热保温、消音降噪的功能，提高座舱舒适性，降低飞机能耗和油耗。

公司高效节能产品隔音隔热毯已经获得中国商用飞机有限责任公司试验资格证书。该产品以玻璃纤维棉为原料，通过改性复合等专利工艺，拥有质轻、阻燃、防水、隔音、隔热等优异性能，可以用于飞机机舱、船舱、地铁等对隔音隔热综合性要求较高的应用领域。公司已获得航空航天质量管理体系 AS 9100 认证，具有美国材料试验协会（American Society for Testing and Materials，简称 ASTM）标准建设了声学实验室。2022 年，公司已经向中国商用飞机有限责任公司批量供应隔音隔热毯。

同时，公司研发生产的高硅氧纤维已被国际知名航天公司率先长期使用，达成了深度的商业合作，对开拓航空航天方面的高端应用具有重要意义。公司将继续努力为更多用户提供优质的国产化产品和服务。

此外，中国作为“轨道大国”，在轨道交通的设计、生产和应用方面均居世界前列。近几年随着城市化加快，轨道交通的需求和建设也在加大步伐，同时新的要求不断升级、标准更高，以中国中车为代表的交轨设计制造龙头对低重量、安全性、舒适度等方面的考虑更为突出。航空隔音隔热棉在大飞机上的使用已经成熟，效果明显、反响良好，超细纤维柔软有弹性，能达到很好减重目的，良好的吸声隔热特性，使得该产品有信心在交轨运行过程中的高频噪音下表现突出，降噪系数完全可以满足相关性能要求，同时本产品具有优异的隔热保温能力，可以降低外部和内部空间的冷热交换频次，将在交轨运行过程中的能耗降到一定水平。此外，载客交轨对于安全性的重视，车厢隔音隔热材料的选用底线是满足一定防火性能要求，还有寿命设计对于车厢所用材料的耐候性要求高。我司产品本身优异的防水防火性能，能够满足一系列防寒材类要求和 R1-HL3 轨道防火性能要求。航空隔音隔热毯轻量化、节能降噪、无毒无味、防火防水，其应用到包括地铁、轻轨、市域快轨、有轨电车、磁浮交通、其他商用货运长客等轨道交通领域将逐渐成为一种新趋势。

Zisun in Mobile Dust-free Space Ⅱ

When the civil aircraft soars at an altitude of 10,000 meters, in order to ensure the temperature and comfort of the cargo compartment of the cabin during the flight, the aircraft installs a sound insulation layer between the skin and the lining, which plays the role of reflecting heat radiation or reducing heat conduction, realizes the functions of heat insulation, sound reduction and noise reduction in the cabin, improves the comfort of the cockpit, and reduces the energy consumption and fuel consumption of the aircraft.

The company's high-efficiency and energy-saving products sound insulation and heat insulation blankets have obtained the test qualification certificate of Commercial Aircraft Corporation of China. The product uses glass fiber cotton as raw material, through modified composite and other patented processes, with light weight, flame retardant, waterproof, sound insulation, heat insulation and other excellent properties, can be used in aircraft cabins, cabins, subways and other applications with high comprehensive requirements for sound insulation and heat insulation. The company has obtained AS 9100 certification for aerospace quality management systems and has built an acoustic laboratory with American Society for Testing and Materials (ASTM) standards. In 2022, the company has supplied sound and heat insulation blankets to Commercial Aircraft Corporation of China in batches.

At the same time, the high silica fiber developed and produced by the company has been taken the lead in long-term use by internationally renowned aerospace companies, and has reached in-depth commercial cooperation, which is of great significance for exploring high-end applications in aerospace. The company will continue to strive to provide more users with high-quality domestic products and services.

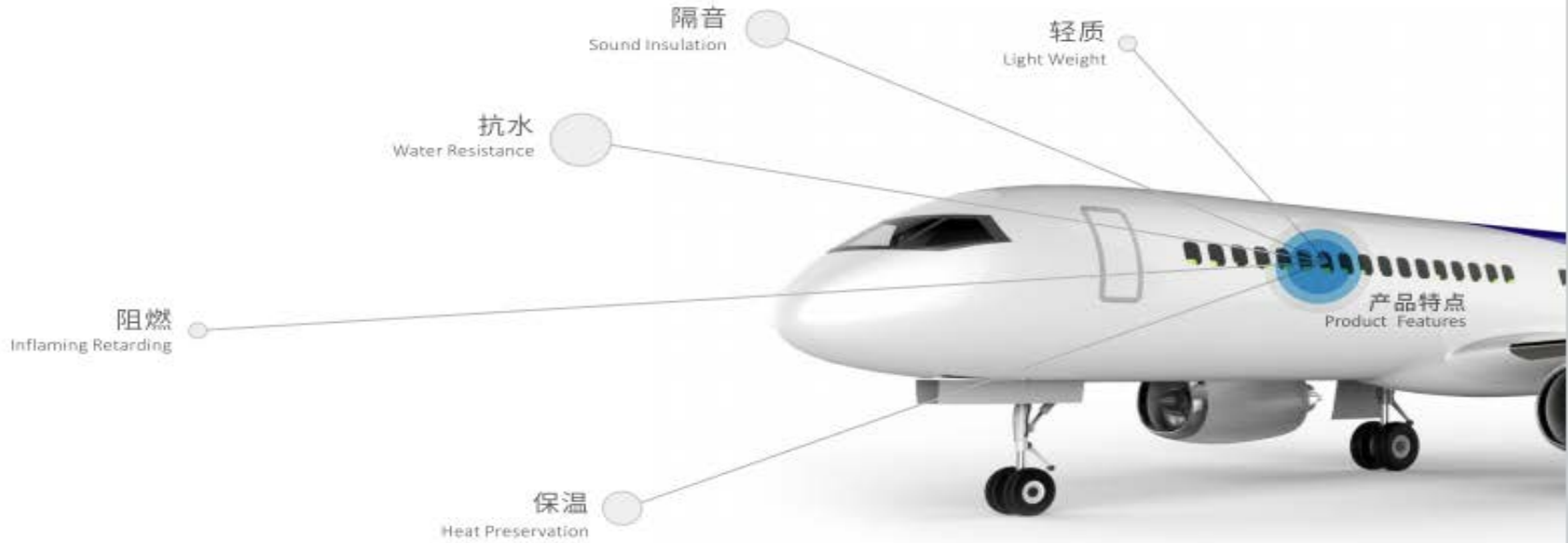
In addition, China, as a "rail power", ranks among the top in the world in the design, production and application of rail transit. In recent years, with the acceleration of urbanization, the demand and construction of rail transit are also increasing the pace, while new requirements are constantly upgrading and standards are higher, and the rail design and manufacturing faucet represented by CRRC is more prominent in terms of low weight, safety and comfort. The use of aviation sound insulation and heat insulation cotton in large aircraft has matured, the effect is obvious, the response is good, the microfiber is soft and elastic, can achieve a good weight reduction, good sound absorption and heat insulation characteristics, so that the product has the confidence to perform well under the high-frequency noise in the process of rail operation, the noise reduction coefficient can fully meet the relevant performance requirements, at the same time, this product has excellent thermal insulation ability, can reduce the frequency of cold and heat exchange in the external and internal space, and reduce the energy consumption in the process of rail operation to a certain level. In addition, the passenger rail attaches great importance to safety, and the bottom line of the selection of sound insulation and heat insulation materials for the carriage is to meet certain fire performance requirements, and the life design has high requirements for the weather resistance of the materials used in the carriage. Our products themselves have excellent waterproof and fireproof performance, which can meet a series of cold-proof material requirements and R1-HL3 track fire performance requirements. Aviation sound insulation blanket lightweight, energy saving and noise reduction, non-toxic and odorless, fireproof and waterproof, its application to include subway, light rail, urban express rail, tram, maglev transportation, other commercial freight long-term passenger and other rail transit fields will gradually become a new trend.

Sound And Heat Insulation Blanket

隔音隔热棉毡

再升科技生产的隔音隔热棉毡采用玻璃棉和一种专用粘结剂制成，具有轻质、隔音、抗水、阻燃、保湿、生物可溶性、环保等优质特点,其原材料超细玻璃纤维棉符合德国Fraunhofer研究所无害化的认证要求。通过了欧洲矿棉产品认证委员会（EUCEB)非致癌物质的认证。

Sound and heat insulation blanket is made from glass fiber and special binder. It has many advantages, such as light weight, sound proof, water resistance, flame retardant and heat insulation, bio-soluble,environmental and etc. The basic material—superfine fibre glass cotton mel the requirement of German Fraunhofer about harmlessness authentication. Passed EUCEB's authentication about non-carcinogens.



Applications 用途

隔音隔热棉毡因其卓越的声学和绝热性能被广泛运用于航空航天等高端领域，是飞机、高铁、汽车、舱体等内部空间隔音隔热的关键材料。隔音隔热棉毡由公司自主研发，为客户活动空间的安静、恒温、舒适和私密提供保障。

Because of its excellent acoustic and thermal insulation characteristics, Sound and heat insulation blanket is widely used in high-end domains. It becomes the critical materials in the sound and heat insulation of high speed rails,cars,aircrafts, transports case'etc.Our company research and develop Sound and heat insulation blanket independently. Provide a quite, thermostatic, comfortable, and private activity space for our customers.

试 验 资 格 证 书

中国商飞 COMAC

证书编号：CTEC-L210022　　版次：A

重庆再升科技股份有限公司

重庆市渝北区回兴街道两港大道 197 号，401120

符合中国商用飞机有限责任公司试验能力评估要求，具备承担本证书所列试验服务的能力。

认定试验范围如下：

专业分类：　非金属材料试验-隔音隔热材料试验

试验能力：　排水性试验；毛细现象试验；防腐蚀性能试验；耐高温性能试验；吸声系数试验；胶粘剂含量试验；流阻试验。

有效期至：2024-12-29

初次评估：2021-12-30

签署日：2021-12-30　　签字：

中国商用飞机有限责任公司

中国商飞

试验资格证书

Certificate

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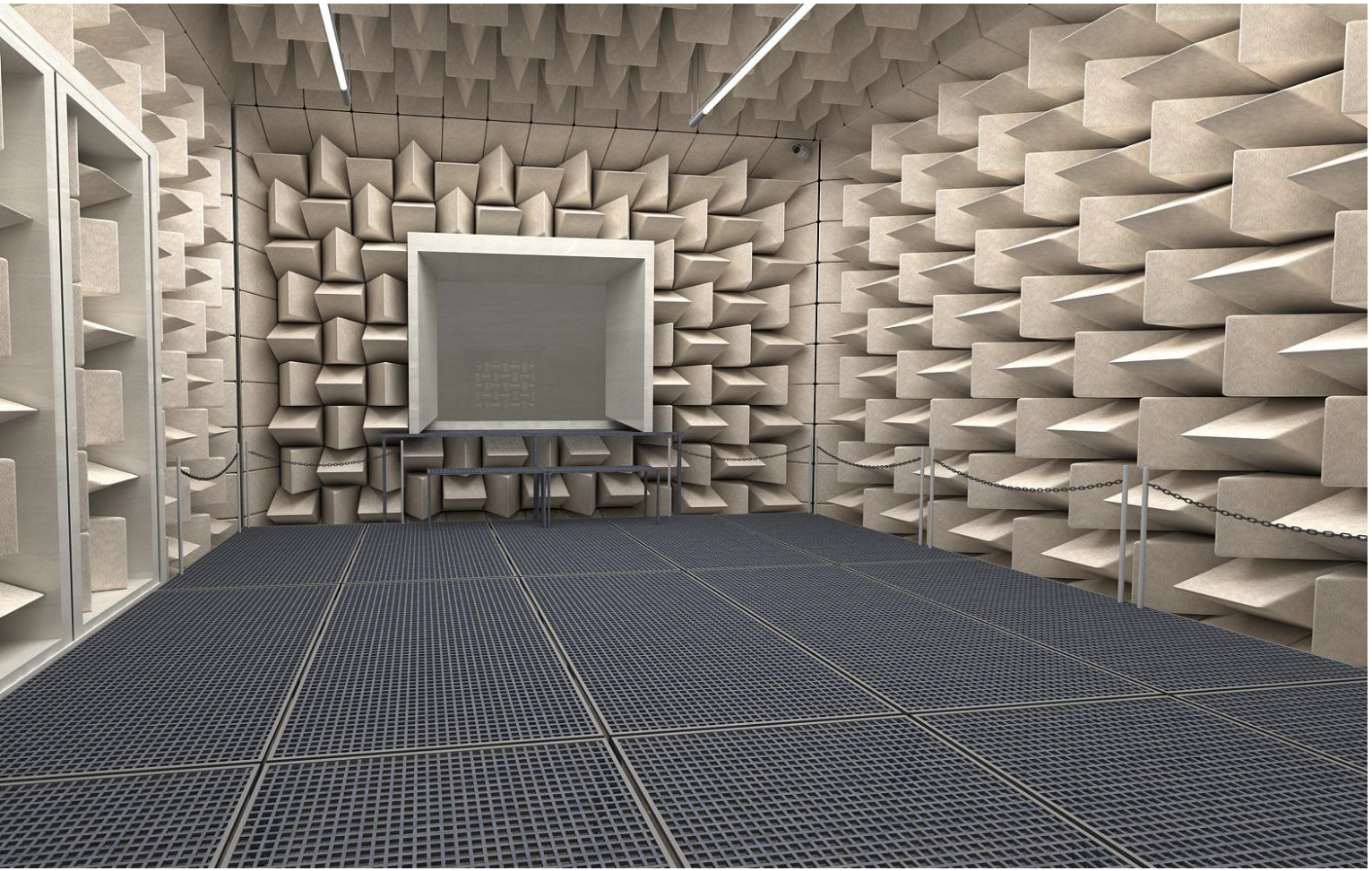
Certificate No.：CTEC-L210022

Professional Classification: Testing of non-metallic materials - Testing of sound insulation materials

Test Ability: drainage test; Capillary phenomenon test; Corrosion resistance test; High performance test; Sound absorption coefficient test; Adhesive content experiment; Flow resistance test.



ACOUSTICS LABORATORY

声学实验室

重庆再升科技股份有限公司承建的声学实验室位于重庆市

一间控制室、一间设备间组成，占地面积600平方米左右。实验室共4间房间，3间混响室、1间全消室。每两间构成一个隔声测试套组，分别采用声强法和声压法。实验室建设于弹簧之上，隔离地面振动对声学测试影响。房间外部设立双层实墙，减少声波对测试精准性的影响。

目前国内唯一的航空纤维隔音材料检测声学实验室

为国产大飞机隔音绝热材料配套。

The acoustic laboratory constructed by Chongqing Zaisheng Technology Co., Ltd. is located in Chongqing city

It is composed of a control room and an equipment room, covering an area of about 600 square meters. The laboratory has 4 rooms, 3 reverberation rooms and 1 total elimination room. Each two rooms form a sound insulation test suite, which adopts sound intensity method and sound pressure method respectively. The laboratory is built on a spring to isolate the impact of ground vibration on acoustic testing. A double-layer solid wall is set outside the room to reduce the impact of sound waves on the accuracy of the test.

At present, the only acoustic laboratory for testing aviation fiber sound insulation materials in China

再升科技在移动无尘空间（三）

冷链运输领域

冷链是指某些产品在加工、贮藏、运输、分销和零售、使用过程中，各环节始终处于产品所必需的特定低温环境下，减少损耗，防止污染和变质，以保证产品安全的特殊供应链系统。冷链已经深刻融入大众生活，适用范围非常广泛，包括初级农产品、加工食品、特殊商品（如药品、疫苗）等。冷链物流的核心组成部分之一就是“温控保温”。

2021 年 12 月，国务院《“十四五”冷链物流发展规划》要求：提高冷藏车发展水平，如加快推进轻型、微型新能源冷藏车和冷藏箱研发制造，积极推广新型冷藏车、铁路冷藏车、冷藏集装箱；促进运输载器具单元化，如引导冷链运输企业使用标准化托盘、周转箱（筐）、笼车等运载单元以及蓄冷箱、保温箱等单元化冷链载器具，加强标准化冷链载器具循环共用体系建设；提高冷链物流设施节能水平，如提高冷库、冷藏车等的保温材料保温和阻燃性能；加大绿色冷链装备研发应用，如鼓励使用绿色、安全、节能、环保冷藏车及配套装备设施。研发应用符合冷链物流特点的蓄冷周转箱、保温包装、保温罩等。鼓励使用绿色低碳高效制冷剂和保温耗材。

此外，我国自动售货机市场前景广阔。随着物联网和人工智能技术的发展，以及近年来“无接触式”、“无人化”自助消费方式的驱动，自动售货机整体发展迅速，大多应用于商场、服务区、地铁站、酒店以及工厂、办公楼等地。自动售货机的市场发展也为新型高效、超薄的绿色保温材料带来新的增长动力。

真空绝热板的核心材料是真空绝热板芯材。真空绝热板芯材的热阻系数、物理性能、稳定性等核心指标决定了制成的真空绝热板的导热系数和使用寿命。再升科技研发生产的真空绝热板芯材，依托微纤维玻璃棉的优异性能，具有独特孔隙结构，尽可能减少传导和对流引起的热传递，性能优异，面密度均匀性和导热系数均达到国际先进水平。

Zisun in Mobile Dust-free Space Ⅲ

Cold chain transportation field

Cold chain refers to a special supply chain system in which certain products are processed, stored, transported, distributed, retailed, and used, and each link is always in a specific low temperature environment necessary for the product to reduce loss, prevent pollution and deterioration, and ensure product safety. The cold chain has been deeply integrated into public life and has a wide range of applications, including primary agricultural products, processed foods, and special commodities (such as drugs and vaccines). One of the core components of cold chain logistics is "temperature control and insulation".

In December 2021, the State Council's "14th Five-Year Plan" cold chain logistics development plan requires: improve the development level of refrigerated trucks, such as accelerating the development and manufacturing of light and micro new energy refrigerated trucks and refrigerated containers, and actively promoting new refrigerated trucks, railway refrigerated trucks and refrigerated containers; Promote the unitization of transport vehicles, such as guiding cold chain transportation enterprises to use standardized pallets, turnover boxes (baskets), cages and other carrying units, as well as unitized cold chain vehicles such as cold storage boxes and incubators, and strengthen the construction of a standardized cold chain vehicle recycling and sharing system; Improve the energy-saving level of cold chain logistics facilities, such as improving the thermal insulation and flame retardant performance of thermal insulation materials such as cold storage and refrigerated trucks; Increase the research and development and application of green cold chain equipment, such as encouraging the use of green, safe, energy-saving and environmentally friendly refrigerated trucks and supporting equipment and facilities. R&D and application of cold storage turnover boxes, thermal insulation packaging, thermal insulation covers, etc. that meet the characteristics of cold chain logistics. Encourage the use of green, low-carbon and high-efficiency refrigerants and thermal insulation consumables.

In addition, China's vending machine market has broad prospects. With the development of the Internet of Things and artificial intelligence technology, as well as the "contactless" and "unmanned" self-service consumption mode in recent years, vending machines have developed rapidly as a whole, and most of them are used in shopping malls, service areas, subway stations, hotels, factories, office buildings and other places. The market development of vending machines has also brought new growth impetus to new high-efficiency, ultra-thin green insulation materials.

The core material of VIPs is the core material of VIPs. The core indicators such as thermal resistance coefficient, physical properties and stability of the core material of the vacuum insulation board determine the thermal conductivity and service life of the vacuum insulation board. The core material of vacuum insulation board developed and produced by Zaisheng Technology, relying on the excellent performance of microfiber glass wool, has a unique pore structure, reduces heat transfer caused by conduction and convection as much as possible, and has excellent performance, and the uniformity of areal density and thermal conductivity have reached the international advanced level.

再升科技在移动无尘空间（四）

阀控式铅酸蓄电池储能

阀控式铅酸蓄电池的核心材料之一就是以微纤维玻璃棉为原材料生产的电池 AGM 隔板,它是除铅酸蓄电池正负极外俗称“第三极”，重要性不言而喻。电池隔板置于电池的两极极板之中，防止正、负极板相互接触而发生短路，吸附硫酸电解液，是维持电池长效、稳定、高效功能的核心材料。电池隔板的微孔性、化学稳定性、机械强度等重要指标，决定了阀控式铅酸电池的深循环
寿命、充电接收能力和安全性能。

公司生产电池 AGM 隔板，以自主研发生产的微纤维玻璃棉为核心原材料，具有优异的与水亲和性、耐酸腐蚀性、耐温性、耐氧化性，并且比表面积大，具有高孔隙率，吸液速度快，并具有良好的机械强度，易于加工。因公司微纤维玻璃棉的优异性能，公司的电池隔板产品杂质含量极低，保证了制成的阀控式铅酸电池的低自放电率。同时，根据不同应用领域的铅酸蓄电池对隔板要求不同，公司自行设计出不同直径和长度的微玻纤玻璃棉，很大程度上优化了产品工艺配方，对于新型铅酸蓄电池市场要求，公司深挖材料性能，紧抓市场需求，持续推行公司电池隔板产品在性能和产能上的持续提升。

Zisun in Mobile Dust-free SpaceIV

Valve-regulated lead-acid battery energy storage

One of the core materials of VRLA batteries is the battery AGM separator produced from microfiber glass wool, which is commonly known as the "third pole" in addition to the positive and negative electrodes of lead-acid batteries, and its importance is self-evident. The battery separator is placed in the two pole plates of the battery to prevent the positive and negative plates from contacting each other and cause short circuits, and adsorb the sulfuric acid electrolyte, which is the core material to maintain the long-term, stable and efficient function of the battery. Important indicators such as microporosity, chemical stability, and mechanical strength of battery separators determine the deep cycle of valve-regulated lead-acid batteries
Life, charge reception capability and safety performance.

The company produces battery AGM separators, with microfiber glass wool as the core raw material independently developed and produced, which has excellent affinity with water, acid corrosion resistance, temperature resistance, oxidation resistance, and large specific surface area, high porosity, fast liquid absorption speed, and has good mechanical strength, easy to process. Due to the excellent performance of the company's microfiber glass wool, the company's battery separator products have extremely low impurity content, which ensures the low self-discharge rate of the valve-regulated lead-acid battery. At the same time, according to the different requirements of lead-acid batteries in different application fields for separators, the company has designed micro-glass fiber glass wool of different diameters and lengths, which has largely optimized the product process formula.

High Specific Surface Area Battery Separator

高比表面积电池隔膜

高比表面积电池隔膜是以直径0.4～3um超细玻璃纤维经湿法制成的无毒、无味、洁白的产品，是阀控式密封铅酸蓄电池（简称VRLA电池）的专用核心材料。

高比表面积电池隔膜的优良性能表现在：耐酸侵蚀好，厚度均匀，高孔隙率，吸收电解液快，纵横向均有好的抗张强度，较好的压缩性能保证了一定的极群压力，良好的绝缘性能等等。高比表面积电池隔膜在电池中主要起到固定电解液，提供充放电中两极生产的氢氧复合的通道，阻碍两极活性物质脱落，减缓铅枝晶的生成，减少电解液在充放电过程中的损失，使VRLA电池达到免维护或少维护的目的，延长电池的使用寿命。

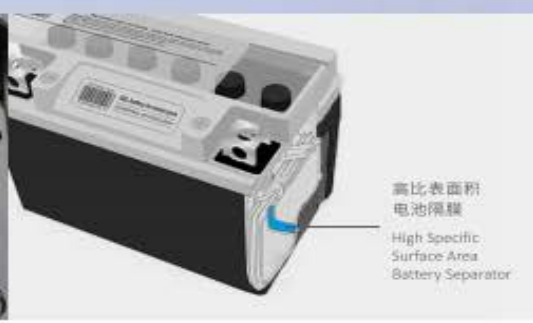
High specific surface area battery separator is one kind of environmental-protection material which is made from glass microfiber with diameter of 0.4-3um. It is white, innocuity, tastelessness and specially used in Valve Regulated Lead-Acid batteries (VRLA batteries).

It is highly porous (90-95%, @20kPa) with uniform thickness and good tensile strength (MD&CD) that can absorb more acid and it has small pore sizes to maintain electrolyte levels in the battery. Additionally, it is highly resistant to battery acid, oxidation and heat, and can maintain its shape and strength after prolonged exposure to sever environmental conditions. Customized specifications are available.

Applications 用途

UPS电源、电力系统、铁路系统、通讯设备、应急灯、防火和警卫系统、发动机、电力车和摩托车、密封式电源、太阳能、风能。

Telecommunications, Cellular phones, Uninterruptible power supplies, Emergency lighting, Power tools, Automobile, Motorcycle, UPS (Large, Small) , Load leveling, Electric vehicle, Etc.



高比表面积电池隔膜目前最大的市场需求来自汽车起停电源，约占所有VRLA电池市场需求总量的70%。

Currently the biggest market demand of high specific surface area battery separator is from auto start-stop power, which accounting for 70% of the total VRLA battery market demand.

工业无尘空间
Industrial Dust-free Space

应用领域
Application

半导体、面板制造

Semiconductor and Panel Manufacturing

制药、医疗健康

Pharmaceuticals, Healthcare

核电

Nuclear power

精密仪器加工

Precision Instrument Processing

工业无尘空间（一）

“干净空气”材料、设备、解决方案，可以有效保护人员健康，高端制造生产工艺流程，保护生态环境免于空气中的颗粒物（PM，particulate matter）和气态分子(AM，airborne molecules)的污染物侵害。

以半导体领域为例，生产环境需要极高洁净度，空气中的颗粒污染物对产品的工艺良品率、性能和可靠性产生重大影响。《芯片制造：半导体工艺制程实用教程(Microchip Fabrication：A Practical Guide to Semiconductor Processing)》所述，经验规则是微粒的大小要小于器件上最小特征图形尺寸的 1/10 倍，即直径为 0.03μm 的微粒会损害 0.3μm 线宽大小的特征图形。因此，管控半导体生产制程中颗粒污染物对于生产过程的经济性具有重要意义。

（1）相关政策

中央网络安全和信息化委员会印发的《“十四五”家信息化规划》我国“十四五”时期信息化发展作出部署安排。《规划》在信息领域核心技术突破工程提出，加快集成电路关键技术攻关。推动计算芯片、存储芯片等创新，加快集成电路设计工具、重点装备和高纯靶材等关键材料研发，推动绝缘栅双极型晶体管（IGBT）、微机电系统（MEMS）等特色工艺突破。

（2）行业趋势

SEMI 在《世界晶圆厂预测报告（World Fab Forecast）》中强调，全球前端晶圆厂设备支出预计将在 2022 年同比增长 10%，达到超过 980 亿美元的历史新高。晶圆厂设备支出在 2020 年增长17%，2021 年增长 39%，这是再在继 2016 年至 2018 年后的又一个三年的增长。

SEMI 发布《年终总半导体设备预测报告（Year-End Total Semiconductor Equipment Forecast –OEM Perspective）》指出，预计 2021 年原始设备制造商的半导体制造设备全球销售总额将达到1030 亿美元的新高，比 2020 年的 710 亿美元的历史记录增长 44.7%。预计 2022 年全球半导体制造设备市场总额将扩大到 1,140 亿美元。

Frost & Sullivan 预计 2020 年至 2024 年全球洁净室投入的年复合增长率为 9%，而国内洁净室的投入中，半导体行业的洁净室将有 20%的年复合增长。根据 Frost & Sullivan 所提供数据，国内洁净室的市场主要由半导体和电子行占据过半份额。

根据 SIA 和 BCG 预测，2021-2030 年期间中国大陆的晶圆代工产能增速在全球范围内将排名第一。洁净的环境是国内外在半导体、面板、精密仪器加工等行业顺利生产制造的重要保证，业内持续投入将推动“干净空气”材料和设备新增和更换的需求。

Industrial Dust-free Space I

"Clean air" materials, equipment and solutions can effectively protect the health of personnel, high-end manufacturing processes, and protect the ecological environment from pollutants in the air particulate matter (PM, particulate matter) and gaseous molecules (AM, airborne molecules).

In the semiconductor field, for example, the production environment requires extremely high cleanliness, and particulate pollutants in the air have a significant impact on the process yield, performance and reliability of the product. As stated in Microchip Fabrication: A Practical Guide to Semiconductor Processing, the rule of thumb is that the particle size should be less than 1/10 times the size of the smallest feature pattern on the device, i.e., a particle with a diameter of 0.03μm will impair the feature pattern with a linewidth size of 0.3μm. Therefore, controlling particulate pollutants in semiconductor production processes is of great significance for the economy of the production process.

(1) Related Policies

The "14th Five-Year Plan for Informatization" issued by the Central Cybersecurity and Informatization Commission makes arrangements for the development of informatization during the "14th Five-Year Plan" period. The "Plan" puts forward the breakthrough project of core technologies in the field of information to accelerate the research of key technologies of integrated circuits. Promote innovation in computing chips and memory chips, accelerate the research and development of key materials such as integrated circuit design tools, key equipment and high-purity targets, and promote breakthroughs in characteristic processes such as insulated-gate bipolar transistors (IGBTs) and microelectromechanical systems (MEMS).

(2) Industry trends

In its World Fab Forecast, SEMI highlights that global front-end fab equipment spending is expected to grow 10% year-over-year in 2022 to an all-time high of more than $98 billion. Fab equipment spending grew 17% in 2020 and 39% in 2021, another three years of growth after 2016 to 2018.

SEMI's Year-End Total Semiconductor Equipment Forecast – OEM Perspective states that global sales of semiconductor manufacturing equipment from OEMs are expected to reach a new high of $103 billion in 2021, up 44.7% from the record $71 billion in 2020. The global semiconductor manufacturing equipment market is expected to expand to $114 billion in 2022.

Frost & Sullivan expects global cleanroom investment to grow at a compound annual growth rate of 9% from 2020 to 2024, while cleanroom investment in the semiconductor industry will grow at a compound annual growth rate of 20% in domestic cleanroom investment. According to data provided by Frost & Sullivan, the domestic cleanroom market is dominated by semiconductor and electronics companies.

According to SIA and BCG, foundry capacity growth in Chinese mainland from 2021 to 2030 will be the highest in the world. Clean environment is an important guarantee for smooth production and manufacturing in semiconductor, panel, precision instrument processing and other industries at home and abroad, and continuous investment in the industry will promote the demand for new and replacement of "clean air" materials and equipment.

再升科技在工业无尘空间（一）

半导体制造工艺中，印刷图案的关键尺寸越来越小，空气中微粒和空气传播分子污染物的控制是影响其成品率的一个关键因素。一枚晶片要历经多道工序，在整个工序链中任何微小的污染都会对其良品率、性能、可靠性造成严重影响。

在以导体、面板、精密仪器加工等先进制造领域为代表的设计的洁净室中，“干净空气”材料根据需求，将被加工成多种过滤器或者过滤单元，其过滤精度和过滤阻力对于控制生产过程中的空气污染物和节能降耗起着重要作用。

对于半导体、面板、电子、医疗等不同高端制造领域，气体分子污染物对于不同生产流程和生产工艺有不同的重大影响。化学过滤材料则是针对 VOCs 气体、AICD 气体、BASE 气体等纳米级分子化合物气体治理。主要原理是运用三种基于范德华力吸附、利用化学反应吸附和化学反应吸收等技术路线处理气态分子污染物。公司针对不同用户的具体生产环境和工艺要求，综合考虑需要处理的气体分子污染物粒径、化学性、浓度等要素，定制设计化学过滤材料的种类和结构，保障用户生产环境的“干净空气”。

再升科技持续深挖材料性能，推进技术进步。公司具有丰富的“干净空气”材料和设备解决方案，可以根据不同类型、等级洁净室的具体需求，提供合适的材料和解决方案，有效处理洁净室中的颗粒污染物和气体分子污染物保障洁净室内人员、设备、材料的安全运行，避免洁净室生产过程中污染物散逸，保障周围环境安全。

Zisun in Industrial Dust-free Space Ⅰ

In semiconductor manufacturing processes, where the critical size of printed patterns is getting smaller and smaller, the control of airborne particles and airborne molecular contaminants is a key factor affecting their yield. A wafer goes through multiple processes, and any slight contamination in the entire process chain will have a serious impact on its yield, performance, and reliability.

In the clean room designed by advanced manufacturing fields such as conductors, panels, and precision instrument processing, the "clean air" material will be processed into a variety of filters or filter units according to the demand, and its filtration accuracy and filtration resistance play an important role in controlling air pollutants and saving energy and reducing consumption in the production process.

For different high-end manufacturing fields such as semiconductors, panels, electronics, and medical, gas molecular pollutants have different significant impacts on different production processes and production processes. Chemical filter materials are used for the treatment of nano-scale molecular compound gases such as VOCs gas, AICD gas, and BASE gas. The main principle is to use three technical routes based on van der Waals force adsorption, chemical reaction adsorption and chemical reaction absorption to treat gaseous molecular pollutants. According to the specific production environment and process requirements of different users, the company comprehensively considers the particle size, chemicality, concentration and other factors of gas molecular pollutants to be treated, and custom-designs the types and structures of chemical filter materials to ensure the "clean air" of the user's production environment.

Zaisheng Technology continues to dig deep into the performance of materials and promote technological progress. The company has a wealth of "clean air" materials and equipment solutions, which can provide suitable materials and solutions according to the specific needs of different types and grades of clean rooms, effectively deal with particulate pollutants and gas molecular pollutants in clean rooms, ensure the safe operation of personnel, equipment and materials in clean rooms, avoid the escape of pollutants in the production process of clean rooms, and ensure the safety of the surrounding environment.

工业无尘空间（二）

国内外生物医药、医疗健康行业持续增长的需求直接推动行业的“干净空气”材料和解决方案的需求。

（1）行业趋势

根据国家统计局数据，从 2011 至 2019 年，我国卫生总费用由 24,000 亿元上升至 66,000 亿元，年复合增长率为 13.24%。基于国内的人口结构、经济发展等宏观趋势和医药健康产业内的鼓励创新国产替代、国际化浪潮的大环境，我国的生物医药、医疗健康行业仍将持续蓬勃发展。麦肯锡(McKinsey & Company)的《How COVID-19 changes The Game For Biopharma In China》中提出，中国是全球第二大医药市场，也是多数全球制药企业的战略重点。

近年来，全球应对突发卫生危机能力及防控意识都极大增强。大众健康观念、消费习惯、心理素质、教育文化等都发生相应变化。放眼全球，各国对健康卫生与疾病治疗的持续重视推动行业的投入持续加大，行业融资额度持续增加，对医药、医疗的需求预计将长期持续。随着科技发展，将出现新型药物、疫苗、方舱医院和移动医院等多种需求，将直接推动相应应用场景对“干净空气”的重视程度和技术要求。

Industrial Dust-free Space Ⅱ

The growing demand for biomedical and healthcare industries at home and abroad is directly driving the demand for "clean air" materials and solutions in the industry.

(1) Industry trends

According to data from the National Bureau of Statistics, from 2011 to 2019, China's total health expenditure increased from 2.4 trillion yuan to 6.6 trillion yuan, with a compound annual growth rate of 13.24%. Based on the macro trends such as domestic population structure and economic development and the general environment of encouraging innovation in domestic substitution and internationalization in the pharmaceutical and health industry, China's biomedicine and medical health industry will continue to flourish. McKinsey & Company's How COVID-19 changes The Game For Biopharma In China states that China is the world's second-largest pharmaceutical market and a strategic priority for most global pharmaceutical companies.

In recent years, the global capacity to respond to health emergencies and awareness of prevention and control have been greatly enhanced. The public's concept of health, consumption habits, psychological quality, education and culture have all undergone corresponding changes. Looking at the world, the continuous emphasis on health and disease treatment in various countries has promoted the continuous increase in industry investment, the financing amount of the industry continues to increase, and the demand for medicine and medical treatment is expected to continue for a long time. With the development of science and technology, there will be a variety of needs such as new drugs, vaccines, cabin hospitals and mobile hospitals, which will directly promote the importance and technical requirements of "clean air" in corresponding application scenarios.

再升科技在工业无尘空间（二）

对于物医药、医疗健康行业，可以细分为医药生物、化学原料药、医药服务、中药、医疗器械、生物制品、化学制剂等多种生产、制造、运输、储存等环境需求不同等级“干净空气”标准的用户。

制药企业，因其生产过程中涉及到一些高活性、高毒性、致敏性、致畸性的药物或中间体，行业内建立了 OEB（occupational exposure band）级职业暴露分级，进而对生产环境的生物安全提出了严格要求。GMP 要求和行业发展等多种因素地推进下，生物制药行业将生产工序密闭化的趋势明显，生物制药企业的洁净要求，空气管理严苛程度亦随之提高。

疫苗生产企业，需要同时疫苗质量和生产活动生物安全，不同防护等级的疫苗生产车间对“干净空气”的材料、设备、技术方案提出了严苛要求。

在生物医药和医疗健康等领域，“干净空气”的材料对于保障生产安全、人员安全有重要作用。公司多种“干净空气”材料和技术已用于本领域洁净室的初、中、高、超高效过滤，具有高可靠性。

洁净室在众多领域有普遍应用，保障生产制造过程中制品、设备、材料不受空气中的污染物影响。常见需要使用洁净室的行业有高端制造业、各种研究机构、制药公司、医学实验室、电子零件生产、航空航天工业、光学与镜片制造、军工制造等。

Zisun in Industrial Dust-free Space Ⅱ

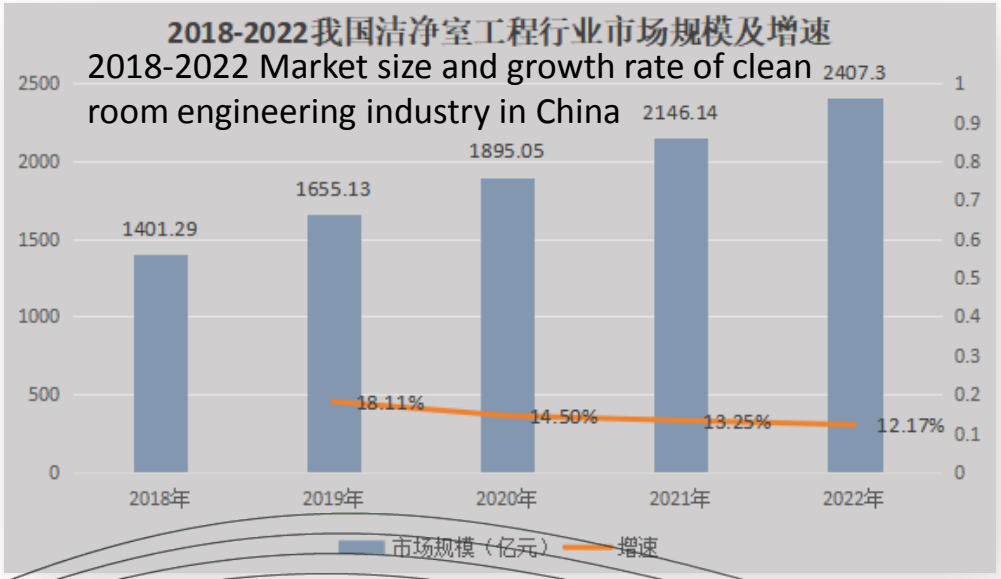
For the physical medicine and medical and health industries, it can be subdivided into users with different levels of "clean air" standards for production, manufacturing, transportation, storage and other environmental requirements such as pharmaceutical biology, chemical raw materials, pharmaceutical services, traditional Chinese medicine, medical devices, biological products, and chemical preparations.

Pharmaceutical companies, because their production process involves some highly active, highly toxic, allergenic, teratogenic drugs or intermediates, the industry has established an OEB (occupational exposure band) occupational exposure classification, which in turn puts forward strict requirements for the biosafety of the production environment. Under the promotion of various factors such as GMP requirements and industry development, the trend of sealing the production process in the biopharmaceutical industry is obvious, and the cleanliness requirements of biopharmaceutical enterprises and the strictness of air management have also increased.

Vaccine manufacturers need to have both vaccine quality and biosafety of production activities, and vaccine production workshops with different levels of protection have put forward strict requirements for materials, equipment, and technical solutions for "clean air".

In the fields of biomedicine and medical health, "clean air" materials play an important role in ensuring production safety and personnel safety. The company's various "clean air" materials and technologies have been used in the primary, medium, high and ultra-efficient filtration of clean rooms in this field, with high reliability.

Clean rooms are widely used in many fields to ensure that products, equipment and materials are not affected by pollutants in the air during the production and manufacturing process. Common industries that need to use clean rooms include high-end manufacturing, various research institutes, pharmaceutical companies, medical laboratories, electronic parts production, aerospace industry, optical and lens manufacturing, military manufacturing, etc.

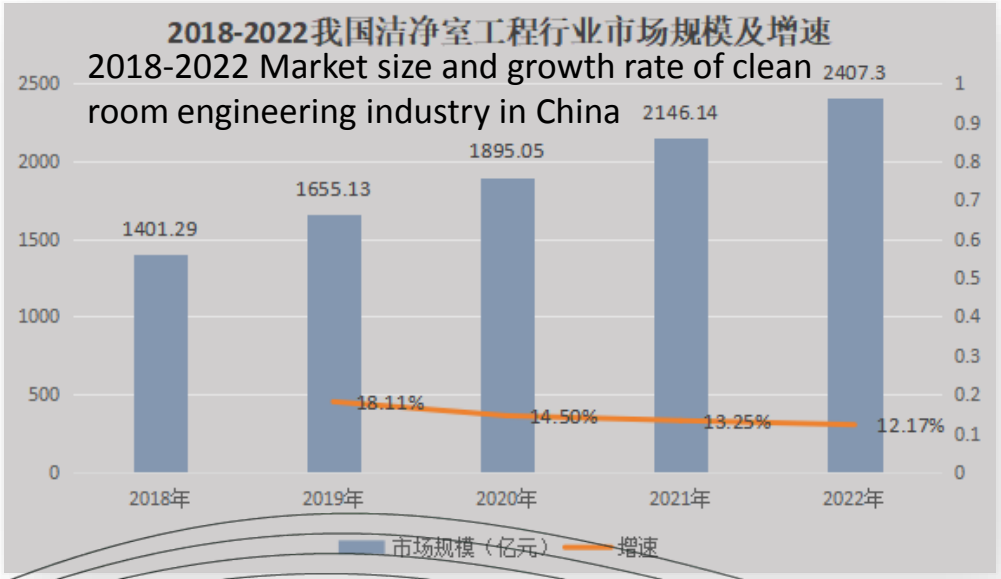


在工业制造、储存及运行过程中，企业越来越重视产品的良品率和安全性以及能耗问题，为了顺应时代的发展和增强企业自身的竞争力，企业对于如何解决制造过程中遇到的固态及气态污染物和降低能耗的需求极为迫切。

再升科技凭借多年深耕“干净空气”技术和材料的优势，为工业空间提供“低碳无尘空间”的解决方案与技术产品。广泛应用于半导体、面板、精密仪器加工、生物医药、医疗健康、食品、核电、军工等领域

其中玻璃纤维滤纸为洁净室的主要过滤材料，其纤维分布均匀、容尘量大、阻力小、强度大，能有效的过滤工业制造过程中所遇到的污染物和控制不同场景的空气湿度，从而增强产品的良品率及安全性。

经过多年发展，我国洁净室工程行业已达到一定规模。数据显示，2022年我国洁净室工程行业市场规模进一步增长，达2407.30亿元，增速为12.17%。预计2025年洁净室工程市场规模可达到3275.3亿元，其中新增过滤材料规模163.8亿元，需替换过滤材料规模107.3亿元



2018-2022 Market size and growth rate of clean room engineering industry in China

comply with the development of the times and enhance their own competitiveness, enterprises have an urgent need to solve the solid and gaseous pollutants encountered in the manufacturing process and reduce energy consumption.

With the advantages of years of deep cultivation of "clean air" technology and materials, Zaisheng Technology provides solutions and technical products for industrial spaces with "low-carbon and dust-free space". Widely used in semiconductor, panel, precision instrument processing, biopharmaceutical, medical and health, food, nuclear power, military and other fields

Glass fiber filter paper is the main filtering material for clean rooms, with uniform fiber distribution, large dust capacity, low resistance, and high strength. It can effectively filter pollutants encountered in industrial manufacturing processes and control air humidity in different scenarios, thereby enhancing product yield and safety.

After years of development, the clean room engineering industry in China has reached a certain scale. Data shows that in 2022, the market size of China's clean room engineering industry further increased, reaching 240.73 billion yuan, with a growth rate of 12.17%. It is expected that the market size of clean room engineering will reach 327.53 billion yuan by 2025, with a new filter material scale of 16.38 billion yuan and a need to replace filter materials scale of 10.73 billion yuan

Glass Microfiber Filter Media
玻璃纤维空气过滤纸

玻璃纤维空气过滤纸是以玻璃纤维为主要原材料，采用湿法成型工艺制成，具有纤维分布均匀、容尘量大、阻力小、强度大等特点，**是理想的空气过滤材料。**

Glass microfiber filter media are comprised primarily of glass microfibers and are produced with a wet laid process similar to that used for the production of paper.It's a ideal filter media because of it's good characteristics.

Applications 用途

一般通风用玻璃纤维滤纸（ASHRAE）
ASHRAE grade(F6-F9)

主要用于普通空调系统、燃气轮机与空压机。
Ordinary air-conditioning system, gas turbine air intake, aircompressor, etc.

高效过滤器用玻璃纤维滤纸（HEPA）
HEPA grade(H10-H14)

主要用于万级～10万级洁净室或工作台、核电站排风、高档家用吸尘器、空气净化器、防毒面具等。
10,000 to 100,000 grade cleaning rooms or working places, air exhaust equipment for nuclear, high-grade household vacuum cleaner, airpurifier, masks, etc.

超高效空气过滤器用玻璃纤维滤纸（ULPA）
ULPA grade(U15-U16)

主要用于芯片厂及100级、10级、1级洁净厂房等。
Chip factories, 100, 10 even,1 grade cleaning rooms,etc.

Oil-Gas Separation Glass Fiber Filter Paper
油气分离玻纤滤纸

为提升压缩空气的洁净度，提高压缩设备性能和寿命，保护下游工序设备，采用气液分离技术以分离气体颗粒 物及油微粒。再升科技研制的油分滤纸可高效完成分离 过程，油微粒经过滤纸的扩散、拦截、惯性碰撞等机理 凝聚排出回收，从而使压缩机排出纯净、无油的压缩空 气。这种滤纸具有孔径分布均匀、透气量好、耐破性 高、过滤效率佳的特点，并可定制幅宽规格。

In order to improve the cleanliness of compressed air, improve the performance and extend the life span of compression equipments, also to protect downstream process equipments. Gas-liquid separation technology is used to separate gas particles and oil particles. The Oil-gas separation glass fiber filter paper produced by ZISUN can efficiently complete the separation process. After the diffusion, interception and inertial collision by the filter paper, the oil particles are condensed and discharged. So that the compressor discharges pureand oil-free compressed air. The Oil-gas separation glass fiber filter paper produced by ZISUN has the characteristics of uniform pore size distribution, excellent gas permeability, high bursting strength, preeminent filtration efficiency. And it can be customized in width as well.

Applications 用途

油气分离玻纤滤纸广泛用于空压机压缩空气、汽车发动机、石油、化工、冶金、航空、电子、电力、制药、环保、原子能、天然气工程、核工业、耐火材料、消防设备等领域的**固液、气固、气液分离和净化。**

Oil-Gas Separation Glass Fiber Filter Paper Widely used in air compressor compressed air engine, automobile, petroleum, chemical industry, metallurgy, aviation, electronics,electric power, pharmaceutical,environmental protection, atomic energy, natural gas, nuclear industry, refractory materials, fire-fighting equipment, and other fields of solid liquid, gas solid, gas-liquid separation and purification.

满足超低阻力的同时实现HEPA、ULPA各等级过滤效率，
是高端空气过滤领域的不二之选。
使用该材料的过滤器及过滤设备有着明显性能优势和效果升级：

Composite PTFE filtration material is able to reach HEPA and ULPA efficiency at low air resistance and is the first choice in high-end air filtration sector.
Filters with this material have clear advantages:

A
无硼硅，无挥发，
无微尘，避免二次污染
Boron silicon free,
no volatile, no dust,
no secondary pollution

B
耗能低，节能大，平均能耗根据不同的设计可节约40%以上
Low energy consumption,
saving more than 40%
energy in average

C
无惧环境腐蚀
(酸性、碱性、有机物)
No fear of
environmental corrosion
(acidic, alkaline, organic)

D
更高效率，更低阻力，
超大容尘能力
Higher efficiency,
lower resistance,
super dust capacity

E
耐普通撞击，
承受能力强。
Common impact resistance,
strong endurance

F
满足
UL900标准
In compliance with
UL900 standard

G
防水
性出众
Excellent water
repellency

H
独特清灰性，
可重复使用
Washable,
reusable

Composite PTFE Filtration Material
高效PTFE过滤膜复合滤料

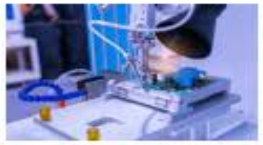
高效PTFE过滤膜复合滤料是聚四氟乙烯颗粒经特殊技术处理后通过双向拉伸形成的含有大量微孔、孔隙率极高的过滤薄膜与其他过滤材料骨架复合而成，综合了化学性质更稳定、纤维分布更均匀、过滤性能更高、阻力更低等优点，在某些特殊应用领域成为无可替代的新型高端过滤材料。

Composite PTFE filtration material is composite of a thin film that contains a large number of micropores and extremely high porosity made from polytetrafluoroethylene particles with biaxial stretching process and other filtration material as boning. It has more stable chemical properties, more even fiber distribution, higher efficiency and lower air resistance and has become an irreplaceable material in certain high-end filtration sector.

Application Area 应用领域

无尘实验室、高端食品加工、医疗、半导体、电子产品、药品生产、吸尘器、防毒面具等。

Clean room, high end food processing, medical environment, semiconductor, electronics , pharmaceutical production , vacuum cleaner and gas mask, etc.


Glass Microfiber Air-laid Mat

微纤维棉过滤毡

微纤维棉过滤毡是经特殊纤维分散器排列成型，再复合仿毡型织物而成。
广泛应用于生物、电子、军工等高科技领域空气微粒过滤。

Glass microfiber air-laid mat is made by special fiber dispersion and then laminated with spun-bonded fabric.

It is widely applied for air filtration for biological,electronic and military industry.

玻纤过滤袋具备玻纤织物耐高温、耐腐蚀、尺寸稳定、伸长收缩率极小、强度高、对气体过滤阻力小等优点。与其他耐高温化纤毡相比，具有价格低、运行阻力低、过滤精度高，适用于钢铁、冶金、炭黑、发电、水泥、化工等行业高温烟气过滤。

Fiberglass pocket filter possess the merits like thermostability, corrosion resistance, dimensional stability, low elongation shrinkage rate, high strength and low resistance towards gas. Compared with other high temperature resistant fiber felt, it has lower price, lower resistance, higher filtration precision, which is applicable to the steel, metallurgy, carbon black, power generation, cement, chemical and other industries of high temperature flue gas filtration.

过滤袋生产线

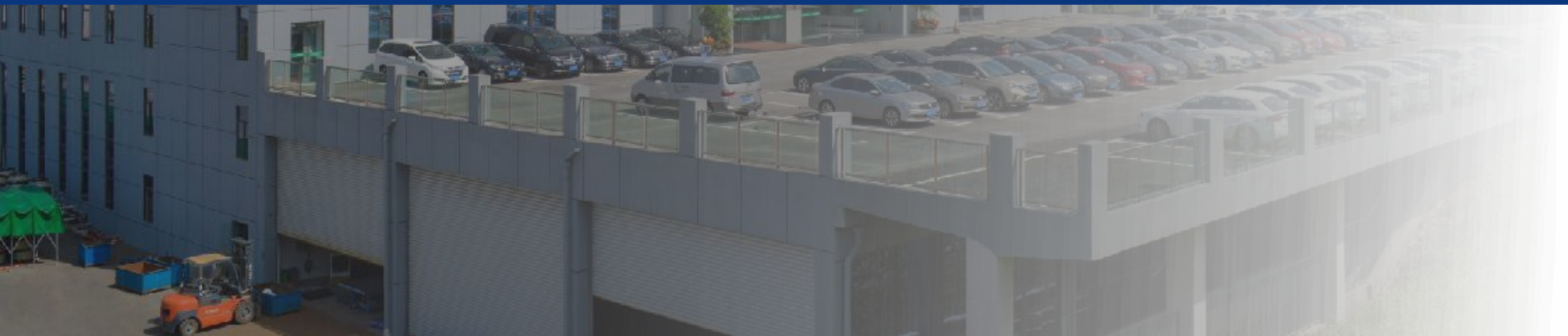
公司新引进生产线，能将微纤维棉过滤毡加工成过滤袋，满足工业需求。

Fiberglass Pocket Filter Production Line

It is a newly introduced production line, which turns glass microfiber mat into pocket filter to meet industry demand.

公司专注于超细纤维、膜材、吸附材料、微静电材料、油气分离材料及隔音隔热材料等新材料的研究，以材料为基石，深度挖掘材料的优势性能，依托公司“国家企业技术中心”，发挥在“干净空气”领域多年深耕的技术优势、材料优势、检测优势、研发优势和设计优势，实施强有力的融合与跨界策略，不断拓宽应用领域，为解决“三大空间”领域空气中的能、尘、噪音提供——

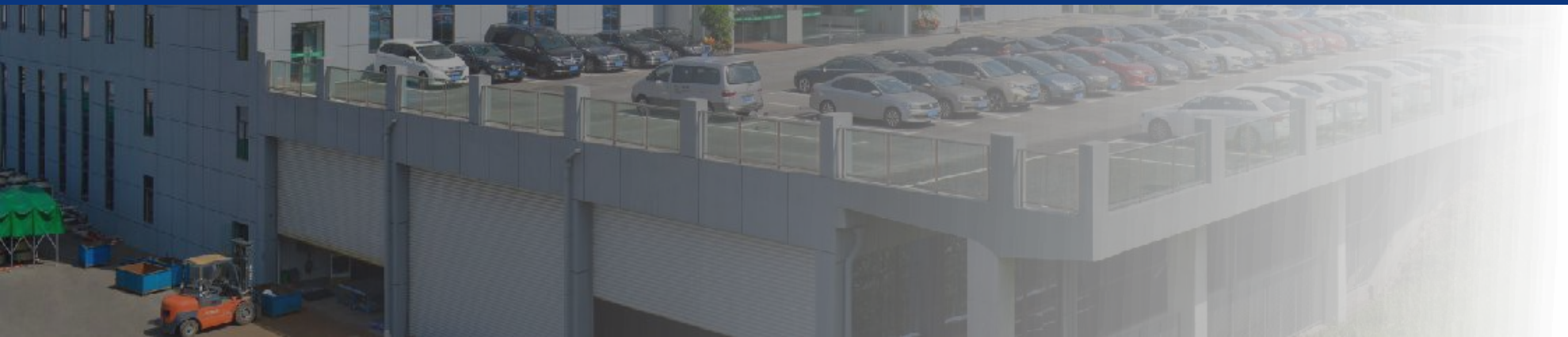
“干净空气”的应用产品及解决方案。



The company focuses on the research of new materials such as ultrafine fibers, membrane materials, adsorption materials, micro electrostatic materials, oil and gas separation materials, and sound insulation materials. With materials as the cornerstone, the company deeply explores the advantages and performance of materials. Relying on the company's "National Enterprise Technology Center", the company leverages the technical advantages, material advantages, testing advantages, research and development advantages, and design advantages that have been deeply exploited in the field of "clean air" for many years, Implement strong integration and cross-border strategies, continuously expand application areas, and provide

“clean air" application products and solutions”

to address energy, dust, and noise in the air in the "three major spaces".



ABOUT ZISUN

关于再升科技

再升科技成立于2007年 是国家高新技术企业，建有国家企业技术中心 公司于2015年 1月22日在上交所主板挂牌上市

股票代码 603601

Established in 2007

Rated as National high-tech enterprise & National enterprise technology center

Listed on the main board of the Shanghai Stock Exchange on January 22, 2015

Stock code 603601

再升科技体验中心
Headquarters Experience Center

打造舒适、优美、干净、科技的智能办公体验中心

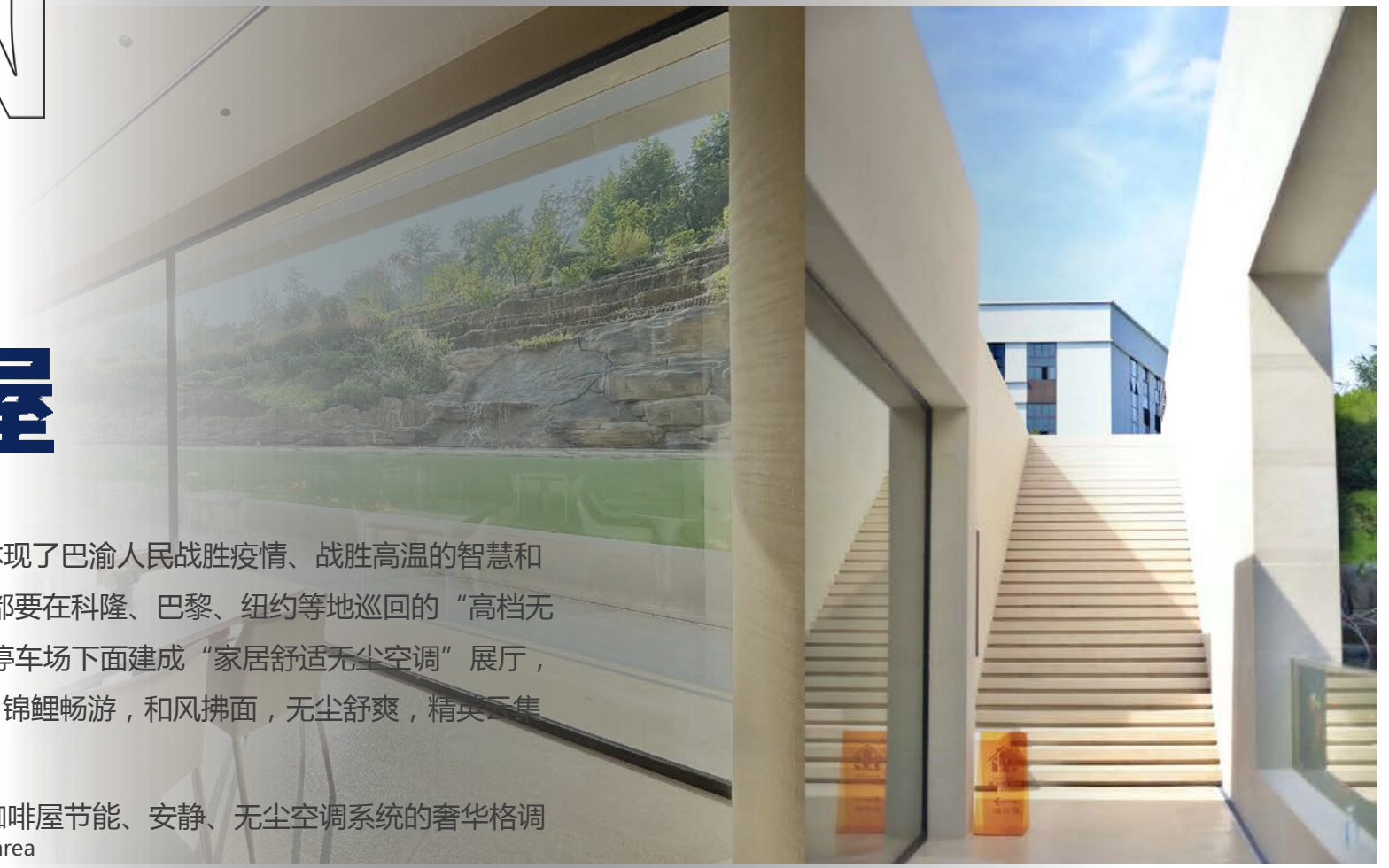
配备奢侈品体验店、声学实验室、研发中心、星级办公室、蒹葭园及在森咖啡屋

To build a comfortable, beautiful, clean and scientific intelligent office experience center

Equipped with luxury experience shop, acoustic laboratory, R&D center, Star office, Jianjia garden and Zisun café

ZISUN CAFE

在森咖啡屋



在森咖啡屋-重庆网红打卡地

在森咖啡屋于2022年6月18日建成开放，体现了巴渝人民战胜疫情、战胜高温的智慧和乐 观精神。由于疫情的影响，业主方每年都要在科隆、巴黎、纽约等地巡回的“高档无尘空 调系统”展会被迫取消，无奈之下在停车场下面建成“家居舒适无尘空调”展厅，并经受住 了重庆100年最火热夏天的考验。锦鲤畅游，和风拂面，无尘舒爽，精英云集

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“世界在窗外，森林在我家”体现了在森咖啡屋节能、安静、无尘空调系统的奢华格调

。Zisun café - Chongqing Internet celebrity check-in area

The construction and opening of the Zisun café on June 18, 2022 reflects the wisdom and optimistic spirit of the people of Chongqing in overcoming the epidemic and high temperatures. Due to the impact of the epidemic, the "High end Dust Free Air Conditioning System" exhibitions that the owners have to tour every year in Cologne, Paris, New York and other places have been forced to cancel. Reluctantly, the "Home Comfort Dust Free Air Conditioning" exhibition hall has been built under the parking lot and has withstood the test of Chongqing's hottest summer in 100 years. Carp swim freely, with a gentle breeze blowing on your face, dust-free and comfortable, gathering elites·····

The world is outside the window, and the forest is in my home "reflects the luxurious style of energy-saving, quiet, and dust-free air conditioning system at Zisun café .

蒹葭园

JIANJIA GARDEN

打造重庆首个碳中和建筑

打造绿色低碳建筑示范中心的低能耗建筑示范园区

打造特色绿色低碳示范园区

To build Chongqing's first carbon neutral building
To create a Low Energy Building Demonstration Park for Green and Low Carbon Building Demonstration Centers
To create a distinctive green and low-carbon demonstration park

以"渗、滞、蓄、净、用、排"的海绵城市建设理念，通过可视化雨水花园、多元化透水路面、绿色屋顶花园、小微湿地公园、共享空间亲水平台、趣味循环水景等生态设施，打造海绵城市特色展示区，提供新颖的体验式空间，在保障功能美观的同时，起到科普与宣传的作用，增强人与生态的互动性。

With the concept of 'infiltration, stagnation, storage, net use, and drainage' in the construction of sponge cities, through visual rainwater gardens, diversified permeable roads, green roof gardens, small and micro wetland parks, shared space hydrophilic platforms, and fun circular water features and other ecological facilities, we create a sponge city characteristic exhibition area, providing a novel experiential space, while ensuring functional aesthetics, playing a role in science popularization and publicity, and enhancing interaction between people and ecology

TECHNOLOGY
ZISUN
再升科技

爱干净空气
用再升科技
LOVE CLEAN AIR
USE ZISUN AIR

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