



### 广州美亚蓄能 科技有限公司

Guangzhou Mayer TES Technology Company Limited

> 母公司是香港上市企业 (股票代码 01116.HK)



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## 广州美亚蓄能科技有限 公司简介

—— Company Introduction —— Guangzhou Mayer TES Technology Company Limited





作为国家高新技术企业,专精特新中小企业,广州美亚股份有限公司,积极响应国家减碳减排号召,走进新能源赛道,依托香港美亚控股的雄厚实力,成立广州美亚蓄能科技有限公司(以下简称「美亚蓄能」),致力开发新型储能产品,为各行各业节能减排,助力国家高质量发展。

Guangzhou Mayer Corp., Ltd is a national high-tech enterprise that has been awarded as a specialized and special new small and medium enterprise in Guangdong Province. We respone to the national carbon reduction policy actively by establishing Guangzhou Mayer TES Technology Limited Company, which is committed to develop the new energy storage products and energy conservation and emission reduction in its operations, to contribute to the country's high-quality development.

广州美亚股份有限公司「以下简称美亚股份」, 创建于1995年;

Guangzhou Mayer Corp., Ltd ("Mayer") was establised in 1995;

注册资本2亿,生产基地5.5万平方米,产值可达20亿;

Registered capital is 200 million RMB, production base is 55,000 square meters, annual output value is 2 billion RMB;





母公司「美亚控股有限公司」于2004年在香港联交所主板上市的(股票代码 01116.HK);

Parent Company Mayer Holding Limited was listed on the Hong Kong Stock Exchange in 2004.(Stock Code 01116.HK) 主营产品有不锈钢水管、碳钢精密制管以及板带裁剪配送服务、管道直饮水、不锈钢家装全屋活水系统工程、纳米相变蓄能材料、超高效能蓄冷和储热系统工程;

The main products are stainless steel pipe, carbon stee pipe, steel plate cutting service, drinking water service, Nano phase change energy storage materials and ultra-high efficient cold energy storage and thermal energy storage system. 美亚是中国不锈钢水管行业标杆品牌,参与国标 GB/ T 19228 - 2011 标准制定。

"MAYER" is considered a benchmark brand in the stainless steel pipe industry in China. Participated in the formulation of GB/ T 19228-2011 standard.

美亚实验室通过国家CNAS认证。

Mayer Central Laboratory has also obtained a CNAS certificate.





广州美亚蓄能科技有限公司,是一家集"研发、生产、销售、服务"于一体的新能源创新科技公司,可快速响应不同行业客户各种个性化技术服务需求,为客户提供蓄冷储热解决方案和服务。

Guangzhou Mayer TES Technology Company Limited is a green energy technology company that integrating reseach, production, sales and service. It can quickly respond to various personalized technical service needs of customers in different industries, and provide customers with the cold energy storage and thermal energy storage solutions and services.





在国家"双碳"战略背景下,美亚蓄能聚焦以"超省电、超安全、超稳定"的纳米技术为核心研制出纳米相变蓄能材料(PCM),该技术曾多次获奖并获得数十项技术专利。可广泛应用于先进制造工业的恒温恒湿生产车间、数据中心机房、大型公共场所(机场、高铁站、地铁站、学校、医院、酒店等)、设施农业(大棚种植、冷链物流、冷库仓储、果蔬保鲜等)、边防驻军基地、科研中心等领域。

Under the background of the national "dual-carbon" strategy, MAYER TES focuses on "super power-saving, super-safe, super-stable" technology to develop nano-phase-change energy storage materials (PCM), which has obtained dozens of technical patents. It can be widely used in constant temperature and humidity production workshop, data center room, large public places (airport, high-speed railway station, subway station, schools, hospitals, hotels, etc.), agriculture facilities (greenhouse planting, cold chain logistics, cold storage warehousing, fruits and vegetables preservation, etc.), border garrison bases, scientific research centers and so on.

节能 Energy saving

安全Secure





美亚蓄能技术研发团队拥有深厚的技术研发经验,以及丰富的大型工程施工经验。技术研发团队在 吸收国外同行先进技术的基础上,成功研发出具有自主知识产权的技术专利。

The R&D team has rich working experience in large-scale construction project. On the basis of absorbing advanced technology from foreign counterparts, we successfully developed technical patents with independent intellectual property rights.

美亚蓄能专业提供"技术咨询、方案设计、工程安装、运营维护"一站式多元化技术服务。全面助力各行各业实现绿色低碳转型,助力企业降本增效,用新技术、新产品,引领储能的新未来。 We provide one-stop diversified technical services including technical consulting, project design, engineering installation, operation and maintenance. Comprehensively helps industry to realize green and low-carbon transformation, help enterprises to reduce costs and increase efficiency, with new technology, new products, leading the new future of energy storage.

公司坚持"精专、精心、精工"的服务态度,奉行"安全至上,客户为本,诚信负责,科技创新"的核心价值观,同时肩负社会责任,为国家的双碳减排贡献力量。

Company insist "specialized, careful, refined" service attitude. Pursue "safety first, customer oriented, integrity and responsibility, scientific and technological innovation" core values, at the same time, undertake social responsibilities and contribute to the country's dual carbon emission reduction.

节能 Energy saving

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### 致力于为客户提供高效、可靠、环保的储能解决方案,推动能源转型和可持续发展。

Committed to providing customers with efficient, reliable, and environmentally friendly energy storage solutions to promote energy transformation and sustainable development.



### 成为全球领先的储能技术提供商, 助力实现双碳减排目标。

To become a global leading energy storage technology provider and help chieve the dual carbon emission reduction target.



安全至上,客户为本,诚信负责,科技创新。

Safety First, Customer Oriented, Integrity and Responsibility, Innovation-Driven.



2023年6月22日,美亚蓄能完成纳米相变蓄能材料生产线的试产以及量产测试,同时建设完成一套使用纳米相变蓄能材料运行的超高效能中央空调系统,给我司工厂办公以及生产车间供冷。

On June 22, 2023, Mayer ETS completed the trial production and mass production test of the production line of nano phase change energy storage materials, and finished to build a set of ultra-high efficiency central air-conditioning system, supplying cooling to our factory office and production workshop.



生产线 Production Line



生产设备 Equitment



供冷系统主机 Cooling System Mainframe



储能罐 Energy Storage Tank



储能罐内部 Tank Inside





美亚蓄能 用新型储能技术促进各产业向绿色低碳转型,并围绕"双碳"战略开展节能领域相关业务,积极参与到中国节能协会、中国建筑节能协会、中国仓储与配送协会、广东省节能协会、广东省暖通空调协会等协会活动,并成为正式会员或理事单位,共同推进中国环保节能事业发展。

Guangzhou Mayer TES Technology Limited Company uses new energy storage technology to promote the transformation of various industries to green and low carbon, and carries out energy saving related business around the "dual carbon" strategy, and participates in the activities of China Energy Conservation Association (CECA), China Building Energy Conservation Association (CBECA), China Warehousing and Distribution Association (CWDA), Guangdong Energy Conservation Association (GDECA), Guangdong HVAC Association (GDHACA), etc. actively, and has become a full member or director unit to promote the development of China's environmental protection and energy conservation.













为实现碳达峰、碳中和,贯彻新发展理念、构建新发展格局、推动高质量发展的内在要求。美亚蓄能正在推进"七个一"工程,一研究院、一生产基地、一能源基站、一发展基金、一专家委员会、一套标准、一套可持续发展模式,其中,中农美亚(北京)农业科学研究院、山西太原兰花种植实验基地已经落成,中国农科院北京顺义基地已投入使用,同时,与各协会及院校成立中农美亚农业科学研究院专家委员会,最终建立减碳,负碳,增质、增产、增效的新型中国高效双碳产业模式。美亚蓄能积极与以下机构共同合作,推进纳米相变蓄能材料的技术应用研究以及市场应用开发。

In order to achieve carbon peak and carbon neutrality, it is an inherent requirement to implement the new development concept, build a new development pattern and promote high-quality development. Mayer TES is advancing the "Seven Ones" project, which includes: one research institute, one production base, one energy base station, one development fund, one expert committee, one set of standards, and one sustainable development model. Among them Zhongnong Mayer (Beijing) Agricultural Science Research Institute Co.,Ltd ,Shanxi Taiyuan orchid planting experimental base have been completed. Chinese Academy of Agricultural Sciences Beijing Shunyi base has been put into use. Meanwhile, the Expert Committee of the Zhongnong Mayer Academy of Agricultural Sciences has been established in cooperation with various associations and institutions. Ultimately, a new type of high - efficiency dual - carbon industrial model in China will be established, which focuses on carbon reduction, carbon sequestration, quality enhancement, and efficiency improvement.

Mayer ETS collaborates with the following institutions to promote the research on the technical application and the development of market application of nano - phase change energy storage materials.



中农美亚 (北京) 农业科学研究院 Zhongnong Mayer (Beijing) Agricultural Science Research Institute Co.,Ltd



山西太原兰花种植实验基地 Shanxi Taiyuan orchid planting experimental base



中国农科院北京顺义基地 Chinese Academy of Agricultural Sciences Beijing Shunyi base









Guangzhou Institute of Energy Conversion, Chinese Academy of Sciences



Research Center for Eco -Environmental Sciences, Chinese Academy of Sciences



Institute of Environment and Sustainable Development in Agriculture, Chinese Academy of Agricultural Sciences



China Agricultural University



Beijing University of Chemical Technology



Beijing University of Chemical Technology



South China University of Technology



Guangdong University of Technology



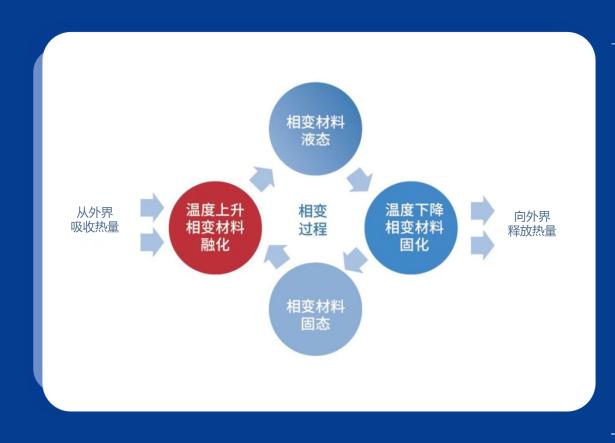
Shenzhen Technology University



### 美亚蓄能 产品介绍

— Product Introduction ——





### 何为相变? What is a phase change?

相变是指材料在液态和固态之间的相互转变,例如在日常生活中最常见的是水和冰的转变,在这个转变的过程中吸收或释放热量。

Phase change refers to the transformation of a material between liquid and solid states, such as the common everyday example of water turning into ice. During this transformation process, heat is either absorbed or released.

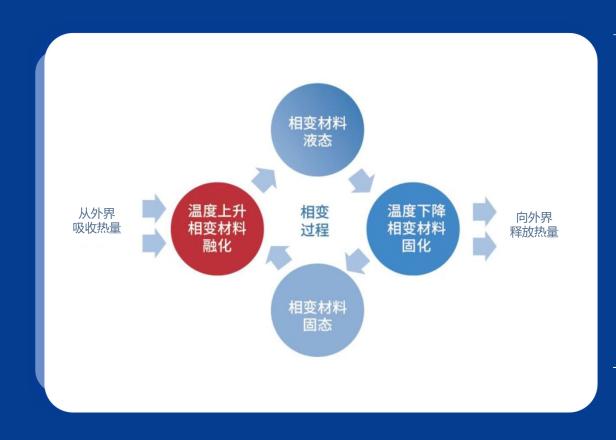
蓄能是指材料在固液相态转变过程中,大量吸收或放出热量的原理,实现热能的恒温储存和释放。以相变蓄能材料在固-液相变为例,在加热到熔化温度时,就产生从固态到液态的相变,熔化的过程中,相变材料吸收并储存大量的潜热;

Energy storage refers to the principle of materials absorbing or releasing large amounts of heat during the phase transition between solid and liquid states, enabling the stable storage and release of thermal energy. Taking phase-change energy storage materials as an example, when heated to their melting point, they undergo a phase transition from solid to liquid. During the melting process, the phase-change material absorbs and stores a significant amount of latent heat.

节能 Energy saving

安全Secure





### 何为相变? What is a phase change?

当相变材料冷却时,储存的热量在一定的温度范围内要散发到环境中去,进行从液态到固态的逆相变。在这两种相变过程中,所储存或释放的能量称为相变潜热。物理状态发生变化时,材料自身的温度在相变完成前几乎维持不变,形成一个宽的温度平台,虽然温度不变,但吸收或释放的潜热却相当大。

When the phase change material is cooled, the stored heat is dissipated to the environment within a certain temperature range, and the reverse phase transition from liquid to solid is carried out. During these two phase transitions, the energy stored or released is called latent heat. When the physical state changes, the temperature of the material itself remains almost unchanged before the phase transition is completed, forming a wide temperature platform, although the temperature is unchanged, the latent heat absorbed or released is quite large.

节能 Energy saving

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### 纳米相变蓄能材料 (PCM)

我司采用纳米技术研发的纳米相变蓄能材料 (PCM) 是一种新型的"优态盐",通过纳米分子将无机盐分子进行链接捆绑,在反复融化和冻结的过程中能够保持稳定的结构,因而使用寿命长达25年。

The nano Phase Change Materials (PCM) used by our company is a new type of "eutectic salt", in which inorganic salt molecules are linked and bound by nano-molecules to maintain a stable structure during repeated melting and freezing, resulting in a service life of up to 25 years.

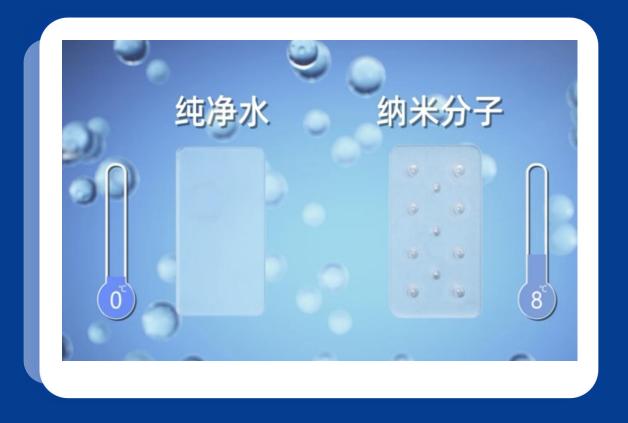
研发人员经过多年的研究,已开发出一系列纳米相变蓄能材料产品:从零下 86℃至零上600℃,适合不同使用场景。

After years of research, researchers have developed a series of nanoscale phase-change energy storage materials: from -86°C to 600°C, suitable for different use scenarios.

节能 Energy saving

安全Secure





### +8℃产品介绍 Product Introdution

本产品特性:在8℃以下固态结冰。

The product feature: it can be solidly frozen below 8°C.

当外界温度降低到8℃时,开始吸收大量冷量,由液态转为固态,从而储存冷量。

When the outside temperature is lowered to 8°C, it starts to absorb a large amount of cold and turns from liquid to solid, thus storing cold.

对于7°C出水的冷水机组就能够进行蓄冷,对比冰蓄冷节能30%以上,产品可以适用于常规冷水机中央空系统节能、节费改造。

7 °C chiller will be able to store cold, compared with ice storage cold energy saving of more than 30%, the product can be applied to the conventional chiller centralized air condition system energy saving, fee-saving transformation.

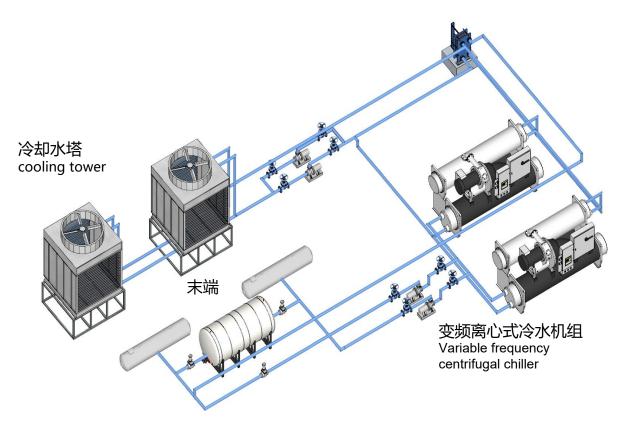
节能 Energy saving

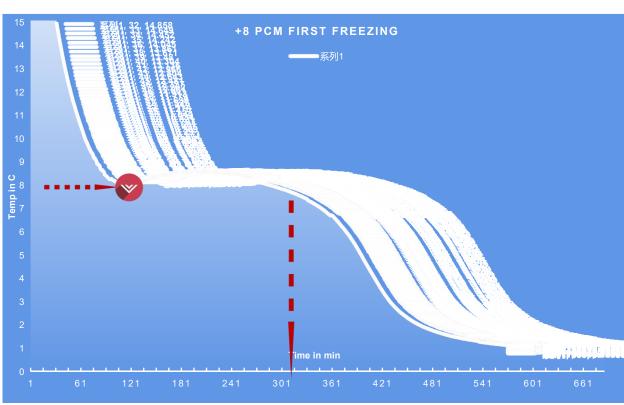
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### +8℃冰板蓄冷过程温度曲线,经过测算一块冰板可蓄冷量为0.2197kW·h

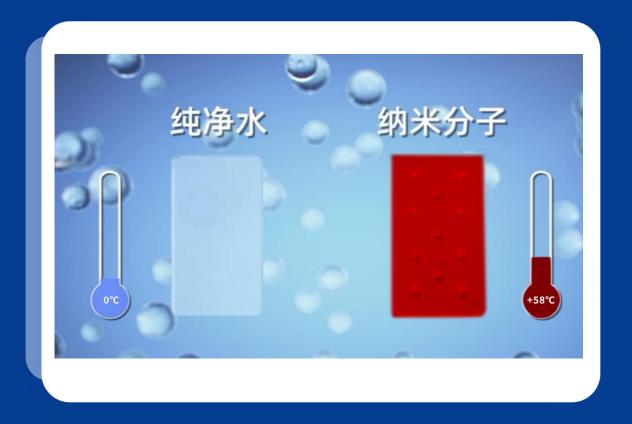
The temperature curve of ice panel cold storage process at +8°C shows that the cold storage capacity of one ice panel is 0.2197kW·h





相变蓄能器+8°C PCM-TES 250RT Phase change accumulator +8°C PCM-TES 250RT





### +58℃产品介绍 Product Introdution

本产品特性:在58℃以下凝固。

The product features: solidify below 58°C.

当产品在液态的状态下,储存大量的热量,当温度从58℃逐渐降低时,开始释放大量热量,产品开始慢慢凝固。

When the product is in a liquid state, it stores a lot of heat, and when the temperature gradually decreases from 58 ° C, a lot of heat is released, and the product begins to slowly solidify.

该产品适用于热量储存,对比传统采用水来储存热量,可以大大节省储存空间,可应用于供热供暖的系统改造。

The product is suitable for heat storage, compared with the traditional use of water to store heat, it can greatly save storage space, can be used in heating and heating system transformation.

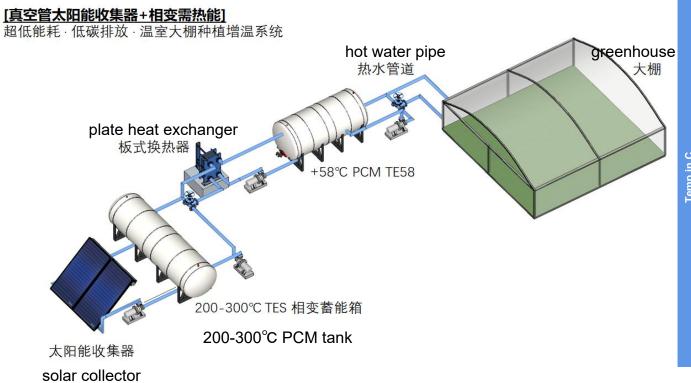
节能 Energy saving

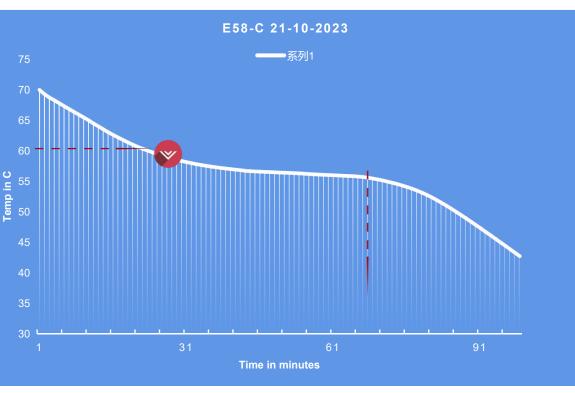
安全Secure



### +58℃储热板放热曲线过程,经过测算一块储热板蓄热量为0.3417KWH

+58 °C heat storage panel exothermic curve process, after calculating a heat storage panel heat storage capacity of 0.3417KWH







### 纳米相变蓄能罐产品介绍 PCM Tank Introduction

美亚蓄能推出纳米蓄能罐产品,现在标准产品有6米和12米两种规格。

About the PCM tank, we have two specifications of 6 meters and 12 meters.

8℃产品储存的能量分别是250RTH和500RTH

The energy stored by 8℃ products is 250RTH and 500RTH respectively 58℃产品是储存的能量分别为1367kW·h和2734kW·h

58℃ products are stored with energy of 1367kW·h and 2734kW·h respectively 该产品运行安全稳定,能够根据实际场景进行布置,安装时可以埋地或者架空。

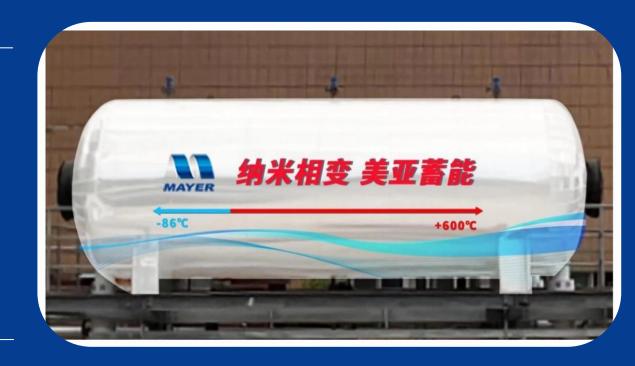
The product runs safely and stably, can be arranged according to the actual scene, and can be buried or overhead when installed.

环保节能+安全可靠

**Environmental protection and energy saving + safe and reliable** 

节能 Energy saving

安全Secure





### 移动充热宝产品介绍 The "Mobile Heat Charging Treasure" product

移动充热宝产品采用移动供热技术, 纳米相变蓄能罐采用标准货柜尺寸设计, 跟现有平板运输车辆相结合, 实现热能的移动配送。

储热车可以通过两根管道与换热站相连,采用纳米相变蓄能材料,利用潜热进行储热和放热。 这种移动充热宝可以根据各地区余热进行收集储存,并且利用汽车这种灵活配送方式,将热能供给到用户单位。与此同时,车上配置的控制系统具有实时监测能源车供热温度、剩余热量、循环流量等参数的功能,可持续稳定地保证正常供热。

The "Mobile Heat Charging Treasure" product adopts mobile heat supply technology. The nano - phase change energy storage tank is designed in standard container dimensions and combined with existing flatbed transport vehicles to achieve the mobile distribution of heat energy.

The heat storage vehicle can be connected to the heat exchange station through two pipelines. It uses nano - phase change energy storage materials to store and release heat through latent heat.

This "Mobile Heat Charging Treasure" can collect and store waste heat in various regions. Moreover, by using the flexible distribution method of trucks, it can supply heat energy to user units.

At the same time, the control system equipped on the vehicle has the function of real - time monitoring of parameters suh as the heating temperature, remaining heat, and circulation flow rate of the energy vehicle, which can ensure stable and continuous normal heating.





### 美亚蓄能 技术应用介绍

—— Technical Introduction ——

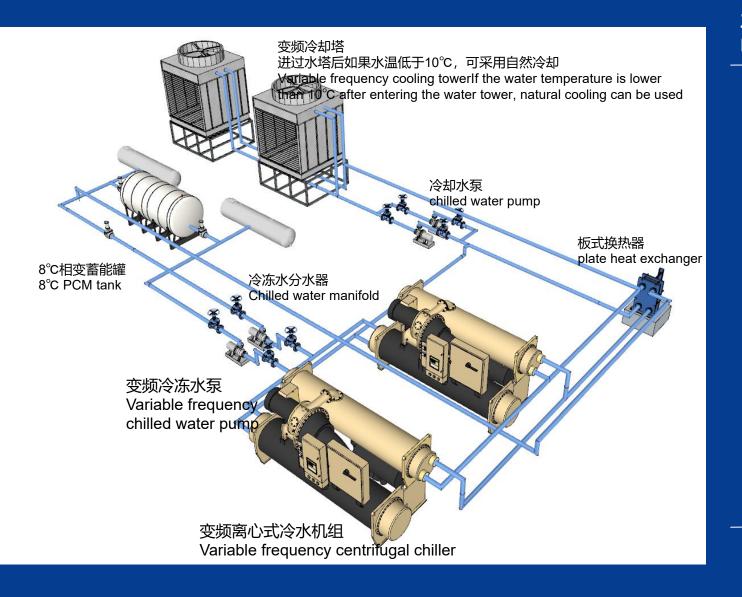


3.1

# 工业领域应用方案设计

Industrial application design





#### 工业应用介绍:超高效能制冷系统

Industrial application: Ultra-high efficiency cooling system

超高效纳米相变蓄能**可变负荷**中央空调系统,该系统选取的高效变频离心冷水机组本身具有较高的COP。

Ultra-high-efficiency nano phase-change energy storage variable-load central air-conditioning system, which was selected with a high-efficiency inverter centrifugal chiller that has a high COP.

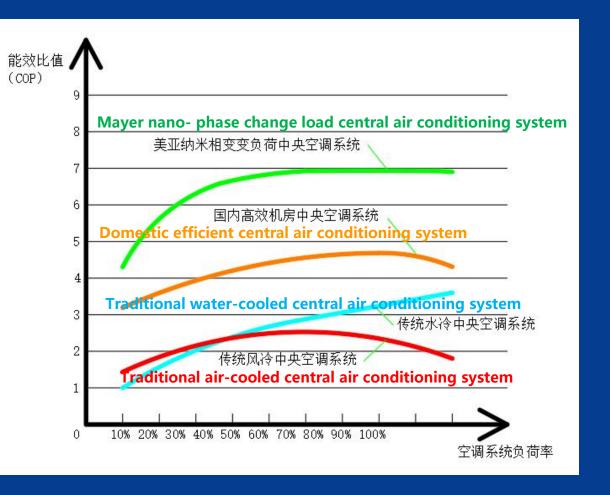
当采取两级冷水机组串联工作的方式时,上游高温主机具有较高的冷冻水出水温度及蒸发温度,可以让COP得到提升,从而使得整个串联的制冷主机系统具有较高的NPLV。当采取两级冷水机组和蓄冷系统串联的运行方式,可让系统冷冻水的供回水实施大温差方式运行。

When the two-stage chiller works in series, the upstream high-temperature mainframe has higher chilled water outlet temperature and evaporation temperature, which can let the COP be improved, thus making the whole series refrigeration mainframe system has a higher NPLV. when the two-stage chiller and the storage cooling system are operated in series, it can let the system chilled water supply and return to implement the operation of the large temperature difference.

节能 Energy saving

安全Secure





#### 超高效能制冷系统 Ultra-High efficiency cooling system

使用纳米相变蓄冷系统与高效制冷主机结合运行,实现边蓄冷边制冷冻水,保持制冷主机始终在高效率运行,具有节能、避峰的双重优点,是真正的节能降耗。

The nano-phase change cold storage system is used in combination with the high-efficiency refrigerator, which can make chilled water while storing cold and keep the refrigerator running at high efficiency all the time. It has the dual advantages of energy saving and peak avoidance, and is really energy saving and consumption reduction.

空调水直接与相变板接触蓄冷,无需板换和乙二醇一次泵,系统结构较冰蓄冷系统简单。纳米相变蓄冷超高效能制冷系统比传统的冰蓄冷运行节能至少30%。

Air conditioning water directly contacts the phase change plate to store cold, without plate exchange and glycol primary pump, and the system structure is simpler than that of ice storage system. Compared with the traditional ice storage operation, the nano-phase change cold storage ultra-high efficiency refrigeration system can save energy by at least 30%.

节能 Energy saving

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机场 Airport

商业综合体 Commercial Building

大型工业中央空调控制厂房 central air-conditioning

数据中心 Data Center



3.2

# 农业领域应用方案设计

Application case in agricultural field





### 纳米相变蓄冷储热技术系统工程

Cold storage and heat storage technology system engineering

通过温室大棚的纳米相变蓄能技术应用研究,引入工业控制相关的监控调节技术,进一步建立农业种植数字化云平台,为未来农业种植标准化、数字化提供服务,数字技术赋能农业,为农业高质量发展做出贡献。

Through the application research of nano-phase change energy storage technology in greenhouses, the monitoring and adjustment technology related to industrial control is introduced, and the digital cloud platform of agricultural planting is further established to provide services for the standardization and digitalization of agricultural planting in the future, and digital technology enables agriculture and contributes to the high-quality development of agriculture.

节能 Energy saving

安全Secure



### 纳米相变蓄能技术在设施农业的应用 (日光棚)

Application of nano phase change energy storage technology in facility agriculture

大棚型太阳能集热板 Solar collector plate 白天: 收集太阳光照, 转化成热量储存在纳米相变蓄能罐中

Daytime:Solar light is collected, converted into heat and

stored in a nanoscale phase-change storage tank

夜间: 蓄能管释放热量, 加热大棚内的空

Night: The energy storage tube releases heat and heats the

air inside the greenhouse

1.Circulating water pump

2. Solar collector plate

3.32°C PCM emergency heating source

4.PCM tank

5. Stainless steel manifold

**6.**Buried tube heat exchanger

7.Water collector

高效相变蓄能箱 High efficiency phase change storage tank

白天: 储存太阳能集热板产生的热量

Daytime: Store the heat generated by solar panels.

夜间: 当大棚内的温度低于设定温度时, 通过蓄热箱释放储存的

热量给大棚供暖

Night: When the temperature in the greenhouse is lower than the set

temperature, the stored heat is released through the heat storage box to

**5**eat the greenhouse

预埋管换热器 Buried tube heat exchanger

将太阳能集热板产生的热量散发至大棚,加热空气

The heat generated by the solar panels is dissipated to

the greenhouses, heating the air

图例说明: 1-循环水泵 2-大棚型太阳能集热器 3-32℃相变蓄热材料应急热源 4-高效相变蓄能箱 5-分水器 6-预埋管换热器 7-集水器

### MAYER

### 未来农业 - 种植 (植物工厂应用)

Future Agriculture - Planting (Plant Factory Applications)

① 解决能耗问题:有效降低种植成本,提升能源利用效率。

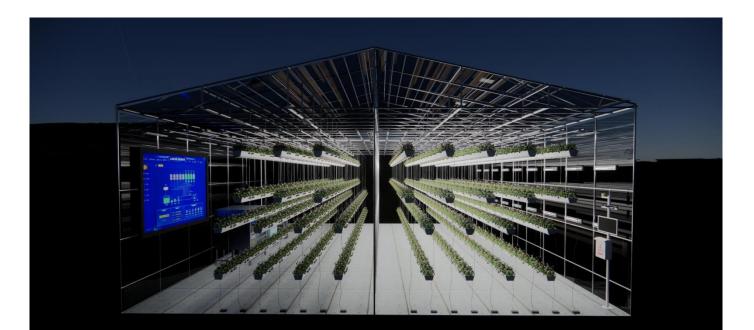
Resolve energy consumption issue: reduce planting costs and improve energy efficiency.

四季温控: 改善植物工厂四季温差大的问题, 为植物生长提供稳定环境。

Four seasons temperature control: improve the problem of large temperature difference in plant factories throughout the year and provide a stable environment for plant growth.

高产值种植: 有利于高产值品种的种植生产, 提升经济效益。

High-value planting: it is conducive to the planting and production of high-value varieties and improves economic benefits.







### MAYER

### 未来农业 - 养殖 (养鱼/虾池)

Future Agriculture - Aquaculture (Fish/Shrimp ponds)

- ① 温度控制: 纳米相变蓄能材料释放冷量/热量,有效地控制养鱼池中的水温。
  Temperature control: the nano-phase change energy storage material releases cold/heat, effectively controlling the water temperature in the fish pond.
- ① 提高养殖效益:良好的水温条件还可以减少鱼类的疾病发生率,降低养殖成本。 Improve the efficiency of fishery: good water temperature conditions can also reduce the incidence of fish diseases and reduce the cost of aquaculture.
- ① 节省电费:在电价低谷时段通过预先蓄冷/储热的方式,避免高昂电费支出。
  Saving power charge: avoid high electricity costs by pre-storage of cold/heat during low price periods.







### 余热回收利用与农业生产相结合 Combination of waste heat recovery and agricultural production

在现有数据中心或其他工/商业界的余热大部分是直接排放到大气中,会产生温室效应,导致全球变暖。 我司利用移动充热宝技术,将余热回收起来,通过汽车运输到农业大棚集中供热。

Most of the waste heat in existing data centers or other industrial/commercial industries is emitted directly into the atmosphere, creating a greenhouse effect and contributing to global warming. We use a mobile heat charging treasure technology with waste heat recovery, central heating by motor transport to agricultural greenhouse.





# 3.3

# 冷链物流及仓储领域应用方案设计

Cold chain logistics and storage field application scheme design



#### 纳米相变蓄能材料在冷链物流及仓储领域的应用

Application of nano-phase change energy storage materials in cold chain logistics and storage



- 美亚蓄能已经可以生产一系列纳米相变蓄能材料产品,从零下86℃至零上600℃多种型号,适合不同场景使用。其中七种零下86℃至零度材料(-86℃、-67℃、-50℃、-33℃、-21℃、-10℃、-1.2℃)适合在冷链物流及仓储中使用。
- Mayer TES has been able to produce a series of nano phase change storage materials products, from minus 86°C to above 600°C a variety of models, suitable for different scenarios. Seven of them (-86°C to zero °C, -67°C, -50°C, -33°C, -21°C, -10°C, -1.2°C) are suitable for use in cold chain logistics and warehousing.
- 不同结冰点的蓄能板可以安装在低温冷库系统中,用户利用峰谷电价的低谷时段运行制 冷压缩机,减少全年50%以上的运行电费。
- Energy storage panels with different freezing points can be installed in the low-temperature cold storage system, and users can use the low-valley time of peak-valley electricity price to operate the refrigeration compressor, reducing the annual operating electricity bill by more than 50%.
- 在冷链物流运输方面,可利用不同结冰点的蓄能板配合移动保温箱,一般可以保持数日 的指定低温。

In the aspect of cold chain logistics and transportation, energy storage plates with different freezing points can be used to cooperate with mobile incubators, which can generally keep the specified low temperature for several days.



## 不同冷库类型及需求 Different cold storage types and requirements



超低温冷库 cold store for food

(-45°C~-60°C) \*储存速冻饺子、食物等













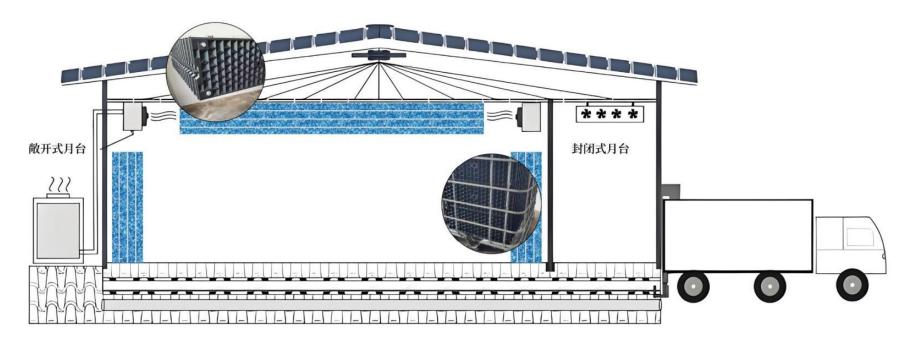
气调冷库 cold store for fruit (-2℃~+5℃) \*储存新鲜水果蔬菜等

恒温冷库 Thermostatic cold store for medicine (+5℃~+15℃) \*适用于医药、酒类等储存





# PCM 在冷库中应用-1 Application



#### 相变材料应用优势: The advantages of PCM

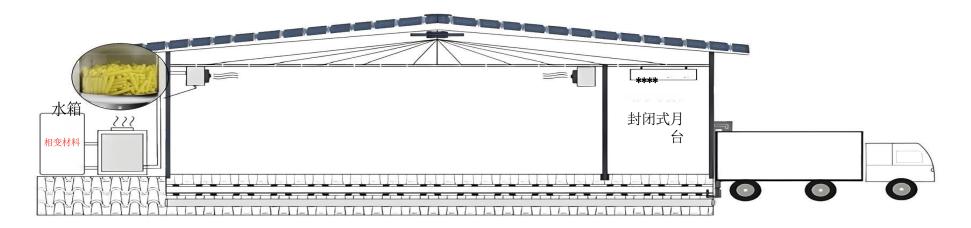
- 夜间储存能量,白天释放,精准实现调峰填谷(被动式) Energy storage at night, release during the day, accurate peak load and valley filling (passive)
- 利用峰谷电价差,节能省费 Use the difference between peak and valley electricity price, energy saving and cost saving
- 无需复杂的自控程序,成本低,效益好 No need for complex automatic control procedures, low cost, good benefits

#### 相变材料应用方式:Application of phase change materials

- 高架库:储能堆叠架+将顶层货架替换为heatstaxx
- Elevated warehouse: energy storage stack + Replace the top shelf with heatstaxx
- 地堆库:储能堆叠架+相变材料吊装
- Ground storage: energy storage stack + phase change material lifting
- 冷库实际应用照片见下页
- See the photos of cold storage in practice on the next page



# PCM 在冷库中应用-2 Application



#### 相变材料应用优势: The advantage of PCM

- 夜间低价谷电储能,白天峰值电价时释放,精准调峰降费(需要控制系统设置) Low-price valley powered cold storage at night, release cold at peak electricity price during the day, accurate peak load reduction (need to control system Settings)
- 适用于合同能源管理方式进行节能降费管理 It is suitable for energy saving and cost reduction management by contract energy management

#### 相变材料应用方式:

#### Application of phase change materials

- 系统增加冷冻储能水箱,水箱中添加防冻液(乙二醇)
   Add a chilled energy storage tank to the system, and add antifreeze (ethylene glycol) to the tank.
- 水箱中添加相变材料 (heatStixx/heatSel)进行夜间蓄能
   A phase change material (heatStixx/heatSel) was added
   to the tank for nighttime energy storage



# 美亚蓄能 展会&项目案例

—— Project case ——



#### 2023年8月美亚纳米相变蓄能材料农业应用研讨会在北京召开

Mayer Nano Phase Change Energy Storage Materials Agricultural Application Symposium Held in Beijing

美亚控股有限公司、广州美亚蓄能科技有限公司领导一行代表出席,平谷区农业农村部局长,农业农村部工程中心组织中国科学院、中国农业大学等高校院所能源领域专家出席研讨会。美亚纳米相变蓄能材料应用的面世,象征着我国减碳排、碳中和环保节能事业迈上一个新台阶,期待未来在国家农业发展方面贡献力量,合力推动平谷区在建设农业中关村的轨道上跑起来、快起来!以农业现代化助力农业强国建设!

Representatives from Mayer Holdings Limited and Guangzhou Mayer TES Technology Co., Ltd. attended the symposium, along with the Director of the Agriculture and Rural Affairs Bureau of Pinggu District and experts from the Chinese Academy of Sciences and China Agricultural University, organized by the Engineering Center of the Ministry of Agriculture and Rural Affairs. The introduction of Mayer's nano phase change energy storage materials marks a significant step forward in China's efforts towards carbon reduction, carbon neutrality, environmental protection, and energy savings. We look forward to contributing to the future development of national agriculture, working together to accelerate Pinggu District's progress in building an agricultural Zhongguancun. Let's drive the modernization of agriculture and support the construction of a strong agricultural nation.





#### 2023年11月26日,美亚纳米相变蓄能材料应用研讨会暨科技成果发布会成功举办

Mayer Nano Phase Change Energy Storage Material Application Seminar and Scientific and Technological Achievement Conference was successfully held on 26th November 2023.

2023年11月26日,美亚蓄能在广州黄埔君澜酒店举办了《美亚纳米相变蓄能材料应用研讨会暨科技成果发布会》。此次会议聚焦纳米相变蓄能材料的最新应用和成果,吸引了来自各事业单位、高校、科研机构、企业、投资机构等领域的众多专家学者参与。

On 26th November 2023, Mayer TES held the "Mayer Nano Phase Change Energy Storage Material Application Seminar and Scientific and Technological Achievement Conference" in Guangzhou Huangpu Junlan Hotel. The conference focused on the latest applications and achievements of nano phase change energy storage materials, and attracted many experts and scholars from various institutions, colleges and universities, research institutes, enterprises, investment institutions and other fields.





# 第十届国际 (广东) 节能展 The 10th International (Guangdong) Energy Conservation Exhibition

本届展会由广东省节能协会主办,以节能储能为主题,展览面积达5万平方米,吸引了超过500家节能储能企业参展。广州市发改局、工信局等政府部门对此次活动给予了大力支持与指导。

This exhibition is hosted by Guangdong Energy Conservation Association, with the theme of energy-saving energy storage. The exhibition area covers 50000 square meters and has attracted over 500 energy-saving energy storage enterprises to participate. The Guangzhou Municipal Development and Reform Bureau, Industry and Information Technology Bureau and other government departments have provided strong support and guidance for this event.







# 2023年澳门国际环保合作发展论坛及展览

2023 Macau International Environmental Cooperation and Development Forum and Exhibition

本届活动以"推动绿色创新共建生态文明"为主题,通过举办绿色展览、绿色论坛、绿色配对、绿色公众日等系列活动,并增设在线展厅、云配对及云直播等内容,助力推动珠三角地区、粤港澳大湾区与国际上的环保商务合作及技术交流。

The theme of this event is "Promoting Green Innovation and Building Ecological Civilization Together". Through a series of activities such as green exhibitions, green forums, green matchmaking, and green public days, as well as the addition of online exhibition halls, cloud matchmaking, and cloud live streaming, it aims to promote environmental business cooperation and technology exchange in the Pearl River Delta region, the Guangdong Hong Kong Macao Greater Bay Area, and internationally.



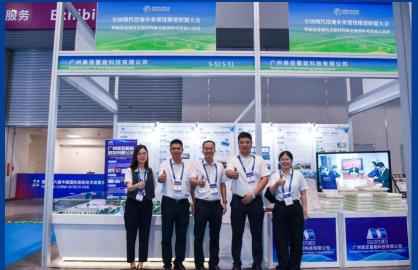


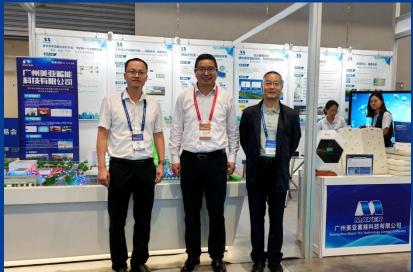
# 第二十六届中国国际高新技术成果交易会现代设施农业展

The 26th China International High tech Achievement Fair Modern Facility Agriculture Exhibition

本次展会聚焦"高精尖特新"服务和技术,展示新装备新技术新材料新金融等创新技术成果。集中展现中国设施农业发展成效经验农业现代化管理理念和装备技术,发布农业 高新技术最新成果。

This exhibition focuses on "high-precision, cutting-edge, special and new" services and technologies, showcasing innovative technological achievements such as new equipment, new technologies, new materials, and new finance. Concentrate on showcasing China's experience in the development of facility agriculture, modern management concepts and equipment technology in agriculture, and release the latest achievements in agricultural high-tech.







美亚蓄能展台Mayer Energy Storage Exhibition Stand



#### 案例一: 广州美亚蓄冷高效机房 Case 1: Mayer High Efficiency Cold Storage Machine Room

广州美亚蓄冷高效机房冷源为2台300冷吨日立离心机组、2台海尔300冷吨磁悬浮机组、2台共计490冷吨柜式风冷机组、1台100冷吨溴化锂机组;热源为屋顶408㎡太阳能集 热器系统;4台250冷吨纳米相变储能罐系统负责调节整个高效机房能效,在保证冷量稳定输出的情况下,使系统以最佳工况运行,提高SCOP。利用蓄冷罐实现峰平谷电价差 手段,最终实现节能、节碳、降费的目的;该项目作为美亚蓄能展示案例及测试平台,均取得不错的效果,2024年8月份的**系统SCOP高达6.38。** 

The cold sources for the Guangzhou Mayer cold storage high-efficiency machine room are 2 Hitachi centrifugal units with a cooling capacity of 300 tons, 2 Haier magnetic levitation units with a cooling capacity of 300 tons, 2 cabinet air-cooled units with a total cooling capacity of 490 tons, and 1 lithium bromide unit with a cooling capacity of 100 tons; The heat source is a 408 m² solar collector system on the roof; Four 250 ton nano phase change energy storage tank systems are responsible for regulating the energy efficiency of the entire high-efficiency computer room, ensuring stable output of cooling capacity and operating the system at optimal conditions to improve SCOP. Utilizing cold storage tanks to achieve peak to valley electricity price differentials, ultimately achieving the goals of energy conservation, carbon savings, and cost reduction; As a demonstration case and testing platform for Mayer Energy Storage, this project has achieved good results, with a system SCOP of 6.38 in August 2024.



美亚制冷系统 Refrigeration System



#### 案例一: 广州美亚蓄冷高效机房 Case 1: Mayer High Efficiency Cold Storage Machine Room

2023年11月,广州美亚委托中交城市能源研究设计院有限公司对该项目的机房进行系统能效评估;通过数据监测及分析计算,中交建出具了《集中空调制冷机房能效评价报告》,满足《集中空调制冷机房系统能效经济限定值》T/DZJN78-2022 一级能效等级要求。
In November 2023, Guangzhou Meiya commissioned China Communications Construction Urban Energy Research and Design Institute Co., Ltd. to conduct a system energy efficiency assessment of the project's computer room; Through data monitoring and analysis calculations, CCCC has issued the "Energy Efficiency Evaluation Report for Central Air Conditioning Refrigeration Room", which meets the first level energy efficiency level requirements of the "Economic Limit Values for Energy Efficiency of Central Air Conditioning Refrigeration Room Systems" T/DZJN78-2022.



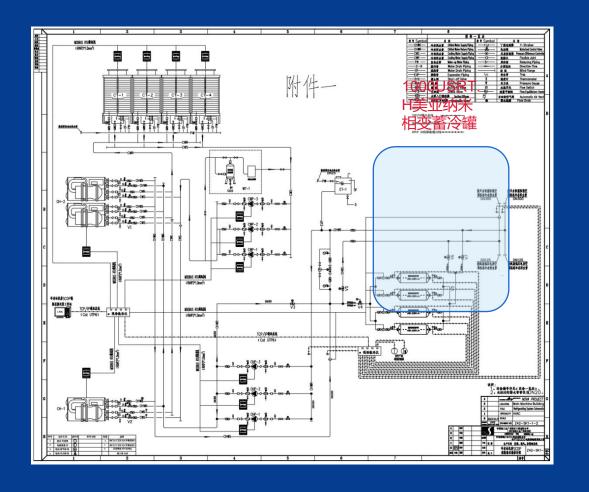
冷水机组Chiller

现场图Figure at the crime scene



## 案例二:中烟摩迪(江门)纸业有限公司卷烟纸分切恒温恒湿车间节能改造方案

Case 2: Energy saving Renovation Plan for Cigarette Paper Cutting Constant Temperature and Humidity Workshop of China Tobacco Mauduit (Jiangmen) Paper Industry Co., Ltd



通过控制系统的有效调节,调节冷水机组制冷量与末端需冷量之间的动态平衡,实现制冷主机始终高效率运行及消峰填谷的目标,实现既节钱又节能,是真正的节能减排。

By effectively adjusting the control system, the dynamic balance between the cooling capacity of the chiller unit and the final cooling demand can be adjusted to achieve the goal of efficient operation and peak shaving of the refrigeration host, saving both money and energy, which is truly energysaving and emission reduction.

节能 Energy saving

安全Secure

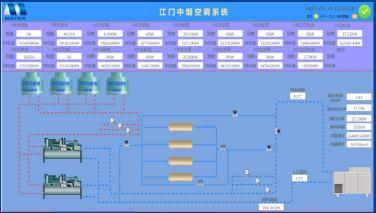
省电save electricity



## 案例二:中烟摩迪(江门)纸业有限公司卷烟纸分切恒温恒湿车间节能改造方案

Case 2: Energy saving Renovation Plan for Cigarette Paper Cutting Constant Temperature and Humidity Workshop of China Tobacco Mauduit (Jiangmen) Paper Industry Co., Ltd





在冷冻站冷冻水总供水管设置 4 台 250USRT.H 的纳米相变蓄冷罐, 总冷量1,000USRT.H 可以完全满足冷冻站在夏季 7、8、9 三个月并且室外温度超过 35℃时尖峰电价 3 个小时中的 1个小时的冷量所需。

根据"2021年8月31日,广东发改委发布《关于进一步完善我省峰谷分时电价政策有关问题的通知》其中明确提出,拉大峰谷电价差,峰平谷比价从现行的1.65:1:0.5 调整为1.7:1:0.38。尖峰电价在上述峰谷分时电价的峰段电价基础上上浮25%"。

Install 4 sets of 250USRT in the chilled water main supply pipe of the refrigeration station The nano phase change cold storage tank of H has a total cooling capacity of 1000USRT H can fully meet the cooling capacity required for one hour of the peak electricity price during the summer months of July, August, and September when the outdoor temperature exceeds 35 °C.

According to the "Notice on Further Improving the Peak Valley Time of Use Electricity Price Policy in Our Province" issued by the Guangdong Development and Reform Commission on August 31, 2021, it is clearly stated that the peak valley electricity price difference will be widened, and the peak to average valley price ratio will be adjusted from the current 1.65:1:0.5 to 1.7:1:0.38. The peak electricity price will be increased by 25% on the basis of the peak segment electricity price of the peak valley time of use electricity price mentioned above.

节能 Energy saving

安全Secure

省电save electricity



#### 案例二:中烟摩迪(江门)纸业有限公司卷烟纸分切恒温恒湿车间节能改造方案

Case 2: Energy saving Renovation Plan for Cigarette Paper Cutting Constant Temperature and Humidity Workshop of China Tobacco Mauduit (Jiangmen) Paper Industry Co., Ltd

与中烟摩迪已经签订合作协议, 卷烟纸分切恒温恒湿车间中央空调系统节能改造方案于2024年5月施工, 目前已完成安装调试。

We have signed a cooperation agreement with China Tobacco Mauduit. The energy-saving renovation plan for the central air conditioning system of the cigarette paper cutting constant temperature and humidity workshop will be constructed in May 2024, and the installation and commissioning have been completed.



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#### 案例三: 中国农科院北京顺义兰花供暖节能实验基地

Case 3: China Academy of Agricultural Sciences Beijing Shunyi Orchid Heating Energy saving Experimental Base

项目位于北京市顺义区中国农业科学院农业环境与可持续发展研究所院内, 总规模为3163.2㎡温室,利用太阳能系统结合纳米相变蓄能储罐实现冬季 采暖,夏季制冷,达到节能减排的目的,为国家实现"双碳"目标做贡献。

The project is located in the Institute of Agricultural Environment and Sustainable Development, Chinese Academy of Agricultural Sciences, Shunyi District, Beijing. The total scale of the greenhouse is 3,163.2 square meters. It uses a solar energy system combined with nano phase change energy storage tanks to achieve winter heating and summer cooling, achieving the goal of energy conservation and emission reduction, and contributing to the country's achievement of the "dual carbon" goal.



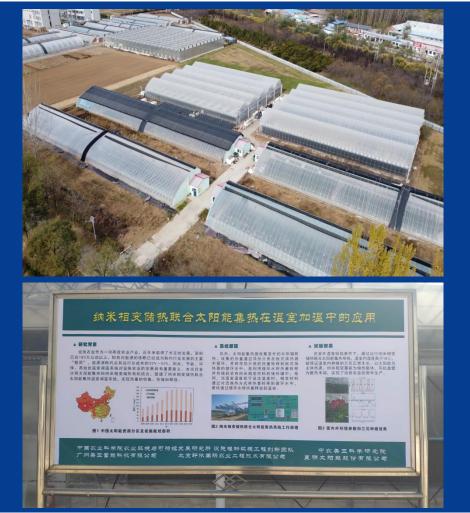


### 案例三: 中国农科院北京顺义兰花供暖节能实验基地

Case 3: China Academy of Agricultural Sciences Beijing Shunyi Orchid Heating Energy saving Experimental Base

技术路线:利用太阳能设备吸收太阳热量,将该热量转移至纳米相变蓄能储罐内,进而将水加热满足采暖用热需求。温室面积2163.2㎡,太阳能系统面积规模为1000㎡,采暖热负荷250w/㎡。可利用场地面积600㎡。辅助热源为水源热泵机组。项目配置62组真空管太阳能集热器,集热器总面积415.40㎡,集热器采光面积266.60㎡和一台28㎡。纳米相变蓄热储罐。

Technical route: Utilizing solar energy equipment to absorb solar heat, transferring the heat to a nano phase change energy storage tank, and then heating water to meet heating needs. The greenhouse area is 2163.2 square meters, the solar energy system area is 1000 square meters, and the heating load is 250w/square meter. The available site area is 600 square meters. The auxiliary heat source is a water source heat pump unit. The project is equipped with 62 sets of vacuum tube solar collectors, with a total collector area of 415.40 square meters, a collector lighting area of 266.60 square meters, and a 28m ³ nano phase change thermal storage tank.





## 案例三: 中国农科院北京顺义兰花供暖节能实验基地

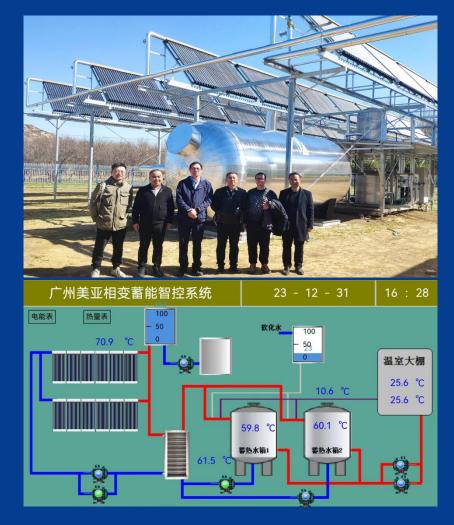
Case 3: China Academy of Agricultural Sciences Beijing Shunyi Orchid Heating Energy saving Experimental Base

同时,项目采用全自动远程控制系统,实现对各处系统的远程控制、全自动运营管理、实时报警、数据分析、能源监测、环境监测等功能,可上传大数据平台——远程可视化监控系统,实时了解系统运行状况,出现故障时能够快速相应并处理问题,真正让客户用得放心满意

中科院研究员黄锦楼,农科院王源老师一行到现场考察后达成合作;开展太阳能通过纳米相变材料供暖的节能减排以及能量利用效率等课题研究。

At the same time, the project adopts a fully automatic remote control system to achieve remote control of various systems, fully automatic operation management, real-time alarm, data analysis, energy monitoring, environmental monitoring and other functions. It can be uploaded to a big data platform - a remote visualization monitoring system to understand the system's operation status in real time. When faults occur, it can quickly respond and solve problems, truly allowing customers to use it with confidence and satisfaction

Researcher Huang Jinlou from the Chinese Academy of Sciences and Professor Wang Yuan from the Chinese Academy of Agricultural Sciences reached a cooperation agreement after conducting on-site inspections; Conduct research on energy-saving, emission reduction, and energy utilization efficiency of solar heating through nano phase change materials.





## 案例四: 山西轩侬园艺有限公司兰花基地供暖节能改造项目

Case 4: Shanxi Xuannong Horticulture Co., Ltd. Orchid Base Heating Energy saving Renovation Project

10000平方米兰花种植基地,实施第一期温室大棚太阳能冬季采暖方案。通过纳米相变蓄热技术,将太阳能高温热能储存下来,用于实现连续的供暖。

蝴蝶兰喜暖畏寒。生长适温为18~25℃,冬季10℃以下就会停止生长,低于5℃容易死亡。最适宜的相对湿度范围为60-80%。原有供暖采用水源热泵的方式能耗高,导致种植运行成本高。通过这次改造,采用太阳能集热管+纳米相变蓄能这种供暖方式,降低运行成本的同时,进一步在农业种植方面进行碳减排。

Implement the first phase of greenhouse solar winter heating plan for a 10000 square meter Milan flower planting base. By using nano phase change thermal storage technology, solar high-temperature heat energy is stored for continuous heating.

Phalaenopsis prefers warmth and is afraid of cold. The suitable temperature for growth is 18-25 °C, and growth will stop below 10 °C in winter. It is easy to die below 5 °C. The most suitable relative humidity range is 60-80%.

The original heating method using water source heat pumps had high energy consumption, resulting in high operating costs for planting. Through this renovation, the heating method of using solar collectors and nano phase change energy storage is adopted to reduce operating costs and further reduce carbon emissions in agricultural planting.







### 案例四: 山西轩侬园艺有限公司兰花基地供暖节能改造项目

Case 4: Shanxi Xuannong Horticulture Co., Ltd. Orchid Base Heating Energy saving Renovation Project

项目采用太阳能清洁能源+纳米相变储能系统+高效机房节能控制技术相结合的方式,利用免费的太阳能清洁能源作为大棚供热主热源使用,原水源热泵系统作保留,作为备用热源与调峰负荷使用,保证系统在整个冬季稳定运行

项目占地5180平,采用钢结构连栋温室大棚,种植蝴蝶兰,要求室内温度15℃~30℃ (育花期为25℃),湿度要求60%~80%。

The project adopts a combination of solar clean energy, nano phase change energy storage system, and high-efficiency computer room energy-saving control technology. Free solar clean energy is used as the main heat source for greenhouse heating, while the original water source heat pump system is reserved as a backup heat source and used for peak load regulation, ensuring stable operation of the system throughout the winter

The project covers an area of 5180 square meters and adopts a steel structure connected greenhouse for planting butterfly orchids. The indoor temperature is required to be 15  $^{\circ}$ C $^{\circ}$ C (the flowering period is 25  $^{\circ}$ C), and the humidity is required to be 60% $^{\circ}$ 80%.





### 案例四: 山西轩侬园艺有限公司兰花基地供暖节能改造项目

Case 4: Shanxi Xuannong Horticulture Co., Ltd. Orchid Base Heating Energy saving Renovation Project

太阳能集热器采用内聚光真空集热管,集热器采光面积为226.56㎡,冬季采暖热负荷为100kw, 共计48组太阳能集热器。纳米相变罐选用58℃工况,共计2台储热罐,单台28t,做储热及调优 使用

项目竣工交付使用后,美亚组织专家组到项目上参观评审。其中有:农业农村部工程服务中心俞洪军总工,王志强处长,中科院黄锦楼研究员,中国农业大学黎耀军教授、袁小艳教授等专家。 The solar collector adopts internal concentrated vacuum collection tubes, with a daylighting area of 226.56 square meters and a winter heating load of 100 kW. There are a total of 48 sets of solar collectors. The nano phase change tank adopts a 58 °C operating condition, with a total of 2 thermal storage tanks, each with a capacity of 28t, for thermal storage and optimization purposes

After the completion and delivery of the project, Meiya organized an expert group to visit and evaluate the project. Among them are: Chief Engineer Yu Hongjun from the Engineering Service Center of the Ministry of Agriculture and Rural Affairs, Director Wang Zhiqiang, Researcher Huang Jinlou from the Chinese Academy of Sciences, Professor Li Yaojun and Professor Yuan Xiaoyan from China Agricultural University, and other experts.





## 案例五: 怀来县数据中心余热回收利用换热充热站项目

Case 5: Huailai County Data Center Waste Heat Recovery and Utilization Heat Exchange Charging Station Project

该项目位于怀来云数据中心南侧,规划占地 25 亩,总投资 9500 万。其中:一期占地 8 亩,建余热基站,包含土地费用、余热回收设施、储热装置、纳米相变材料装置,提热设施, 供热管线,规划运营等费用。计划投资 3500 万。 二期占地 17 亩,建设实验研发楼 10000 平米,土源储热基地 10 亩。计划投资 6000 万。

The project is located on the south side of Huailai Cloud Data Center, with a planned area of 25 acres and a total investment of 95 million yuan. Among them, the first phase covers an area of 8 acres and will build a waste heat base station, including land costs, waste heat recovery facilities, thermal storage devices, nano phase change material devices, heating facilities, heating pipelines, planning and operation expenses. Planned investment of 35 million yuan. The second phase covers an area of 17 acres, with a construction of 10000 square meters of experimental research and development building and 10 acres of soil source heat storage base. Planned investment of 60 million yuan.



怀来云数据中心 Huailai Cloud Data Center



怀来云数据中心余热回收 Huailai Cloud Data Center Waste Heat Recovery





怀来云数据中心余热释放到农业大棚及居民使用 Huailai Cloud Data Center releases waste heat for agricultural greenhouses and residential use



## 案例五: 怀来县数据中心余热回收利用换热充热站项目

Case 5: Huailai County Data Center Waste Heat Recovery and Utilization Heat Exchange Charging Station Project

2024年11月13日,中农美亚怀来云数据中心余热回收供暖项目成功投运,为金秋家园小区提供了温暖舒适的冬季供暖服务。标志着美亚在数据中心行业在余热回收技术和绿色可持续发展方面取得了新的突破。除了本次实施的余热供暖项目外,美亚与亿安天下还将在怀来县建设以"蝴蝶兰种植产业园,数字农业,农光互补"三位一体的综合能源型农业生态示范项目,打造怀来县具有代表性的"碳中和"数字农业产业示范项目。

On November 13, 2024, the Zhongnong Meiya Huailai Cloud Data Center waste heat recovery heating project was successfully put into operation, providing warm and comfortable winter heating services for the Jinqiu Jiayuan community. This marks a new breakthrough for Meiya in waste heat recovery technology and green sustainable development in the data center industry. In addition to the waste heat heating project implemented this time, Meiya and Yi'an Tianxia will also build a comprehensive energy based agricultural ecological demonstration project in Huailai County, which integrates "butterfly orchid planting industrial park, digital agriculture, and agricultural photovoltaic complementarity", to create a representative "carbon neutral" digital agriculture industry demonstration project in Huailai County.





Case 6: Huailai County "Carbon Neutrality" Digital Agriculture Industry Demonstration Base Project

该项目以纳米相变蓄能材料 (PCM) 技术为依托,中农美亚(北京) 农业科学院为产业平台,在怀来县打造的一个以数据中心余热回收利用为研究载体,为设施农业以及周边社区提供蓄热供暖服务为业务支撑,以高品质设施农业产业生态为内容,以节能减碳为目标,"农工互补"型双碳示范项目。为北方设施农业提供了可持续发展的样板。

This project is based on the technology of nano phase change energy storage materials (PCM), with Zhongnong Meiya (Beijing) Academy of Agricultural Sciences as the industrial platform. It is built in Huailai County with data center waste heat recovery and utilization as the research carrier, providing thermal storage and heating services for facility agriculture and surrounding communities as the business support, focusing on high-quality facility agriculture industry ecology, and aiming at energy conservation and carbon reduction. It is a "complementary agriculture and industry" dual carbon demonstration project. Provided a model for sustainable development of facility agriculture in the north.





Case 6: Huailai County "Carbon Neutrality" Digital Agriculture Industry Demonstration Base Project

#### 1、怀来县数据中心余热回收利用换热充热站项目 Huailai County Data Center Waste Heat Recovery and Utilization Heat Exchange and Charging Station Project

该项目位于怀来云数据中心南侧,规划占地 25 亩,总投资 9500 万。

一期占地 8亩,建余热基站,包含土地费用、余热回收设施、储热装置、纳米相变材料装置,提热设施,供热管线,规划运营等费用。计划投资 3500万。

二期占地 17 亩,建设实验研发楼 10000 平米,土源储热基地 10 亩。计划投资 6000 万。

The project is located on the south side of Huailai Cloud Data Center, with a planned area of 25 acres and a total investment of 95 million yuan.

The first phase covers an area of 8 acres and will build a waste heat base station, including land costs, waste heat recovery facilities, thermal storage devices, nano phase change material devices, heating facilities, heating pipelines, planning and operation expenses. Planned investment of 35 million yuan.

The second phase covers an area of 17 acres, with a construction of 10000 square meters of experimental research and development building and 10 acres of soil source heat storage base. Planned investment of 60 million yuan.





Case 6: Huailai County "Carbon Neutrality" Digital Agriculture Industry Demonstration Base Project

#### 2、怀来县"碳中和"数字农业产业示范基地项目 Huailai County "Carbon Neutrality" Digital Agriculture Industry Demonstration Base Project

该项目位于怀来云数据中心东侧和南侧农业用地,占地面积1230亩,总投资 12 亿。 建设内容包括:60万平米设施农业,其中农光互补项目36万平米,年发电量1亿度以上。 蝴蝶兰种植项目20万平米,1万平米其他农业科技项目,2万平米数字农业科技产销中心, 以及1万平米能源转化基站,冷0链物流等配套设施。

The project is located on agricultural land to the east and south of Huailai Cloud Data Center, covering an area of 1230 acres with a total investment of 1.2 billion yuan.

The construction content includes: 600000 square meters of facility agriculture, including 360000 square meters of agricultural photovoltaic complementary projects, with an annual power generation of over 100 million kilowatt hours. The butterfly orchid planting project covers an area of 200000 square meters, along with 10000 square meters of other agricultural technology projects, a 20000 square meter digital agricultural technology production and sales center, as well as 10000 square meters of energy conversion base stations, cold zero chain logistics and other supporting facilities.





Case 6: Huailai County "Carbon Neutrality" Digital Agriculture Industry Demonstration Base Project

#### 3、196 亩农业产学研孵化项目 196 acre agricultural industry university research incubation project

该项目地块位于葡萄大道和东镇公路交汇处东南侧,占地面积 196 亩,容积率 1.0,为一类工业用地。已建成标准化厂房建筑 4 栋,目前为张家口·怀来大数据产业基地科技创新园区项目。未来总建筑面积为 140117.27 平方米。

美亚计划将该项目改造成为农业产学研科技孵化基地及其生活配套项目。

The project site is located on the southeast side of the intersection of Grape Avenue and Dongzhen Road, covering an area of 196 acres with a plot ratio of 1.0, and is classified as Class I industrial land. Four standardized factory buildings have been built, currently serving as the Zhangjiakou Huailai Big Data Industry Base Science and Technology Innovation Park project. The total future construction area is 140117.27 square meters.

Meiya plans to transform the project into an agricultural industry university research technology incubation base and its supporting living facilities.





# 广州美亚蓄能科技有限公司

Guangzhou Mayer TES Technology Limited Company

地址:广州市黄埔区永和大道38号1栋301房

传真: (86) 020 2609 3054