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# ECOTUG

ECOTUG 90 / ECOTUG 180

# Who We Are

**AEME GSE is a global pioneer in aviation Ground Support Equipment (GSE), driving the green transformation of airports with innovative energy solutions.**

With over 20 years of expertise in power electronics technologies, we offer a comprehensive portfolio of GSE products—including eGPUs, solid state power units, energy management systems, and cable reels.

Our solutions are widely deployed at major civil airports in the Asia-Pacific and are rapidly expanding into global markets.

From independent R&D and intelligent manufacturing to a global service network, AEME delivers scalable, reliable, and adaptable green airport solutions tailored to diverse operational needs.

**20+** Years

Of expertise in power industry

**2.6+** Million tons

Carbon Emissions Reduced

**95,000** m<sup>2</sup>

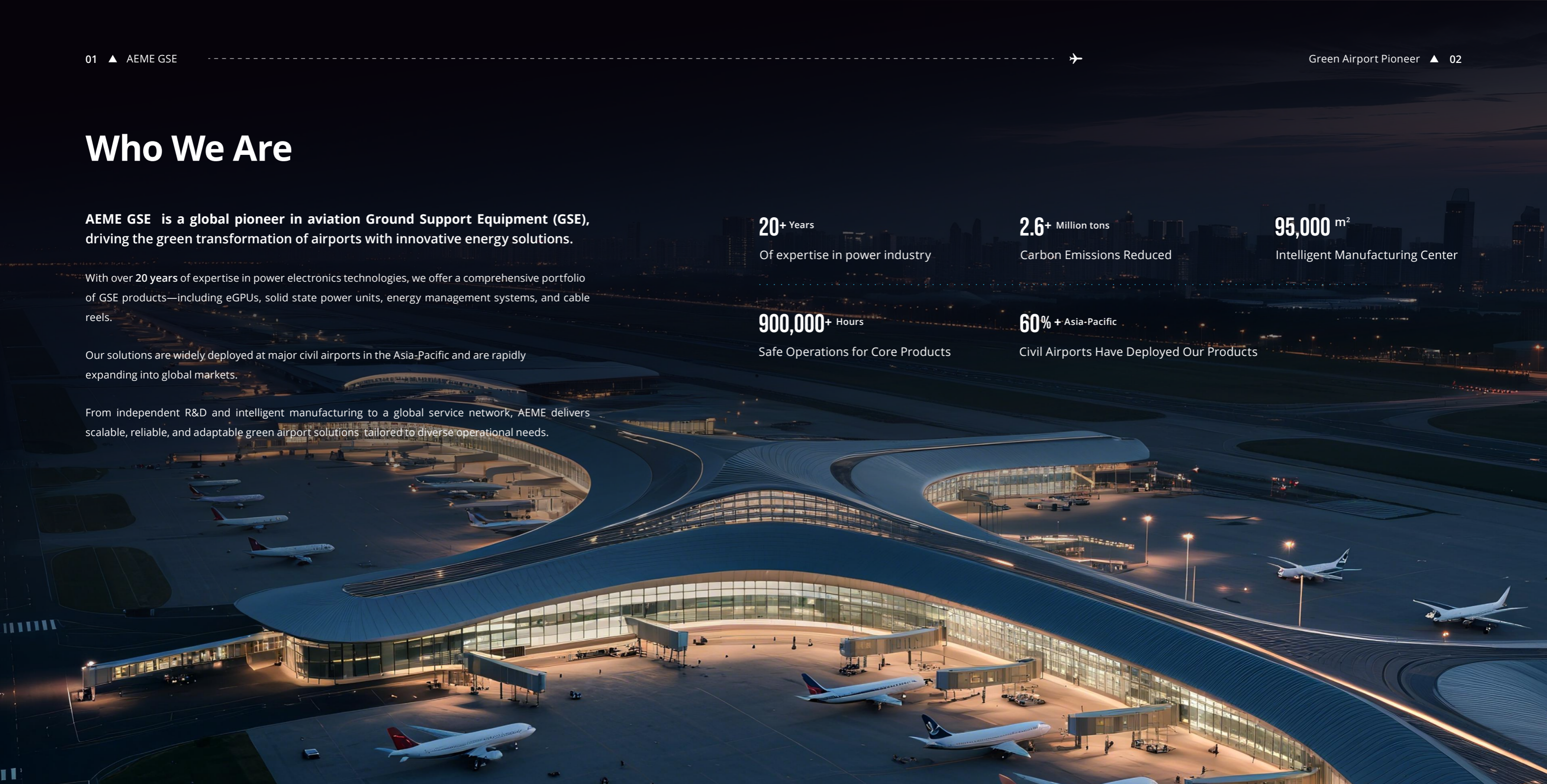
Intelligent Manufacturing Center

**900,000+** Hours

Safe Operations for Core Products

**60%+** Asia-Pacific

Civil Airports Have Deployed Our Products



# ECOTUG

## Enabling Low-Carbon Airport Operations



Designed for civil aviation airports, this solution provides a clean, stable, and efficient 400Hz power supply, offering a reliable alternative to traditional fuel-powered APUs.



It integrates a towable chassis and an energy storage battery system into a mobile unit, offering excellent mobility and compatibility with various types of aircraft stands.



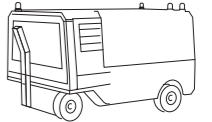
Supports dual output of 115V/400Hz and 28VDC to meet the power needs of a broad range of aircraft.



### ECOTUG 90

AGSP-ASS-090H-M

400Hz/90kVA



### ECOTUG 180

AGSP-ASS-180H-M

400Hz/180kVA



## Product Highlights

### Scalability



Our product offers high flexibility, supporting multi-unit parallel operation and mobile chassis setups to adapt to various application scenarios.

### Safety



Equipped with a fire protection system, including both battery fire suppression and system-wide fire safety features.

### Reliable Power Supply



Ensuring uninterrupted operation during grid outages.

### Intelligent Diagnosis



Full-process operational diagnostics ensure easy maintenance.

### Cloud Service



Integrated with a self-developed cloud platform for digital management, enhancing operation and maintenance efficiency.



## Battery Details



### Battery Management System

#### Real-time monitoring

- Cell voltage (accuracy $\leq$ 5mV), charge current (accuracy $\leq$   $\pm$ 1% FSR), SOC (error $\leq$ 5%), and state of health.

#### Three-level alarm

- Local alert  $\rightarrow$  Remote control  $\rightarrow$  Forced shutdown. Data stored locally for over 10 years to support fault tracing and diagnostics.

### Automatic Fire Suppression System

- Each battery pack has an automatic fire system with detectors for temperature, smoke, CO, and vapor. Algorithms assess risk, trigger alerts, and activate suppression. Manual switch ensures backup safety in emergencies.

### LFP Power Battery (LiFePO<sub>4</sub>)

- High thermal stability reduces thermal runaway risk under abnormal conditions.
- Long cycle life and stable structure lower aging-related safety hazards.

### Environmental Adaptability Management

- Thermal management system (heating, cooling, insulation) ensures stable performance from -20°C to 55°C, reducing temperature-related risks and extending battery life.

# ECOTUG Solutions

## Mobile Power Support Solution

This solution utilizes a mobile power system to address challenges such as limited power distribution at remote stands. It also enables quick response in emergencies and unexpected situations.

### Emergency Support



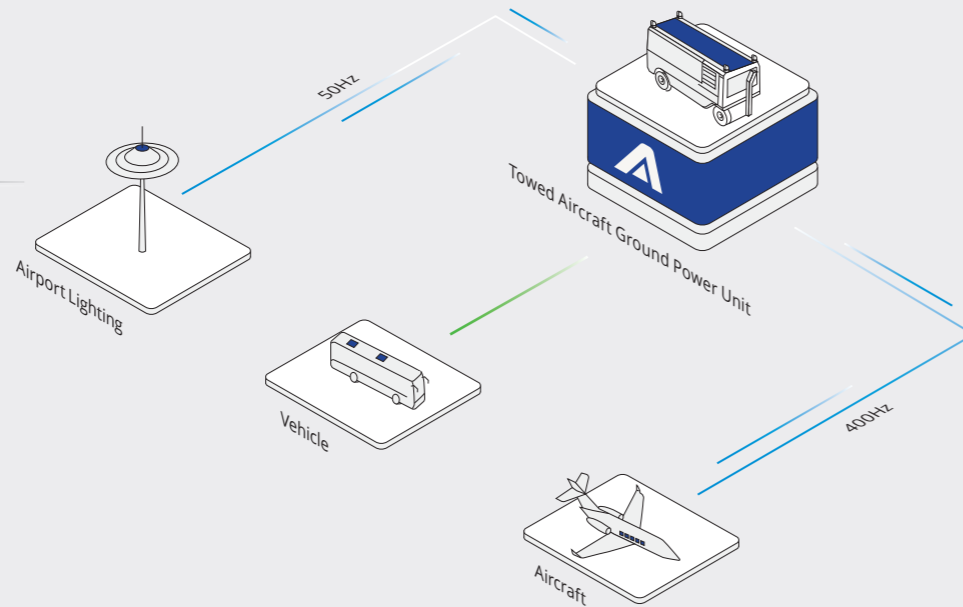
Capable of responding quickly to emergencies

### Versatile Applications



Flexible and mobile, green and low-carbon, suitable for multiple scenarios

### Key Products



# ECOTUG Solutions

## 400Hz Power Supply Solution

Our 400Hz Power Supply Solution supports global carbon neutrality efforts by enabling APU shutdown during aircraft ground parking.

### Flexible Installation



Modular design enables flexible deployment in various scenarios

### High Reliability



Supports low-voltage and zero-voltage ride-through functions

### High Efficiency

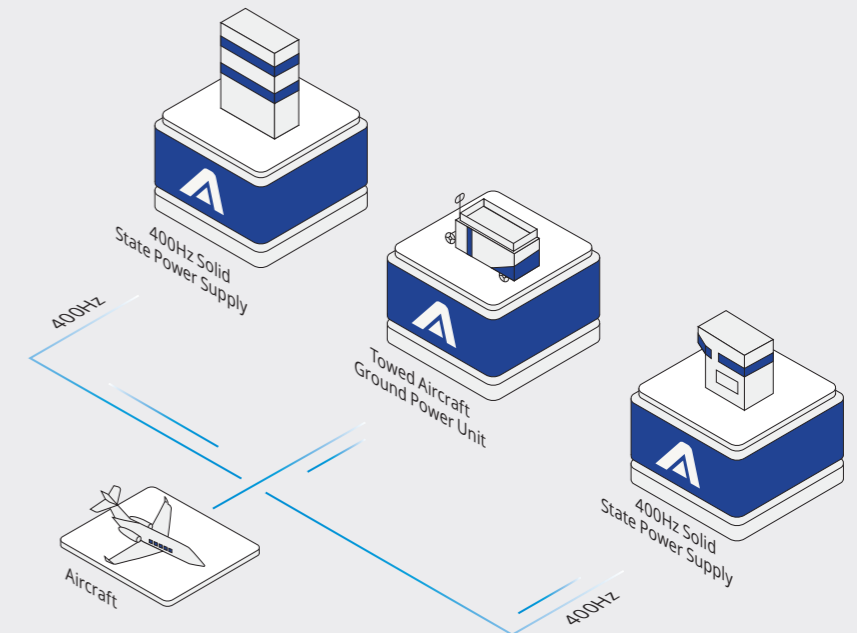


Improved system efficiency to lower energy costs

### Key Products



AC



# Minimizing Airport Emissions and OPEX

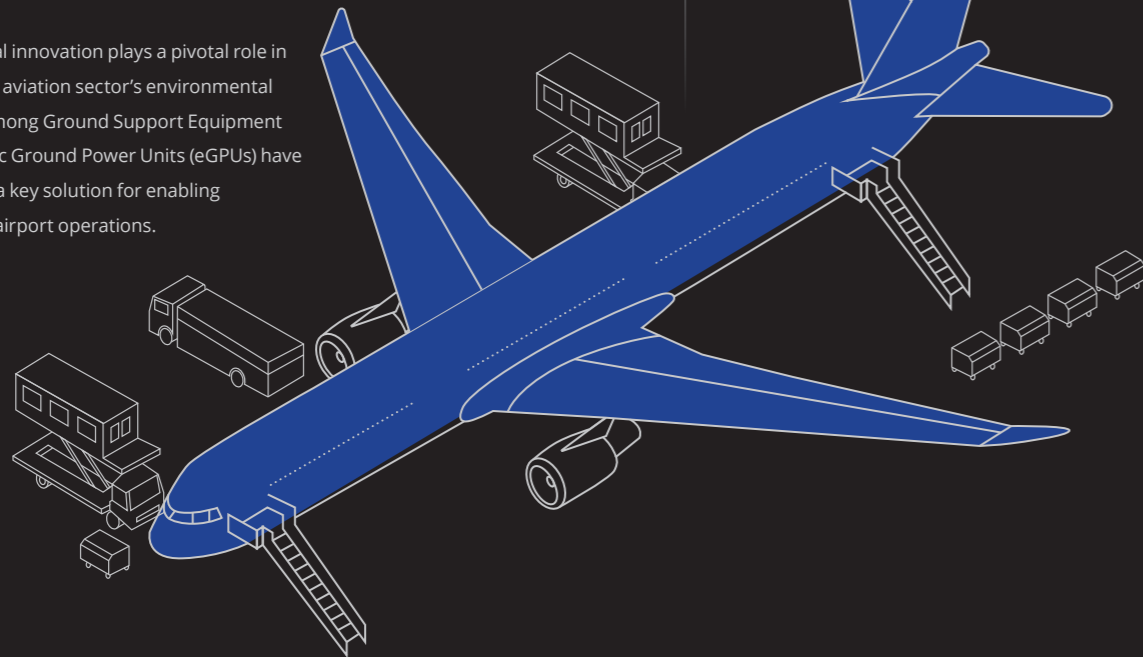
- Growing Need for Decarbonization
- Rising Costs of Airport Infrastructure Upgrades
- Sustainable Innovation Paves the Way to Lower Emissions



As global temperatures continue to rise, the aviation sector — a vital pillar of the global economy — faces mounting pressure to accelerate decarbonization.



Technological innovation plays a pivotal role in reducing the aviation sector's environmental footprint. Among Ground Support Equipment (GSE), electric Ground Power Units (eGPUs) have emerged as a key solution for enabling sustainable airport operations.



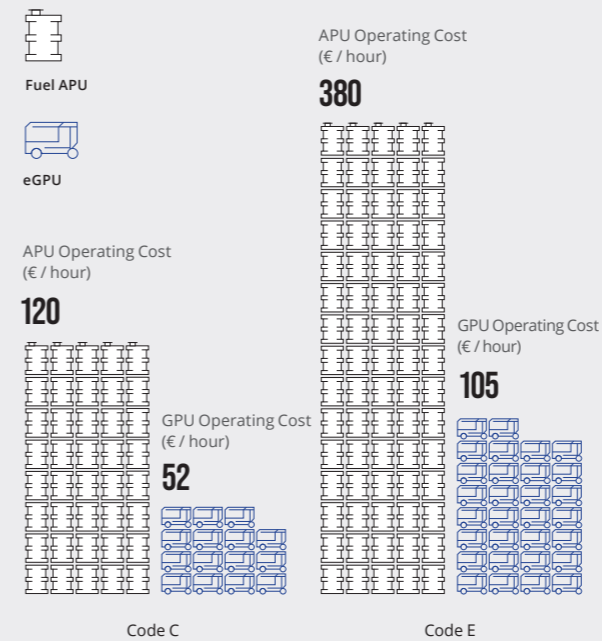
The APU contributes to an aircraft's carbon emissions on the apron, up to

# 50%

# Saving Operating Expenses

## OPEX for Diesel APU VS eGPU

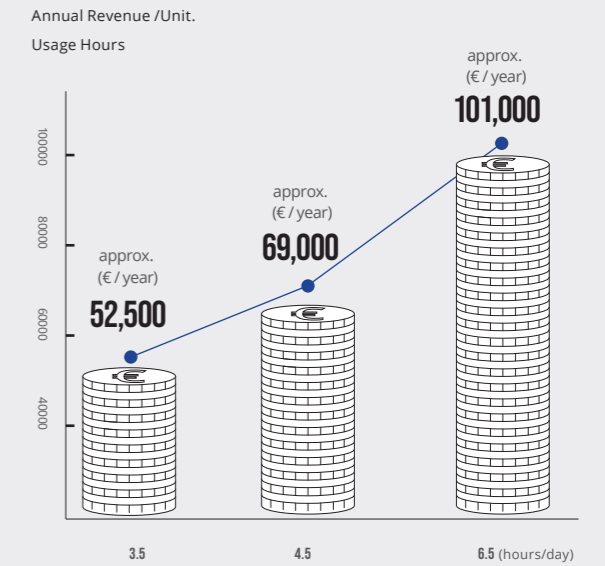
The following data are estimated examples based on the usage of related products in China, calculated according to fuel and electricity costs in different countries.



Note: Estimated figures. Actual costs may vary depending on airport and airline-specific pricing policies.

## Cumulative Revenue

We offer multiple cooperation models. For partners purchasing the GPU, each unit can generate revenue based on actual usage. The following data are examples drawn from the usage of some of our products in May this year.



Note: The calculation is based on standard plug-in charging rates for mobile GPUs in China and may be adjusted based on the standards of different countries.

Product	ECOTUG 90	ECOTUG 180
Product Model	AGSP-ASS-090H-M	AGSP-ASS-180H-M
<b>DC Charging</b>		
Connection mode	GB/T20234/CCS2.0	
Maximum charging	690V	700V
Charging power	92kW	150kW
Maximum charge current	150A	250A
<b>400Hz Output</b>		
Rated capacity	90kVA	180kVA
Rated voltage	115/200VAC	115/200VAC
Rated frequency	400HZ	
<b>Overload</b>		
125%	Lasts 10min	
150%	Lasts 60s	
200%	Lasts 30s	
300%	Lasts 10s	
400%	Lasts 1s	
<b>Protect</b>		
Level of protection	IP55	
Uninterrupted power transmission	Available	
Output over/under voltage protection	Available	
Overload protection	Available	
Internal over-temperature protection	Available	
Output short circuit protection	Available	
Output N line disconnection protection	Available	
Output N-line voltage monitoring	Available	
Input over/under voltage protection	Available	
Input overcurrent protection	Available	
<b>Efficiency</b>		
Compound efficiency	>91%	
<b>Environment</b>		
Operating temperature	-20°C-55°C	
Relative humidity	10%-100% (no condensation)	
Noise level	<70dB	
Altitude	≤2000m	
<b>Structure</b>		
Dimensions(mm)	3000*1750*1750	4500*1790*1750
Weight	3050kg	4120kg



Shenzhen Bao'an International Airport



West Air



Chengdu Tianfu International Airport



Chengdu Shuangliu International Airport



Hangzhou International Airport



Nanchang International Airport



Nanchang International Airport



Chongqing Jiangbei International Airport



West Air



Chongqing Jiangbei International Airport



Sanya Phoenix International Airport



Shijiazhuang International Airport



Beijing Capital International Airport



Hangzhou International Airport



Chongqing Jiangbei International Airport



Dalian International Airport

# Why AEME GSE

## Technical Innovation



Leveraging advanced technology, AEME leads in green energy storage R&D. Our innovative aircraft ground power supply, ultra-silent modular PCS, and all-in-one systems are widely recognized by the market.

## Customer Support



We provide one-stop solutions with proven capabilities in R&D, manufacturing, quality control, and delivery, offering complete support from design to installation and commissioning.

## Quality Control



AEME adheres to "quality-first" philosophy. Our team ensures every product meets the highest industry standards.

## Delivery Capability



Customer-centric and execution-driven, AEME offers standardized project delivery and O&M systems, ensuring high quality and efficiency from start to finish.