

Hybrid Seminar:

Green Innovation in ESG: Pioneering Sustainable Solutions for a Better Tomorrow



Topic:

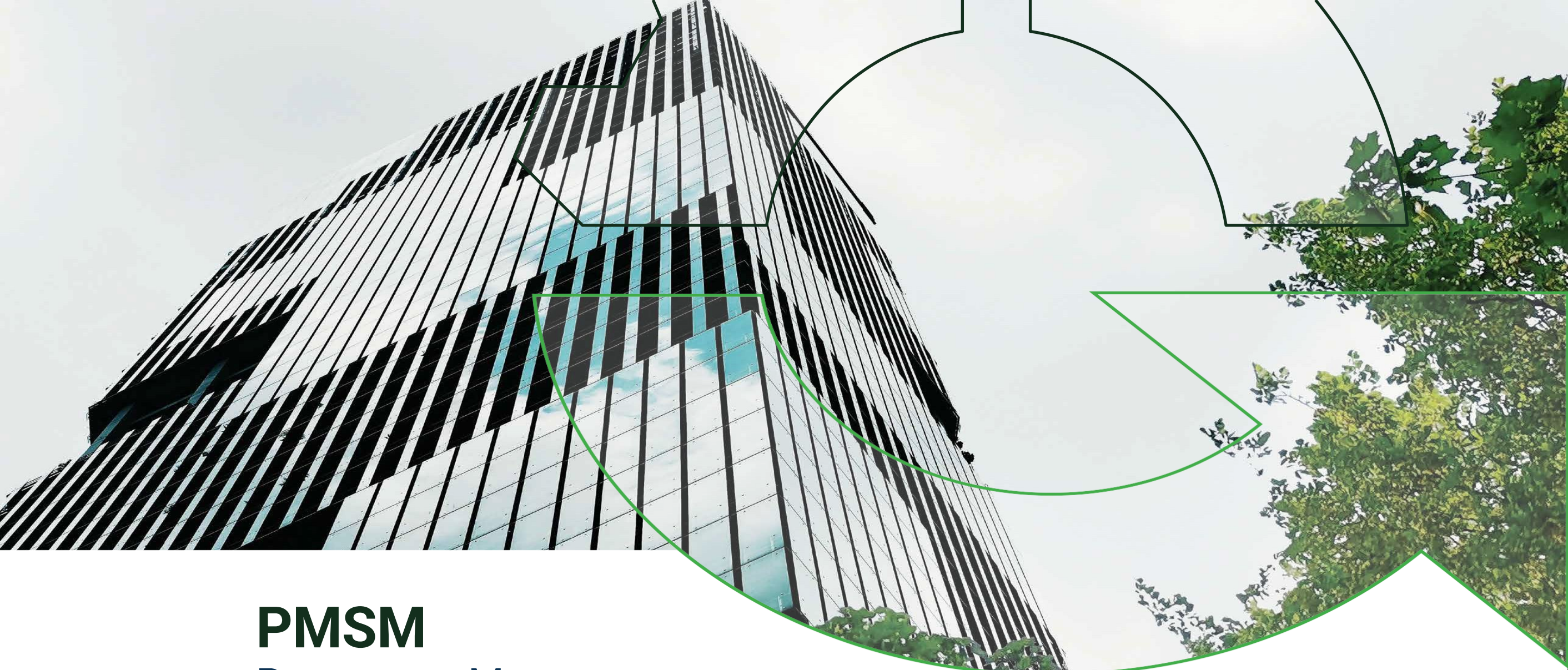
The Role of PMS Motor in the ESG goals

Mr. Ricky LAW

Director

ESGreen Research Ltd.

Remarks: This material/event is funded by the Professional Services Advancement Support Scheme of the Government of the Hong Kong Special Administrative Region. Any opinions, findings, conclusions or recommendations expressed in this material/any event organised under this project do not reflect the views of the Government of the Hong Kong Special Administrative Region or the Vetting Committee of the Professional Services Advancement Support Scheme.



PMSM

Permanent Magnet Synchronous Motor

Embracing environmentally friendly motor solutions curtails emissions, conserves energy, and safeguards natural resources for future generations.



ESGreen

ENERGY-EFFICIENT MOTORS

The Impact of Extreme Weather on Global Sustainability Practices

- In recent years, climate change has worsened wildfires, hurricanes, droughts, and flooding, **raising global concerns**. This has driven a shift toward sustainability.
- World governments, businesses, and citizens are working together to **reduce energy consumption** and adopt cleaner sources of power.
- Policies like emissions caps, renewable incentives, and **ESG reporting** are being implemented.
- China plans to boost renewables, cut carbon intensity, and increase forest cover by 2030 to **fight climate change and pollution**.



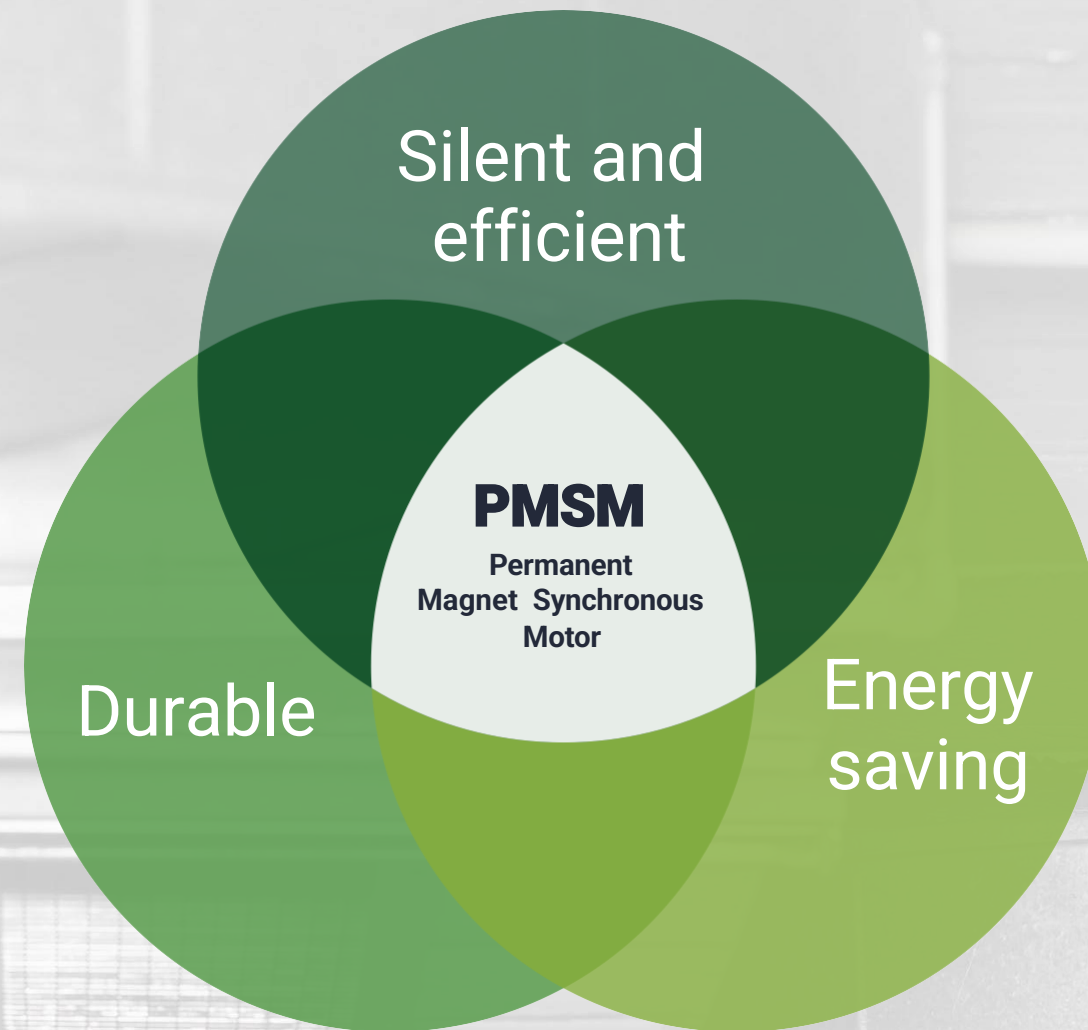
PMSM

Permanent Magnet Synchronous Motor

Our new permanent magnet synchronous motor demonstrates our **commitment to environmental**, social and governance (ESG) standards and its efficient design significantly reduces energy consumption and greenhouse gas emissions. This innovative motor prioritizes environmental and social responsibility, ideal for businesses aligning with ESG goals.

FUNCTIONAL FEATURES (COMPARED TO AC MOTORS)

- Up to 50% less energy consumption
- Durable for at least 9 years (versus 4 years or less for AC motors)
- Quieter in operation (Motor noise $\leq 45\text{dB}^*$)
*Background noise 29.9dB





SPECIFICATIONS & FEATURES

- Operating voltage range: 220V - 240V AC, 50/60Hz, 1 Phase
- Max. output power: 120W
- Can match three-speed thermostat direct input (High / Med / Low)
 - Low: 500 ~ 930 rpm
 - Med: 720 ~ 1080 rpm
 - High: 880 ~ 1270 rpm

PMSM

Permanent Magnet Synchronous Motor



Model:
ESGreen-120W

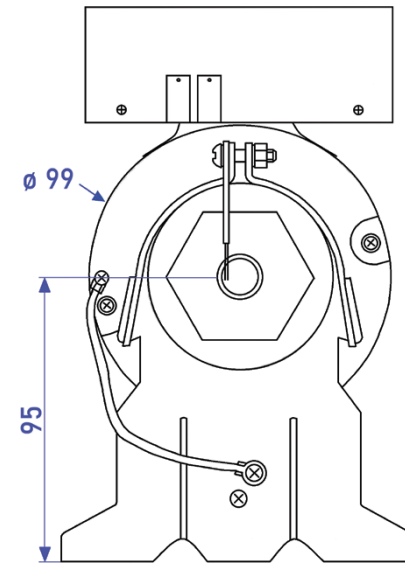
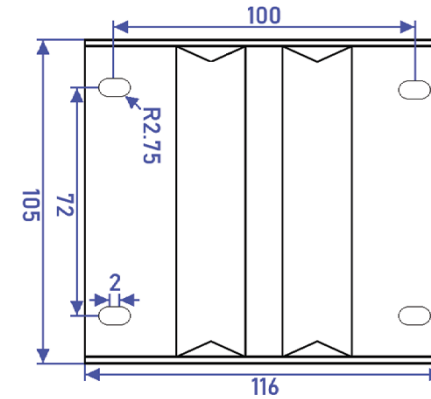
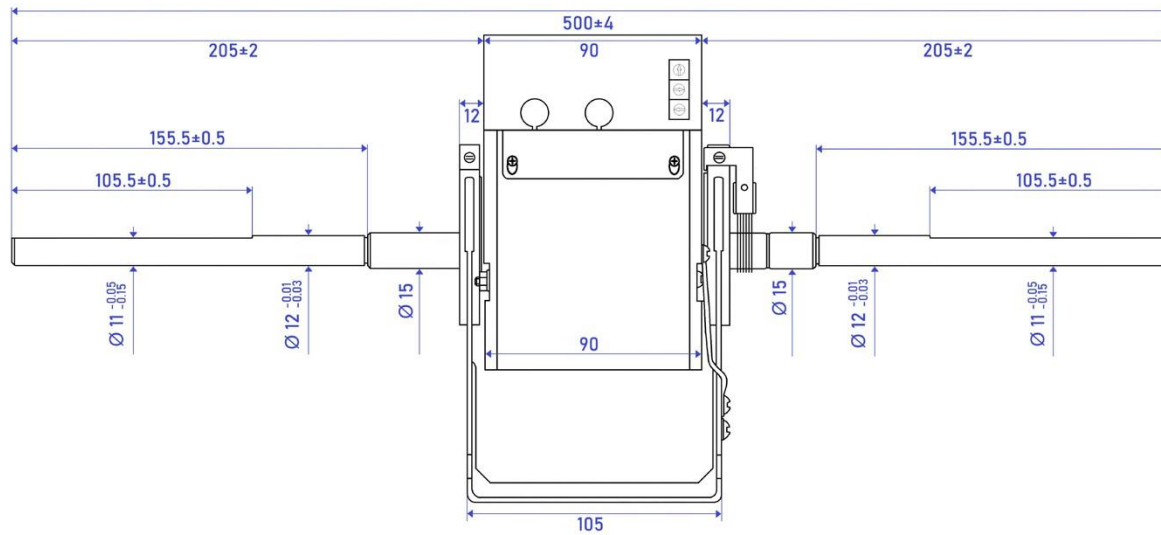
PMSM

Permanent Magnet Synchronous Motor

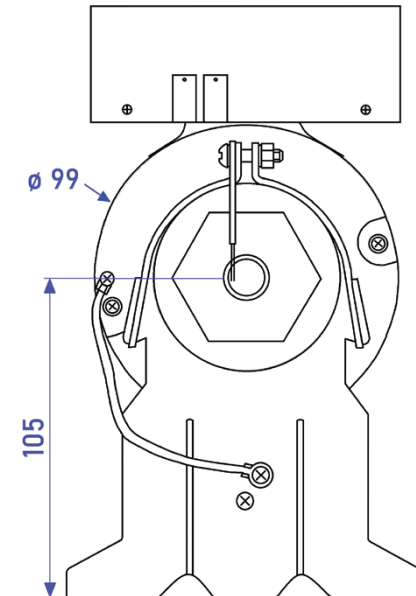
**ESGreen**

ENERGY-EFFICIENT MOTORS

BASIC DIMENSIONS



With 95mm height stand



With 105mm height stand



SPECIFICATIONS & FEATURES

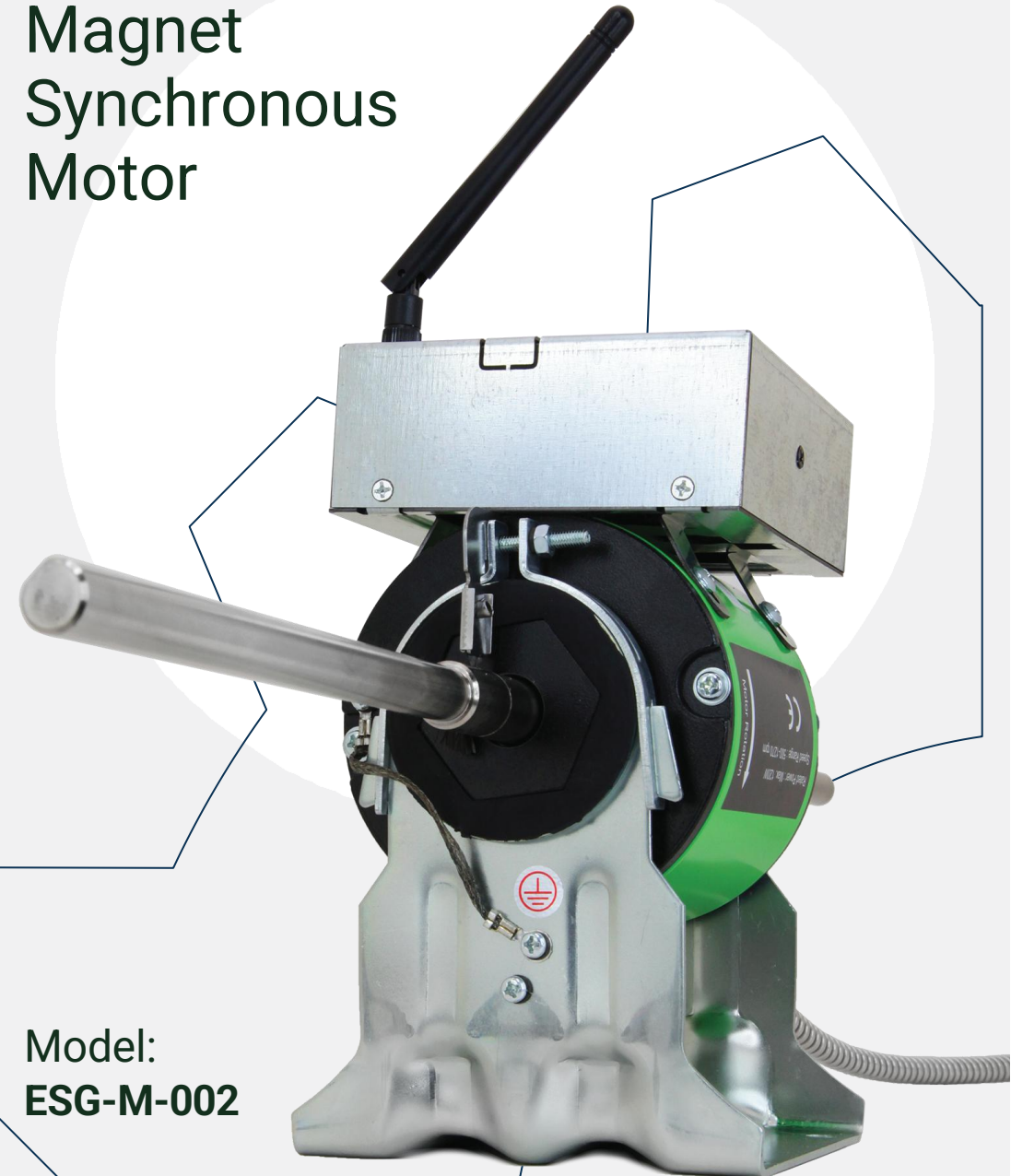
- Operating voltage range: 100V - 277V AC, 50/60Hz, 1 Phase
- Max. output power: 120W
- Speed range: 400 – 1400 rpm
- Can match three-speed thermostat direct input (High / Med / Low)

Default speed:

- Low: 660 rpm
 - Med: 840 rpm
 - High: 1000 rpm
 - Can be adjusted via Wi-Fi
- LED showed working status
 - Wi-Fi connected to server for data transfer (optional)
 - Monitor speed, power consumption and on-board temperature in the backend platform (optional)

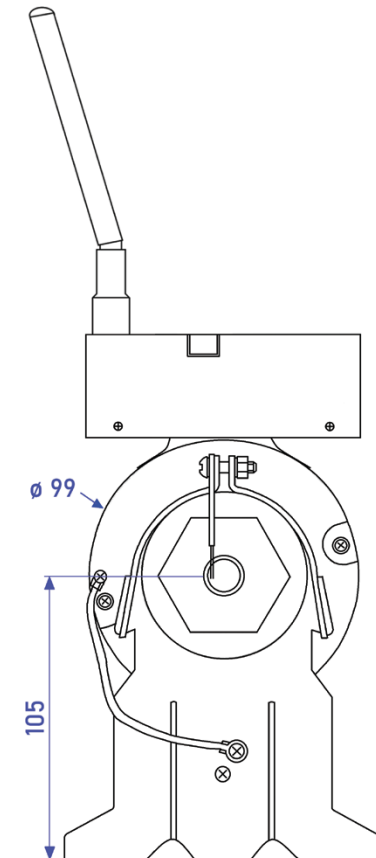
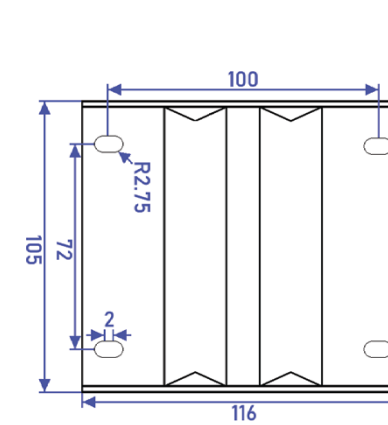
Smart PMSM

Permanent
Magnet
Synchronous
Motor



Model:
ESG-M-002

BASIC DIMENSIONS

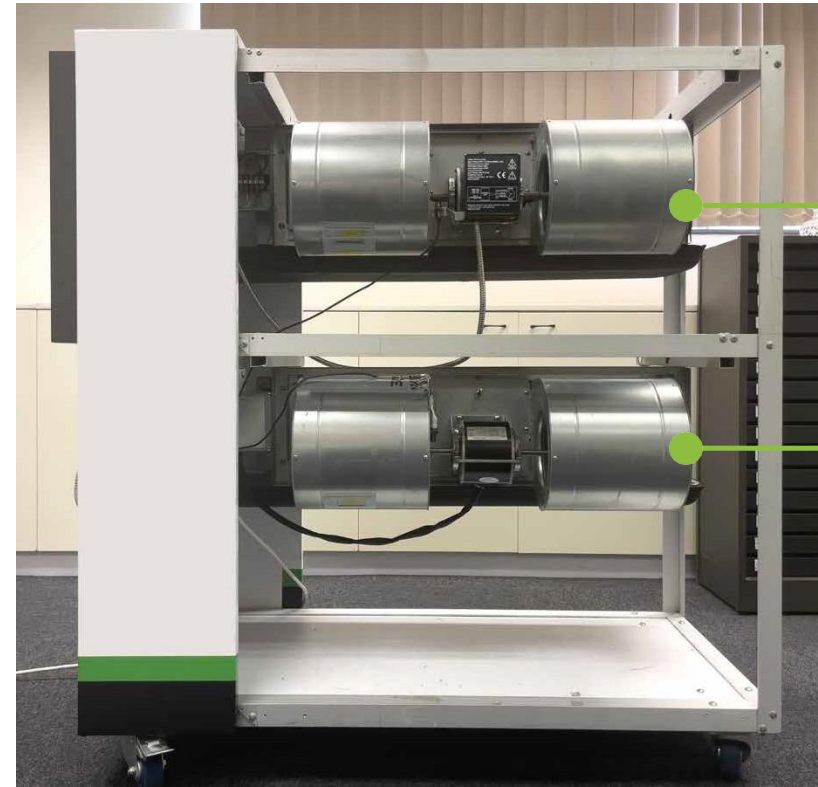


With 105mm height stand

PMSM

Permanent Magnet Synchronous Motor vs AC Motor

POWER CONSUMPTION COMPARISON DEVICE



PMSM
Motor

AC
Motor

PMSM

Permanent Magnet Synchronous Motor vs AC Motor

POWER CONSUMPTION COMPARISON



High Speed

PMSM

Permanent Magnet Synchronous Motor vs AC Motor

POWER CONSUMPTION COMPARISON



Medium Speed

PMSM

Permanent Magnet Synchronous Motor vs AC Motor

POWER CONSUMPTION COMPARISON



Low Speed

PMSM

Permanent Magnet Synchronous Motor vs AC Motor

POWER CONSUMPTION COMPARISON



RPM	Power/hour		Energy saving	
	AC Motor	PMSM	(W)	(%)
High speed	87.99 W	49.38 W	- 38.61 W	-44%
Medium speed	75.74 W	31.10 W	- 44.64 W	-59%
Low speed	65.23 W	16.50 W	- 48.73 W	-75%
Annual electricity consumption (kWh)	663.482 kWh	272.436 kWh	- 391.046 kWh	-59%
CO2 emissions per year	252 kg / CO2	104 kg / CO2	- 148 kg / CO2	
Equivalent number of trees planted			6 trees (each 5 meters tall)	

- Annual electricity consumption is calculated at medium speed (24/7)
- The carbon dioxide emission intensity of CLP Power's local electricity sales in 2024 is 0.38 kilograms per kilowatt hour.
- The number of trees planted is determined based on the carbon dioxide absorption over their lifespan. A tree that grows taller than 5 meters absorbs approximately 23 kg of carbon dioxide per year.

* The annual electricity consumption figure is calculated based on the medium speed

* The above is only a rough idea. Actual parameters will depend on the specific environment and situation.

PMSM

Permanent Magnet Synchronous Motor

Suitable for 24-hour central air-conditioned places



Data Center



Hotel



Convenience
Store



Hospital

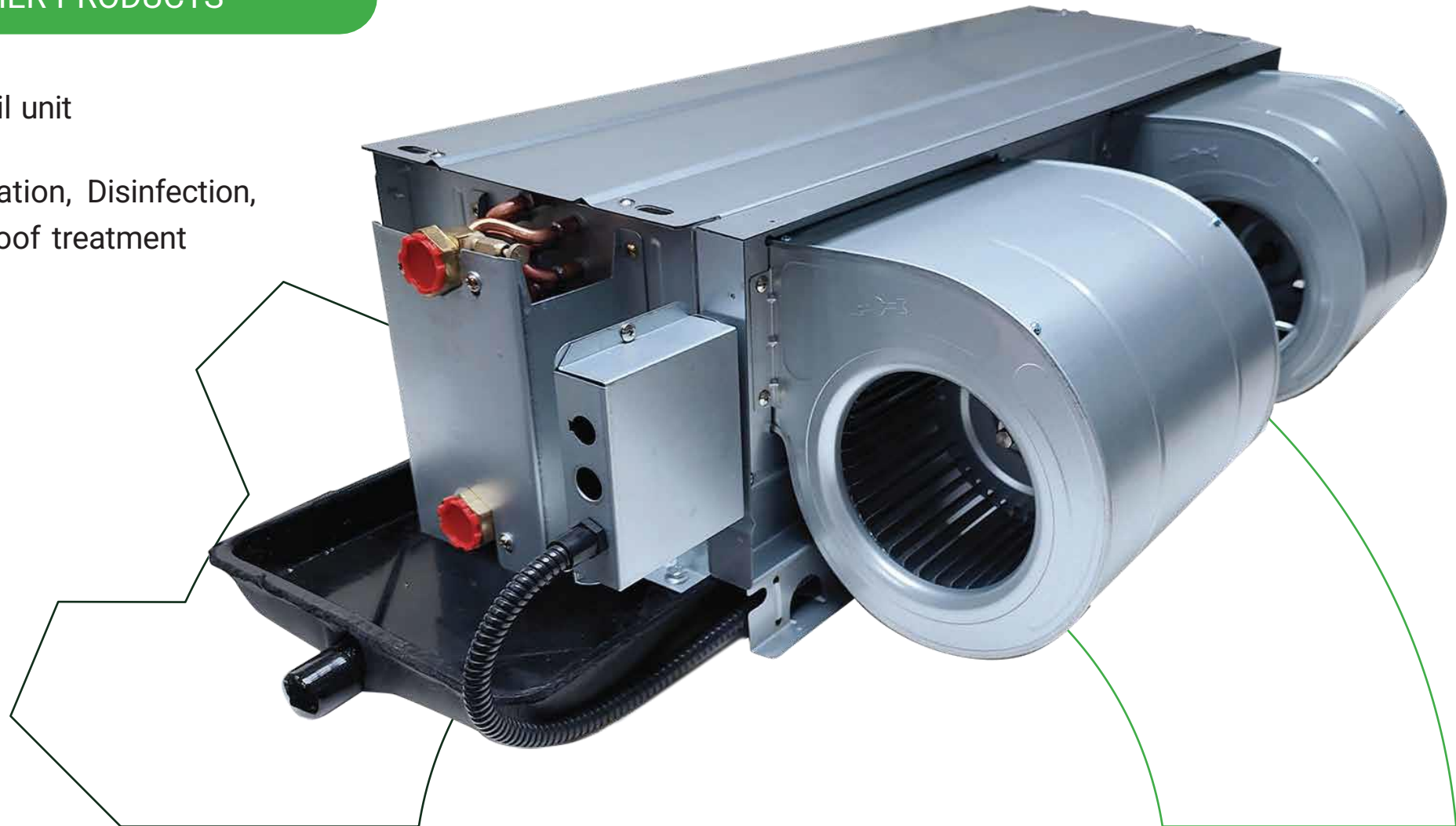
PMSM

Permanent Magnet Synchronous Motor



OTHER PRODUCTS

- Fan coil unit
- Sterilization, Disinfection, Dustproof treatment



PMSM

Permanent Magnet Synchronous Motor



OTHER PRODUCTS

- Thermostat
- Manual Temperature Adjustment
- 3 Wind Speed Levels, 1 Eco Mode and 1 Auto Mode
- Programmable Schedules: ON/OFF
- Built-in Wifi Function
- RS485 and BMS connection
- LCD Display: Temperature Setting, Current Temperature, H/M/L Fan Speed, Current Time



PMSM

Permanent Magnet Synchronous Motor



OTHER PRODUCTS

- Detects a full drip pan to prevent overflow.
- Connects via WiFi for remote monitoring and control.
- Sends instant alerts via app or message.
- LED light alerts.
- Two power models:
 - : 2pcs AA batteries lasts reliably for 3 to 5 years.
 - : DC power input with a water inflow control feature.
- Compatible with smart home automation systems.
- Installs easily with magnetic backing.



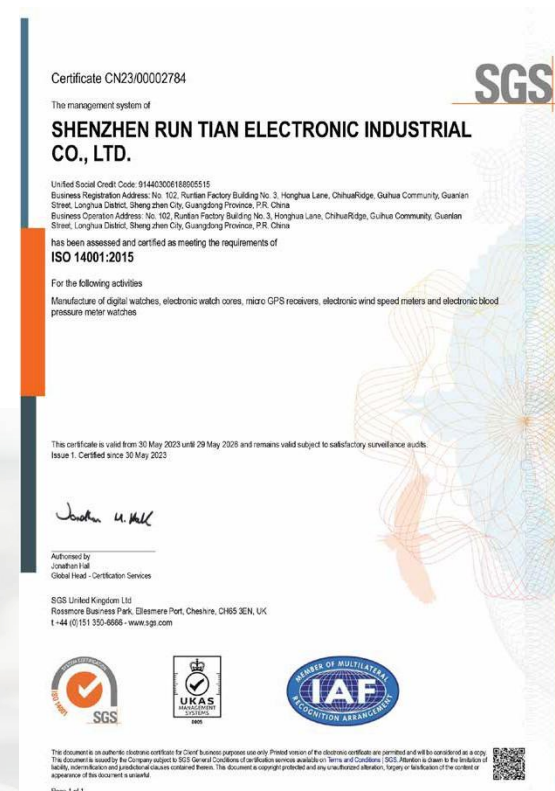
PMSM

Permanent Magnet Synchronous Motor

Manufactured by Certified Factory



ISO 9001:2015



ISO 14001:2015



PMSM

Permanent Magnet Synchronous Motor

Certificate for the PMSMotor



TEST REPORT

Report No.: S24052301501001 Page 1 of 60

Applicant: Shenzhen Runtian Electronic Industrial Ltd.
Address: No.102, Runtian Factory Building, No.3, Honghua Lane, Chihua Ridge, Gulhua Community, Guanlan Street, Longhua District, Shenzhen, Guangdong, China

The following sample(s) was/were submitted and identified on behalf of the client as:
Product name: Motor
Model: ESGreen-120W
Manufacturer's Factory: Shenzhen Runtian Electronic Industrial Ltd.
Address: No.102, Runtian Factory Building, No.3, Honghua Lane, Chihua Ridge, Gulhua Community, Guanlan Street, Longhua District, Shenzhen, Guangdong, China

Sample Received Date: 2024-05-23
Testing Period: 2024-05-23 ~ 2024-05-29

Test Requirement:
As specified by client, to determine the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Bis-(2-ethylhexyl) Phthalate (DEHP), Benzyl butyl Phthalate (BBP), Dibutyl Phthalate (DBP) and Diisobutyl Phthalate(DIBP) contents in the submitted sample(s) in accordance with RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Test Result(s): Please refer to the following page(s).
Test Method: Please refer to the following page(s).
Test Conclusion:
Based on the performed tests on submitted sample(s), the test results of Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Bis-(2-ethylhexyl) phthalate (DEHP), Benzyl butyl Phthalate (BBP), Dibutyl Phthalate (DBP) and Diisobutyl Phthalate(DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Compiled by: [Signature] Reviewed by: [Signature]
Approved by: [Signature] Date: 2024-06-05

Shenzhen NTEK Testing Technology Co., Ltd. | Address: 183F, Building C, 183F, Fenda Science Park, Sarnel Community, Hangcheng Street, Baoan District, Shenzhen, Guangdong, China | Tel: +86-0755-2320 0090
http://www.ntek.org.cn | Consultant Tel: +86-0755-2321 0073 | Consultant Email: consultant@ntek.org.cn

RoHS

CERTIFICATE OF COMPLIANCE

NTEK 北测®
CERTIFICATE OF LVD COMPLIANCE

According to Directive: 2014/35/EU
Ref. No.: S24060502301001

Product: Motor
Trademark: N/A
Applicant: Shenzhen Runtian Electronic Industrial Ltd.
Address: No.102, Runtian Factory Building, No.3, Honghua Lane, Chihua Ridge, Gulhua Community, Guanlan Street, Longhua District, Shenzhen, Guangdong, China
Manufacturer: Shenzhen Runtian Electronic Industrial Ltd.
Address: No.102, Runtian Factory Building, No.3, Honghua Lane, Chihua Ridge, Gulhua Community, Guanlan Street, Longhua District, Shenzhen, Guangdong, China
Model: ESGreen-120W
Rating: 220VAC, 50/60Hz, 0.55A, 120W

The test sample of product has been passed, the test according to requirements of the following standards:
Standard(s): EN 60334-1:2010
Test report(s) No.: S24060502301001

Based on the voluntary assessment of the product sample and technical file, we confirm that the above-mentioned product meets the requirements of the EU directive. The CE mark as show below can be used, under the responsibility of the manufacturer or the importer, after completion of an EU declaration of conformity and compliance with all relevant EU directives.

CE Approved by/Date: [Signature] June 05, 2024
Department Manager

Shenzhen NTEK Testing Technology Co., Ltd.
Address: 183F, Building C, 183F, Fenda Science Park, Sarnel Community, Hangcheng Street, Baoan District, Shenzhen, Guangdong, China
Tel: 400-800-6108, 0755-2320 0090, 2320 0090 http://www.ntek.org.cn

1 page 1

CE_LVD

报告编号: 13001-20240604M15797-B1

检测报告
TEST REPORT

产品名称: 电机控制器
型号: MKT23009 220AC 120W 1.C型 PT1175V
污染等级 2 A 类软件
委托单位: 深圳润田电子实业有限公司

CQC
中认英泰检测技术有限公司
CQC Intime Testing Technology Co., Ltd.

CCC

CERTIFICATE OF COMPLIANCE

NTEK 北测®
Supplier's Declaration of Conformity

According to FCC part 15
Ref. No.: S24050703302001

Product: Motor
Applicant: WeiWealth Electronic Innotech Ltd.
Address: Flat A, 7/F, Southeast Industrial Building, 611-619 Castle Peak Road, Tsuen Wan, N.T., Hong Kong
Manufacturer: WeiWealth Electronic Innotech Ltd.
Address: Flat A, 7/F, Southeast Industrial Building, 611-619 Castle Peak Road, Tsuen Wan, N.T., Hong Kong
Factory: WeiWealth Electronic Innotech Ltd.
Address: Flat A, 7/F, Southeast Industrial Building, 611-619 Castle Peak Road, Tsuen Wan, N.T., Hong Kong
Model: ESGreen-120W

The test sample of product has passed the test according to requirements of the following standards:
Standard(s): 47 CFR FCC part 15 subpart B, 10.1-2023
Test report(s) No.: S24050703302001
ANSI C63.4:2014

The Sample was tested to conform to the applicable FCC Rules and Regulations. The method of testing was in accordance to the most accurate measurement standards possible, and that all necessary steps have been enforced to assure that all production units of the same equipment will continue to comply with the Federal Communications Commission's requirements.

FC Approved by/Date: [Signature] Aug 09, 2024
Department Manager

Shenzhen NTEK Testing Technology Co., Ltd.
Address: Room 501, 5/F, of Building C, Room 112-113, 1/F, of Building C, Room 111-116, 1/F, of Building E, 2/F, of Building E, Fenda High-Tech Park, Sarnel Community, Hangcheng Subdistrict, Baoan District, Shenzhen, Guangdong, China
Tel: 400-800-6108, 0755-2320 0090 / 2320 0090 Website: http://www.ntek.org.cn

FCC

PMSM

Permanent Magnet Synchronous Motor

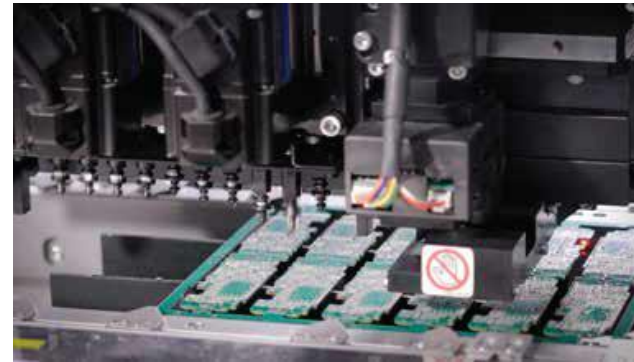
SDG Certificate



PMSM

Permanent Magnet Synchronous Motor

Factory



PMSM

Permanent Magnet Synchronous Motor



Factory



PMSM

Permanent Magnet Synchronous Motor

Factory



Noise test



Aging and functional testing



Case Study



PMSM

Permanent Magnet Synchronous Motor



Case Study

Hotel / Apartment



The Beverly Hills Clubhouse
(Tai Po, Hong Kong)

KORNHILL APARTMENTS | 康蘭居

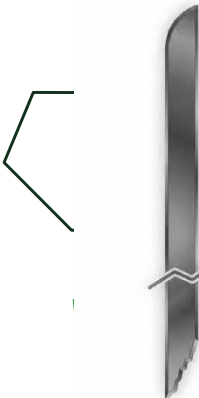
Kornhill Apartments
(Quarry Bay, Hong Kong)



Regalia Bay
(Stanley)



Townplace West Kowloon
(Cheung Sha Wan, Hong Kong)



High Cliff
(Mid-Levels East, Hong Kong Island)



Four Seasons Hotel
(Central)

page 148

Page 148 Hotel
(Tsim Sha Tsui)

PMSM

Permanent Magnet Synchronous Motor



Case Study

Public Institution

HKUST used our PMSM motor to demonstrate energy savings following rigorous testing conducted in partnership with a well-known French contractor. The contractor signed a contract with HKUST in the presence of a representative from the French En



香港科技大學
THE HONG KONG
UNIVERSITY OF SCIENCE
AND TECHNOLOGY

The Hong Kong University of Science and Technology
(Clear Water Bay)

PMSM

Permanent Magnet Synchronous Motor



Case Study

Bank

Hang Seng 113 has integrated our ESGreen PMSM motors into its level-wide HVAC system to enhance energy efficiency and operational performance.



恒生113



Hang Seng 113
(Mongkok, Hong Kong)

PMSM

Permanent Magnet Synchronous Motor



Case Study

Industrial / Commercial Building



南豐紗廠

The Mills
(Tsuen Wan, Hong Kong)



Hong Kong Air Cargo Terminals Limited – Air Side (Hactl)
(Lantau Island, Hong Kong)



PMSM

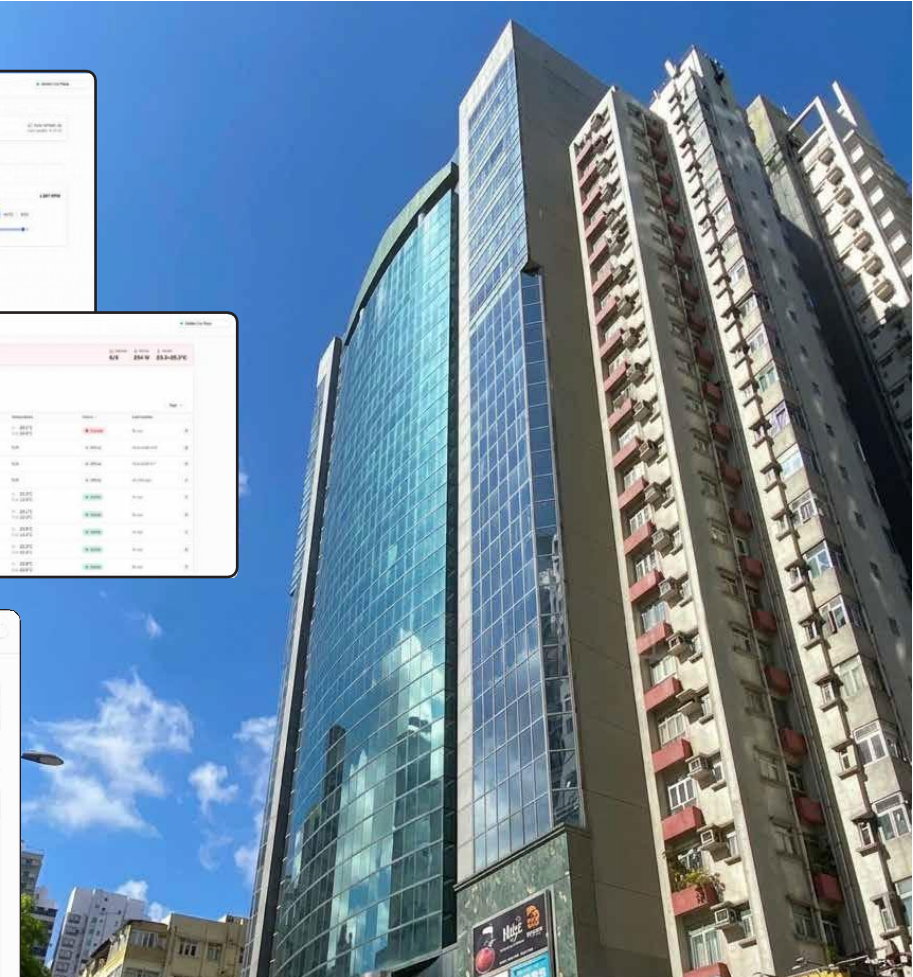
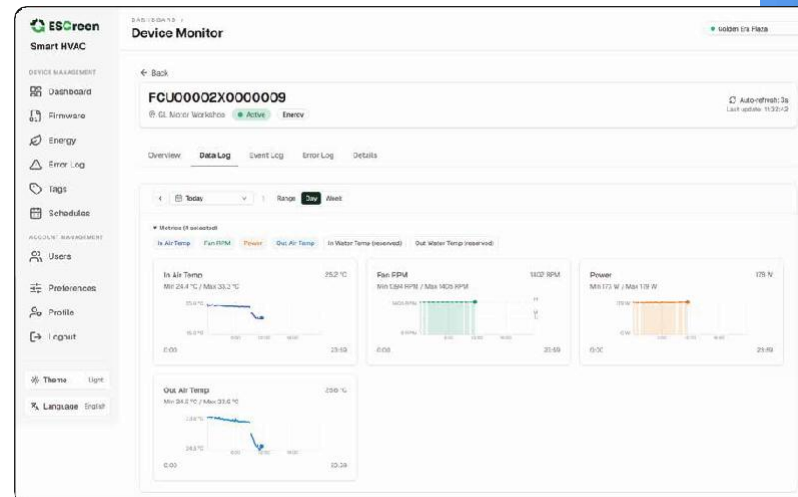
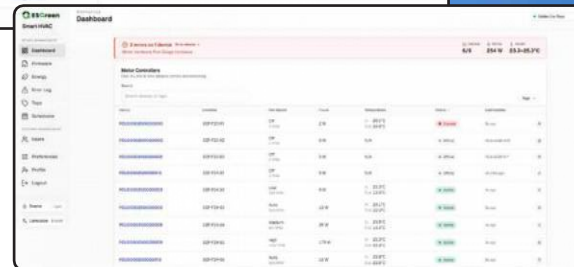
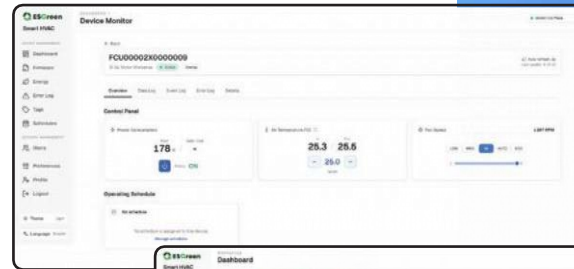
Permanent Magnet Synchronous Motor

Case Study

Commercial Building

Golden Era Plaza modernized its HVAC infrastructure with our ESGreen PMSM motors, leveraging an integrated backend platform to monitor overall system performance

Golden Era Plaza
金雞廣場



Golden Era Plaza
(Mongkok, Hong Kong)

PMSM

Permanent Magnet Synchronous Motor



Case Study

Commercial Building

Smart HVAC

DEVICE MANAGEMENT

- Dashboard
- Firmware
- Energy
- Error Log
- Tags
- Schedules

ACCOUNT MANAGEMENT

- Users
- Preferences
- Profile
- Logout

ThemeLight

LanguageEnglish

WORKSPACE

Dashboard

2 errors on 1 deviceError details

Motor Hardware, Fuel Gauge Hardware

ONLINE6/9DRAW254 WROOM23.3–25.3°C

Motor Controllers

Click any row to view detailed controls and monitoring

Search

Search devices or tags

Tags

Device	Location	Fan Speed	Power	Temperature	Status	Last Update
FCU0000200000000	GEP-F23-01	Off 0 RPM	2 W	In 25.1°C Out 24.6°C	2 errors	5s ago
FCU00002X0000000	GEP-F23-02	Off 0 RPM	0 W	N/A	Offline	13/8/2026 14:51
FCU00002X0000002	GEP-F23-03	Off 0 RPM	0 W	N/A	Offline	13/8/2026 11:11
FCU00002X0000013	GEP-F24-01	Off 0 RPM	0 W	N/A	Offline	2h 23m ago
FCU00002X0000003	GEP-F24-02	Low 399 RPM	9 W	In 23.3°C Out 12.0°C	Active	4s ago
FCU00002X0000005	GEP-F24-03	Auto 800 RPM	19 W	In 24.1°C Out 22.0°C	Active	5s ago
FCU00002X0000006	GEP-F24-04	Medium 841 RPM	26 W	In 23.5°C Out 14.4°C	Active	4s ago
FCU00002X0000009	GEP-F24-05	High 1402 RPM	179 W	In 25.3°C Out 25.5°C	Active	5s ago
FCU00002X0000012	GEP-F24-06	Auto 800 RPM	19 W	In 23.8°C Out 23.5°C	Active	5s ago

Golden Era Plaza
(Mongkok, Hong Kong)

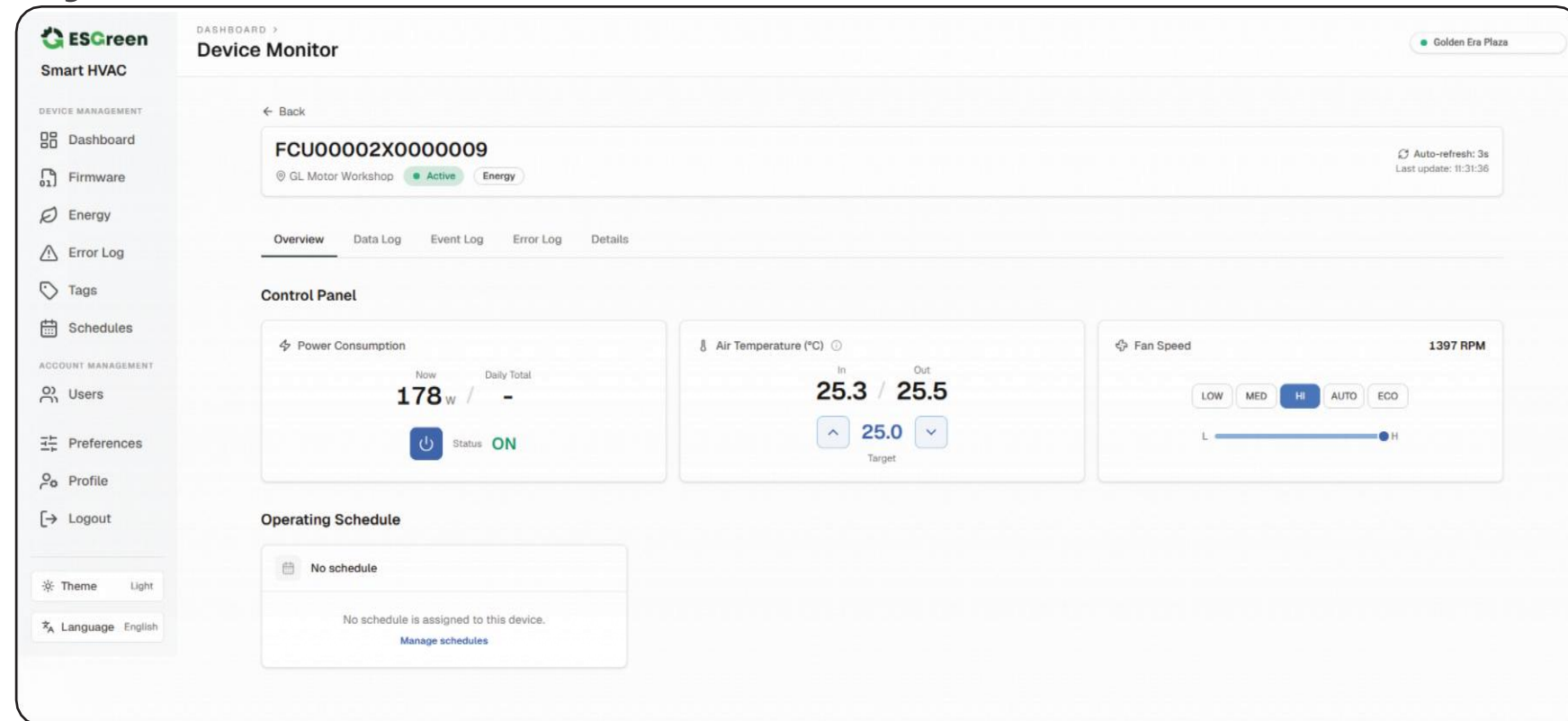
PMSM

Permanent Magnet Synchronous Motor



Case Study

Commercial Building



Golden Era Plaza
(Mongkok, Hong Kong)

PMSM

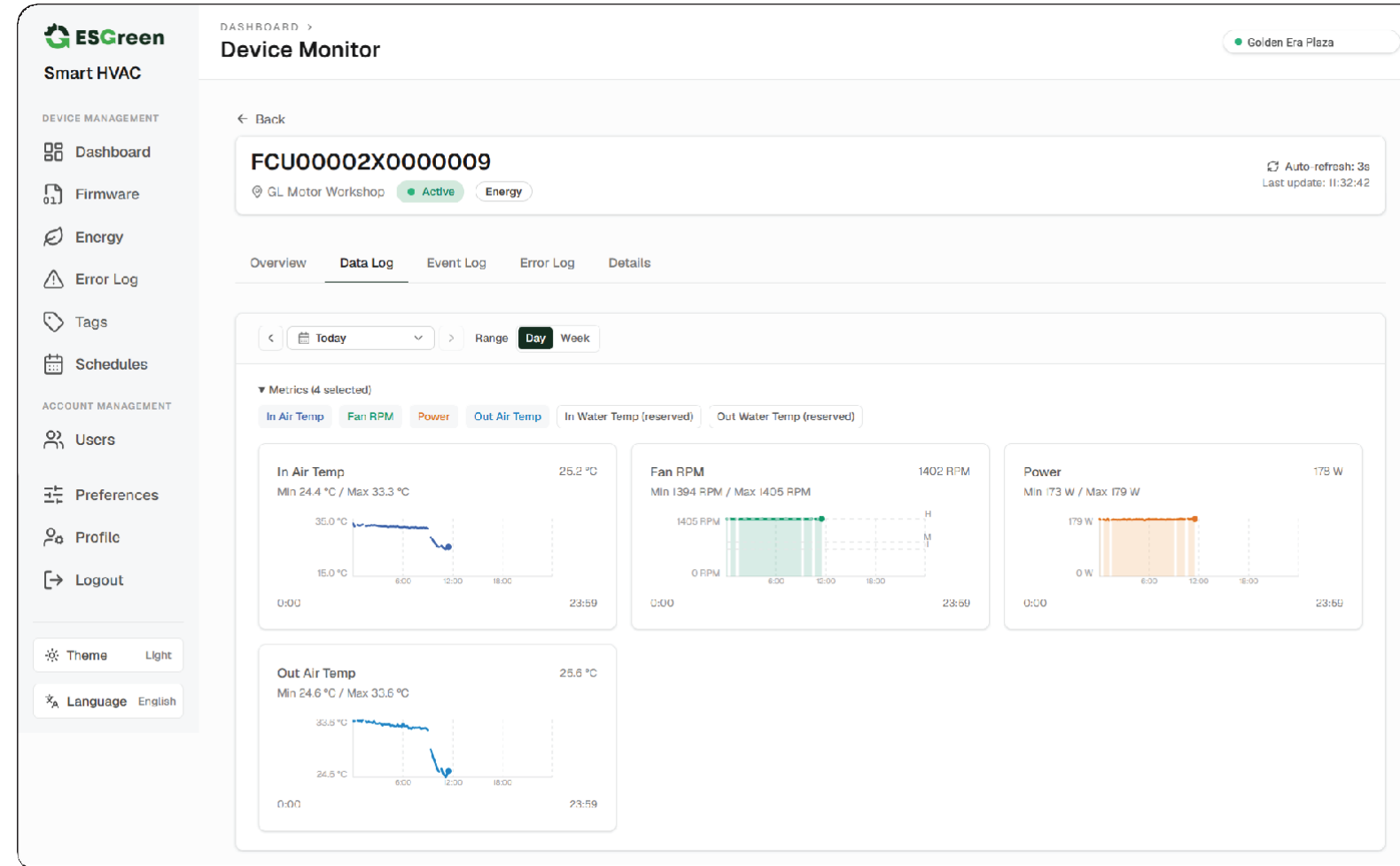
Permanent Magnet Synchronous Motor



Case Study

Commercial Building

Golden Era Plaza
(Mongkok, Hong Kong)





THANK YOU



www.esgreen.com.hk