

# Introduction & Experience Sharing

Energy for the FUTURE



■ 2024



有量科技股份有限公司  
AMITA TECHNOLOGIES INC.

# AMITA Taiwan

HQ + R&D located in Taoyuan, Taiwan

Established in the Year 2000

Capacity: 200MWh

Lithium-ion Z-Stacking Pouch: NCM, LMFP, LFP, Semi-Solid

High Power with Long Cycle Life Solutions

Material science study with a long history of research data

The Ability for Providing Turnkey Solutions

Advance Technology and Research Capabilities

IATF 16949 、 ISO 9001 Factory Certificates

ISO50001 、 ISO14064-1

Taiwan Excellence Award 2023

R&D100 award 2020/Patents 51+

Shareholder:

Energy Absolute



Located in Chachoengsao City Thailand

Production started in the Year 2021

50GWh in Planning

First GWh Scale of Lithium-ion Cell manufacture  
in the ASEAN countries

Thailand 4.0 Standard

Capacity: 1,000+MWh | 4GWh by 2025

Lithium-ion Pouch Cell: NCM

Focus on the Large Commercial Vehicle Applications

IATF 16949 、 ISO 9001 Factory Certificates

BOI Approved

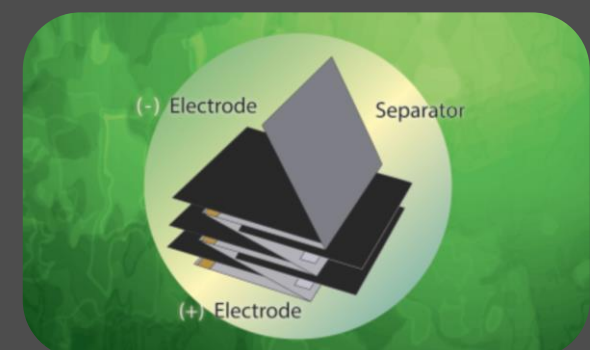


# AMITA Thailand



# Available Technologies

AMITA  
capability



# AMITA inside

# MILESTONE



what's next!



MIT AA team

## STOBA

Successfully deployed  
STOBA technology.

## EXCELLENCE

Won the Taiwan 100  
Excellent Product.  
IATF16949 certified.  
Emerging Market: 5233

## NCA & Investment

Fast charging lithium  
battery cell: 230wh/kg

New investor:  
Energy Absolute  
Fast-charging

## CAPABILITIES

Completed a new stage  
of the Revolutionary  
Gigafactory project.

## NAEPE

Received R&D 100  
Awards for Semi-Solid-  
State battery cell.

## GIGAFACTORY

AMITA new production  
factory launched in  
Thailand.

## TAIWAN EXCELLENCE

A NATIONAL  
recognition award.

**START**  
Founded by  
Dr. Jim Cherng.



2000

2009

2011

2016

2018

2020

2021

2023

**NEXT**



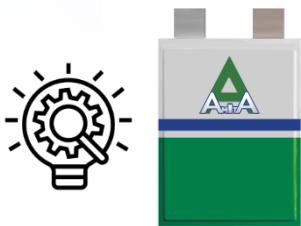
# In-Depth Experienced Battery Development & Production Team



## Develop Various Lithium-ion Battery Types

From our strong in R&D, we develop various **Lithium-ion battery types** to match the market demand and various applications.

- **NMC** – Lithium Nickel Cobalt Manganese Oxide
- **LMFP** – Lithium Manganese Iron Phosphate
- **NCA** – Lithium Nickel Cobalt Aluminum Oxide
- **LFP** – Lithium Iron Phosphate
- **LTO** – Lithium Titanate Oxide



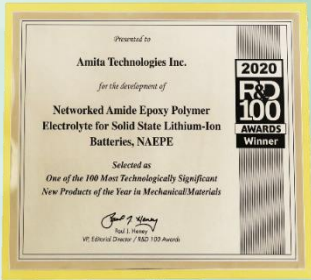
## Strong Partnership

AMITA has strong partnership with ITRI for **more than 10 years**, enhancing long-term technical cooperation, adding new features and products, as well improving cost competitiveness.

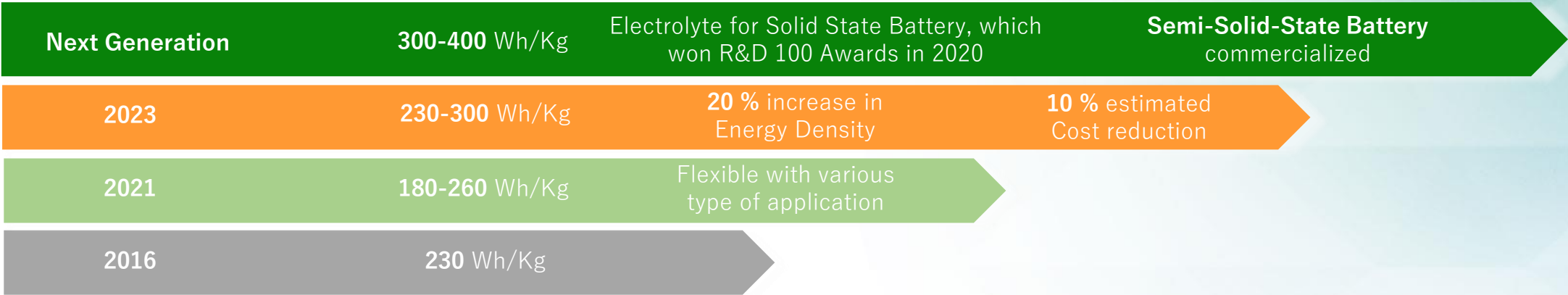
## R&D for Solid-State Battery Cell

ITRI and AMITA have collaborated to develop Semi-Solid-State Lithium-Ion battery cells named **NAEPE**, which won R&D 100 Awards in 2020.

The GWh factory applies **up-to-date technology** and has operated since **2022 Q4**.



## R&D Roadmap

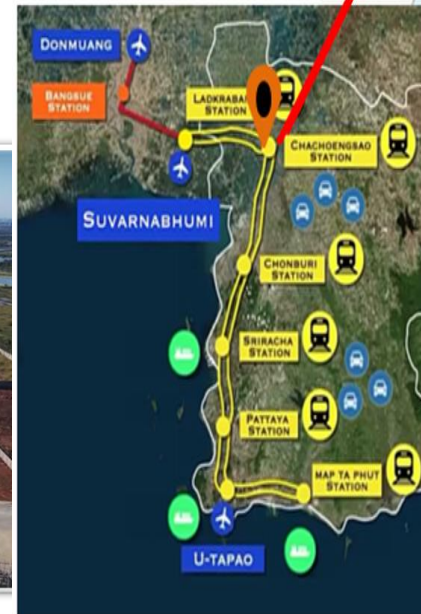
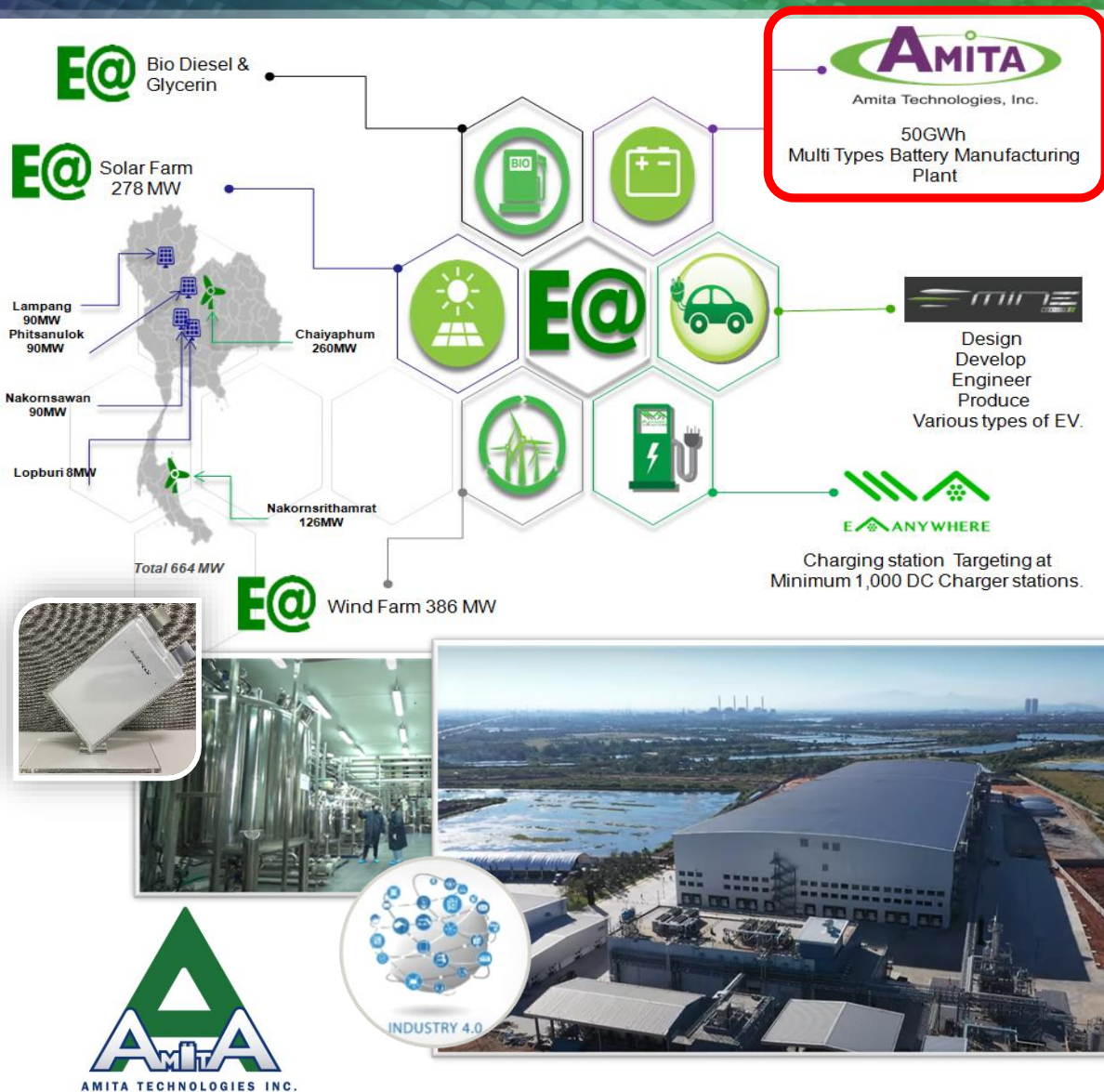




# AMiTA Production Base



375.23 Rai  
60 Hectare









# Cell Product Overview

AMITA  
capability



Cell Characteristics	High Power & Safety	High Performance	Fast Charge for Commercial EV	ESS
Applications				
Chemistry	LMFP & NCM	NCM	NCM	NCM / LFP / LTO
Highlight	12C for 200s & Pass Nail Penetration	High CP Value	3C Continuous Charge	Long Cycle Life
Energy Density	220+ wh/kg	260 wh/kg	220 wh/kg	160~220 wh/kg
Cycles	500+ 1C/10C @ CC-CV 80%SOH	1200 1C/1C @ 100% DOD	8000+ 3C/1C @ 60% DOD	> 4000 0.5C/0.5C @ 80% DOD
Cost	\$\$\$\$\$	\$\$\$\$	\$\$\$	\$\$

Practical & Reliable Lithium-ion Battery Solution Provider



TAIWAN  
EXCELLENCE  
2023

*Everyday Excellence*



# Taiwan Excellence Award

Innovation Industry Benchmark!

Fast  
Charge



**3C Fast Charge Pack**  
Technical Excellence



Home



**Portable 4.7KG / 0.8kWh**  
for a home charge battery pack





# UAV Application

Leading Power Performance in its class.

## Drone/Aviation Application :

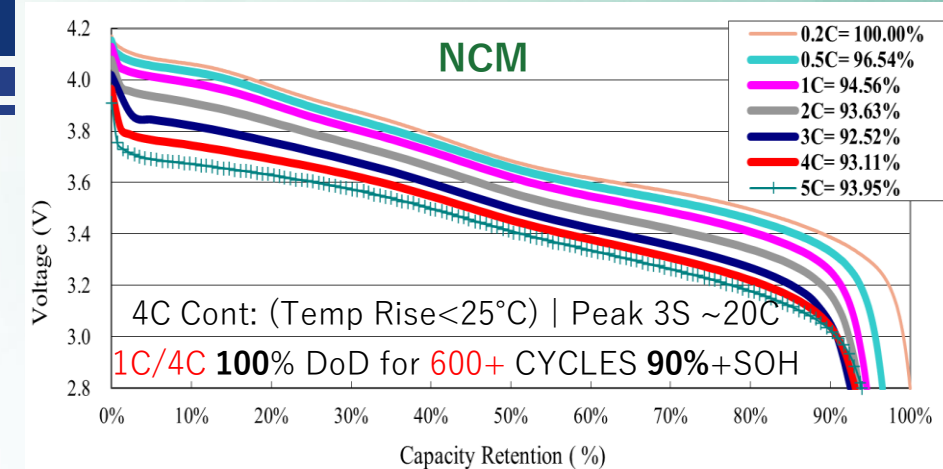
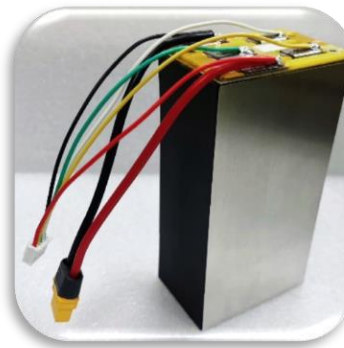
- Excellent aviation control capability and stability.  
= High power output.
- Lightweight & Compact  
= High Energy Density.
- Long flight time duration.  
= Low ACIR & DCIR.



## Product Options:

Cell Options: 9.5Ah, 12.8Ah, 22Ah

Module Options: 4S1P, 12S1P



# Large Scale of eCommuter Vessel

The **first commercial-scale operation** of a large-scale EV vehicle in Southeast Asia.

## NH Durable Fast-Charge Serials:

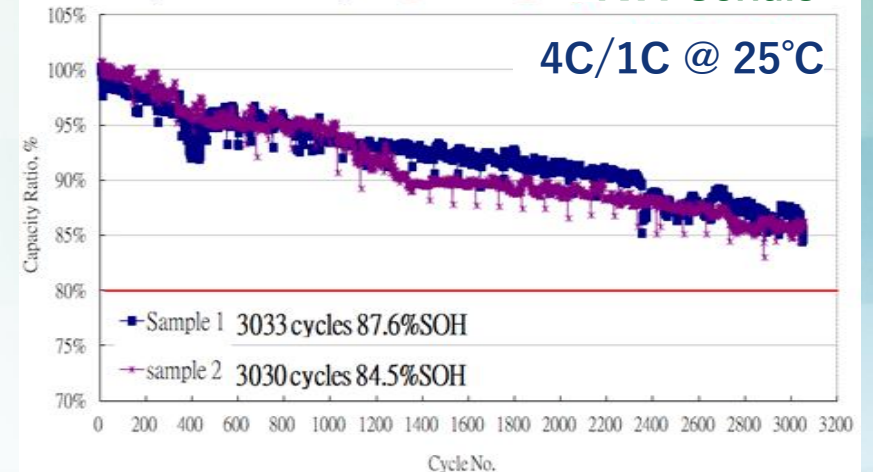
- Fill up 80% of battery capacity within 30 minutes.  
800kwh for a 250 passengers commuter ferry.  
= High standard of cell consistency requirement & Fast charge capabilities.
- Charge 3~6 times a day.  
= Long cycle life.



**Test Condition:**  
4C/1C, 2.8V~4.2V, 25°C & 45°C

**NH Serials**

**4C/1C @ 25°C**



## MINE Smart Ferry

Battery Capacity: 800 KWh      Max Speed: 18 knot  
Range/Charge: 100 km      Max # of Passenger: 250 persons







PAST



NOW



Max  
Passenger  
**250**  
passenger



#### Dimension & Material

Length

**24**  
Meter

Width

**7**  
Meter

Hull

**1.2**  
Meter

#### Battery & Propulsion and Efficiency

Speed

Max  
**18**  
KNOT

Battery

**800**  
kWh

Distance

Max  
**100**  
Km/charge

#### Charging Time

**15-20**  
Mins



Largest DC Charging Station in ASEAN

#### 停靠點





# Medium-sized eBus Application

Top-rated operating efficiency in the medium-sized eBus in Taiwan.

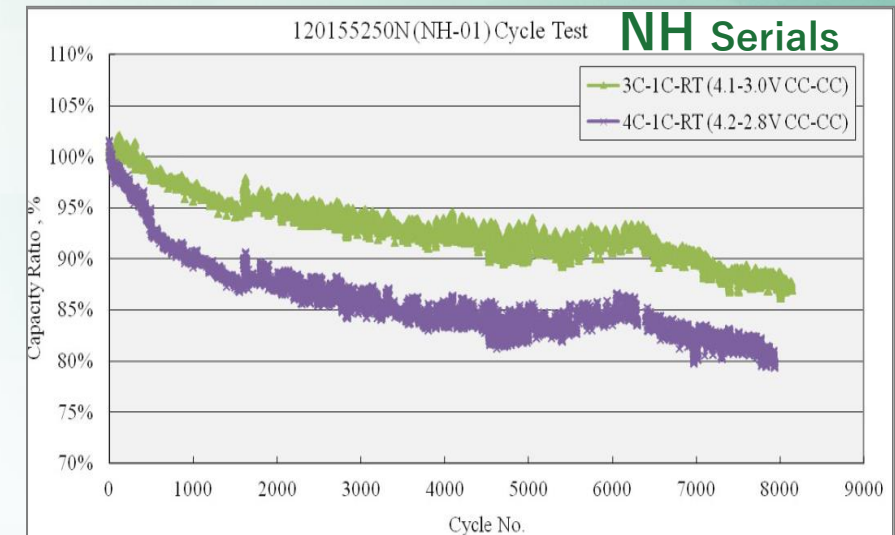
## Fast-Charge/Light-Weighted Application:

- City eBus business operating model – short distance & limited space for a charging station.  
= 20 minutes for CC charging during the break.
- Medium size ebus design & improve its performance.  
= Carry less battery weight : 1.2km~1.6km/kWh.
- Operates 60% of SOC for longer lifespan.



## GD Bus Company

Battery Capacity: 75 kWh	Max Speed: 80 KM/h
Range/Charge: 50 KM	Max # of Passenger: 40 persons





# AMITA ESS Sites



Taipei City Hall (NCM / 140kWh)  
AFC/Load Shifting | 2019/6



First Commercial Bank (NCM / 20kWh)  
BBU@ WorldTrade&XinSheng Branch | 2023/02



Amita (NCM / 1.08MWh)  
UPS/Load Shifting | 2023/12



CTBC@Micronesia (NCM / 2MWh)  
PV Smoothing | 2019



Pingtung County

Kaohsiung City

Kaohsiung County

Tainan City

Tainan County

Chiayi City

Chiayi County

Yunlin County

Nantou County

Changhua County

Taichung City

Taichung County

Miaoli County

Hsinchu City

Taoyuan County

Hsinchu County

Taipei County

Taipei City

Keelung City

Matsu/  
Lienchiang County

Kinmen County

Penghu County

CPC (LTO / 50kWh)  
Peak shaving/ Load shifting | 2018/2

BenQ (LFP / 1.27MWh)  
Peak shaving/ Load shifting | 2024/3

Guangxing (NMC / 2.5MWh)  
AFC | 2024/3



臺北市政府  
Taipei City Government

TAIPEI



第一銀行  
First Bank



TECO



TECO



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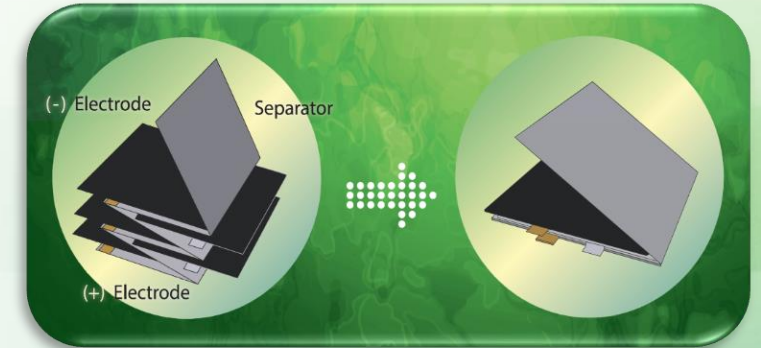
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AFC | 2024/3



# Cell Structure Design



RESISTANCE VALUE of PARALLEL CONNECTIONS

$$R_1 \parallel R_2 \parallel R_3 \parallel R_4 \parallel R_n \text{ (parallel)} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots$$

Source: Online consortium of Oklahoma.

ESS OP @500 cycles



ESS OP @500 cycles



Source: Trend of safety of separators of first generation XEV second generation XEV and ESS batteries.

Structure	Z-stacking (Amita)	Prismatic Winding	Cylindrical Winding
<div>CATHODE</div> <div>ANODE</div> <div>SEPERATOR</div>			
Impedance	Low	High	High
✓ C-rate	High	Low	Low
Cycle Life	Longer	Moderate	Moderate
Stress on Electrode piece	N/A	Corner area Severe stress on the inner ring	Axis area Severe Stress
✓ Safety	High	Internal short circuit risk (Stress of electrode piece from the inner circle => high in self discharge)	Internal short circuit risk (Stress of electrode piece => high in self discharge)
Manufacturing Capacity	Alignment accuracy of electrode pieces takes more time.  Slow in production	Fast production speed	Fast production speed



# Well Established Quality Assurance



134815/A/0001/SM/En



## Certificate of Registration

This certificate has been awarded to

**Amita Technologies Inc.**

No. 6, Chazhuan Rd., Guishan Dist., Taoyuan City, 33349, Taiwan

in recognition of the organization's Quality Management System which complies with

**IATF 16949:2016**

The scope of activities covered by this certificate is defined below

**Design and Manufacture of Rechargeable Lithium Polymer Cells and Battery Packs  
- [USI 6AZM3P]**

Certificate Number: 134815/A/0001/SM/En			
Date of Issue of Certification Cycle	Issue Number	Certificate Expiry Date	Certification Cycle
18 June 2024	1	17 June 2027	1
Revision Date	Revision Number	Original Certificate Issue Date	Scheme Number
18 June 2024	0	18 June 2024	0525296

For detailed explanation for the data fields above, refer to <http://www.urs-holdings.com/logos-and-regulations>

Issued by: Mukesh Singhal Mukesh Singhal - On behalf of the Schemes Manager



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The scope of activities covered by this certificate is defined below

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- [USI 6AZM3P]**

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Issued by: Mukesh Singhal Mukesh Singhal - On behalf of the Schemes Manager



CERTIFICATO N.  
CERTIFICATE N. **0005.2024**

SI CERTIFICA CHE IL SISTEMA DI GESTIONE DELL'ENERGIA DI  
WE HEREBY CERTIFY THAT THE ENERGY MANAGEMENT SYSTEM OPERATED BY

**AMITA TECHNOLOGIES INC.**

有量科技股份有限公司  
NO. 6, CHAZHUAN RD., GUISHAN DIST., TAOYUAN CITY 33349, TAIWAN  
33349 桃園市龜山區茶專路 6 號

SITI / SITES

NO. 6, CHAZHUAN RD., GUISHAN DIST., TAOYUAN CITY 33349, TAIWAN  
33349 桃園市龜山區茶專路 6 號

E' CONFORME ALLA NORMA / IS IN COMPLIANCE WITH THE STANDARD

**ISO 50001:2018**

PER LE SEGUENTI ATTIVITA' / FOR THE FOLLOWING ACTIVITIES

Design and manufacture of rechargeable lithium polymer cells and battery packs  
可充放電池及模組的設計與製造

IL PRESENTE CERTIFICATO E' SOGGETTO AL RISPECTO DEL  
REGOLAMENTO PER LA CERTIFICAZIONE DEI SISTEMI DI GESTIONE  
THE USE AND THE VALIDITY OF THE CERTIFICATE SHALL SATISFY THE  
REQUIREMENTS OF THE RULES FOR CERTIFICATION OF MANAGEMENT SYSTEMS

DATE:	PRIMA CERTIFICAZIONE FIRST CERTIFICATION	EMISSIONE CORRENTE CURRENT ISSUE	SCADENZA EXPIRY
	2024-01-05	2024-01-05	2027-01-05

IMQ S.p.A. - VIA QUINTILIANO, 43 - 20138 MILANO ITALY  
Management Systems Division - Piano Omega



MS 1P 0005MS

La validità del certificato è subordinata a verifiche periodiche e a segnalazione di non conformità.

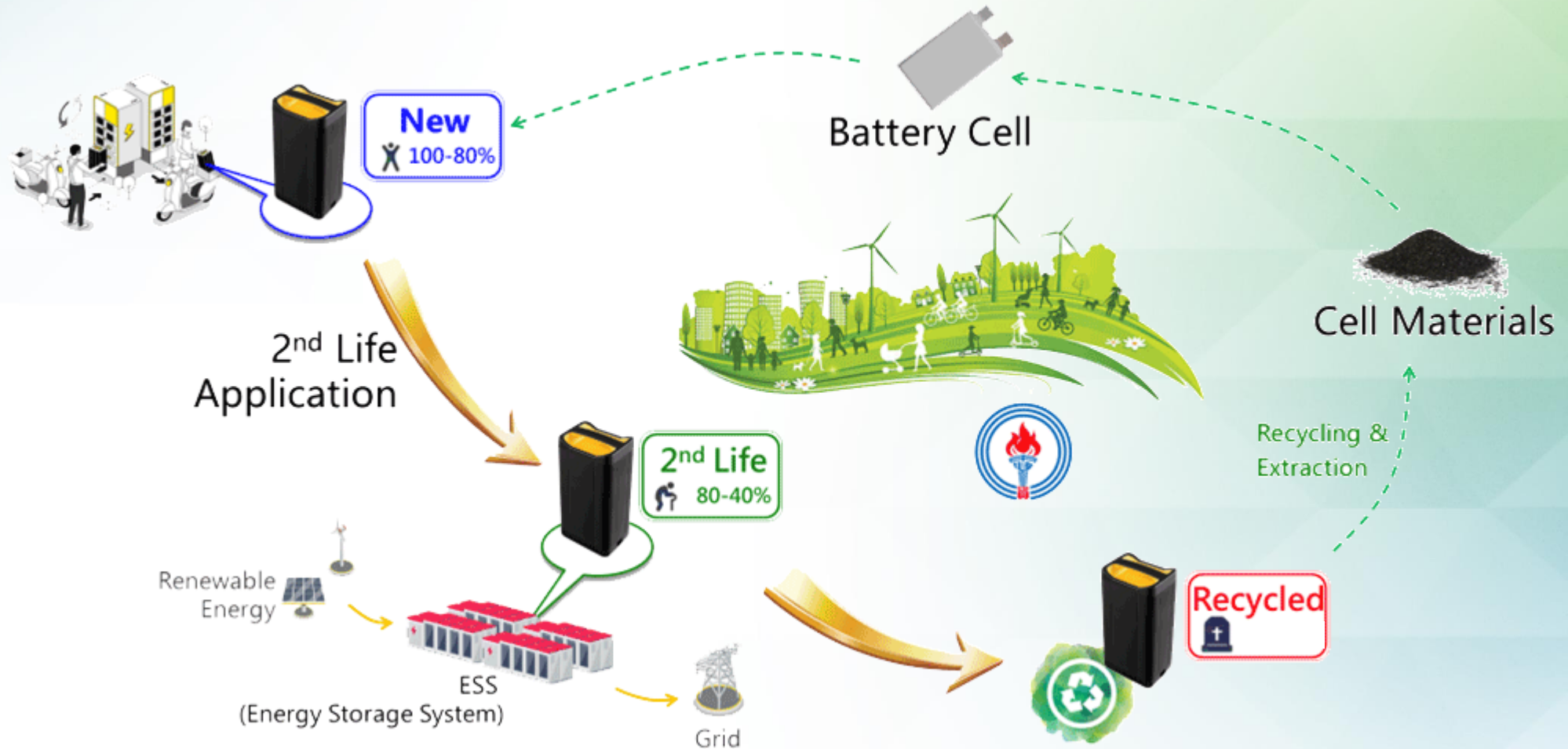


CISQ è un'Associazione riconosciuta dal Ministero della Sanità e della Sicurezza Alimentare.



# Maximizing Sustainability

AMITA Way of being **SUSTAINABLE** together with our Partners.





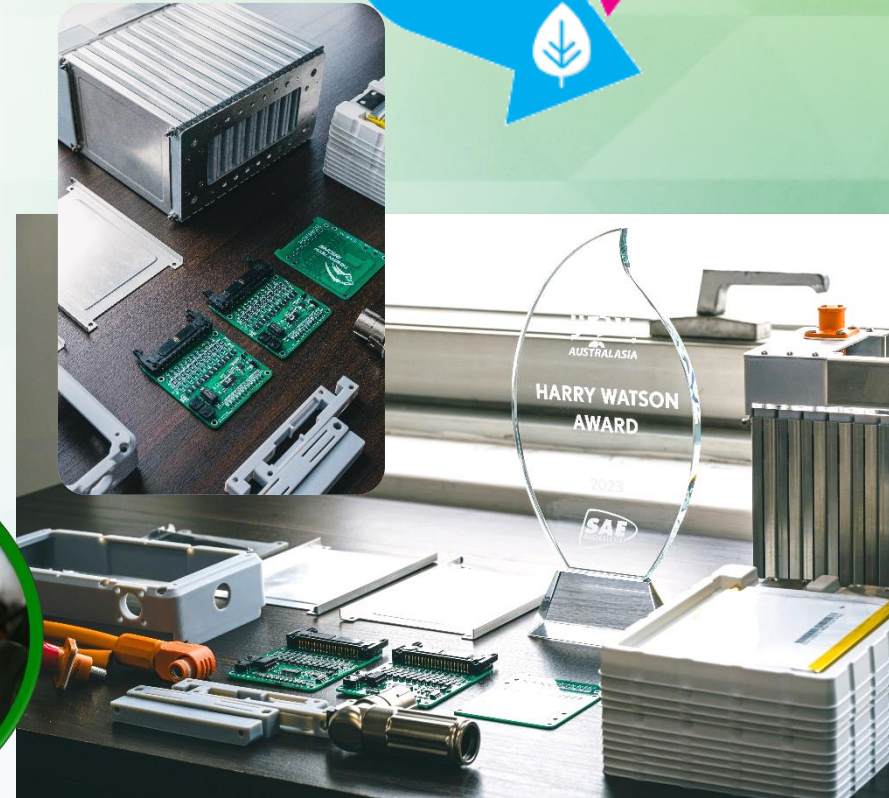
# Corporate Society Responsibilities

**AMITA** Way of being **CONTRIBUTING** to our society.

**AMITA** wholeheartedly supported the **Taiwan Tech Formula Racing Team** in configuring the battery module for the **LEOPARD01 electric racing competition**.

We provided research and development equipment, battery cells, and guidance on relevant technical support, laying a solid foundation for the next generation of our young students.

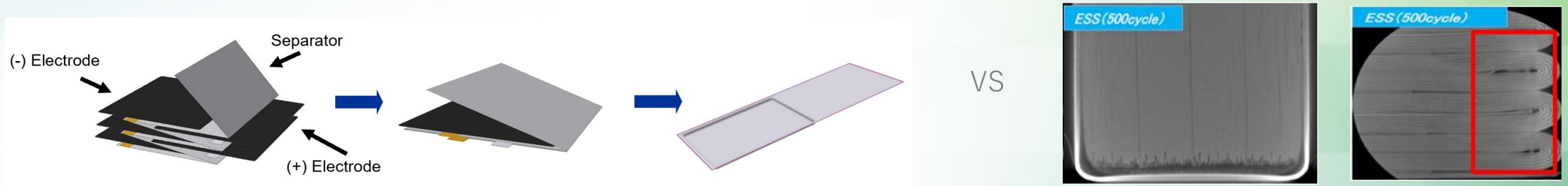
The outstanding performance of the students deserves commendation, showcasing remarkable teamwork and dedication!



# Recap & FAQ

AMITA  
capability

The **Z-stacking pouch** cell design, known for its longevity, high safety standards, and minimal DCIR, is perfectly suited for **commercial applications** demanding **extended cycle life** and **enhanced safety**.



Amita Technologies, with its **24 years** of experience, holds profound expertise in the **commercialization** of high-power cells and battery packs.





# Thank you for your time

ENERGY TRANSFORMATION TO THE FUTURE



**AMITA TECHNOLOGIES**

✉ [SALES@AMITATECH.COM](mailto:SALES@AMITATECH.COM)

