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# Future Mobility Aspiration through **Bio-Circular-Green** Economy within APEC

14 – 16 September 2022  
QSNCC, Bangkok, Thailand



**iEVTech 2022**

# EV STATION

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# EV STATION PLUS



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เปิด-ปิด การชาร์จ และจ่ายเงินผ่านแอป**

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HELIX AUTONOMOUS VEHICLE **X3 PLUS**



Future smart city lifestyle

## THE LIFE STYLE OF FUTURE CITY

Neolix new generation large-capacity autonomous delivery vehicle X3 PLUS

### AI capability + modular design that meet the needs of diverse scenarios

- Highly integrated, with a carriage space of 2.4 m<sup>3</sup> and a full-load mass of up to 11 tons.
- Modular design, to explore unlimited possibilities under more scenarios.
- Large capacity + long endurance mileage, to realize diversified delivery and all-weather 24/7 operation.
- Vehicle Length: 2.69m. Width: 1m. Height: 1.56m (excluding top Lidar). Endurance mileage: 200km.

### Multi-scenario applications, to create mobile infrastructure for smart city



**Unmanned retail scenario**

- Support with food and cold chain and last-mile "touchless" delivery service for convenience.
- Customer Goods-Sensor to assist intelligent classification.
- Reduce customer wait time and increase service quality.
- Self-charging and self-feeding.



**Unmanned delivery scenario**

- Lowest cost solution.
- Comprehensive solution to reduce cost and increase efficiency.
- Multiple deployment.
- 24/7 operation capability.



**Unmanned cargo transport scenario**

- Large container with high capacity to transport up to 11 tons and 1000kg.
- Autonomous cargo weighing.
- Intelligent settlement system.
- High stability.



**Unmanned security patrol scenario**

- Autonomous inspection.
- AI-Driven.
- Remote monitoring.
- 24/7 operation.
- Deployment on-site to assist in control center.
- Capability of interacting with AI robot of other's system.



**Unmanned epidemic prevention scenario**

- Comprehensive prevention.
- Full disinfection process.
- Intelligent disinfection.
- Real-time monitoring.
- Mobile inspection.



**Education scenario**

- Second classroom teaching for computer education.
- Application scenario.
- Support innovation and entrepreneurship activities.
- Smart campus building.

#### Multi-sensor fusion detection solutions

- 32-line Lidar with detection range up to 120m.
- High-performance Lidar with a wider field of view, capable of full-angle detection.
- Front-view 8M camera providing the front view visual perception.
- 2D equipment view camera, with Lidar forming redundant perception.

#### Leading industry computing platform Neowise 2.0

- 280-Tera computing power.
- Remote Data Cloud.
- High-speed connection.
- High security.

#### The new EIC system

- High-integration safety (HiSafe) technology.
- Safe, reliable and secure (SRS) in order of 10<sup>-7</sup>.
- Safe delivery system (SDS) to ensure security for safety monitoring.

#### Intelligent container

- Large capacity volume.
- Intelligent information system.
- Just in time (JIT) loading module.
- Capable to continue on demand.

#### IVI integrated information domain controller

- Business decision system, integrating domain control, engine, electronic control, etc.
- IVI and other functions with.
- Capable to set up an communication system to detect ultra-low latency and high stability.

#### Automotive grade chassis

- L4 autonomous grade in cooperative chassis.

#### Driven by data, comprehensive upgrade of autonomous driving algorithm

- 200+ machine learning driven by data, with combined upgrade in algorithm.
- The industry first upgrade to L4 with detection and 200+ms end-to-end latency.
- High-precision 3D point cloud processing, accurate, reliable, secure and controllable ultra-high resolution perception.
- Intelligent prediction, rapid response to dynamic environment and unpredictable situations.

Safety redundancy mechanism

Multi-layer redundant system design.  
Ultra-low latency remote safety and take-over system.  
Active safety detection EPB system.

**NAGASE**  
Bringing it all together.



**Mr. Krisda Utamote**

**President of Electric Vehicle  
Association of Thailand**

Home to 60% of the world's total population and 70% of the world's populous cities, Asia-Pacific continues to experience rapid growth in urbanization. Nevertheless, the acceleration of industrialization and urbanization, energy and environmental issues that seriously affects human survival and development have become the focus of the entire world. Among various kind of energy and environmental issues, air pollution is of the most public concern.

Given the above situation, finding a feasible approach to alleviate the air pollution and oil consumption carries enormous significance. In the transport sector, the use of renewable energies and electric vehicles (EVs) are being emphasized to tackle the energy and environmental issues. At the COP26 in Glasgow, Thailand brought the "Bio-Circular-Green" or BCG economic model, and reiterated that the country will be the pathway towards a paradigm shift to environmentally friendly economic development. This topic will be in the agenda at the Asia Pacific Economic (APEC) Leaders Meeting in Bangkok in 2022.

To support Thailand's commitment in COP26 and to drive the country's electrification plan, the Thai government has declared electric vehicles as an official industry development for the future, targeting to produce around 725,000 electric passenger cars and pickup trucks or around 30% of production, and to increase the registration of electric passenger cars and pickup trucks to around 440,000 vehicles or around 50%

## Welcome Message

### Welcome Message from President of Electric Vehicle Association of Thailand

units by 2030. With these targets, the Electric Vehicle Association of Thailand (EVAT), aims to support the government's plan to stimulate the growth of the electric vehicle market. and by doing so, we actively take part in the National EV Policy subcommittees to work with all stakeholders on a number of initiatives and support schemes for electric vehicles.

However, it's not only up to the government to drive the electrification. EVAT also believe that we are all responsible in preventing air pollutions and in further development of electric vehicle industry in Thailand. We believe in new business models and future careers in the manufacturing of electric vehicles thus we support technological and knowledge sharing platforms, from professional levels to student levels in all educational backgrounds. We also support electric vehicle conversion opportunities thus EVAT also organized the Electric Motorcycle Conversion Contest in March 2022 to give vocational students, college students and the public to jointly demonstrate their electric motorcycle conversion technologies in a competitive but sustainable manner. By doing so, EVAT sees the importance of human resources development to support the shift towards the electric vehicle industry. These initiatives are seen as highly important knowledge base for everyone in the industry and in educational institutions, to exchange our know-hows and viewpoints for on-going development in the new era of automotive technology.

On behalf of the Electric Vehicle Association of Thailand (EVAT), it has been our great pleasuring in co-organizing the 7th International Electric Vehicle Technology Conference and Exhibition (iEVTech 2022) with Informa Markets At the same time, I would like to take this opportunity to thank you all speakers and participants at the iEVTech 2022. I'm confidence that your participation and information exchange will contribute to the development of future mobility through bio-circular-green economy within APEC and the world.

# Welcome Message

## Welcome Message from Country General Manager - Thailand Informa Markets - Thailand

I am very pleased to be the co-organised of the 7th International Electric Vehicle Technology Conference or iEVTech

The future of the Thai Electric Vehicle (EV) industry is growing steadily by following the trend towards zero carbon emissions. Thailand aims to be the regional manufacturing hub and also automotive parts supplier for EVs by 2030. Technology and innovation can help to solve pollution problems for Thailand such as greenhouse gas emissions, the PM2.5 problem and it also presents outstanding opportunities for business and industries related to EV. Development of the electric vehicle industry is gaining strong momentum as the government and private sectors are working to make Thailand a major EV production hub. There is also great enthusiasm among local car users, attracted by the environment-friendly advantages, reasonable prices and increased confidence in its long-term use.

This year is special. Thailand is the host of APEC – a great opportunity for us to show our potential and capabilities of the country in becoming a major EV hub in the APEC group of countries. Today, here with us at this session, we also welcome special delegations from APEC Automotive Dialogue as well as policy makers and representatives from both private and public sectors who attend this opening ceremony of the International Electric Vehicle Technology Conference or iEVTech 2022. The event is co-organized by Informa Markets and the Electric Vehicle Association of Thailand (EVAT), and this year was inspired by the theme 'Future Mobility Aspirations through the Bio-Circular-Green Economy within APEC'.

On behalf of Informa Markets, I would like to thank the Electric Vehicle Association of Thailand (EVAT) for their partnership in organizing this conference and helping to drive the industry forward well into the future. Lastly, I would like to extend our deep appreciation to Speakers, Exhibitors, and Participants for their participation in the conference. Thank you.



**Mr. Sanchai Noombunnam**

*Country General Manager - Thailand  
Informa Markets - Thailand*

## Conference Committee

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Yossapong Laonual

### Advisor

Pisit Rangsaritwutikul

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Krisda Utamote

### General Vice Chair

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Vehicles Association

Tokyo University of Science, Japan

Honorary Chairman of EVAT, Thailand

President of Thailand Automotive Institute  
and Advisors of EVAT, Thailand

President of EVAT, Thailand

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AXA Partners Thailand

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Innova-Pack Co., Ltd.

ETRAN Thailand

AAPICO

ABeam Consulting Thailand

EVAT, Thailand

AFRY, Thailand

BUU, Thailand



# Program at a Glance

14 September 2022		15 September 2022		16 September 2022
08:30 - 09:00	Registration	Registration		Registration
09:00 - 12:00	ASEAN Sustainable Energy Week 2022 Opening Ceremony	Future of Electric Mobility (In collaboration with GIZ & CharIN) (Parallel Session) Session Chair: Dr. Uthane Supatti Room 209A	Role of EV toward Carbon Neutrality (in collaboration with TESTA & UNEP) (Parallel Session) Session Chair: Dr. Pimpa Limthongkul & Dr. Nuwong Chollacoop Room 209B	Exhibition (10:00-18:00)
12:00 - 13:30				Exhibition (10:00-18:00)
13:30 - 16:30	iEVTech Opening Ceremony and Special Forum	EV knowledge sharing (Parallel Session) Session Chair: Tamonwan Cholpratin Room 209A	Taiwan Mobility Session (Parallel Session) Session Chair: Dr. Kitchanon Ruangjirakit Room 209B	
18:00 - 21:00	Welcome Dinner Hosted by Informa Markets	Banquet Hosted by EVAT		
		Ballroom A, 7th floor, The Westin Grande Sukhumvit Hotel, Bangkok		



**14 September 2022**

**Afternoon Session (12:30 – 17:00)**

**Exhibition Hall, Conference Theater A, QSNCC, Bangkok, Thailand**

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#### Agenda

**12:30 – 13:30 Registration**

**13:30 – 13:50 Welcoming speech by organizers**

Mr. Krisda Utamote, President of Electric Vehicle Association of Thailand

Mr. Sanchai Noombunnam, Country General Manager - Thailand, Informa Markets - Thailand

**13:50 – 14:15 Opening Remark and Special keynote "Thailand's Investment Opportunities for Electric Vehicles towards the Bio-Circular-Green Economy"**

Mr. Narit Therdsteerasukdi, Deputy Secretary General of The Board of Investment of Thailand

**14:15 – 14:25 Opening Ceremony and Photo session**

**14:25 – 16:15 Future Mobility Aspiration through Bio-Circular-Green Economy within APEC**

Chargé d'Affaires' Gwendolyn Cardno

US Embassy

Dr. Veerapat Kiatfuengfoo

Deputy Director General

Energy Policy and Planning Office (EPPO)

Mr. Hirofumi Oima

Director for Automotive International Trade Policy Automobile Division, Manufacturing Industries Bureau, Ministry of Economy, Trade and Industry (METI), Japan

Mr. Warit Rattanachuen

Assistant Governor – Project Management Office (PMO)

Electricity Generating Authority of Thailand (EGAT)

Dr. Hsiang-Wei Ho

Section Chief

Department of Industrial Technology, Ministry of Economic Affairs, Taiwan

#### **Moderator**

Dr. Wit Sitthivakin, Financial Journalist the Standard

**16:15 – 16:40 Special keynote "EV Market Outlook 2022"**

by Mr. Allen Tom Abraham

Lead Transport Analyst, India, Southeast Asia and Australia, Bloomberg New Energy Finance

**16:40 Closing Session**

by Dr. Pongpan Kaewtatip, Vice President, EVAT

15 September 2022

Morning Session (09:00 – 12:30)

Room 209A, QSNCC, Bangkok, Thailand

#### Agenda

(Session Chair: Dr. Uthane Supatti, MC: Mr. Pan Piyasil)

- 09:00 – 09:30 Registration
- 09:30 – 09:40 **Welcoming speech**  
Mr. Krisda Utamote, President of Electric Vehicle Association of Thailand  
Dr. Dominika Kalinowska, Director Transport Projects Thailand / ASEAN, GIZ
- 09:40 – 10:00 **Vision for Electric Car Ecosystem in Bangkok Metropolitan**  
Speaker: Ms. Kannikar Srithunyalucksana, The Creagy Co., Ltd.
- 10:00 – 10:20 **Shaping the Future of Mobility on city level – international best-practices**  
Speaker: Christian Hochfeld, Agora Verkehrswende
- 10:20 – 10:40 **Sustainable transition toward e-mobility in Bangkok**  
Speaker: Tanit Menaneatra, Metropolitan Electricity Authority, MEA
- 10:40 – 11:00 **Charging infrastructure requirements and design for urban applications**  
Speaker: Mr. Jacques Borremans, Managing Director Asia, CharIN
- 11:00 – 11:15 **Coffee Break**
- 11:15 – 12:30 **Panel Discussion on Shaping the Future of Mobility for Bangkok Metropolitan**  
**Panelist 1** Assoc. Prof. Dr. Wisanu Subsompon, Bangkok Metropolitan Deputy Governor  
**Panelist 2** Christian Hochfeld, Agora Verkehrswende  
**Panelist 3** Tanit Menaneatra, Metropolitan Electricity Authority, MEA  
**Panelist 4** Mr. Jacques Borremans, Managing Director Asia, CharIN  
**Moderator** Mr. Pan Piyasil, Technical Advisor, GIZ

**15 September 2022**

**Morning Session (09:00 – 12:00)**

**Room 209B, QSNCC, Bangkok, Thailand**

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## Agenda

(Session Chair: Dr. Pimpa Limthongkul, MC: Dr. Nuwong Chollacoop)

**09:00 – 09:30 Registration**

**09:30 – 09:35 Welcoming speech**

Assoc.Prof.Dr. Pongpan Kaewtatip  
Executive Committee, Thailand Energy Storage Technology Association (TESTA)

**09:35 – 10:00 Keynote: UNEP Global Electric Mobility Programme (Recording)**

Ms. Yeonju Jeong  
Associate Programme Management Officer, United Nations Environment Programme (UNEP)

**10:00 – 10:05 Group photo**

**10:05 – 10:40 Update on Electric Two-and Three-Wheelers Progress in the Philippines**

Mr. Edmund Araga  
President, Asian Federation of Electric Vehicles Association (AFEVA)

**10:40 – 11:00 Break**

**11:00 – 11:20 Update on National Battery Swapping Initiative for Electric Motorcycle**

Dr. Pimpa Limthongkul  
Director of Energy Innovation Research Group, National Energy Technology Center (ENTEC)

**11:20 – 11:40 Mainstreaming Electric Mobility Two and Three-Wheelers in Thailand**

Dr. Peerawat Saisirirat  
Researcher of Renewable Energy and Energy Efficiency Research Team, National Energy Technology Center (ENTEC)

**11:40 – 12:00 Q&A**

15 September 2022

Afternoon Session (13:00 – 16:30)

Room 209A, QSNCC, Bangkok, Thailand

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## Agenda

(Session Chair: Tamonwan Cholpratin, MC: Ms. Veenarat Laohapakakul, Newscaster of one31 Channel)

13:00 – 13:30 Registration

13:30 – 13:35 Welcoming Speech

Mr. Suroj Sangsnit

Vice President for Industry of Electric Vehicle Association of Thailand (EVAT)

13:35 – 14:05 **Topic: Plug- in Happiness, Fullfill All Journey**

Mr. Panupan Subjarassang

Vice President, Physical Platform Engineering and Maintenance and Director of EV Station PluZ Project

14:05 – 14:35 **Topic: E-mobility and the trend in application of copper conductors**

Mr. Arthit Prathumpuang

Vice President (Business Development and Marketing) Oriental Copper Co., Ltd.

14:35 – 14:55 Coffee break

14:55 – 15:25 **Topic: BMW's Vision towards Carbon Neutrality**

Mr. Opas Noppornpitak

Manager Corporate Communications, BMW Manufacturing (Thailand) Co., Ltd.

15:25 – 15:55 **Topic: Batteries made by Laser**

Mr. Markus Lindemann

Regional Director Laser Division, Sales & Technology, TRUMPF Ltd.

15:55 – 16:15 Q&A

**15 September 2022**

**Afternoon Session (13:00 – 16:30)**

**Room 209B, QSNCC, Bangkok, Thailand**

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**Agenda**

(Session Chair: Dr. Kitchanon Ruangjirakit & Dr. Jet P.H. Shu)

- 13:00 – 13:30 Registration**
- 13:30 – 13:45 Welcoming Speech and Update on Current EV Status in Thailand**  
Mr. Krisda Utamote  
President of Electric Vehicle Association of Thailand (EVAT)
- 13:45 – 14:00 Opening Remarks and Update on Current EV and Autonomous Vehicles Status in Taiwan**  
Dr. Jet P.H. Shu  
Advisor of Mobility Taiwan Auto Research Consortium (mTARC)
- 14:00 – 14:20 Introduction of Autonomous and Electric Vehicles Development Capacity Built in Taiwan**  
Mr. Vector Yeh  
R&D Manager, Automotive Research & Testing Center (ARTC)
- 14:20 – 14:40 Electrification and Automation of Public Transportation**  
Miss Jenny Lai  
Sales Account Manager of Tron Energy Technology Co., Ltd.
- 14:40 – 15:00 The Practice Sharing on Thailand Lithium-ion Batteries Manufacturing and Development in Asia Market**  
Miss Daphne Wong  
Director of Amita Technologies, Inc.
- 15:00 – 15:15 Coffee Break**
- 15:15 – 15:35 Sandbox of Autonomous Vehicle Trials in Taiwan**  
Mr. James Lei  
Director of Autonomous Vehicles Technology Innovative Experimentation Program Office (AVTEP), DoIT, MOEA.
- 15:35 – 15:55 Autonomous Driving Incentive Technology for Future Development**  
Dr. Kelvin Chen  
Deputy Division Director of MMSL, Industrial Technology Research Institute.
- 15:55 – 16:15 Driver Assistance System Solutions: Parking (Surrounding) & Driving (Front)**  
Mr. James Chao  
Sales & Marketing Manager, Thai Whetron Electronics Co., Ltd.
- 16:15 – 16:30 Q&A and Closing Remarks**



# Future Mobility Aspiration through Bio-Circular-Green Economy within APEC

(Opening Ceremony)

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14 September 2022

Afternoon Session (12:30 – 17:00)

Exhibition Hall, Conference Theater A

QSNCC, Bangkok, Thailand



**Mr. Krisda Utamote**

*President of Electric Vehicle  
Association of Thailand*



**Mr. Sanchai Noombunnam**

*Country General Manager - Thailand  
Informa Markets - Thailand*

**Welcoming speech by organizers**  
| 13:30 – 13:50

**Future Mobility Aspiration through  
Bio-Circular-Green Economy within APEC**

Opening Ceremony

| 14 September 2022 | Afternoon Session (12:30 – 17:00)

**Mr. Krisda Utamote**

President

Electric Vehicle Association of Thailand

**Welcoming speech by organizers**  
| 13:30 – 13:50

**Future Mobility Aspiration through  
Bio-Circular-Green Economy within APEC**

Opening Ceremony

| 14 September 2022 | Afternoon Session (12:30 – 17:00)

**Mr. Sanchai Noombunnam**

Country General Manager - Thailand

Informa Markets - Thailand



**Opening Remark and Special keynote**  
**“Thailand’s Investment Opportunities**  
**for Electric Vehicles towards the**  
**Bio-Circular-Green Economy”**  
**| 13:50 – 14:15**

**Future Mobility Aspiration through**  
**Bio-Circular-Green Economy within APEC**

Opening Ceremony

| 14 September 2022 | Afternoon Session (12:30 – 17:00)

**Mr. Narit Therdsteerasukdi**

Deputy Secretary General

The Board of Investment of Thailand

**Abstracts**

The emergence of Thailand, the world’s 10th biggest automotive manufacturer and the largest in ASAEN, as an EV hub has been fast-tracked through superior geographical advantages, complete industrial supply chain and sufficient pool of talented personnel and government policies that comprehensively incentivize both investors in the EV sector’s supply chain and car buyers.

For Thailand, to turn into regional frontrunner in EV, from luxury cars to two-wheelers, the government announced the “30@30” EV roadmap to produce 750,000 EVs or 30% of car production capacity by 2030. To achieve the target, the government has already launched various measures to promote more EV adaption and boost domestic demand for electric cars as well as lure investors and manufacturers to the EV industry in Thailand.

Thailand Board of Investment (BOI) as an investment promotion agency, we offer tax holidays for EV production of all types, and also grants investment incentives for EV parts and components, integrated software and apps for EV use, and EV-related infrastructure, especially charging stations, to accelerate the growth of the EV industry.

**Biography**

Mr. Narit Therdsteerasukdi graduated Bachelor degree in Economics (Honors) from Chulalongkorn University, in Law from Ramkhamhaeng University, and M.A. in Economics from Boston University, USA. Additionally, he received a certificate in Economic Management for Development from Curtin University, Australia and an advanced certificate in Public Administration and Public Law from King Prajadhipok’s Institute.

For work experiences, he has been working in the Office of the Board of Investment since 1995 until the present moment with a position of the Deputy Secretary General since 2017. Previously, he had been serving as Senior Executive Advisor of the BOI, Executive Director of Investment Strategy and Policy Bureau, and Executive Director of Management Information Systems Bureau.



**Mr. Narit Therdsteerasukdi**

*Deputy Secretary General*

*The Board of Investment of Thailand*



**Chargé d'Affaires' Gwendolyn Cardno**

*US Embassy*



**Dr. Veerapat Kiatfuengfoo**

*Deputy Director General  
Energy Policy and Planning Office (EPPO)*



**Mr. Hirofumi Oima**

*Director  
Automotive International  
Trade Policy Automobile Division*



**Mr. Warit Rattanachuen**

*Assistant Governor  
Project Management Office (PMO)  
Electricity Generating Authority of Thailand (EGAT)*



**Dr. Hsiang-Wei Ho**

*Section Chief  
Department of Industrial Technology,  
Ministry of Economic Affairs, Taiwan*

## Future Mobility Aspiration through Bio-Circular-Green Economy within APEC

| 14:25 – 16:15

### Future Mobility Aspiration through Bio-Circular-Green Economy within APEC

Opening Ceremony

| 14 September 2022 | Afternoon Session (12:30 – 17:00)

**Chargé d'Affaires' Gwendolyn Cardno**  
US Embassy

**Mr. Wattanapong Kurovat,**  
Director General  
Energy Policy and Planning Office (EPPO)

**Mr. Hirofumi Oima**  
Director for Automotive International Trade Policy  
Automobile Division, Manufacturing Industries  
Bureau, Ministry of Economy, Trade and Industry  
(METI), Japan

**Mr. Warit Rattanachuen**  
Assistant Governor - Project Management Office (PMO)  
Electricity Generating Authority of Thailand (EGAT)

**Dr. Hsiang-Wei Ho**  
Section Chief  
Department of Industrial Technology, Ministry of  
Economic Affairs, Taiwan

**Moderator**



**Dr. Wit Sitthivakin**

*Financial Journalist the Standard*

## Future Mobility Aspiration through Bio-Circular-Green Economy within APEC

| 14:25 – 16:15

### Future Mobility Aspiration through Bio-Circular-Green Economy within APEC

Opening Ceremony

| 14 September 2022 | Afternoon Session (12:30 – 17:00)

**Chargé d’Affaires’ Gwendolyn Cardno**  
US Embassy

## Future Mobility Aspiration through Bio-Circular-Green Economy within APEC

| 14:25 – 16:15

### Future Mobility Aspiration through Bio-Circular-Green Economy within APEC

Opening Ceremony

| 14 September 2022 | Afternoon Session (12:30 – 17:00)

**Dr. Veerapat Kiatfuengfoo**  
Deputy Director General  
Energy Policy and Planning Office (EPPO)

Dr. Veerapat Kiatfuengfoo is the Deputy Director General at the Energy Policy and Planning Office, Ministry of Energy, where he is responsible for the preparation of Thailand’s key long-term policies including the National Energy Plan, the Power Development Plan, the Smart Grid Master Plan and the Gas Plan. He also has professional experiences in the development of Thailand oil, gas and electricity price policies and the policy on the liberalization of gas industry.

Dr. Veerapat graduated with a PhD in Development Studies from the University of Melbourne, Australia, a Master of Arts in Economics from the Vanderbilt University, USA and a Bachelor of Business Administration in Finance from Kasetsart University, Thailand



**Chargé d’Affaires’ Gwendolyn Cardno**

*US Embassy*



**Dr. Veerapat Kiatfuengfoo**

*Deputy Director General  
Energy Policy and Planning Office (EPPO)*



**Mr. Hirofumi Oima**

*Director*

*Automotive International  
Trade Policy Automobile Division*

## Future Mobility Aspiration through Bio-Circular-Green Economy within APEC

| 14:25 – 16:15

### Future Mobility Aspiration through Bio-Circular-Green Economy within APEC

Opening Ceremony

| 14 September 2022 | Afternoon Session (12:30 – 17:00)

#### **Mr. Hirofumi Oima**

Director for Automotive International Trade Policy Automobile Division, Manufacturing Industries Bureau, Ministry of Economy, Trade and Industry (METI), Japan

#### **Abstracts**

Japan has long been making efforts to reduce GHG emissions in the road transport sector. To that end, Japanese OEMs have introduced a range of xEVs into the market over the past two decades. The batteries used in xEVs, including lithium-ion batteries, contain valuable mineral resources such as lithium, cobalt, and nickel, so it is critical that the batteries be used efficiently and sustainably. At the same time, it is also necessary to reduce the environmental footprint of vehicles, including their batteries, throughout their life cycle. The growing number of xEVs in use underscores the urgency of appropriately managing end-of-life batteries. In my presentation, I will introduce Japan's efforts for more effective management of end-of-life batteries.

#### **Biography**

Joined Japan's Ministry of International Trade and Industry (today's METI) in April 1996. After working on industrial policy for the automobile and space industries and on standardization policy (including ISO standards) at METI, served as a policy analyst at OECD's Directorate for Science, Technology and Industry from 2009 to 2012. From 2012, was involved with nuclear energy policy and metal-industry technology policy at METI. Served as Deputy Director General of NEDO's Technology Strategy Center from 2019 to 2021. Took up current position in July 2021.

**Future Mobility Aspiration through  
Bio-Circular-Green Economy  
within APEC**  
| 14:25 – 16:15

**Future Mobility Aspiration through  
Bio-Circular-Green Economy within APEC**

Opening Ceremony

| 14 September 2022 | Afternoon Session (12:30 – 17:00)

**Mr. Warit Rattanachuen**

Assistant Governor - Project Management Office (PMO)  
Electricity Generating Authority of Thailand (EGAT)

**Biography**

**Work Experience**

Warit Rattanachuen, Assistant Governor of the Electricity Generating Authority of Thailand (EGAT) is the first person who led the EGAT's Project Management Office (PMO). The PMO was formed 2 years ago with the mission to embrace the energy and digital disruptions impacting the mid-century state-owned organization as EGAT and forcing them to transform their businesses. Warit is responsible for establishing and operating a unit as a virtual structure with agile and flat organization principle. The businesses under PMO are EV Business Solution, Energy Solution, Green Energy Trading, Regional Energy Trading and Battery Energy Storage. Moreover, Warit is a member of the Investment Committee of Innospace (Thailand), that is a start-up ecosystem promoting company funded by several large corporate groups. Previously, he was the Director of Corporate Strategy where he oversees all activities of corporate strategy, corporate risk management and State-owned enterprise assessment. Prior to that Warit worked in a field of power system control and operations for 19 years.

**Future Mobility Aspiration through  
Bio-Circular-Green Economy  
within APEC**  
| 14:25 – 16:15

**Future Mobility Aspiration through  
Bio-Circular-Green Economy within APEC**

Opening Ceremony

| 14 September 2022 | Afternoon Session (12:30 – 17:00)

**Dr. Hsiang-Wei Ho**

Section Chief  
Department of Industrial Technology, Ministry of  
Economic Affairs, Taiwan



**Mr. Warit Rattanachuen**

*Assistant Governor  
Project Management Office (PMO)  
Electricity Generating  
Authority of Thailand (EGAT)*



**Dr. Hsiang-Wei Ho**

*Section Chief  
Department of Industrial Technology,  
Ministry of Economic Affairs, Taiwan*



**Mr. Allen Tom Abraham**

*Lead Transport Analyst, India,  
Southeast Asia and Australia,  
Bloomberg New Energy Finance*



**Assoc. Prof. Dr. Pongpan Kaewtatip**

*Vice President  
Electric Vehicle Association  
of Thailand (EVAT)*

**Special keynote**  
**“EV Market Outlook 2022”**  
**| 14:25 – 16:15**

**Future Mobility Aspiration through  
Bio-Circular-Green Economy within APEC**

Opening Ceremony

| 14 September 2022 | Afternoon Session (12:30 – 17:00)

**Mr. Allen Tom Abraham**

Lead Transport Analyst, India, Southeast Asia and  
Australia, Bloomberg New Energy Finance

**Closing Session**  
**| 14:25 – 16:15**

**Future Mobility Aspiration through  
Bio-Circular-Green Economy within APEC**

Opening Ceremony

| 14 September 2022 | Afternoon Session (12:30 – 17:00)

**Assoc. Prof. Dr. Pongpan Kaewtatip**

Vice President

Electric Vehicle Association of Thailand (EVAT)



# The Future of Electric Mobility in Bangkok Metropolitan

(In collaboration with  
GIZ & CharIN)

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15 September 2022  
Morning Session (09:00 – 12:30)  
Room 209A,  
QSNCC, Bangkok, Thailand



**Mr. Krisda Utamote**

*President of Electric Vehicle  
Association of Thailand*



**Dr. Dominika Kalinowska**

*Director Transport Projects Thailand,  
ASEAN, GIZ*

**Welcoming speech**  
| 09:30 – 09:40

**The Future of Electric Mobility in  
Bangkok Metropolitan**

(In collaboration with GIZ & CharIN)

| 15 September 2022 | Morning Session (09:00 – 12:30)

**Mr. Krisda Utamote**

President

Electric Vehicle Association of Thailand

**Welcoming speech**  
| 09:30 – 09:40

**The Future of Electric Mobility in  
Bangkok Metropolitan**

(In collaboration with GIZ & CharIN)

| 15 September 2022 | Morning Session (09:00 – 12:30)

**Dr. Dominika Kalinowska**

Director Transport Projects Thailand / ASEAN, GIZ



## Vision for Electric Car Ecosystem in Bangkok Metropolitan | 09:40 – 10:00

### The Future of Electric Mobility in Bangkok Metropolitan

(In collaboration with GIZ & CharIN)

| 15 September 2022 | Morning Session (09:00 – 12:30)

#### **Ms. Kannikar Srithunyalucksana** The Creagy Co.,Ltd.

Kannikar has over 15 years of experience in the low-carbon energy sector. She is an expert in RE and energy efficiency policies and has conducted a number of influential reports on energy strategy as well as climate change strategy. At Creagy, she is a senior manager supervising the team in providing strategic, technical, innovation and commercial support for both public and private sector clients. The latest project includes Development of Public Transport Electrification awarded by GIZ. Prior to Creagy, she worked as a senior policy analyst supporting the policy team of the Energy for Environment Foundation in elaborating a number of RE policies further executed by the Ministry of Energy.



**Ms. Kannikar Srithunyalucksana**

*The Creagy Co.,Ltd.*





**Mr. Christian Hochfeld**

*Agora Verkehrswende*

**Shaping the Future of Mobility on city level – international best-practices**  
**| 10:00 – 10:20**

**The Future of Electric Mobility in Bangkok Metropolitan**

(In collaboration with GIZ & CharIN)

| 15 September 2022 | Morning Session (09:00 – 12:30)

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**Mr. Christian Hochfeld**  
Agora Verkehrswende

**Sustainable transition toward  
e-mobility in Bangkok**  
| 10:20 – 10:40

**The Future of Electric Mobility in  
Bangkok Metropolitan**

(In collaboration with GIZ & CharIN)

| 15 September 2022 | Morning Session (09:00 – 12:30)

**Mr. Tanit Menaneatra**

Metropolitan Electricity Authority, MEA



**Mr. Tanit Menaneatra**

*Metropolitan Electricity Authority*  
**MEA**





**Mr. Jacques Borremans**

*Managing Director Asia  
CharIN*

**Possible Charging infrastructure proposals  
for bus-fleets in urban applications**

**| 10:40 – 11:00**

**The Future of Electric Mobility in  
Bangkok Metropolitan**

*(In collaboration with GIZ & CharIN)*

*| 15 September 2022 | Morning Session (09:00 – 12:30)*

**Mr. Jacques Borremans**

Managing Director Asia, CharIN

CharIN Managing Director in Asia since 2016. Promotion of the rollout of the Combined Charging System in Asia, Australia and New Zealand

Managing Director W&W Consulting Ltd for Greater China

Consulting & Business Development: Advising Western Technology companies on their Asia market entry strategy and implementing sales & market strategies for Western companies in Asia (PRC, Taiwan, Hong Kong, ASEAN, ...)

MBA Rutgers University (NJ, USA)

Master degree in Engineering with a specialization Nuclear Physics and in Electronics at the University of Brussels, Belgium

**Panel Discussion on Shaping the Future of Mobility for Bangkok Metropolitan**  
| 11:15 – 12:30

**The Future of Electric Mobility in Bangkok Metropolitan**

(In collaboration with GIZ & CharIN)  
| 15 September 2022 | Morning Session (09:00 – 12:30)

**Panelist 1**

Assoc. Prof. Dr. Wisanu Subsompon  
Bangkok Metropolitan Deputy Governor

**Panelist 2**

Christian Hochfeld  
Agora Verkehrswende

**Panelist 3**

Tanit Menaneatra  
Metropolitan Electricity Authority, MEA

**Panelist 4**

Mr. Jacques Borremans  
Managing Director Asia, CharIN

**Moderator**

Mr. Pan Piyasil  
Technical Advisor, GIZ

**Moderator**



**Mr. Pan Piyasil**

Technical Advisor  
GIZ



**Ms. Kannikar Srithunyalucksana**

*The Creagy Co.,Ltd.*



**Mr. Christian Hochfeld**

*Agora Verkehrswende*



**Mr. Tanit Menaneatra**

*Metropolitan Electricity Authority  
MEA*



**Mr. Jacques Borremans**

*Managing Director Asia  
CharIN*



# Role of EV toward Carbon Neutrality

(In collaboration with  
TESTA & UNEP)

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15 September 2022  
Morning Session (09:00 – 12:00)  
Room 209B,  
QSNCC, Bangkok, Thailand



## Welcoming speech

| 09:30 – 09:35

### Role of EV toward Carbon Neutrality

(In collaboration with TESTA & UNEP)

| 15 September 2022 | Morning Session (09:00 – 12:00)

#### Assoc. Prof. Dr. Pongpan Kaewtatip

Executive Committee

Thailand Energy Storage Technology Association (TESTA)

Dr.Pongpan Kaewtatip received his PhD from Nippon Institute of Technology (NIT), Japan in 2000. He has been working at Faculty of Engineering, KMUTT until the present. Now, he is an Associate Professor at the Department of Mechanical Engineering. He had been the head of department from 2010-2014. He is also working for the Society of Automotive Engineers, Thailand (TSAE) for several years. He was the Vice President for R&D of TSAE for several years. He has also served as Vice president for research promotion of the Electric Vehicle Association of Thailand (EVAT) since 2016. His research interest includes metal forming technology, as well as the forming of new frontier materials such as SMA, biomedical materials, etc. He is also interested in the field of energy policy, renewable energy especially in transport sector.

Dr.Pongpan has been working with The Thailand Research Fund (TRF) since 2014 before TRF has been transformed to Thailand Science Research and Innovation (TSRI) in 2019. He was the Deputy Director for Research and Innovation Organizations Collaboration and Acting Director of Industry Division, TRF. Now he is the Vice President of TSRI. TSRI is the national budget allocator under the Ministry of Higher Education, Science, Research and Innovation since 2nd May 2019.

## Keynote: UNEP Global Electric Mobility Programme (Recording)

| 09:35 – 10:00

### Role of EV toward Carbon Neutrality

(In collaboration with TESTA & UNEP)

| 15 September 2022 | Morning Session (09:00 – 12:00)

#### Ms. Yeonju Jeong

Associate Programme Management Officer  
United Nations Environment Programme (UNEP)



**Assoc. Prof. Dr. Pongpan Kaewtatip**

*Executive Committee*

*Thailand Energy Storage*

*Technology Association (TESTA)*

TSRI serves as secretariat of the Science Research and Innovation Promotion Committee. Promote, support and drive Science, Research and Innovation (SRI) system of Thailand by

- Drafting National SRI Policy and Strategic and Sector Plans.
- Allocating National SRI Budget to all relevant Organization. (Government, Non-Government, Private Sector and Civil Society)
- Empowering SRI Organizations.
- Promoting Networking and International Collaboration.



**Ms. Yeonju Jeong**

*Associate Programme*

*Management Officer*

*UNEP*



**Mr. Edmund Araga**

*President*

*Asian Federation of Electric Vehicles Association (AFEVA)*

## Update on Electric Two-and Three-Wheelers Progress in the Philippines

| 10:05 – 10:40

### Role of EV toward Carbon Neutrality

(In collaboration with TESTA & UNEP)

| 15 September 2022 | Morning Session (09:00 – 12:00)

#### **Mr. Edmund Araga**

President

Asian Federation of Electric Vehicles Association (AFEVA)

EDMUND A. ARAGA is the founding member of AFEVA Asian Federation of Electric Vehicles Association, Inc. to ASEAN countries such as Thailand, Malaysia and Singapore by encouraging and inviting member countries to attend and participate the 1st ASEAN electric vehicle and hybrid Summit held at the World Trade Center Manila Philippines June 28-29, 2017, which brings together under one roof EVAP members and their foreign counterparts for B2B meetings. Most foreign alliances and joint ventures were forged during these Summits and is currently the president of the Electric Vehicles Association of the Philippines (EVAP), the official organization of some 55 major players in the EV industry in the Philippines.

As EVAP President, he represented the EV industry in the Senate hearings on the re: "An Act Providing the National Energy Policy and Regulatory Framework for the Use of Electric Vehicles, and the Establishment of Electric Charging Stations." He is also advocating at both Congress and Senate for the passage of the Electric Vehicle and Hybrids Incentives Bill that will grant fiscal and fiscal incentives for both manufacturers and users of EVs and hybrids.

#### **STRENGTHENING THE DOMESTIC BASE:**

As an EV supplier, Edmund is an advocate on electric vehicle by securing the e-trike, Manufacturer/Assembler on a Pioneer status given by the Board of Investments under Department of Trade and Industry. First to established the commercial e charging stations in the vicinity of Bacoor City, distribute e trike units to Local Government units of Habay Bacoor, Ayala Alabang, North Bay Blvd Navotas, Tondo Manila. Private entities such as Maynilad, Panaderia Pantoja, Uratex Phils RGC group of Companies, San Remigio Beach Club, offer to Local Government unit of Bacoor and be granted with a franchise on electric tricycle in the vicinity of Molino Blvd. Deployed e-trike as their shuttle service in the campus of Philippines Christian University in Dasmariñas

#### **FORGING STRATEGIC FOREIGN PARTNERSHIPS:**

Edmund has established a partnership with the Electric Vehicle Association of Thailand when he was recently invited to speak at the Thailand when he was recently invited to speak at the Thailand Automotive Summit 2019 in Bangkok, Thailand. He followed this up with relations with the China-based CIAPS-PBA a potential partner for the manufacturing local batteries. And initiated the partnership between battery suppliers and Philippine Nickel Industry Association.



## Update on National Battery Swapping Initiative for Electric Motorcycle | 11:00 – 11:20

### Role of EV toward Carbon Neutrality

(In collaboration with TESTA & UNEP)

| 15 September 2022 | Morning Session (09:00 – 12:00)

#### Dr. Pimpa Limthongkul

Director of Energy Innovation Research Group  
National Energy Technology Center (ENTEC)

#### Biography

Dr. Limthongkul earned a B.S. in Materials Science and Engineering from Cornell University and earned a Ph.D. degree from Massachusetts Institute of Technology (MIT). She is currently the Energy Storage Research Team Leader at the National Energy Technology Center (ENTEC), Thailand. During the past 20 years, her work has been geared towards the development energy storage materials and systems throughout the value chain. She is a co-authored of over 70 scientific publications, a co-inventor of over 20 patents/patents applications. She has received several awards including L'oreal for Women in Science fellowship and Innovation Award from Petroleum Institute of Thailand. Her research work has also helped found 2 battery companies: A123 Systems and 24M Technologies. She is now also a president of Thailand Energy Storage Technology Alliance (TESTA) which has a mission to Exchange- Connect-Nurture -Promote energy storage technologies in Thailand.



**Dr. Pimpa Limthongkul**

*Director of Energy Innovation  
Research Group,  
National Energy Technology  
Center (ENTEC)*

MC



**Dr. Nuwong Chollacoop**

*Director of Low Carbon Energy Research Group,  
National Energy Technology Center (ENTEC)*



**Dr. Peerawat Saisirirat**

*Researcher of Renewable Energy and Energy Efficiency Research Team, National Energy Technology Center (ENTEC)*

## Mainstreaming Electric Mobility Two and Three-Wheelers in Thailand | 11:20 – 11:40

### Role of EV toward Carbon Neutrality

(In collaboration with TESTA & UNEP)

| 15 September 2022 | Morning Session (09:00 – 12:00)

#### Dr. Peerawat Saisirirat

Researcher of Renewable Energy and Energy Efficiency Research Team, National Energy Technology Center (ENTEC)

#### WORK EXPERIENCE:

2020-Current, Researcher, Renewable Energy and Energy Efficiency Research Team, Energy Innovation Research Group, National Energy Technology Center (ENTEC)

2012-2020, Researcher, Renewable energy research team, Materials for Energy Research Group, National Metal and Materials Technology Center (MTEC)

2011-2012, Post-doctoral researcher, Bio-energy laboratory, Materials for Energy Research Unit, National Metal and Materials Technology Center (MTEC)

2009-2010, Research assistance (part time) of "Possibility of Ethanol Usage as Diesel Substitutes in Thai Transportation Sector", funded by Asian Transportation Research Society (ATRANS)

2002-2005, Lecturer, Department of Mechanical Engineering, Siam University

#### EDUCATION:

Doctor of Engineering (Mechanical Engineering) King Mongkut's University of Technology Thonburi and Université d'Orléans (France)

(2005-2011, Sandwich Program) Thesis title: A Study of HCCI Combustion for Hydrocarbon-Ethanol Mixture

Master of Engineering (Mechanical Engineering) King Mongkut's University of Technology Thonburi (1999-2001) Thesis title: Experiment and Study of Combustion in a Homogeneous Charge

Compression Ignition Engine Bachelor of Engineering (Mechanical Engineering) King Mongkut's University of Technology Thonburi

(1995-1998) Thesis title: Air Fuel Ratio Determination from Exhaust Gas Composition of a Two Stroke Engine

#### CURRENT RESEARCH AND AREA OF INTEREST:

- Policy research: Energy demand modelling for road transportation sector

- Next generation automotive technology and fuels:

- Renewable fuels: feasibility study on bio-diesel and gasohol use

- Alternative vehicles: electric 2&3 wheelers, passenger car: HEV, PHEV and BEV

- Combustion analysis for internal combustion engine

- Experiment: experimental analyses on exhaust gas composition, in-cylinder pressure evolution and combustion image

- Modeling: detailed chemical kinetic of homogeneous gas phase combustion



# EV knowledge sharing: EV technologies for sustainable transport

(Parallel Session)

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15 September 2022  
Afternoon Session (13:00 – 16:30)  
Room 209A,  
QSNCC, Bangkok, Thailand



**Mr. Suroj Sangsnit**

*Vice President for Industry  
Electric Vehicle Association  
of Thailand (EVAT)*

## Welcoming Speech

| 13:30 – 13:35

### EV knowledge sharing: EV technologies for sustainable transport

(Parallel Session)

| 15 September 2022 | Afternoon Session (13:00 – 16:30)

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#### **Mr. Suroj Sangsnit**

Vice President for Industry of Electric Vehicle Association of Thailand (EVAT)

**Topic:** Plug- in Happiness, Fullfill All Journey  
| 13:35 – 14:05

**EV knowledge sharing: EV technologies for sustainable transport**

(Parallel Session)

| 15 September 2022 | Afternoon Session (13:00 – 16:30)

**Mr. Panupan Subjarassang**

Vice President, Physical Platform Engineering and Maintenance and Director of EV Station PluZ Project



**Mr. Panupan Subjarassang**

*Vice President, Physical Platform Engineering and Maintenance and Director of EV Station PluZ Project*

**MC**



**Ms. Veenarat Laohapakakul**

*Newscaster  
one31 Channel*



**Mr. Arthit Prathumpuang**

*Vice President  
(Business Development and Marketing)  
Oriental Copper Co., Ltd.*

**Topic: E-mobility and the trend in application of copper conductors**  
**| 14:05 – 14:35**

**EV knowledge sharing: EV technologies for sustainable transport**

(Parallel Session)

| 15 September 2022 | Afternoon Session (13:00 – 16:30)

**Mr. Arthit Prathumpuang**

Vice President (Business Development and Marketing)  
Oriental Copper Co., Ltd.

**Abstracts**

Electrification is seen as the most practical means of achieving efficient and clean transportation, which is vital to global sustainable development. The electric vehicle (EV) revolution is reshaping the global car industry as the market changes fast due to technological advancements, improved affordability, and government incentives. According to electromobility (e-mobility) research, copper is positioned to play an important role in three critical domains: charging infrastructure, energy storage, and electric car manufacture (EVs) because of its durability, malleability, reliability and superior electrical conductivity. The changing market will have a significant influence on copper consumption, with supply may unable to meet future demand. This presentation will assist analyze the trend for EV demand and corresponding copper raw material use, with a focus on three major products: battery, charging infrastructure, and EV 's copper components, in order to follow potential market changes.

**Biography**

Mr. Arthit Prathumpuang is a Ph.D. candidate at Chulalongkorn University's Technopreneurship and Innovation Management Program. His research interests include strategic management, Blockchain technology in circular economy, and innovations pertaining to copper. Currently, he is Vice President of Oriental Copper Co., Ltd., where he oversees the business development and marketing divisions. He has been involving in commercial areas of business development, sales, marketing, and CRM in the copper sector during his whole career since 2006.

**Topic: BMW's Vision towards Carbon Neutrality**  
**| 14:55 – 15:25**

**EV knowledge sharing: EV technologies for sustainable transport**

(Parallel Session)

| 15 September 2022 | Afternoon Session (13:00 – 16:30)

**Mr. Opas Noppornpitak**

Manager Corporate Communications  
BMW Manufacturing (Thailand) Co., Ltd.

**Abstracts**

BMW's Vision towards Carbon Neutrality. Over the past decades, BMW has repeatedly set itself ambitious sustainability goals and has taken on a pioneering role in this area. In the future, too, the BMW Group will continue to demonstrate that it not only supports change towards sustainability, it also aims to shape this change. We are creating a sustainable circular economy and will increase the share of secondary materials by 2030. Furthermore, vehicle architecture and design are adapted to recycling processes. This means we will return end-of-life vehicles to the raw materials cycle.

**Biography**

Opas Noppornpitak has been working in various fields during his 16 years in the automotive industry. At BMW Thailand, he was working in product-related function where he excelled in the product knowledge, technology, and digital aspects for several years. His recent position as Manager Corporate Communications at BMW Manufacturing Group Thailand (Plant Rayong) enhances his knowledge in vehicle production business. He has an excellent knowledge experience in all BMW drivetrains (ICE, PHEV, BEV). Together with his passion for BMW Group products, he has a high interest in the company's vision towards sustainability.



**Mr. Opas Noppornpitak**

*Manager Corporate Communications  
BMW Manufacturing(Thailand) Co., Ltd.*





**Mr. Markus Lindemann**

*Regional Director Laser Division,  
Sales & Technology  
TRUMPF Ltd.*

**Topic: Batteries made by Laser**  
**| 15:25 – 15:55**

**EV knowledge sharing: EV technologies for sustainable transport**

(Parallel Session)

| 15 September 2022 | Afternoon Session (13:00 – 16:30)

**Mr. Markus Lindemann**

Regional Director Laser Division, Sales & Technology, TRUMPF Ltd.

**Abstract**

TRUMPF is a global leader for Laser Technology in manufacturing for many decades. Batteries, motors and other electrical parts of EV require durable joints of different materials like Copper and Aluminum. TRUMPF has developed several laser processes to improve the welding quality of these joints. Applying these optimized welding strategies, beam optics and vision systems with TRUMPF lasers enables highest quality welds with stable and durable welding results. The presentation will include a variety of different solution for the joining tasks in battery and EV component manufacturing and will explain the advantage of the laser welding process. For research and flexible production, TRUMPF is offering standard laser welding machines with TRUMPF Lasers. For customized production lines, TRUMPF is cooperating with local automation partners to find always the most efficient laser manufacturing solution for the customer.

**Biography**

**Markus Lindemann**

2000-2006: Member of the development team for additive manufacturing in TRUMPF Germany.

2006-2010: Project engineer in the central sales department of TRUMPF's laser division in Germany.

2011-2015: Sales Director of TRUMPF China's laser division. Based in Shanghai but supporting TRUMPF customers all over China.

2016-2018: Director of International Sales Asia and Africa in TRUMPF HQ, based in Germany. Developing strategies with TRUMPF Laser subsidiaries in Asia and supporting Key Customers.

Since 2018: Markus took over the current position and moved with his family to Singapore. He is developing the TRUMPF laser market with the local TRUMPF subsidiaries in Thailand, Vietnam, Malaysia, Indonesia, Philippines, Singapore as well as Australia and New Zealand. In 2022, he was appointed-additional to the previous tasks-as General Manager for the TRUMPF Pte Ltd in Singapore.





## Taiwan Mobility Session

(Parallel Session)

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15 September 2022  
Afternoon Session (13:00 – 16:30)  
Room 209B,  
QSNCC, Bangkok, Thailand



**Mr. Krisda Utamote**

*President of Electric Vehicle  
Association of Thailand*



**Dr. Jet P.H. Shu**

*Advisor  
Mobility Taiwan Auto Research  
Consortium (mTARC)*

**Welcoming Speech and Update on  
Current EV Status in Thailand**  
| 13:30 – 13:45

**Taiwan Mobility Session**

(Parallel Session)

| 15 September 2022 | Afternoon Session (13:00 – 16:30)

**Mr. Krisda Utamote**

President

Electric Vehicle Association of Thailand

**Opening Remarks and Update on  
Current EV and Autonomous Vehicles  
Status in Taiwan**  
| 13:45 – 14:00

**Taiwan Mobility Session**

(Parallel Session)

| 15 September 2022 | Afternoon Session (13:00 – 16:30)

**Dr. Jet P.H. Shu**

Advisor

Mobility Taiwan Auto Research Consortium (mTARC)

## Introduction of Autonomous and Electric Vehicles Development Capacity Built in Taiwan

| 14:00 – 14:20

### Taiwan Mobility Session

(Parallel Session)

| 15 September 2022 | Afternoon Session (13:00 – 16:30)

#### Mr. Vector Yeh

R&D Manager

Automotive Research & Testing Center (ARTC)

#### Abstracts

The Automotive Research & Testing Center (ARTC) was established in 1990 by the Ministry of Economic Affairs (MOEA), R.O.C. ARTC devotes to innovative AV and EV technology development and provides complete testing services from troubleshooting, design improvement and performance verification to assist automotive industry clients. In 2019, ARTC unveiled Taiwan first SAE level 4 autonomous electric vehicle, WinBus, which was a joint-collaborative achievement by over 40 Taiwanese companies. WinBus is one platform for all which offers auto parts/module/system providers a good chance to demonstrate their capability to face the CASE era of automobiles. To support WinBus development, a virtual testing environment has been established, which provides the verification for AV algorithms under different development stages, such as Hardware in the Loop (HiL), Vehicle in the loop (ViL), etc. The test results could provide the developers suggestions for improvement and optimization of the system, and also significantly reduce the time for subsequent real-world tests and the development cost during the research and development process. To fulfill the demand of AV and EV testing, ARTC is working on new test tracks including a weather simulation tunnel, overpass, roundabout, C-V2X/city, etc. Taiwan is ready to accept challenges for coming AV and EV trend.

#### Biography

Vector Yeh received the B.S. degree and M.S. degree in Mechanical Engineering from National Taiwan University, Taipei, Taiwan, in 2000 and 2003. After graduated, he joined ARTC Proving Ground Department as an engineer focusing on handling testing. Since 2006, he started to pursue mechatronic system R&D. He had led the research on electric power steering system development, which had been transferred to Taiwan's industries for successful application in passenger and all-terrain vehicles. Currently, he is a manager at R&D Division in developing algorithms for braking and steering by wire systems and is leading the V&V teams for ADAS and AV.



Mr. Vector Yeh

*R&D Manager*

*Automotive Research & Testing Center (ARTC)*



**Miss Jenny Lai**

*Sales Account Manager  
Tron Energy Technology Co., Ltd.*

## Electrification and Automation of Public Transportation

| 14:20 – 14:40

### Taiwan Mobility Session

(Parallel Session)

| 15 September 2022 | Afternoon Session (13:00 – 16:30)

#### Miss Jenny Lai

Sales Account Manager  
Tron Energy Technology Co., Ltd.

#### Abstracts

##### Electrification and Automation of Public Transportation

Tron-e is known as a reliable electric buses solution provider in Taiwan with self-developed liquid cooling battery packs and fleet management system. With several-year experience of battery materials and zero emission transportation development, Tron-e jumped to No.1 market share in Taiwan and already has almost 300 electric buses running on road with total mileage of over 16,000,000km. Furthermore, Tron-e also have factory in different countries in south Asia and already delivered 7meter and 12meter electric bus solutions and autonomous vehicle solutions in Thailand. It's estimated to deliver almost hundreds of buses and electric TukTuk in upcoming years.

Tron-e cooperated with the mechanical engineering department of ITRI to develop own vehicle control unit and Taiwan's first set of LKAS (Lane Keeping Assist System) for electric buses to enhance the safety of the public transportation. Tron-e will introduce Taiwan's electric buses technology and share more of the successful experience in South Asia, and we sincerely invite more companies to join us together to create greener earth.

#### Biography

Jenny is specialized in oversea business development with long-time experience in vehicle industry and is responsible for South-Asian electric bus, green energy business development in Tron-e for several years. She's focusing on customized EV solution, supporting overseas tenders in line with the customer's strategic plans and goals, establishing new business models with local partners in upcoming EV era.

## The Practice Sharing on Thailand Lithium-ion Batteries Manufacturing and Development in Asia Market | 14:40 – 15:00

### Taiwan Mobility Session

(Parallel Session)

| 15 September 2022 | Afternoon Session (13:00 – 16:30)

#### Miss Daphne Wong

Director of Amita Technologies, Inc.

#### Abstracts

We love our planet and minimize carbon footage - new business behavior in the green energy market, such as fast charging (reduce commercial round trip down time and increase its efficiency), or light weighted practical solutions (Is it necessary to fill up its capacity for a simple application!).

\* Introduction of the FIRST Giga battery cell factory in Southeast Asia.

\* Agile Thinking: How to link to commercial/practical thinking style to achieve the battery design goal. Amita technologies considers the commercial application first, and technology design comes after. Practical real-world applications will be discussed as well.

\* Fast charging can greatly reduce the charging time and the battery cost of EV, such as E-Scooter, E-Taxi, E-Bus, and E-Ferry. To shorten the charging time to 10~15 minutes, Amita Technologies has developed high-rate lithium power cells to facilitate continuous 4C charging battery packs. Considerations of battery pack design, such as heat dissipation, high voltage insulation, and current distribution will be discussed.

#### Biography

Daphne Wong joined Amita Technologies in 2018 and has been part of the project team on building the first Giga battery cell factory in Southeast Asia. The factory has been successfully commissioned since December 2021. Daphne now has been repositioned as Director of Sales and Marketing. During her past career in product development was also awarded Medical Design Excellence Award in the United States back in 2009.



Miss Daphne Wong

Director

Amita Technologies, Inc.



**Mr. James Lei**

*Director  
Autonomous Vehicles Technology  
Innovative Experimentation  
Program Office (AVTEP), DoIT, MOEA.*

## **Sandbox of Autonomous Vehicle Trials in Taiwan** | 15:15 – 15:35

### **Taiwan Mobility Session**

(Parallel Session)

| 15 September 2022 | Afternoon Session (13:00 – 16:30)

#### **Mr. James Lei**

Director of Autonomous Vehicles Technology Innovative Experimentation Program Office (AVTEP), DoIT, MOEA.

#### **Abstracts**

The world is heading towards the development of smart transportation and sharing economy, coupled with the rise of 5G high-speed networking, which has driven the rapid development of innovative applications for autonomous vehicles. For this issue, the Ministry of Economic Affairs promotes technology research and development, regulatory adjustments, environmental deployment, and industry promotion for autonomous vehicles.

The "Unmanned Vehicles Technology Innovative Experimentation Act" formulated by the Ministry of Economic Affairs was approved by the Legislative Yuan in 2018, making Taiwan the world's first regulatory sandbox for self-driving cars, drones and self-driving ships. The industry, academia and research institutes are encouraged to do innovative trials on autonomous vehicle technology, services and business models in the roads.

Now there are eleven trial cases across Taiwan, such as last mile connection, city transit, tourist shuttle bus and the logistics delivery. With these trial sandbox cases, we have developed a diverse service model that is in line with the local demands. In the future, we hope to share and exchange the experience and information in policy, regulatory, industry of the autonomous vehicles sandbox, and to collaborate in leveraging advantages for both sides to explore the new market opportunities.

#### **Biography**

During 1994 to 2019, I worked with Committee for Aviation and Space Industry Development (CASID), MOEA in establishing the manufacturing capability of aerospace industry in Taiwan, such as aerostructure, engine, interior, and promoting international cooperation with Boeing, Airbus. Since 2019, I worked with Autonomous Vehicles Technology Innovative Experimentation Program Office (AVTEP), Department of Industrial Technology (DoIT), MOEA. for promoting technology research and development, regulatory adjustments, environmental deployment, and industry promotion in autonomous vehicles. Now there are thirteen trial cases across Taiwan, such as self-driving car and ship in last mile connection, city transit, the logistics delivery respectively.

## Autonomous Driving Incentive Technology for Future Development | 15:35 – 15:55

### Taiwan Mobility Session

(Parallel Session)

| 15 September 2022 | Afternoon Session (13:00 – 16:30)

#### Dr.Kelvin Chen

Deputy Division Director  
MMSL, Industrial Technology Research Institute.

#### Abstracts

The self-driving solution of MMSL (Mechanical and Mechatronics System Research Labs., MMSL) obtained Taiwan's first self-driving test license plate, and the driving behavior and strategies satisfy Taiwan's traffic condition.

Our self-driving technology adopts modular software design, which can be quickly transplanted to a variety of vehicle models according to the field and functional requirements. At present, it has successfully carried out self-driving technology verification in mini-Vans, Sedans, RVs, Trucks, and Buses, and has also completed several open field verifications. This system is not affected by weather and time period and is suitable for various powertrain types of vehicles.

In addition to public transportation, self-driving logistics is also one of the important focus service applications of our self-driving team. In the future, there are still many service applications to cooperate with domestic and international companies such as driverless delivery services in industrial parks, driverless delivery services in air-port/harbor, etc., to implement the industrial application of autonomous driving technology.

This work shares MMSL's autonomous driving applications and core technologies. First of all, we will take an overview of our solutions for everyone. Following, we will describe MMSL's autonomous driving development and some core technologies. Finally, we will show some operation cases on the public road.

#### Biography

Kelvin Chen received his Ph.D degree in Department of Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan. Since 2007, he has been a researcher in Industrial Technology Research Institute, Hsinchu, Taiwan. His research interests are autonomous vehicle system, intelligent and adaptive control, robust control and DSP applications.



**Dr.Kelvin Chen**

*Deputy Division Director  
MMSL, Industrial Technology  
Research Institute.*



**Mr. James Chao**

*Sales & Marketing Manager  
Thai Whetron Electronics Co., Ltd.*

**Driver Assistance System Solutions:  
Parking (Surrounding) & Driving (Front)  
| 15:55 – 16:15**

**Taiwan Mobility Session**

(Parallel Session)

| 15 September 2022 | Afternoon Session (13:00 – 16:30)

**Mr. James Chao**

Sales & Marketing Manager

Thai Whetron Electronics Co., Ltd.

**Biography**

Cooperating with car makers and facility domestically ,regionally and globally , delicately focus on South East Asian vehicle industry with advanced technology study such as ADAS, Driveless and topic such as Passenger and commercial vehicles, Environmental pressures for the sector, Automotive component parts, World oil price and consumption of petrol., currently be responsible for Thailand market in Whetron Group.



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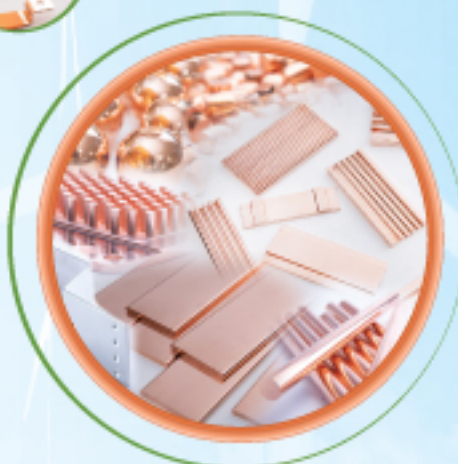
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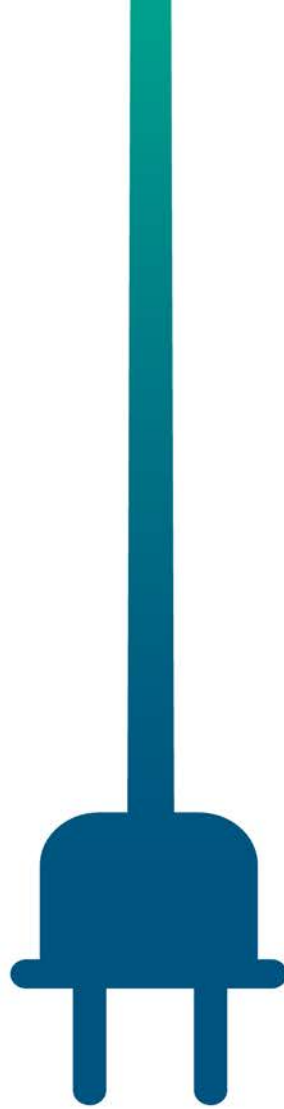
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Electrical conductivity of any electrical conductor is dependent upon the purity of conductor. OC-ETP<sup>®</sup> is cast from pure copper cathodes. This high purity of raw material enables OC-ETP<sup>®</sup> to offer a better electrical conductivity than conventional copper busbar. The electrical conductivity of OC-ETP<sup>®</sup> is approximately 101% IACS (International Annealed Copper Standard).

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Formability is a term used to express how well a copper busbar can be bent without cracking. OC-ETP<sup>®</sup> material can be formed into superbly fabricated finished products, all bends are smooth with no surface cracking. This is because OC-ETP<sup>®</sup> has good formability. The formability of copper is directly related to the grain size structure of the copper material - the smaller the copper grains the better the formability. OC-ETP<sup>®</sup> process produces a very fine copper grain size structure, offering superior formability of connectors and terminals.





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