

# EV Hackathon

Future EV Mobility Creative Contest for Sustainability

27-28 August 2022







## Message from the German Ambassador to Thailand

### Georg Schmidt

Dear hackathon participants, dear readers,

160 years ago, Thailand and Germany established diplomatic relations with each other. This historic jubilee highlights the long-lasting friendship between our two peoples. What a great reason to celebrate! We are doing so in a series of events of which the Hackathon on Electric Vehicles is one of the outstanding ones, initiated by the Thai Ministry of Foreign Affairs and implemented in close cooperation with King Mongkut's University of Technology North Bangkok and the German Embassy Bangkok.

The topic of our hackathon is a very timely choice: As climate change and ever growing resource consumption have become an existential threat to our planet, there is an urgent need for a sustainable transformation of our economies. This is particularly true for the transportation sector, which is still a major emitter of greenhouse gases both in Thailand and Germany. Electromobility can play a major role in overcoming this challenge. I hope that our creative competition on electric vehicles will both raise awareness for the need to move away from fossil fuels and come up with practical suggestions of how this can be achieved.

I would like to express my gratitude to the Thai Ministry of Foreign Affairs for initiating this project and to KMUTNB for all the effort and the enthusiasm that was put into this project, in particular by Prof Nisai Fuengwarodsakul from the Sirindhorn International Thai-German Graduate School of Engineering at KMUTNB and his fabulous team. Germany has been closely involved with KMUTNB ever since the latter was founded as the Thai-German Technical School in 1959. The impressive development of this institution over the past six and a half decades provides a shining example of what cooperation between our two countries in the sphere of higher education can achieve.

A special "Thank you" goes out to our sponsors whose generous donations enable us to offer very attractive prizes for the winners of the hackathon.

I am very much looking forward to many new ideas on how electric vehicles can be instrumental in creating a sustainable transport system for the future.

I wish all participants the best of luck!

Georg Schmidt  
Ambassador of the Federal Republic of Germany to Thailand



Message from the Director-General,  
Department of European Affairs,  
Ministry of Foreign Affairs of Thailand

## Mr. Asi Mamanee

Germany's inventions such as the liquid petroleum-fueled engine, the gas engine, and the diesel engine hence have greatly transformed the landscape of industrial development and modernized transportation. Since then, the modes of transport have continued to evolve towards vehicles that emit fewer greenhouse gases and air pollutants such as electric vehicles (EV). The evolution echoes global efforts towards protecting the environment while realizing sustainable development goals.

In Thailand, all sectors have recognized the important role of electric vehicle (EV) innovation as one of the driving forces in steering Thailand towards the smart society and smart energy, potentially the mega trend of a low-carbon approach. To be part of this efforts, the EV Hackathon Competition, jointly organized by the Ministry of Foreign Affairs, King Mongkut's University of Technology North Bangkok, and the Embassy of Germany in Bangkok, in celebration of the 160<sup>th</sup> Anniversary of Diplomatic Relations between Thailand and Germany, not only reflects today's trend but also the two countries' commitment as "Partners for Sustainable Growth".

Notably, the substance of the Competition is in line with Germany's energy transition and climate change policies as well as Thailand's Bio-Circular-Green Economy or BCG Model. To reach this common goal, the EV Hackathon Competition affirms Thailand's commitment at COP26 to working towards carbon neutrality by 2050 and the net-zero greenhouse gas emission by 2065 in support of green transition agenda.

In this regard, I am confident that this Competition will pave the way forward to ensure a promising future for our next generations, create an opportunity for students to learn the best practices from experts, and realize a sustainable future with innovation and responsibility. I hope that this event will not only raise awareness among the public on the importance of the long-standing Thai-German partnership but also contribute to the viable future for our two countries and peoples.





## Message from the President, King Mongkut's University of Technology North Bangkok

### Prof. Dr.-Ing. habil. Suchart Siengchin

It gives me great pleasure to extend our most sincere congratulations on the occasion of the 160<sup>th</sup> anniversary of the diplomatic relations between Germany and Thailand. For more than a century, the bilateral cooperation between the two countries have continued flourishing and we have already witnessed how much it is impactful. I believe the founding of King Mongkut's University of Technology North Bangkok (KMUTNB) in 1959 is one exemplary testimony of the fruitful outcomes of this close partnership.

Since then, the German model of technical education emphasizing on practice-based learning has been implemented. At the beginning of the establishment of Thai-German Technical School (North Bangkok Technical School), the German Government provided a broad range of assistance, including machinery, equipment, curriculums guidelines, specialists from Germany and scholarships for Thai teachers. Moreover, the Thai-German model of academic quality and identity standards are continually being enhanced by policies for set up new faculties later. Especially, the Sirindhorn International Thai - German Graduate School of Engineering (TGGS) was established in 2004 with strong supports from the RWTH Aachen University and many renowned German companies. At the present, KMUTNB has 16 faculties within three campuses: KMUTNB North Bangkok, Prachinburi and Rayong Province. The university has over 30,000 students and offers 191 Thai and English Programs in certificate, bachelor, master and doctorate levels.

Starting from the cooperation of the two countries, KMUTNB currently becomes an innovative university and gains international recognitions; for instance: to be 8-Time World Champion in the RoboCup Rescue Robot League, and also to constantly win international awards in research and innovation, to appear in several world rankings, such as being ranked in the 3<sup>rd</sup> place in Thailand for Engineering Mechanical, Aeronautical & Manufacturing in the QS World University Ranking 2022

KMUTNB is the educational institution whose origin and background are closely related to Germany and has also maintained a longstanding collaboration with German partners. Therefore, we are very glad to partner in co-organizing the EV Hackathon: "Future EV Mobility Creative Contest for Sustainability", together with the Ministry of Foreign Affairs, the Government of Thailand, and the Embassy of Germany in Bangkok, for commemorating the milestone of the diplomatic relations between the two countries. I hope this competition will be a platform for the young generation to express their creativities and even gain inspirations to pursue study or a career in the field of electric vehicle technologies, which will become increasingly important in the future.

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# CONTENTS

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- 1** Message from the German Ambassador to Thailand
- 2** Message from the Director-General, Department of European Affairs, Ministry of Foreign Affairs of Thailand
- 3** Message from the President King Mongkut's University of Technology North Bangkok
- 5** Future EV Mobility Creative Contest for Sustainability
- 6** Awards
  - Competition Key Dates
- 7** Training Schedule
- 12** Judge and Mentor
- 14** Contestant Team
- 15** Finalist Teams
- 29** Our partners and sponsors







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## Future EV Mobility Creative Contest for Sustainability

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To remark the 160<sup>th</sup> anniversary of the diplomatic relations between the Kingdom of Thailand and the Federal Republic of Germany, the Department of European Affairs, Ministry of Foreign Affairs, representing the Royal Thai Government, and the German Embassy in Bangkok, representing the German Government, together with King Mongkut's University of Technology North Bangkok, will cooperate to organize the commemorative event which can bring benefits to the society and to increase public recognition of the cordial ties between the two countries. The event to celebrate this milestone of the two countries' long-lasting friendships will be organized in the form of a competition entitled "Future EV Mobility Creative Contest for Sustainability." This activity will provide opportunities to the university students to gain new knowledge in electric vehicle technologies, and also to be platforms for them to develop and present their creative ideas for improving electric vehicles by applying knowledge in terms of technology, business, and management mindsets to their projects. The outcomes of their work potentially lead to the innovation, solutions to certain problems, or the beginning of their own electric vehicle businesses in the future.

The forms of the contest are designed for the students in the higher education institutions, and will be focused on bringing out the creativity to apply and integrate knowledge in electric vehicle technologies for developing ideas impacting on the social and economic progress, and the environmental sustainability. However, the contest will not emphasize on the adaption of advanced engineering knowledge. The competitors are free to express their creative ideas in various forms, such as possible solutions for technical problems, suggestions on the government policies, new business models, telecommunication projects, construction projects, etc.

To equip all competitors with cutting-edge electric vehicle technologies and essential knowledge, intensive training courses will be offered before the first round of the contest by electric vehicle experts from both Germany and Thailand to inspire students finding their own ways to become the future valuable human resources, and to develop electric vehicle industries in Thailand.

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## Awards

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**The winning team** will receive 100,000 baht, an honor plaque and a certificate.

**The first runner-up team** will receive 50,000 baht, an honor plaque and a certificate.

**The second runner-up team** will receive 25,000 baht, an honor plaque and a certificate.

**A consolation prize** (5 teams) will receive 15,000 baht and a certificate.

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## Competition Key Dates

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PR campaigns and contest application	May 23-June 30, 2022
Basic Electric Vehicle Training	July 2 – 9, 2022
First round submission deadline	July 22, 2022
Announcement: Round of 16 qualified teams	July 29, 2022
Virtual presentation skills training for 16 qualifying teams	July 30-August 5, 2022
Online presentations given by 16 qualifying teams	August 6, 2022
Result of 8 teams selection announcement	August 10, 2022
Final competition of 8 teams taking place at KMUTNB	August 27-28, 2022





# Training Schedule

## 2 July 2022

Session 1 09:00 – 09:45 Introduction to EV Hackathon

Session 2 09:45 – 10:30 EV business and solution **Dr. Phasin Suebsubanunt**  
Managing Director, Smart Station  
Co., Ltd.

Session 3 10:30 – 11:15 EV business and solution **Mr. Jaturong Suriyasasin**  
Deputy Governor, MEA

Session 4 11:15 – 12:00 EV business and solution **Ms. Surisa Sangdee**  
EGAT EV Business Solution, EGAT

Session 5 12:00 – 12:45 EV business and solution **Mr. Saichon Chansuan**  
Assistant Manager of Strategy  
and New Business Development  
Division Provincial Electricity  
Authority (PEA)

## 4 July 2022

Session 6 17:00 – 18:30 Electromobility in Germany **Prof. rer. nat. Dirk-Uwe Sauer**  
Chair for Electrochemical Energy  
Conversion and Storage Systems  
RWTH-Aachen University





## 5 July 2022

Session 7 17:00 – 17:45 Electric Tuk-Tuk Business: Muvmi **Mr. Pipat Tangsiripaisan**  
Co-founder and Head of  
Engineering Division Urban  
Mobility

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17:45 – 18:30 Business of EV controllers: ECU shop **Mr. Ponpoj Wannapinyochip**  
President of ECU Shop 1  
Company, Ltd.

## 6 July 2022

Session 8 17:00 – 18:30 Electric motorcycle R&D and Business **Mr. Wasanpus Poohrinitthapoom**  
R&D Engineering Director

**Mr. Satianpong Somjit**  
R&D electrical engineering  
Manager GP Motor (Thailand)  
Co., Ltd.

## 7 July 2022

Session 9 17:00 – 18:30 EV conversion: Trends, Challenges and Opportunity **Mr. Pariphat Buranasin**  
Managing Director, Gewinn  
Consulting Co.,Ltd.

Secretary to the Sub-committee  
State Security, etc.

Working group, Member:  
Development of EV conversion  
industry in EEC-HDC

Working group member:  
Coordination of HR  
Development in EEC-HDC





## 8 July 2022

Session 10 17:00 – 18:30 Introduction to EV

**Asst. Prof. Narong Thumputi**

Lecturer at Department of Electrical Engineering Technology, CIT, KMUTNB

## 9 July 2022

Session 11 09:00 -09:45 Trend, future & challenges of electric vehicles

**Mr. Krisda Utamote**

Director Corporate Communications, BMW Group Thailand

President of Electric Vehicle Association of Thailand (EVAT)

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Session 12 09:45 – 10:30 Battery technology for EV

**Dr. Pimpa Limthongkul**

Energy Storage Technology Research Team Leader ENTEC/NSTDA

President of Thailand Energy Storage Technology Association (TESTA)

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Session 13 10:30 – 11:15 Battery Design for Vehicle Integration

**Dr. Manop Masomtob**

Researcher Energy Storage Technology (ENTEC/NSTDA)

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Session 14 11:15 – 12:00 Battery waste management from EV

**Assoc. Prof. Dr. Rungsima Yeetsorn**

Deputy Director in administration and innovation management of STRI TGGS/ KMUTNB

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Session 15 12:00 – 12:45 Innovative Materials for EV Mobility

**Mr. Sompob Prasertkul**

Technical Sales Manager ASEAN, Covestro Thailand



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Khlong San, Bangkok 10600  
02-288-0911



**PORSCHE**



# Judge and Mentor

## Selection Committee

1. Mr. Worakorn Sasijulaka  
Representative from Schaeffler Manufacturing Thailand
2. Mr. Supreecha Muangmahla  
Representative from Porsche Thailand, AAS Auto Service Co. Ltd
3. Mr. Kriskorn Kraichinda  
Representative from BMW (Thailand) Co.Ltd.
4. Ms. Cholthee Chandrachoti  
Representative from Covestro (Thailand) Company Limited
5. Ms. Surisa Sangdee  
Representative from Electricity Generating Authority of Thailand
6. Mr. Jumpote Himacharoen  
Representative from Metropolitan Electricity Authority
7. Ms. Tidarat Madtharad  
Representative from Provincial Electricity Authority
8. Dr. Nimit Nipattummakul  
Representative from National Innovation Agency (NIA)
9. Dr. Non Arkaraprasertkul  
Representative from Digital Economy Promotion Agency (DEPA)
10. Mr. Suphalerk Soodyodprasert  
Representative from Department of Rail Transport (DRT)
11. Assoc.Prof.Dr. Nongluck Meethong  
Representative from Thailand Energy Storage Technology Association (TESTA)
12. Ms. Thitipat Dokmaithet  
Representative from Thailand Automotive Institute
13. Mr. Puttipong Kongcharoen  
Representative from Thai Industrial Standards Institute (TISI)
14. Mr. Chuckrit Tangchaitrong  
Representative from Department of Land Transport
15. Dr. Anat Hasap  
Representative from Thailand Institute of Scientific and Technological Research
16. Dr. Ekkarut Viyanit  
Representative from National Science and Technology Development Agency (NSTDA)
17. Assoc.Prof.Dr. Thanatchai Kulworawanichpong  
Representatives from the education sector, Suranaree University of Technology
18. Asst.Prof.Dr. Teeraphon Phophongviwat  
Representatives from the education sector, King Mongkut's Institute of Technology Ladkrabang
19. Asst.Prof.Dr. Danai Phaoharuhans  
Representatives from the education sector, King Mongkut's University of Technology Thonburi
20. Dr. Poowanart Poramapojana  
Representatives from the education sector, Kasetsart University

## Mentor team

1. Dr. Amorntep Sakuna  
Representatives from the education sector, Chandrakasem Rajabhat University
2. Asst.Prof.Dr. Pawita Maneemai  
Representatives from the education sector, King Mongkut's University of Technology North Bangkok
3. Dr. Surachai Wongfookeat  
Representatives from the education sector, Nakhon Ratchasima Rajabhat University
4. Dr. Manop Masomtob  
Representative from National Science and Technology Development Agency (NSTDA)
5. Asst.Prof.Dr. Kusol Pimapunsri  
Representatives from the education sector, King Mongkut's University of Technology North Bangkok
6. Asst.Prof.Dr. Peerapong Pornwongthong  
Representatives from the education sector, King Mongkut's University of Technology North Bangkok
7. Asst.Prof.Dr. Chonlakarn Wongkorsub  
Representatives from the education sector, King Mongkut's University of Technology North Bangkok
8. Mr. Sorawit Wanitanukul  
Representative from National Science and Technology Development Agency (NSTDA)
9. Dr. Nuwong Chollacoop  
Representative from. National Science and Technology Development Agency (NSTDA)
10. Asst.Prof.Dr. Soontaree Saksri  
Representatives from the education sector, King Mongkut's University of Technology North Bangkok
11. Asst.Prof.Dr. Danai Phaoharuhans  
Representatives from the education sector, King Mongkut's University of Technology Thonburi
12. Mr. Pipat Tangsiripaisan  
Representative from Urban Mobility Tech Co. Ltd.
13. Mr. Arthorn Yongrattanakij  
Representative from VR Global Property Company Limited
14. Mr. Thitipat Dokmaithet  
Representative from Thailand Automotive Institute
15. Dr. Burin Kerdsup  
National Electronics and Computer Technology Center (NECTEC)

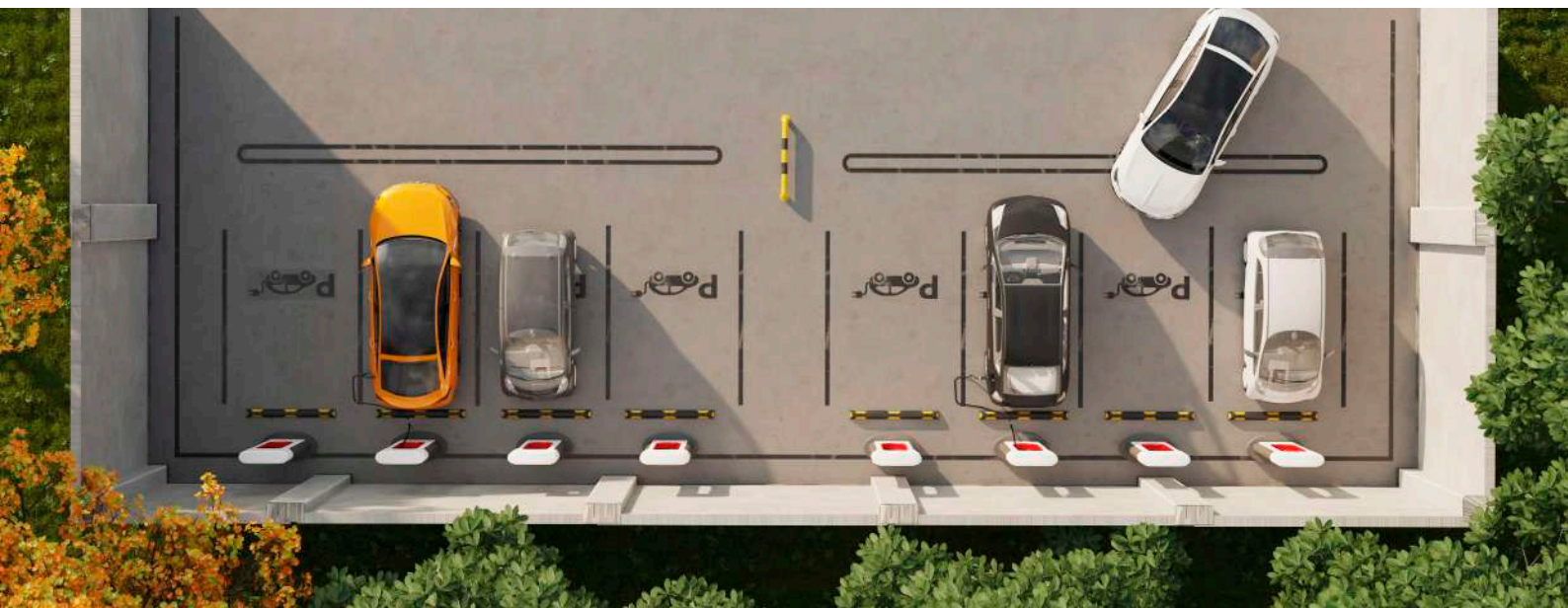
## Final Committee

- |  |   |
|--|---|
| 1. Assoc.Prof.Dr. Yossapong Laoonual   | Representative from Ministry of Foreign Affairs   |
| 2. Dr. Thorsten Clausing               | Representative from Embassy of the Federal Republic of Germany Bangkok  |
| 3. Mr. Peeradit Chotipatputti          | Representative from Schaeffler Manufacturing Thailand   |
| 4. Mr. Kriskorn Kraichinda             | Representative from BMW (Thailand) Co.Ltd   |
| 5. Ms. Cholthee Chandrachoti           | Representative from Covestro (Thailand) Company Limited   |
| 6. Mr. Warit Rattanachuen              | Representative from Electricity Generating Authority of Thailand  |
| 7. Mr. Pichit Phongprasert             | Representative from Electricity Generating Authority of Thailand  |
| 8. Mr. Jumpote Himacharoen             | Representative from Metropolitan Electricity Authority  |
| 9. Ms. Tidarat Madtharad               | Representative from Provincial Electricity Authority  |
| 10. Mr. Asa Piyarat                    | Representative from Electric Vehicle Association Of Thailand (EVAT)   |
| 11. Mr. Kasean Sukeemok                | Representative from Thailand Energy Storage Technology Association (TESTA)  |
| 12. Mr. Threepol Boonyamarn            | Representative from Thailand Automotive Institute   |
| 13. Dr. Ekkarut Viyanit                | Representative from National Science and Technology Development Agency (NSTDA)  |
| 14. Dr. Non Arkaraprasertkul           | Representative from Digital Economy Promotion Agency (DEPA)   |
| 15. Dr. Nimit Nipattummakul            | Representative from National Innovation Agency (NIA)  |
| 16. Mr. Napapadol Sukkasem             | Representative from King Mongkut's University of Technology North Bangkok<br>Alumni Association under the Royal Patronage of His Majesty the King |
| 17. Asst.Prof.Dr. Nuksit Noomwongs     | Representatives from the education sector, Chulalongkorn University   |
| 18. Dr. Tayakorn Chantarangsu          | Representative from Department of Rail Transport (DRT)  |
| 19. Dr. Veerapat Kiatfuengfoo          | Representative from Energy Policy and Planning office (EPPO)  |
| 20. Asst.Prof.Dr. Kumpanat Sirivedin   | Representative from German Alumni Association under the Royal Patronage   |
| 21. Assoc.Prof.Dr. Surapong Suwankawin | Representative from IEEE Joint IAS/IES/PELS Thailand Chapter  |
| 22. Mr. Thanapat Suksuhamwong          | Representative from Renewable Energy Industry Club, The Federation of Thai Industries   |
| 23. Mr. Chuckrit Tangchaitrong         | Representative from Department of Land Transport  |
| 24. Dr. Chalothorn Boonlua             | Representative from Office of National Higher Education Science Research<br>and Innovation Policy Council (NXPO)                                  |
| 25. Asst.Prof.Dr. Siradol Siridhara    | Representative from the education sector: Mahidol University  |



# Contestant Team

University and College	Teams
Assumption University of Thailand	1
Buengkan Technical College	2
Burapha University	2
Chulalongkorn University	12
Chulalongkorn University – Kasetsart University	1
Chulalongkorn University – King Mongkut’s University of Technology Thonburi	1
Kasetsart University	1
Kasetsart University – Rangsit University – Thammasat University	1
Khon Kaen University	6
King Mongkut’s Institute of Technology Ladkrabang	3
King Mongkut’s Institute of Technology Ladkrabang – Chulalongkorn University – Thammasat University	1
King Mongkut’s Institute of Technology Ladkrabang – Sirindhorn International Institute of Technology	1
King Mongkut’s University of Technology North Bangkok	20
King Mongkut’s University of Technology North Bangkok – Khon Kaen Universtiy	1
King Mongkut’s University of Technology Thonburi	12
Mahidol International College – King Mongkut’s University of Technology North Bangkok	1
Mahidol University	1
Nakhon Phanom University	1
National Tsing Hua University – Nagoya University – Korea Advanced Institute of Science&Technology	1
North-Chiangmai University	1
Northeastern University	1
Rajamagala University of Technology Isan	1
Rajamangala University of Technology Isan (Surin Campus)	4
Rajamangala University of Technology Lanna	4
Rajamangala University of Technology Phranakorn	2
Rajamangala University of Technology Rattanakosin	1
RWTH Aachen University – TU Munich – Thai Nichi Institute of Technology	1
Srinakharinwirot University	1
Sukhothai Thammathirat Open University – Ramkhamhaeng University	1
Suranaree University of Technology	1
Thammasat University	2
Thammasat University – Khon Kaen University – Chiangmai University	1
Thammasat University – King Mongkut’s Institute of Technology Ladkrabang	1
Ubon Ratchathani University	6
Udon Thani Rajabhat University	1
University of Notthingham – Thammasat University	1
Walailak University	2
<b>Total</b>	<b>101</b>





## Finalist | 8 Teams

<b>004</b>	<b>PorMayJedai</b>	<b>028</b>	<b>EVT-028</b>
King Mongkut's University of Technology North Bangkok		King Mongkut's Institute of Technology Ladkrabang	
Pakapon Chaimongkoltrakul		Thapanon Noochan	
Por-ngern Suksai		Ittikorn Tipson	
Metinee Thuleerat		Poonwisa Borvonshivabhumi	
<b>012</b>	<b>ACDC</b>	<b>034</b>	<b>Wagen Toretto</b>
Chulalongkorn University		Chulalongkorn University	
Chanon Wanasinchai		Kittibhum Potong	
Natthawat Piyanonthaya		Guy Yotsaksri	
Korpoj Piya-asdarat		Witsathon Pongkapanakrai	
<b>013</b>	<b>Bangmod</b>	<b>072</b>	<b>KUXEV</b>
King Mongkut's University of Technology Thonburi		Kasetsart University	
Kawisara Sripattanatrakul		Kun Lerttanaaree	
Ratchadaporn Boonrungee		Lor Techeen Bhumithadadech	
Supachit Coomsiripituck		Natsuda Uppapong	
<b>017</b>	<b>Thunder EV</b>	<b>076</b>	<b>CHARGEEN</b>
Chulalongkorn University		Chulalongkorn University	
Dechatorn Devaphalin		Hathaitanit Tongthong	
Chaiyapat Boonyaratsiri		Patthanapol Tanaboriboon	
Poom Kraesai		Watcharapong Wongkaew	

## Semi-Finalist | 16 Teams

<b>004</b>	<b>PorMayJedai</b>	King Mongkut's University of Technology North Bangkok
<b>012</b>	<b>ACDC</b>	Chulalongkorn University
<b>013</b>	<b>Bangmod</b>	King Mongkut's University of Technology Thonburi
<b>015</b>	<b>Electric Unicorn</b>	King Mongkut's University of Technology North Bangkok
<b>017</b>	<b>Thunder EV</b>	Chulalongkorn University
<b>022</b>	<b>EPOW</b>	King Mongkut's University of Technology North Bangkok – Khon Kaen University
<b>028</b>	<b>EVT-028</b>	King Mongkut's Institute of Technology Ladkrabang
<b>033</b>	<b>Easy Trans</b>	King Mongkut's University of Technology Thonburi
<b>034</b>	<b>Wagen Toretto</b>	Chulalongkorn University
<b>040</b>	<b>PI SA NA</b>	National Tsing Hua University – Nagoya University – Korea Advanced Institute of Science&Technology
<b>046</b>	<b>EV-SURRECT</b>	Chulalongkorn University
<b>060</b>	<b>Powerpuff Boyz</b>	Chulalongkorn University
<b>068</b>	<b>CHAY SAM</b>	Buengkan Technical College
<b>069</b>	<b>GOOD BOY</b>	Buengkan Technical College
<b>072</b>	<b>KUXEV</b>	Kasetsart University
<b>076</b>	<b>CHARGEEN</b>	Chulalongkorn University

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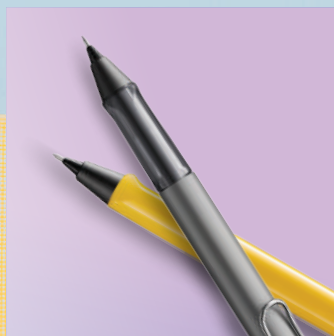
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กับแนวคิด Learn to Earn  
เรียนรู้เพื่ออยู่รอด



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ที่จบการศึกษาในสาขายานยนต์ไฟฟ้า  
จะเป็นกำลังสำคัญในการขับเคลื่อนเศรษฐกิจ  
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