

Report on Participation in the 2025-2026 International Exchange Program in Thailand

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1.Introduction

In recent years, various forms of globalization have progressed in the fields of technology and economics, and consequently, engineers are required to have the ability to adapt to a global environment. To respond to these changes and enhance our own skills, we participated in an international exchange program in Thailand, which was held from February 5th to February 10th. The objectives of the international exchange program are as follows.

1. To broaden the international perspective of young engineers.
2. To improve communication skills
3. To strengthen future cooperation between the Kanto Branch and TSAE.

This report introduces our participation in the international exchange program in Thailand.

2. Participants

Japanese students

- Takasumi Kyo (Tokyo Denki University M2)
- Sogo Ota (Chiba University M1)

Thai students

- Pakron Puangpee (Kasetsart University)
- Tanat Kitjumroen (Kasetsart University)
- Poowanart Poramapojana (Kasetsart University)
- Chanarong Khempech (Ubon Ratchathani Univ.)

3.Schedule

The international exchange program to Thailand was conducted according to the schedule shown in Table 1.

Table 1 Thailand Visit Schedule

Date	Schedule
2026/2/5	Arrival
	Thailand Automotive Institute
2026/2/6	Auto Challenge
2026/2/7	Cultural Tour : Ayutthaya
	Auto Challenge
2026/2/8	Sightseeing : Bangkok
2026/2/9	Amita Technology
	P1 Composites
2026/2/10	Thailand EV Center of Excellence
	Kasetsart University
	Departure

4. February 5th (Thu) Weather: Sunny

4.1 Thailand Automotive Institute

The Thailand Automotive Institute is an official testing and certification center that verifies whether various automotive parts meet Thai standards.

It primarily tests tires and helmets, as well as durability tests for plumbing components such as faucets.

For tires, they conduct rolling resistance tests, load and speed durability tests, and tests where the tire is pressed against a large rotating drum under load. For helmets, they conduct impact absorption tests.

We observed a test where a helmet was attached to a dummy head simulating a human head and placed on a stand. An impact object was dropped onto the helmet from a predetermined height to measure the impact.

They also conducted water resistance tests to measure whether chemical substances in tire products leach out when submerged in water. We learned that this is an important process for protecting the environment in Thailand.



Figure 1 Entrance of Thailand Automotive Institute



Figure 2 Electrical and Electronics Institute

#### 4.2 The Electrical and Electronics Institute (EEI)

The Electrical and Electronics Institute (EEI) is a non-profit organization that conducts various certification tests for electrical products such as home appliances, electric vehicles, and chargers.

Thailand is promoting its 30/30 policy, which aims for 30% of its domestic automobile production to be zero-emission vehicles by 2030.

As a result, the electrification of automobiles is progressing, but batteries are required to be extremely safe in accidents and harsh environments. Vibration tests, thermal shock tests, impact tests, and water resistance tests were conducted there. This test aims to determine whether the internal structure remains accurate even under vibrations simulating actual driving conditions, whether it can withstand rapid temperature changes, and whether it will ignite in the event of a collision.

The research facilities were excellent, including an anechoic chamber. Electromagnetic compatibility and radio frequency tests are conducted here.

It is designed to verify whether electromagnetic waves emitted by electrical products and electric vehicles would affect other equipment, and whether external electromagnetic waves would cause malfunctions.

Visiting this research institution allowed us to learn how the safety of batteries used in Thailand is ensured.

#### 5. February 6th (Friday) Weather: Sunny

##### 5.1 Auto Challenge

The TSAE Auto Challenge 2026, Thailand's student formula racing competition, was held at Pathumthani Speedway over two days, on the 6th and 7th. On the 6th, static events such as vehicle inspections and business presentations were held, and We were able to observe these. We also had the opportunity to visit the pit of the Kasetsart University FSAE team (Dongtaan racing) and learned about the team's details and aspirations.

In addition, we were given the opportunity to give a presentation alongside the announcement of the best business presentation. Neither of us participates in the Student Formula project, but Ota presented on his research into internal combustion engines using ammonia as fuel, and Kyo presented on his research into motor control used in machine tools and the FSAE team he previously belonged to. Although it wasn't a direct presentation about Student Formula, we had a large audience with more people than there were chairs available and received many questions, resulting in a very meaningful exchange.



Figure 3 after the presentation

6. February 7th (Saturday) Weather: Sunny with occasional rain

### 6.1 Cultural Tour : Ayutthaya

The temple ruins of the Ayutthaya Kingdom, which flourished for approximately 400 years from the 14th century, are a popular tourist spot and a UNESCO World Heritage Site. While magnificent and beautiful, many of the ruins were artificially destroyed during the Burmese invasion in the mid-18th century, which we found fascinating as it reflects the passage of history. At Wat Yai Chai Mongkol, We also learned about Thai worship customs. Although Buddhism has different roots in Japan and Thailand, We were able to experience the differences between them.



Figure 4 Ayutthaya Cultural Studies

### 6.2 Auto Challenge (2<sup>nd</sup> day)

We left Ayutthaya and headed to Pathumthani Speedway to watch the second day of the Auto Challenge. Dynamic events were being held that day, with vehicles running in endurance and autocross

races. The endurance race, in particular, attracted a lot of attention at the venue, and it was impressive to see teams from different groups congratulating each other on completing the race. On this day, we were able to hear in detail about the EV vehicle from Ubon Ratchathani University from the team members. We were told that they are currently testing an air-cooled battery cooling system, comparing it to a water-cooled system planned for next year, to find the optimal solution. We're looking forward to seeing what the results will be.



Figure 5 Team scene from Kasetsart University

7. February 8th (Sunday) Weather: Sunny

### 7.1 Wat Arun

Wat Arun, meaning "Temple of Dawn," is a Buddhist temple located in Bangkok. It sits on the west bank of the Chao Phraya River. Its origins date back to the Ayutthaya period, and the temple is believed to have existed at least as early as the 17th century. The distinctive phra prang (temple tower) was built in the early 19th century during the reign of King Rama II.

Even though it's the same Buddhism as in Japan, there are huge differences in temples, and We were truly overwhelmed by their grandeur.

### 7.2 Wat Paknam

Wat Paknam is a historic royal temple founded during the Ayutthaya period, and in 2021, it completed a 69-meter-tall bronze golden Buddha statue, said to be the

tallest in a meditative posture. Entering the tranquil temple and ascending to the top floor, We were greeted by a ceiling painting depicting the life of Buddha, which was both artistic and moving.

The student who accompanied us gave us a detailed explanation of Thai Buddhism and culture. We were able to learn about both the similarities and differences between Thailand and Japan. Furthermore, since there was a government election in Thailand that day, We were able to hear in detail about the expectations of the Thai people for the government and the current situation of the Thai people, making it a very meaningful time.



Figure 6 Wat Arun



Figure 7 Wat Paknam

8. February 9th (Monday) Weather: Sunny

### 8.1 Amita Technology

Amita Technology is a lithium-ion battery manufacturer founded in Taiwan in 2000. We visited their newly constructed factory, built in anticipation of the growing demand for lithium-ion batteries in Thailand due to the recent increase in EV adoption. While information control within the premises was strict and we were unable to observe the actual

manufacturing process, we were able to handle the materials used in the battery manufacturing process and gain an understanding of their battery recycling efforts, which was very informative. We also learned that they use ultra-thin metal sheets from a Japanese manufacturer for the battery electrodes. Furthermore, given the recent series of Li-ion battery fires in Japan, we learned about the safety measures the manufacturer is taking.



Figure 8 Amita Technology

### 8.2 P1 Composite

P1 Composite is a company that manufactures automotive parts from carbon-reinforced plastic (CFRP). They own an autoclave with a diameter exceeding approximately 1.5 m and are equipped to manufacture carbon bathtubs and hoods for two-seater sports cars. They also have a business that creates convex-shaped car body panels that are already difficult to obtain, and We were surprised by the difference in weight compared to steel plate versions. While participating in student formula racing, Kyo had experience manufacturing CFRP cowlings for vehicles, and We could sense their commitment to creating a good working environment and producing high-quality products.

9. February 10th (Tuesday) Weather: Sunny

### 9.1 TECE (Thailand EV Center of Excellence)

TECE is a core organization established under the National Science and Technology Development Agency

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(NSTDA) of Thailand with the aim of making Thailand a manufacturing and technology hub for electric vehicles in Southeast Asia.

Research into electric vehicles (EVs) was thriving as we moved towards carbon neutrality. The anechoic chamber, a facility for electromagnetic wave experiments and measurements, was particularly impressive. Here, research was being conducted to determine whether electronic components interfered with other equipment or malfunctioned. They were also conducting explosion-proof simulations of products used in the fuel tank area (lights, fans, electrical switches, electrical connectors, etc.) as part of safety testing. We were once again impressed by the extensive research being done on electrical safety at the Thai research institute.



Figure 9 TECE

### 9.2 Kasetsart University

Kasetsart University is in Bangkok.

We had the opportunity to tour the mechanical engineering department's labs and observe their Formula One activities. Air pollution is a serious problem in Thailand. The research on PM (particulate matter) was particularly impressive. It was very interesting that they measured and analyzed PM not only from exhaust fumes but also from brake dust.

In Formula, we were able to hear in detail about the challenges they faced during development.

Regarding aerodynamics, they adopted the shape that

yielded the best results in simulations, and for the exhaust system, they experimented with several shapes that would increase power output before finally deciding on one.

They also had a program that allowed the ignition timing to be changed instantly from the driver's seat. We were truly amazed by the high level of expertise at Kasetsart University.



Figure 10 Kasetsart University

## 10. Summary

We participated in the international exchange program in Thailand with the following three objectives.

1. Expanding the international perspective of young engineers
2. Improving communication skills
3. Strengthening future collaboration between the Kanto Branch and TSAE

Visits to automotive companies and research institutes, as well as interactions with Thai students, during the exchange program in Thailand were unique aspects of this international exchange program. Visiting Thai automotive companies and research institutes allowed us to experience firsthand the differences between Japanese and Thai companies, as well as the differences in environmental awareness. Specifically, We were impressed by the strong focus on electric vehicles (EVs) in Thai research and the significant efforts being made to improve the environment. Compared to Japan,

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Thailand has a large number of older cars on the roads, leading to serious air pollution. However, many of the new cars in Bangkok are EVs, and their penetration rate is considerably higher than in Japan. Furthermore, the research we learned about also gave the impression that a lot of research is focused on improving the environment.

Furthermore, through interactions with Thai students, we were able to learn deeply about the current culture of Thailand, including its food and lifestyle, as well as the social problems that Thailand is currently facing. This was an invaluable experience that allowed us to learn deeply about everything from the current state of the automotive industry in Thailand to the social context.

### 11. Acknowledgments

Finally, we would like to express our sincere gratitude to Pakron Puangpee, Tanat Kitjumroen, Poowanart Poramapojana, Chanarong Khempech, and everyone at Kasetsart University who are active in Formula racing, for guiding us for about a week during this year's trip to Thailand. We would also like to thank everyone at SAE-Thailand for their cooperation in our international exchange activities, and to the companies and research institutes that welcomed us for our visits.