
Tuesday, May 22, 9:30 to 12:30, F205 and F206, Annex Hall

According to one estimate, proving that autonomous driving is safer than human driving would require actual test drives covering over 240 million kilometers. Level 2 automated driving, for example, requires envisioning 6 million scenarios at the specifications writing stage, and the development of fully autonomous driving is expected to take 106 years. In the context of autonomous driving vehicle development that factors in traffic, weather, and other varied conditions, a rational explanation of the extent to which safety performance is conceived (the requirements), of the methods used to achieve those performance requirements, and of how to prove that they have been achieved, will be required to realize sound advances in on-board autonomous driving devices.

As part of efforts to realize advanced autonomous driving, legislation and standardization is being assessed in conjunction with technical development, and the Japan Automobile Manufacturers Association (JAMA), in coordination with working groups on safety evaluations in various countries, has prepared a white paper based on the outcomes of research on demonstrating safety and presented an international standard proposal to ISO/TC 22/SC 33/WG 9 (Test scenario of autonomous driving vehicle). This forum, organized in collaboration with JAMA to promote understanding of the latest conditions with respect to achieving autonomous driving, seeks to convey the outcomes and contents of that research, and communicate the direction taken by research on evaluating the safety of advanced autonomous driving systems.

Planning: Standardization Board, Automated Driving Standardization Study Panel, JAMA, Automated Driving Investigative Commission

Y-2. Powertrain for Passenger Vehicles in 2030 — For ICE Survival —

Wednesday, May 22, 13:30 to 17:00 Main Hall, Conference Center

China and various countries in Europe have outlined policies to ban pure ICE starting in 2030. Furthermore, emissions regulations encompassing RDE (in countries such as England, the Netherlands, France, Germany, India, Indonesia, Norway, Sweden, and China) will become much more stringent in 2025, imposing even stricter conditions on ICEs.

Global corporations will lead this forum in clearly identifying technical issues and setting a course of action on what has to be done by 2030 for ICEs to advanced further and remain viable in these circumstances. We hope the subsequent panel discussion will both deepen understanding and boost the motivation of young ICE engineers and researchers participating in the forum.

Planning: Gasoline Engine Committee


Wednesday, May 22, 14:00 to 17:30 F203, Annex Hall

In automobile development, model based development making use of simulation is becoming increasingly critical due to the requirements imposed by advanced functions, increased complexity, and shortened development times. Connecting and exchanging models created using a variety of tools between different departments or companies has become a pressing need in model based development. This has led, since 2010, to European-led efforts to define a shared interface for connecting models created by different tools, which has been standardized as the functional mock-up interface (FMI). Despite growing adoption of FMI in tools worldwide, its contents and uses are still not very well known in Japan. Using actual examples, this forum aims to spread knowledge through plain explanations of how to connect and exchange models using FMI, and of the attendant required precautions.

Planning: Automotive Control & Model Committee

Y-4. A Great Revolution Term which Will Occur Once in 100 Years! How the Automotive Industry Will Change toward the Sustainable Society?

Wednesday, May 22, 14:00 to 17:30 F204, Annex Hall

With respect to automotive technology, a trend of vying for supremacy in various mobility businesses related to fields such as CASE or MaaS has become clear, particularly in Europe, the U.S., and China, and we are on the cusp of a major transformation in automotive technologies said to occur only once in a hundred years. This joint forum organized by the Special Committee on Next-Generation Power Systems and the Special Committee to Study the Automotive Society of 2050 will report on the discussions held by experts in the various fields of energy, ITS,
mobility encompassing cities and transportation, and next-generation power systems concerning how automobiles will change with the advent of a sustainable society, and what issues the Japanese automotive industry must address in that respect. It will also inform participants of challenges faced with respect to the ideal for the mobility of the future.

At the same time, it has become clear that even if the sum total of the greenhouse effect gas targets pledged by the various countries following the Paris Agreement was met, it would still be impossible to stay below the level of greenhouse effect gas emissions set for 2030, while growing interest in decarbonization efforts and ESG investing is bringing considerable changes to circumstances around the automobile. In the context of the period of major transformation for the automobile, this forum will provide an opportunity to approach its incorporation into a sustainable society from a comprehensive perspective.

Planning: Special Committee on Next-Generation Power Systems, Special Committee to Study the Automotive Society of 2050

Y-5. Japan Car Body Technologies 2019

Wednesday, May 22, 13:30 to 17:30 F205 and F206, Annex Hall

EuroCarBody is an annual conference held in Europe that features car body exhibits and benchmarking. That latest car body information is used as the basis for discussions on basic technologies such as materials or joining adapted to actual car bodies. In Japan as well, this forum has been held since 2012 in response to the need for a venue allowing comprehensive discussion that encompasses basic technologies and structure. This year, the ideal form of vehicle body technologies will be explored through presentations on the latest core vehicle body technologies and attendant vehicle body exhibits arranged with the understanding and cooperation of several automakers, as well as a discussion between the participants. That discussion will then serve as a springboard to a future expanded conference on vehicle body technologies beneficial to both presenters and the audience, and contribute to raising the overall vehicle body engineering capabilities of Japanese manufacturers.

Planning: Structural Frame-work Engineering Committee

GIA Forum

Y-6. SIP Phase 1 Outcomes of Research and Development on Autonomous Driving Systems — SIP-adus Report —

Thursday, May 23, 9:30 to 12:30 Main Hall, Conference Center

The outcomes of research and development on autonomous driving systems (SIP-adus) carried out from 2014 to 2018 in the context of the SIP Phase 1 five-year plan have been collated in a report (in English) designed to serve as global and long-term reference material. This forum will present the main initiatives from that report to convey its contents both in and outside Japan.

Planning: Operational Planning Committee, Cabinet Office, Government of Japan

Y-7. Domestically Produced Combustion Software HINOCA to Accelerate Model-Based Development of Engines— Introduction of HINOCA which Is a New Attempt to Develop by Industry-University Collaboration—

Thursday, May 23, 9:30 to 13:00 F203, Annex Hall

HINOCA is Japanese-developed software developed by the SIP Innovative Combustion Technology program that follows the

Step 1 (Inception): Observe the engine flow, spray and combustion behavior of the engine.
Step 2 (Elaboration): Understand and clarify phenomena to define a universal model.
Step 3 (Construction): Implement a program that can run the actual calculations.

SIP was concluded in March 2019, and ver. 1 was completed. It is being introduced in this forum to foster its further development.

Planning: CFD Technical Subcommittee


Thursday, May 23, 10:30 to 12:30 F204, Annex Hall
In the automotive industry, advances in CASE are gradually taking tangible form and new fields of technology are rapidly expanding, holding the potential to bring major changes to society. The upcoming commercialization of 5G is likely to provide impetus for further advances, stirring speculation on how the world of the automobile will change in the coming years. Guest lecturers from China and Korea, whose presence in fields such as AI, connectivity and MaaS has stood out, will join Japanese lecturers in introducing the latest information from their respective countries.

Planning: International Committee


Thursday, May 23, 10:00 to 12:00 F205 and F206, Annex Hall
The demand to address electrification, safety, automated driving, and other issues in addition to longstanding concerns such as decreasing environmental impact, reducing weight, and enhancing fuel efficiency, can be safely said to make the major transformation of the automobile a necessity. The Materials Committee provides material engineering information from the steel, light metal, and chemical products fields to support innovation in automobiles. The materials forum focuses on the latest trends concerning the material technologies constituting the foundation that contributes to the major transformation of the automobile. This edition of the forum puts the steel field at the forefront, with automobile and steel manufacturers joined by theoretical researchers as part of a joint program with the Iron and Steel Institute of Japan to share views on the course of automotive material engineering.

Planning: Materials Committee

Y-10. The Latest Trend of the Materials R&D for the Revolution of the Automotive (Light Weight Metal, Organic Material)

Thursday, May 23, 14:00 to 16:50 F205 and F206, Annex Hall
This edition of the forum puts the light metals and chemical products fields, with automobile, light metals, and chemical product manufacturers joined by theoretical researchers as part of a joint program with the Japan Institute of Metals and Materials to share views on the course of automotive material engineering.

Planning: Materials Committee

Y-11. Motorsports Forum

Thursday, May 23, 14:00 to 16:00 Main Hall, Conference Center
Various companies will present their motorsports-related activities and initiatives.

Planning: Technical Program Organizing Committee


Thursday, May 23, 14:00 to 17:30 Room 315, Conference Center
Charging systems are a crucial element of vehicle electrification in the context of the once in a hundred years transformation of the automobile, and a variety of charging approaches, including wireless methods, continue to be the subject of numerous research, proposals, and field tests. This forum will present a comprehensive overview covering the international standardization of stationary charging, along with upcoming trends in dynamic charging, for the purpose of contributing to the internationalization of this field.

Planning: Wireless Power Transfer System Technology Committee

Y-13. The Leading Edge Technology and Activity of Image Information Applications

Thursday, May 23, 14:00 to 17:10 F203, Annex Hall
The image data collected from on-board vehicle cameras is use in various ways. Drive recorders, for example, have spread rapidly among both personal and commercial vehicles, and are used not only to mitigate accidents, provide safety education, and allow fact-based fault determination after an accident, but also to provide driver assistance and collect basic data to further advances in autonomous driving technology. Although autonomous driving technologies have been gathering most of the attention, rapid advances are also being made in technologies performing real time recognition of pedestrians or the surroundings using image data from on-board cameras, raising expectations to use that data as probe data for smoothing traffic flow and enhancing safety.
In this forum, representatives from industry, academia, and government involved in drive recorders and autonomous driving will present ideas from a broad range of sectors concerning the increasingly diversifying use of image data in the automotive field, and will also draw participants into a discussion aimed at exploring the potential of technologies that use image data. This forum is being held in cooperation with the Japan Drive-Recorder Consortium.

**Planning:** Image Information Application Committee


*Thursday, May 23, 14:00 to 17:15 F204, Annex Hall*

This forum will showcase some of the UK’s best innovations in the areas of Zero Emission and Connected and Autonomous Vehicles. Around 10 presentations from UK based organizations will demonstrate ground breaking technical advances in areas such as e-machines, power electronics, level 4/5 automation and more. The aim is to highlight to a Japanese and pan Asian audience the innovation activity taking place in the UK. It is also intended to build business relations between the two automotive nations.

**Planning:** International Committee, British Embassy

**Y-15. Proposal for the New Relationship of Humans with a Personal Mobility Vehicle including Motorcycle**

*Friday, May 24, 9:30 to 12:30 F203 and F204, Annex Hall*

Motorcycles are a more straightforward means of transportation than automobiles, and represent a form of mobility with strong sports and hobby aspects. Since their introduction more than a century ago, motorcycles have retained their basic style of one front wheel and one rear wheel, with the engine in the middle and the rider straddling the vehicle. Recently, however, the introduction of models with two front wheels and other signs of change have been observed.

In that context, this forum will take a look at the promising future vision of motorcycles by both reexamining the vehicle dynamics of the conventional motorcycle configuration, and discussing the dynamics and safety of the newly introduced vehicles with two front wheels, as well as of PMVs with two rear wheels and other vehicles subject to ongoing research. Presenting both everlasting value and the significance of the changes should convey the appeal of motorcycles to a broad range of Exposition visitors, including students.

**Planning:** Two-wheeled Vehicle Dynamics Committee

**Y-16. Mobility Design in the Era of Automatic Driving / Connectivity**

*Friday, May 24, 13:30 to 17:00 F203 and F204, Annex Hall*

Solving the various social issues we face, including safety and security, establishing an environmentally friendly society, and the declining birth rate and aging population calls for defining a future-oriented course for the development of automotive technologies as well as proposing and creating a sustainable mobile society through that automotive technology.

Under these circumstances, the evolution of autonomous driving, connectivity, and other technologies currently in the spotlight is viewed as representing the first step in solving those issues, rather than merely the styling of mobility, due to the significant impact of that evolution on the traffic infrastructure and other aspects of lifestyle and the social environment, as well as on the value of the existence of mobility itself.

Given the need to strengthen collaborative industry-academia-government projects coordinated with the social sciences, humanities, and other newly-included academic fields to build a new creative collaboration environment, this forum will use knowledge from a variety of fields and perspectives to examine the forms of mobility, and their design, that should be offered to society.

**Planning:** Design Committee

**Y-17. Cars that Think and Communicate — Beyond Autonomous Driving I—**

*Friday, May 24, 9:30 to 12:40 F205 and F206, Annex Hall*

With the ongoing rapid progress of autonomous and automated driving, development targeting its commercialization is being actively conducted, and initiatives aimed at market introduction are also underway. Such automotive engineering innovations, which are not limited to autonomous and automated driving technologies, but also extend to revolutionizing the on-board devices and vehicle control technology between humans and cars, as well as the devices used by the vehicle to communicate with its surroundings, has begun to significantly impact the form of automotive technologies. This year,
as usual, the forum is jointly organized by the Electronics, ITS, and Multimedia Engineering Committees and the Automated Driving Committee and features discussions on the technologies required to achieve automated driving by enabling the vehicle to think on its own as well as cooperate with its surroundings and with the driver. The event also introduces upcoming technologies and their potential, and provides food for thought on future courses of action.

Segment I of the forum will focus on discussing the systems and their potential.

**Planning:** Electronics Engineering Committee, Multimedia Engineering Committee, ITS Engineering Committee, Automated Driving Committee

**Y-18. Cars that Think and Communicate — Beyond Autonomous Driving II —**

Friday, May 24, 14:00 to 17:00 F204 and F205, Annex Hall

Segment II of the forum discussions will center around the base technologies required to achieve autonomous driving vehicles in the years to come.

**Planning:** Electronics Engineering Committee, Multimedia Engineering Committee, ITS Engineering Committee, Automated Driving Committee