

2023 Formula SAE Japan – Monozukuri Design Competition – 2023 FSAEJ Participation Rules (Second Edition)

Issued: December 20, 2022

Revised: January 16, 2023

2023 Formula SAE Japan (FSAEJ) is hosted by the Society of Automotive Engineers of Japan (JSAE) in accordance with the rules described below, the Formula SAE® Rules 2023, the 2023 FSAEJ Participation Rules, and the 2023 FSAEJ Local Rules. Items described in the Participation Rules and the Local Rules take priority over the Formula SAE® Rules 2023.

Article 1 Competition Name

2023 Formula SAE Japan - Monozukuri Design Competition -
Abbreviation Code: FSAEJ

Article 2 General Policy

2023 FSAEJ will operate all Static events (Presentation, Cost and Manufacturing, Design event) as virtual events. Technical Inspections and Dynamic events are to be held on-site.

The details of the virtual events will be released in 2023 FSAEJ Local Rules No.2.

Article 3 Date

Virtual Events: **From Monday, August 21 to Friday, August 25, 2023**

Onsite Events: **From Monday, August 28 to Saturday, September 2, 2023**

*Time schedule details will be announced later.

*JST time is applied unless otherwise stated.

Article 4 Venue/Onsite Event

ECOPA (Ogasayama Sports Park), Shizuoka Prefecture, URL: <https://www.ecopa.jp/english/>

Article 5 Organizer

Society of Automotive Engineers of Japan, Inc. (JSAE)

Article 6 Formula SAE Japan Office

Society of Automotive Engineers of Japan, Inc. (JSAE)

Address: 10-2 Gobancho, Chiyoda-ku, Tokyo 102-0076 Japan

Tel.: +81-3-3262-8214, email: formula@jsae.or.jp, URL: <https://www.jsae.or.jp/formula/en/>

Article 7 Competition Officers

Board of Formula SAE Japan

Chairperson: Shunichi Toyomasu

Vice Chairpersons: Yoshiaki Matsuzono

Yuichi Azuma

Rules Committee

Chairperson: Natsuo Tsuji

Vice Chairperson: Hiroaki Mizutani

Executive Committee

Chairperson: Yuu Oowada

Vice Chairpersons: Naoto Sunako

Technical Inspection Leader: Naoto Sunako

EV Leader: Tomo Kawahara

Presentation Event Leader: Takahiko Masuda

Cost & Manufacturing Event Leader: Ken Suzuki

Design Event Leader: Takuya Saito

Dynamic Events Leader: Hirotaka Nakazawa

Secretariat: Shinichiro Doi, Mitsuhiko Koyashiki, Toru Kodaka

Article 8 Official Languages

Japanese or English

Article 9 Competition Classes

1. ICV Class

2. EV Class

Up to a total of 80 teams may participate.

Note for ICV teams: Gasoline will be the only fuel provided. No E85 will be provided.

Article 10 Vehicle Production Regulations

The vehicles must be fabricated in compliance with the Formula SAE® Rules 2023 and 2023 FSAEJ Local Rules.

Article 11 Participation Requirements

The teams must fulfill the following requirements.

1. Educational institutes will be permitted to register only one team and one vehicle, but with exemption to the following cases.

- 1) An institute has multiple campuses and team participate on per campus basis.
- 2) Participation in both the ICV class and the EV class.
- 3) A team is composed of members from two or more educational institutes.

2. Team members

- 1) Team members must be students of national colleges of technology, junior colleges, universities, graduate schools, or similar education / training institutes. Individuals who have graduated within seven months prior to the competition date are also eligible. There is no age limit.
- 2) There may be a possibility of posing limitations about the number of members allowed into the team pit at the site.
- 3) When one educational institute participates in both ICV and EV classes, team members and drivers may participate in both classes.
- 4) Drivers participating in the competition must be 18 years old or above and comply with rule AD.3.3 of the Formula SAE® Rules 2023.

3. Faculty Advisors (FA)

- 1) The FA must be responsible for all team activities as a representative of the educational institute and must register for the competition in the same way as the team members.
- 2) The FA as a general rule must be a member of the faculty staff of the educational institution to which the team belongs.
- 3) A team may have multiple FAs, and FAs may be changed until the team registers on-site.
- 4) During the period of competition, FA must be responsible for all team activities including non-competition matters related to safety, health, and the attitudes of team members.
- 5) The FA as a general rule must accompany the team while the Competition is in progress at the event site. However, the FA may be located away from the Competition site provided that the location is clearly understood by the team and the team FA is able to return to the site within 1 hour if called.
- 6) If the educational institute participates in both the ICV and EV classes, the FA may be responsible for both ICV and EV entries.
- 7) Teams composed of members from two or more educational institutes must have at least one FA from each institute.

4. Electrical System Officer (ESO) and Electric System Advisor (ESA) – EV Class Only

- 1) An ESO must accompany the car whenever it is operated or moved around the event site.
- 2) The FA may be the ESA if the requirements are met.
- 3) Formula SAE Japan provides ESO training as part of its safety education. The ESO of teams participating in the EV class must study the course materials provided by the organizer and achieve the specified score in an online test. However, it should be noted that the purpose of this test is to raise awareness of safety. The test will not result in the awarding of a qualification or certification by the organizer.
- 4) The ESA must have significant experience of the technology that is being developed and its implementation into vehicles or other safety critical systems, such that they are adequately qualified to advise the team on their proposed electrical and control system designs.

Note: It is not necessary for the ESA to be a staff member of the educational institute. Teams may have more than one person acting as ESA to achieve this requirement.

(Refer to rules AD.5.2 and AD.5.3 of the Formula SAE® Rules 2023.)

5. Insurance

All team members and FAs must have effective insurance to cover injury and medical treatment during the period of the onsite events.

Note: It is highly recommended that teams obtain insurance that covers their Formula Student activities

throughout the year.

Article 12 Team Participation Application

1. **Application:** From 12:30, Monday, January 23, 2023
2. **Application Deadline:** 14:00, Thursday, January 26, 2023
3. **How to Apply**

Please apply online via the following website.

https://tech.jsae.or.jp/formula/2023team_en/registration.aspx

4. **Number of Registered Teams:** The upper limit is **80 teams**.

The registered teams are determined by the following priority order.

First priority: Japanese teams.

Second priority: Teams from countries or regions* not included in priority 1 (1 team per country or region).

* See the “Other Area” section on the homepage of the Ministry of Foreign Affairs of Japan or a definition of these regions (<https://www.mofa.go.jp/region/index.html>)

Third priority: In order of application arrival.

5. **Finalizing the Registration**

The first Pending List will be released on Wednesday, February 1, 2023 on the FSAEJ official website (<https://www.jsae.or.jp/formula/en/>).

The deadline for payment of the registration fee is Friday, February 10 2023.

Note: The Pending List contains the teams that can register for 2023 FSAEJ by paying the registration fee. The Waiting List contains the teams waiting to be moved to the Pending List.

- After application, teams will be allocated to the Pending List or Waiting List in the above priority order. Teams at or above 80th place in this order will be placed on the Pending List and teams at or below 81st place will be allocated to the Waiting List.
- Teams placed on the Pending List must complete their registration by paying the registration fee before the deadline.
- Teams must submit an image of their payment certification to the FSAEJ Office by email (formula@jsae.or.jp).
- Teams that fail to submit this payment certification image by the payment deadline will be regarded as withdrawn and removed from the Pending List.
- If 80 teams have not completed registration by February 10, 2023, teams on the Waiting List will be added to the Pending List following the priority order.
- After Monday, February 20, 2023, the pending list will be updated every Monday until the 80th team is added, and the deadline for payment of the registration fee will be Friday of the same week.
- Teams on the Waiting List MUST NOT pay the registration fee. Once paid, the registration fee will not be refunded under any circumstances.

6. **Additional Application**

If the number of Registered Teams does not reach the upper limit (80 teams), an additional application may be opened after January 30, 2023.

7. **Registration Fee: There are two classes of the registration fee.**

1) If all team members (including FAs) are members of one of the following societies:

**(1) SAE International (2) SAE Australasia (3) SAE Brazil (4) IMechE (5) VDI or (6) JSAE:
¥110,000 per team (tax included)**

Note: All members must be a member of one of societies (1) - (6) and input their membership number upon registration. ESAs do not require membership.

2) In all other cases: ¥220,000 per team (tax included)

Note: This fee includes consumption tax. This tax is charged to both Japanese and non-Japanese participants in accordance with the law. **All bank charges must be paid by the team.**

8. Payment: Bank Transfer (only the following details are valid)

1) Bank Details:

Bank Name: MUFG Bank, Ltd., Ichigaya Branch
 (Bank No.: 0005-014)
 Account Holder: SOCIETY OF AUTOMOTIVE ENGINEERS OF JAPAN, INC.
 Account No.: 1299678 (Ordinary)
 SWIFT BIC: BOTKJPJT
 SWIFT code: BOTKJPJTXXX
 Bank Address: 4-1, Kojimachi, Chiyoda-ku, Tokyo, 102-0083 Japan

Article 13 Submission of Documents

Documents must be submitted on the team page (https://tech.jsae.or.jp/formula/e2023team_en/login.aspx).

Team can resubmit as many times as you like before the submission deadline.

Category	Item to be submitted	Submission format (file format/maximum size)	Note	Submission Deadline		Delay Deadline
Registration documents	Copies of student IDs with pictures	PDF/10MB	Not required if ALL team members are members of the societies listed in Article 12	14:00, Thursday July 20		/
	Copies of driver's license	PDF/10MB	All drivers are required to submit a copy of their driver's license.			
	Certificate of insurance coverage	PDF/10MB	Check the Information of the registration documents on the team page.			
Technical Inspection	Structural Equivalency Spreadsheet (SES)	Excel/20MB	/	Initial Submission Deadline	14:00 Thursday March 9	14:00 Friday March 10
				1st Resubmission Deadline	14:00 Thursday May 11	14:00 Friday May 12
				2nd Resubmission Deadline	14:00 Thursday June 15	14:00 Friday June 16

Category	Item to be submitted	Submission format (file format/maximum size)	Note	Submission Deadline	Delay Deadline	
ETC (ICV Using ETC only)	Electronic Throttle Control(ETC) Notice of Intent	Word/10MB	Also submit the ESF for ETC	14:00 Thursday February 23		14:00 Friday February 24
	Electrical System Form (ESF)	Dedicated format for FSAEJ/40MB	Examination method is the same as Article 16 (3)	Initial Submission Deadline	14:00 Thursday April 6	14:00 Friday April 7
				Resubmission Deadline	14:00 Thursday June 1	
				Final Resubmission Deadline	14:00 Thursday July 27	
EV (EV Class only)	ESO/ESA form	Dedicated format for FSAEJ/10MB	If it changes after the deadline, e-mail to fomula@jsae.or.jp	14:00 Thursday February 23		14:00 Friday February 24
	Electrical System Form (ESF)	Dedicated format for FSAEJ/40MB		Initial Submission Deadline	14:00 Thursday April 6	14:00 Friday April 7
				Resubmission Deadline	14:00 Thursday June 1	
				Final Resubmission Deadline	14:00 Thursday July 27	
	Charging Plug Spec Form	Dedicated format for FSAEJ/20MB		14:00 Thursday July 13		
Self-Checked EV Inspection Sheet	Dedicated format for FSAEJ/30MB		14:00 Thursday August 3			
Shakedown Certificate		MPG, MP4, WMV/40MB	The pass/fail result of the Shakedown Certificate submitted by 14:00 on Thursday, August 3, will be announced on Monday, August 7.	14:00 Monday August 21		

Category	Item to be submitted	Submission format (file format/maximum size)	Submission Deadline	Delay Deadline	
Cost and Manufacturing	Cost Report : Electronic data		14:00	14:00	
		Entry sheet for Cost Report	Thursday June 1	Friday June 2	
	Total 300MB	Bill of Materials (BOM)	dedicated format for FSAEJ, Excel and PDF		
		Cost calculation data (FCA) for each part*			
		Supporting documentation for cost calculation*	PDF		
		Cost Event Addendum	PDF/20MB	14:00 Monday August 21	
	Real case scenario	PDF/3MB	14:00 Monday August 21		
Design Event	Design Documents		14:00	14:00	
		Design Briefing	Thursday June 15	Friday June 16	
		Design Specification Sheet			
	Vehicle Drawings (3 View Drawing)	PDF/3MB	14:00 Thursday July 20	14:00 Friday July 21	
Presentation Event	Sales Presentation Document (SPD)	dedicated format for FSAEJ, PDF/10MB	14:00 Thursday June 22	14:00 Friday June 23	
Static Photo	Photos of the assembly parts	PDF(zip)/30MB	14:00 Thursday July 27		
	Photos of the vehicle	PDF(zip)/30MB	14:00 Thursday August 17		

The following penalty will be counted on the Overall Score

Category	Submission past deadline	Non-submission and Required level not achieved	Response to failure
Technical Inspection (SES)	10-point penalty	Disqualified from FSAEJ	
ETC Notice of Intent /ETC-ESF		Use of ETC prohibited	
ESO/ESA form		Disqualified from FSAEJ	
EV-ESF		Disqualified from FSAEJ	Descending order of EV Inspection, etc.
Presentation Event		(A) Disqualified from FSAEJ or (B) Disqualified for Presentation Event, and -20 points from total score	
Cost and Manufacturing		(A) Disqualified from FSAEJ or (B) Disqualified for Cost and -100 points from total score	
Design Event		(A) Disqualified from FSAEJ or (B) Disqualified for Design Event, and -20 points from total score	
Shakedown Certificate		Cannot participate in vehicle inspection (technical / EV) Not disqualified from FSAEJ	

Article 14 Submission of SES

1. Aim of submission

Early completion of SES is required as the most effective means of incorporating its details and regulations into the vehicle design, and enabling all cars participating in the competition to proceed to the dynamic events.

2. Method of implementation

The SES Templates that can be downloaded from FSAE Online.com (<http://www.fsaeonline.com/>) must be used.

3. Initial Submission, 1st Resubmission, and 2nd Resubmission

Judges will return the pass/fail result of the initial submission by Friday April 21, 2023, and if it fails, we will ask you for the 1st resubmission. After that, we will return the results of the 1st resubmission by Friday June 2. After that, we will return the results of the 2nd resubmission by Thursday July 6, and the teams that have failed at this point will be excluded from the team entry.

*Pending/Waiting teams also need to submit the initial submission by the submission deadline. The re-submission deadline for Pending/Waiting teams will be determined and notified to the teams individually. In these cases as well, a maximum of two re-submissions will be permitted. Teams whose submitted documents are rejected after this point will be excluded from the entry list.

4. Screening score

The acceptable level at the initial SES is scored by the number of its passed items. This score will not be disclosed. However, the order of the Technical Inspection schedule will be determined using this SES screening scores. This schedule will be released on the team page before the competition.

5. Required level not achieved

It will be treated as non-submission, if roughly one-third or more of the document items are not completed at the first submission, or if the designated form is not used.

Article 15 Submission of ESO/ESA Form

1. Aim of submission

Teams must submit the ESO/ESA form to ensure the transparency of the team organization by clearly defining the roles of ESO and ESA and confirming that the appropriate team members are registered.

2. Method of implementation

The ESO must undertake the training related to high voltage safety provided by the organizer (the Society of Automotive Engineers of Japan) and pass the test at the end of the course. A number will be awarded to people passing this test, which must be entered on the ESO/ESA form (due to be posted on the team pages by the first half of February 2023).

In addition, based on AD.5.2.2, any related education, training, or relevant public qualifications (excluding qualifications that are scheduled to be obtained in the future) must also be entered on the form.

3. Criteria for failure

It will be treated as a failure, if the submitted documents do not satisfy the regulations, However, even in the above case, after feedback from the judges, the documents must be submitted again within the designated date and time, and if the judges approve of the improvement of the content, a penalty of 50 points will be given and it will be accepted as the first submission.

Article 16 Submission of EV-ESF

1. Aim of submission

The screening of electrical system design documents is emphasized as the most effective means of ensuring the safety of EV design, and enabling to proceed to Dynamic Events.

Resubmission may be requested several times depending on the degree of completion.

2. Method of implementation

Teams should use the dedicated FSAEJ templates for ESF (posted on the team page at the end of February 2023). Please note that additional items may be requested at a later date to supplement the contents of these templates.

3. Initial Submission, Resubmission, and Final Resubmission

Teams other than those who passed the initial submission will be required to resubmit. The submission or non-submission will be one of the determining factors such as the order of EV inspection at the competition. It is recommended to resubmit the ESF without waiting for the interim/final submission deadlines to receive more than four feedbacks. However, resubmission must be made after receiving feedback from the judges. (Note: the feedback method is different from the Submission of SES in Article 14 above).

However, ESF feedback may not be implemented for teams that cannot participate in EV inspections and Technical inspections.

4. Screening score

The score will be determined based on the number of items passing the acceptable level. The details of the score will not be disclosed. However, the ESF Certificate will be issued on the team page if the team passes all the items.

Teams that pass the ESF will be awarded preferential treatment, such as receiving priority in the line for the EV Technical Inspections, skipping some of the items in the EV Technical Inspections, and so on.

Qualifying teams will be disclosed on the team pages before the Competition.

5. Required level not achieved

It will be treated as non-submission, if roughly one-third or more of the document items are not completed at the first submission, or if the designated form is not used.

However, even in the above case, after feedback from the judges, the documents must be submitted again within the designated date and time, and if the judges approve of the improvement of the content, a penalty of 50 points will be given and it will be accepted as the first submission.

Article 17 Submission of Charging Plug Spec Form

1. Aim of submission

This is the documents for EV Class teams in order to prepare its charging facilities by identifying the specifications for charging accumulator containers at the venue.

2. Method of implementation

Teams must submit the Charging Plug Spec Form. (posted on the team page at the end of June 2023).

3. No Submission

If teams do not submit this form, their charging facilities will not be prepared at the venue. In addition, if teams do not submit this form, they may be descended in the order of EV Inspection.

Article 18 Submission of Self-Checked EV Inspection Sheet

1. Aim of submission

This is the documents for EV Class teams in order to check the safety of their vehicles at an early stage and to proceed all EV teams to Dynamic Events.

2. Method of implementation

Refer to the Local Rules No. 2 issued separately.

3. No Submission

If teams do not submit this form, they may be descended in the order of EV Inspection

Article 19 Presentation Event

Presentation Event will be held as virtual event before the onsite events. It will be conducted in accordance with 2023 FSAEJ Participation Rules, Local Rules, and Formula SAE® Rules 2023.

Refer to the Local Rules No. 2 issued separately.

Article 20 Cost and Manufacturing Event

Cost and Manufacturing Event will be held as virtual event before the onsite events. It will be conducted in accordance with 2023 FSAEJ Participation Rules, Local Rules, and Formula SAE® Rules 2023.

Refer to the Local Rules No. 2 issued separately.

Article 21 Design Event

Design Event will be held as virtual event before the onsite events. It will be conducted in accordance with 2023 FSAEJ Participation Rules, Local Rules, and Formula SAE® Rules 2023

Refer to the Local Rules No. 2 issued separately.

Article 22 Shakedown Certificate

1. Aim of submission

The Shakedown Certificate must be submitted before the deadline to show that the car is completed. If the Shakedown Certificate is regarded as “not submitted” or the contents of videos are regarded as unsuitable (for example, if the videos are unclear or cannot be used to judge the degree of completion), the team may not participate in the Technical Inspections (EV and regular Technical Inspections).

2. Pass/Fail result

As written in the table above, the pass/fail result of the Shakedown Certificate submitted will be announced before the submission deadline. Teams must re-submit by the submission deadline if they fail.

3. Submission method / File format/size

Submission method: Upload to the team page.

File format/size: mpg, mp4, wmv (for Windows Media Player)/maximum 40 MB

A sample movie is provided on the team page.

4. Requirements for contents of videos

- 1) Videos must be clear and allow the Judges to make objective judgments and verifications about the following requirements.
- 2) While driving, the driver must be wearing all the necessary equipment and the impact attenuator must be mounted.
- 3) The following items must be clearly identifiable at the beginning of the video (written clearly on paper, a whiteboard, or the like): (1) the school name, (2) the car number, (3) the location of the video shoot, (4) the date of the video shoot, and (5) the name of the FA.
- 4) The video must show the car driving forward, accelerating, and stopping.
- 5) The video must show a fire extinguisher being carried at the side of the vehicle when the engine is being started with starter motor (ICVs) or when high voltage is applied (EVs).
- 6) (EVs only) The shutdown button close to the right shoulder of the driver must be pushed, and the power must fall to 60 V DC or 25 V AC RMS within 5 seconds.

Article 23 Dynamic Events

Teams must pass the Technical Inspections to proceed to the Dynamic Events. It will be conducted in accordance with 2023 FSAEJ Participation Rules, Local Rules, and Formula SAE® Rules 2023.

Article 24 Testing and Work Safety

1. The organizers are not responsible for the use of the vehicles outside of their competition.
2. The vehicles must not participate in events not suitable for this type of vehicles like hill climbs, drag races, wheel-to-wheel races or similar.
3. Organizers reserve the right to disqualify a team registered for their competition in case of unsafe driving behavior, especially if the reputation of the competition, sponsors and other teams is compromised.

Refer to the "Guidelines of Testing and Work Safety" to be issued in February 2023.

Article 25 Follow-up Programs

The follow-up programs listed below are planned to be held at the 2023 Competition during the online and onsite schedules for teams that have paid the participation fee and (a) have been excluded from entering the Competition or (b) have decided not to enter under their own volition.

Details are planned to be released in July 2023.

- (1) Follow-up program for static events (Cost Report Review, Design Review, and Presentation Event) as part of the online schedule
- (2) Follow-up program for Technical Inspections (regular and EV Technical Inspections) as part of the onsite schedule during the Competition (participants may not bring their cars to the program).

Article 26 Official Q&A

Any questions about these rules, the various other rules, or the Competition in general must be submitted via the official Q&A form on the team page that will be set up after the entry period.

The purpose of the official Q&A is to ask questions about the interpretation of the Rules and to make requests to the judges. Any questions should be thoroughly discussed with team members, FAs, and the experienced before posting.

Questions such as [a] - [e] below will NOT to be answered.

[a]: Repetition of the same questions asked by other teams in same year

[b]: Checking the acceptability of individual cases

[c]: The items clearly mentioned in the Rules

[d]: Technically elementary items

[e]: Failure to mention the full name of the questioner (GR.5.2.1).

Failure to understand the above may be to warn the FA and Team Captain.

*Team page: https://tech.jsae.or.jp/formula/e2023team_en/login.aspx

Article 27 Awards

Outstanding Performance Awards, Categorized Awards and Special Awards

*The details will be released in March 2023.

Article 28 Supplements

1. 2023 Local Rules will be announced on the official website at any time if it needs.
 - (1) Local Rule No.1 (Technical Inspection, EV Inspection, etc.) is issued on December 20, 2022.
 - (2) Local Rule No.2 (Static Events, Dynamic Events, etc.) will be issued in the end of January.
2. On participating in 2023 FSAEJ, each team and the members must thoroughly read and comprehend the contents of the Formula SAE® Rules 2023 and 2023 Local Rules.
3. In case teams abandon to participate in the competition after the last update of the team list, please declare promptly (Formula SAE® Rules 2023 AD.6.5).
4. Teams must comply with Japanese laws.
5. When any doubt occurs as to the interpretation of the Rules, the decision of Rule Committee and 2023 Execution Committee has priority over all others.
6. The organizers, sponsors, and supporting institutions must assume no responsibility whatever for any accident or damage that may occur during the competition unexpectedly. The competition may be stopped based on the judgment of the organizers due to poor weather, unforeseen, or unavoidable circumstances. Any onsite events may be cancelled depending on the infection of COVID-19.

Revision Record

December 20, 2022 First edition issued.

January 16, 2023 Second edition issued.

<Revised Articles>

Article 3 Date

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