

RIMAC GROUP
FORMULA STUDENT
ALPE ADRIA

EVENT
HANDBOOK

2022





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● CHANGELOG

Release Date	Change	Version
25.03.2022	Initial release	0.9
01.07.2022	Competition site layout, Registered teams & Competition schedule added Deadlines updated Document naming penalty points added BPES clarification added DDT number of pages updated & clarification added	1.0
15.08.2022	List of Registered Teams updated Official Schedule updated Business Plan Presentation Description updated Track layout updated	1.1



● EMERGENCY INFORMATION

MINOR INJURY

MEDICAL CENTRE – in the event of a minor injury (shallow cut, small bruising...) please accompany the injured person to the Medical Centre. Emergency aid is provided there. The Medical Centre is available every day during dynamic events while the event site is open.

SEVERE INJURY

TAKE ACTION, RESPOND – if someone is severely injured and requires urgent help, do not hesitate, and immediately call the emergency services. The emergency number for every landline and mobile phone is 112 (also see information about emergency calls below). If you have proper first aid training, help to the best of your ability.

DURING DYNAMICS – when the dynamic area is open, a special rescue team is on-site. To contact them, ask someone with a two-way radio (official, security).

Emergency Numbers

MAIN HOSPITAL

Department of Emergency Medicine

Address: Franje Galinca 4, 42000 Varaždin, Croatia

Phone: +385 42 262 280

Homepage: <http://www.zhm-vz.hr/>

EMERGENCY SERVICES

In case of an emergency, please call one of the numbers listed below, no matter what time it is.

Regular emergency number:	112	0-24h
Ambulance emergency number:	194	0-24h
Firefighters' emergency number:	193	0-24h
Police emergency number:	192	0-24h



BEHAVIOUR IN CASE OF REGULAR FIRES

(FUEL, OIL, PAPER, WOOD, ETC.)

Call for help (firefighters/ambulance) by either finding an official with a radio or calling 112. Assist injured people to leave the area and provide first aid if you can. Try to extinguish the fire if it is possible without risking your safety. If an electric consumer is on fire, first cut the power to it. If the fire cannot be put out, leave the area, and instruct others to do so as well. Wait for the firefighters/ambulance to arrive.

BEHAVIOUR IN CASE OF ACCUMULATOR FIRES

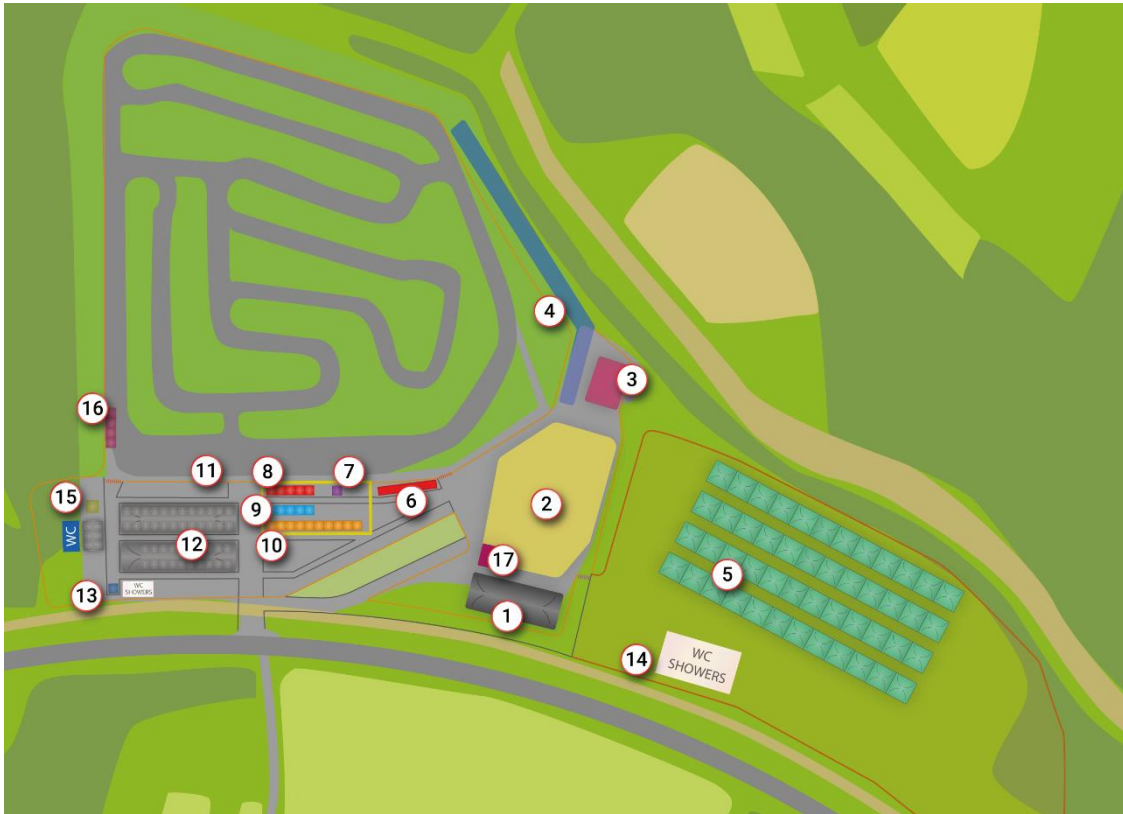
Immediately leave the area within a radius of 5 meters and instruct others to do so as well. Assist injured people to leave the area. An overheated accumulator is extremely dangerous so do not put yourself in danger by trying to put it out. Provide first aid to the injured if you can. See the below section on what to do in case of electric shock - in any case, do NOT give the victim(s) water or food. Call for help by finding an official with a radio or by calling 112 yourself. Wait for the firefighters and ambulance to arrive, who will handle the situation. Stay out of the way of fumes coming from the accumulator or the vehicle; mind the wind direction.

BEHAVIOUR IN CASE OF ELECTRIC SHOCK

Call for medical help by finding an official with a radio or by calling 112 yourself, preferably in parallel to the steps below. Push one of the emergency shutdown buttons and wait until the TSAL is switched off. Note that this can take up to 5 seconds, wait patiently. Try to talk with the victim and ask him/her about his/her health. Insulate yourself if you must move a victim away from a live contact – wear dry gloves or cover your hands with multiple layers of cloth and cover potential contact paths with the vehicle with the HV isolation blanket. Watch your footing to make sure that you do not slip or fall when trying to move the victim. Do not move the victim if there is a possibility of neck or spinal injuries unless he/she is in immediate danger. Do NOT give water or food to the victim. Give artificial respiration if the victim is not breathing. Give CPR if the victim's heart has stopped or use an Automated External Defibrillator. Cover burns with a sterile dressing. On the surface, electrical burns may not look serious, but the burn can be severe deeper in the tissue. Keep the victim comfortable, warm, and at rest, and monitor his/her breathing until the ambulance arrives. The victim might undergo ventricular fibrillation several minutes after experiencing a shock.

● TRACK AND ACCOMMODATION

Track Name: St Rauš, Novi Marof ([Location](#))



1	Main Tent	10	Accumulator Scrutineering & charging
2	Sponsors Area	11	Race Office
3	VIP Area	12	Pit Area
4	Spectators' Area	13	Rain Test
5	Camping Area	14	WC & Showers
6	Emergency Personnel	15	Fuel Station
7	Tilt Test	16	Noise Test & Engine Running Area
8	Mechanical Scrutineering	17	Info & Registration Point
9	Electrical Scrutineering		

THE RACING TRACK CAN BE A DANGEROUS PLACE, SAFETY IS OUR #1 CONCERN! EVERY PARTICIPANT HAS TO BE AWARE OF THAT AND ACCEPT AND ABIDE BY PROVIDED RULES AND RECOMMENDATIONS. IN THE EVENT OF ANY RULEBREAKING; PENALTY POINTS, DISQUALIFICATION OR SIMILAR PUNISHMENT MAY BE EXERTED BY THE FSAA OFFICIALS.



● GENERAL INFORMATION

ARRIVAL AND REGISTRATION

Date and Time: Tuesday, 23rd August 11:00-18:00

Location: Karting track St Rauš, Novi Marof; Info Point

The competition will take place from 23rd to 28th of August 2022.

After the teams arrive at Rimac Group FS Alpe Adria 2022 venue, officials will record your arrival and give you all the needed information about the next steps - registration, parking, unloading the trucks, etc.

ONLY the Team Captain can register their team. They can be accompanied by only ONE team member! During the first step of the registration procedure, the team captain must submit a printed version of the "Waiver of Liability" signed by all team members, which will be provided to the Team Captain in advance. Number of team members is limited to 30 per team (including university advisers or any other related personnel).

By signing the "Waiver of Liability", the teams state that they accept the rules of the competition in addition to the FS Rules, that only team members will work on the vehicle, also that they understand and will follow the safety guidelines of the competition. After the registration, Team Captains will receive a starter package which includes event wristbands, an Event Handbook, etc.

[EV Only] Data loggers will be provided at the registration. FS Ape Adria will use 2022 FSG Data loggers.

A fee will be collected for dynamic and media vests as well as for the Data loggers.

To compete at the event, every team has to be registered on the official FSG website: [FSG Website](#)



REFUND POLICY

Due to COVID-19, the execution of the competition is subject to change. The competition will be canceled by the FSAA if:

- The Croatian government cancels all events at the time of the competition
- 30% of the registered teams are prevented from coming (for any reason)

The refund policy in the event the competition is canceled by the organizer due to above mentioned reasons is:

- Until 31st of March - 90% refund
- Until 30th of April - 70% refund
- Until 31st of May - 50% refund
- After 1st of June - NO REFUND

FSAA reserves the right to change the maximum number of participants per team if there would be any governmental or health-related restrictions on the maximum number of participants at events.

If the case that the event is canceled by a team (due to any reason), there will be no refund.

COVID-19 PREVENTIVE MEASURES

Please follow the Covid-19 guidelines and measures provided by the Croatian government. The competition will be held under the COVID-19 recommendations of the Croatian ministry of health. Information about traveling to Croatia and COVID-19 regulations can be found on the following website: <https://koronavirus.hr/en>



● LIST OF REGISTERED TEAMS [CV]

No.	Car #	Team name	University	Country	Class
1	240	PRz Racing Team	Rzeszow Technical University	Poland	CV
2	229	Rennteam Uni Stuttgart	University of Stuttgart	Germany	CV
3	151	Riteh Racing Team	University of Rijeka	Croatia	CV
4	122	FESB Racing	University of Split	Croatia	CV
5	235	UNI Maribor Grand Prix Engineering	University of Maribor	Slovenia	CV
6	580	FSRacing Team	University of Mostar	Bosnia & Herzegovina	CV
7	168	CULS Prague Formula Racing	Czech University of Life Sciences Prague	Czechia	CV
8	666	PGRacing Team	Gdańsk University of Technology	Poland	CV
9	270	CAT-Racing	University of Applied Sciences Coburg	Germany	CV
10	111	BlueStreamline	Transilvania University of Brasov	Romania	CV
11	189	Formula TU Ostrava	VSB Technical University of Ostrava	Czechia	CV
12	222	T.U. Iasi Racing Team	"Gheorghe Assachi" Technical University of Iasi	Romania	CV
13	294	Rennstall Esslingen	University of Applied Sciences Esslingen	Germany	HV
14	233	CTU CarTech	Czech Technical University Prague	Czechia	HV
15	182	BME Motorsport	Budapest University of Technology and Economics	Hungary	HV



● LIST OF REGISTERED TEAMS [EV]

No.	Car #	Team name	University	Country	Class
1	E67	eForce FEE Prague Formula	Czech Technical University in Prague	Czechia	EV
2	E69	Superior Engineering	University of Ljubljana	Slovenia	EV
3	E18	FSB Racing Team	University of Zagreb	Croatia	EV
4	E35	Road Arrow	University of Belgrade	Serbia	EV
5	E14	NTHU Racing	National Tsing Hua University	Taiwan	EV
6	E55	Ben Gurion Racing	Ben Gurion University of the Negev	Israel	EV
7	E27	Bern Formula Student	Bern University of Applied Sciences	Switzerland	EV
8	E74	TU Brno Racing	Brno University of Technology	Czechia	EV
9	E90	STUBA Green Team	Slovak University of Technology in Bratislava	Slovakia	EV
10	E41	TU Wien Racing	Vienna University of Technology	Austria	EV
11	E12	PWR Racing Team	Wroclaw University of Science and Technology	Poland	EV
12	E32	Lund Formula Student	Lund University	Sweden	EV
13	E23	Formula Electric Belgium	University of Applied Sciences Thomas More	Belgium	EV
14	E97	Mainfranken Racing e.V.	University of Applied Sciences Würzburg-Schweinfurt	Germany	EV
15	E22	Joanneum Racing Graz	University of Applied Sciences Joanneum Graz	Austria	EV
16	E94	E.Stall Esslingen	University of Applied Sciences Esslingen	Germany	EV
17	E44	Einstein Motorsport	University of Applied Sciences Ulm	Germany	EV
18	E53	TU Graz Racing Team	Graz University of Technology	Austria	EV
19	E46	Squadra Corse PoliTO	Polytechnic University of Turin	Italy	EV



20	E20	Running Snail Racing Team	University of Applied Sciences Amberg-Weiden	Germany	EV
21	E16	Zurich UAS Racing	Zurich University of Applied Sciences	Switzerland	EV
22	E28	Democritus Racing Team	Democritus University of Thrace	Greece	EV
23	E68	Delta Racing Mannheim electric e.V.	University of Applied Sciences Mannheim	Germany	EV
24	E10	Speeding Scientists Siegen e.V.	University of Siegen	Germany	EV
25	E34	Schanzer Racing Electric e.V.	Institute of Technology Ingolstadt	Germany	EV
26	E17	ART TU Cluj-Napoca	Technical University of Cluj-Napoca	Romania	EV
27	E42	Fast Forest	Deggendorf Institute of Technology	Germany	EV
28	E60	Strohm und Söhne e.V.	Nuremberg Institute of Technology Georg Simon Ohm	Germany	EV
29	E21	PolSI Racing	Silesian University of Technology	Poland	EV
30	E61	E-Motion Rennteam Aalen e.V.	Aalen University	Germany	EV
31	E15	OWL-Racing-Team	UAS Lemgo	Germany	EV



● OFFICIAL SCHEDULE

Tuesday, 23rd August – Day 0

10:00	Campsite Opens @ Camping Area
11:00-18:00	Teams Registration and Drivers Registration @ Race Office
19:00-20:00	Opening Ceremony (team welcoming and basic information) @ Main Tent

Wednesday, 24th August – Day 1

07:30	Event Site Opens
08:00-08:30	Team Leaders Briefing @ Main Tent
08:30-13:00	Mechanical Scrutineering (all Classes) @ Scrutineering Area
08:30-13:00	Electrical Scrutineering (EV only) @ Scrutineering Area
08:30-13:00	Accumulator Scrutineering (EV only) @ Scrutineering Area
09:00-13:00	Driver Egress (all Classes) @ Scrutineering Area
09:00-13:00	Tilt Test (all Classes) @ Scrutineering Area
09:00-13:00	Noise Test (CV only) @ Track Area
09:00-13:00	Rain Test (EV only) @ Wet Area
11:00-12:00	Company presentation, Rimac Group @ Main Tent
13:00-14:00	Lunch Break
14:00-20:00	Brake Test (all Classes) @ Track Area
14:00-20:30	Mechanical Scrutineering (all Classes) @ Scrutineering Area
14:00-20:30	Electrical Scrutineering (EV only) @ Scrutineering Area
14:00-20:30	Accumulator Scrutineering (EV only) @ Scrutineering Area
14:00-20:30	Driver Egress (all Classes) @ Scrutineering Area



14:00-20:30	Tilt Test (all Classes) @ Scrutineering Area
14:00-20:30	Noise Test (CV only) @ Track Area
14:00-20:30	Rain Test (EV only) @ Wet Area
20:30-21:30	Rimac Group Pub Quiz, Quarterfinals @ Main Tent
21:30	Pits Close

Thursday, 25th August - Day 2

07:30	Event Site Opens
08:30-13:00	Mechanical Scrutineering (all Classes) @ Scrutineering Area
08:30-13:00	Electrical Scrutineering (EV only) @ Scrutineering Area
08:30-13:00	Accumulator Scrutineering (EV only) @ Scrutineering Area
08:30-13:00	Driver Egress (all Classes) @ Scrutineering Area
08:30-13:00	Tilt Test (all Classes) @ Scrutineering Area
08:30-13:00	Noise Test (CV only) @ Track Area
08:30-13:00	Rain Test (EV only) @ Wet Area
08:30-13:00	Brake Test (all Classes) @ Track Area
10:30-11:15	Company presentation, AVL-AST @ Main Tent
12:00-12:30	Company presentation, PIA Automation @ Main Tent
12:30-13:00	Company presentation, Rasco @ Main Tent
13:00-14:00	Lunch Break
14:00-20:00	Brake Test (all Classes) @ Track Area
14:00-20:30	Mechanical Scrutineering (all Classes) @ Scrutineering Area
14:00-20:30	Electrical Scrutineering (EV only) @ Scrutineering Area
14:00-20:30	Accumulator Scrutineering (EV only) @ Scrutineering Area
14:00-20:30	Driver Egress (all Classes) @ Scrutineering Area



14:00-20:30	Tilt Test (all Classes) @ Scrutineering Area
14:00-20:30	Noise Test (CV only) @ Track Area
14:00-20:30	Rain Test (EV only) @ Wet Area
15:00-16:00	Business Plan Presentation Event, Equipment Check @ Cultural Centre "Ivan Rabuzin"
15:00-19:00	Practice and Engine Running Area Open @ Track Area
20:30-21:30	Rimac Group Pub Quiz, Semifinals @ Main Tent
21:30	Pits Close

Friday, 26th August – Day 3

07:30	Event Site Opens
08:00-08:30	Drivers Briefing @ Main Tent
08:30-09:00	Media Briefing @ Main Tent
08:30-09:00	Course Walk @ Track Area
09:00-13:00	Mechanical Scrutineering (all Classes) @ Scrutineering Area
09:00-13:00	Electrical Scrutineering (EV only) @ Scrutineering Area
09:00-13:00	Accumulator Scrutineering (EV only) @ Scrutineering Area
09:00-13:00	Driver Egress (all Classes) @ Scrutineering Area
09:00-13:00	Tilt Test (all Classes) @ Scrutineering Area
09:00-13:00	Noise Test (CV only) @ Track Area
09:00-13:00	Rain Test (EV only) @ Wet Area
09:00-13:00	Brake Test (all Classes) @ Track Area
09:00-13:00	Acceleration (all Classes) @ Track Area
09:00-13:00	Skidpad (all Classes) @ Track Area
09:00-13:00	Practice and Engine Running Area Open @ Track Area



10:00-13:00	Business Plan Presentation Event (all Classes) @ Cultural Centre "Ivan Rabuzin"
10:00-13:00	Cost and Manufacturing Event (all Classes) @ Pit Area
10:00-13:00	Engineering Design Event (all Classes) @ Pit Area
10:00-13:00	Team Photograph @ Photo Area
13:00-14:00	Lunch Break
14:00-18:00	Business Plan Presentation Event (all Classes) @ Cultural Centre "Ivan Rabuzin"
14:00-19:00	Practice and Engine Running Area Open @ Track Area
14:00-19:00	Team Photograph @ Photo Area
14:00-19:30	Acceleration (all Classes) @ Track Area
14:00-19:30	Skidpad (all Classes) @ Track Area
14:00-19:30	Cost and Manufacturing Event (all Classes) @ Pit Area
14:00-19:30	Engineering Design Event (all Classes) @ Pit Area
19:00-20:00	Rimac Group Pub Quiz, Finals @ Main Tent
20:30-21:30	Discussion Panel @ Main Tent <i>"Your first steps in the automotive world"</i>
20:30	Track Area Closes
21:30	Pits Close



Saturday, 27th August – Day 4

07:30	Event Site Opens
08:00-08:30	Drivers Briefing @ Main Tent
08:30-09:00	Media Briefing @ Main Tent
08:30-09:00	Course Walk @ Track Area
09:00-13:00	Autocross (all Classes) @ Track Area
09:00-13:00	Engineering Design Event Finals (all Classes) @ Main Tent
10:00-13:00	Practice and Engine Running Area Open @ Track Area
13:00-14:00	Lunch Break
14:00-16:30	Business Plan Presentation Event Finals (all Classes) @ Main Tent
14:00-17:00	Practice and Engine Running Area Open @ Track Area
14:00-17:30	Autocross (all Classes) @ Track Area
16:45-17:45	Damien Favre, Performance Aerodynamics Manager, Porsche Motorsport @ Main Tent <i>“Aerodynamics Development in Motorsport”</i>
18:00-19:00	Panoramic Photograph (all Teams) @ Track Area
19:00-20:00	Formation Lap (all Vehicles) @ Track Area
20:30	Track Area closes
21:30	Pits Close

Sunday, 28th August – Day 5

07:30	Event Site Opens
08:00-08:30	Drivers Briefing @ Main Tent
08:30-09:00	Media Briefing @ Main Tent
08:30-09:00	Course Walk @ Track Area
09:00-13:00	Engine Running Area Open @ Track Area



09:00-13:00	Endurance Event (all Classes) @ Track Area
10:00-13:00	Feedback Static Disciplines (all Classes) @ Main Tent
13:00-14:00	Lunch Break
14:00-15:00	Damien Favre, Performance Aerodynamics Manager, Porsche Motorsport @ Main Tent <i>"Aerodynamics Correlation in Motorsport"</i>
14:00-17:00	Engine Running Area Open @ Track Area
14:00-18:00	Endurance Event (all Classes) @ Track Area
18:30	Track Area closes
Until 20:00	Moving out of the Pits
20:00-22:00	Closing Ceremony & Award Ceremony @ Main Tent
22:00	Farewell Party

Monday, 29th August

Until 12:00	Moving out of the RGFSAA Camp
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The organizers reserve the right to make changes to the event schedule.

If a team fails to leave the pit or track area by the "pits/track close" time on a particular day or reenters before the pits/track are open the following day, that team can be disqualified from the competition. This is to prevent teams from gaining an advantage by having more work time and to ensure the safety of the participants.



● RULES AND GUIDELINES

Everyone (participants, volunteers, and spectators) at Rimac Group FS Alpe Adria 2022 would like to enjoy an accident-free event! These Guidelines have been established to advise teams of potentially unsafe practices in the pit and pit area.

OFFICIAL RULES

The official rules of the competition are Formula Student Rules 2022 (v1.0) also referred to as FS Rules 2022. They can be found on the FS Germany [website](#). In case of dispute between this handbook and FS Rules 2022, rules in this handbook supersede any other rules and regulations.

CATEGORIES

There will be two categories at RGFSAA22 – combustion and electric vehicles. There will be no driverless events or disciplines at RGFSAA in 2022. Hybrid vehicles are a part of the combustion vehicle category.

HYBRID VEHICLES REGULATIONS

Rimac Group Formula Student Alpe Adria is introducing a new hybrid concept for CV cars in 2022. This new regulation is in cooperation with FSA, FSEast, FSN, and FSCzech.

The implementation of the system needs to abide by the following rules: the hybrid system must be LV - Low Voltage, <60 V. Therefore, there is no need for HV scrutineering for CV vehicles. The maximum average power output of the hybrid system is limited to around 5 kW and the capacity to around 500 Wh. The maximum allowed weight is 3000 g. There are no limitations as to where and how the energy is deployed or how the system recuperates it. For energy storage devices, only batteries may be used. Any other energy storage system is prohibited (flywheels, fuel cells...). A BMS (Battery Management System) is required for all the batteries used in a hybrid system.

The battery will be checked during scrutineering. Alternatively, we will accept SEALED batteries that have passed technical inspection at one of the following competitions in 2022: FSA, FSEast, FSN, and FSCzech. Those batteries will still be tested, but they can remain closed if properly sealed. Since this is the first year of implementing these rules, organizers reserve the right to make any changes up to the start of the competition to provide safety for all participants. Official FS Rules 2022 are still in place.

For specific hybrid rules see [FSEast CV Hybrid Rules](#).



BEHAVIOUR

Alcohol, illegal drugs, weapons, or other illegal material are prohibited on the event site during the event. Use of motorcycles, quads, bicycles, skateboards, or rollerblades in the pit area is prohibited as are self-propelled pit carts, toolboxes, tire carriers, etc.

ALCOHOL

PLEASE NOTE: Alcohol is strictly forbidden on the event site. Along with the fun of this event, we want a safe event. There will be alcohol testing (breathalyzers) during the event. 0% is the allowable alcohol content during this event for everyone. If ANY team member (driver or not) is tested with an alcohol level higher than 0%, he or she will be immediately disqualified for the rest of the event. The second person of the same team caught consuming alcohol or testing higher than the allowed limit will cause the entire team to be immediately disqualified. Motorsports can be dangerous. Use common sense so we can all have a safe event together! The prohibition ends with the beginning of the party on Sunday evening.

TRASH

It is the team's responsibility to keep their pits clean throughout the event. There are trash bins in the pit and near the campsite. No trash (including broken parts, old furniture, worn-out tires, or other materials) may be left behind at the end of the event.

FIRES AND SMOKING

No open fires are allowed at the event site (except for the campsite - cooking area and unless marked otherwise). This includes BBQ grilles, oxy-acetylene torches, heaters, cigarettes, etc. Smoking is strictly prohibited in the dynamic area, in all buildings, and in the pit area. Smoking is permitted only in the dedicated area around the toilets.

JACKING

When supporting your vehicle up off the ground you are required to use a safe, stable, load-rated support device.

WORKING ON THE VEHICLE

Use of any electrically powered tools that results in sparks (angle grinders, welding...) is only allowed in the welding area. While using angle grinders, safety glasses are required! During the use of all electrically powered tools like drills or angle grinders, wearing ear protection is recommended. All members participating in the dynamic area and working on the vehicle must wear closed shoes and adequate long trousers (excluding stretch and nylon pants).



RUNNING ENGINES

You can run engines (IC) or put the vehicle into a ready-to-drive mode (EV) ONLY in the designated engine test area after passing scrutineering.

WELDING

Welding is allowed with the equipment in the welding area and the use of appropriate safety gear is required.

FIRE EXTINGUISHERS

Your fire extinguishers must always be immediately accessible. All team members must be familiar with their use. Each team must have at least two dry chemical/dry powder fire extinguishers with a minimum firefighting agent capacity of 0.9 kg. The following are the minimum accepted ratings: USA, Canada, and Brazil: 10BC or 1A 10BC; Europe: 34B or 5A 34B; Australia: 20BE or 1A 10BE. Extinguishers of larger capacity (higher numerical ratings) are acceptable. Aqueous Film Forming Foam (AFFF) fire extinguishers are prohibited. Halon extinguishers and systems are prohibited. All extinguishers must be equipped with a manufacturer-installed pressure/charge gauge. Except for the initial inspection, one extinguisher must readily be available in the team's pit area and the second must accompany the vehicle wherever the vehicle is moved. Both extinguishers must be presented with the vehicle at technical inspection. Handheld fire extinguishers are not permitted to be mounted on or in the vehicle.

FUEL AND OIL

No open fuel containers are allowed. All fuel containers must be DOT approved. Waste oil is to be taken to the fuel station for disposal. No refueling in the pits and the engine test area is allowed.

VEHICLE MODIFICATIONS

If you make any major modifications to your vehicle, it must return to scrutineering for re-approval. In any case of modification, technical inspectors will be available and monitor the modifications being made. Failure to comply with this rule will result in disqualification.

READY-TO-RACE (R2R)

Ready-to-race condition demands that a vehicle must be fully assembled, with all the bodywork and fluids filled up to the maximum fill level, in complete and finished condition.



READY-TO-DRIVE (R2D)

Ready-to-drive condition demands that a vehicle must be in R2R condition and with a driver inside of the vehicle using the required driver's equipment.

DRIVING PRACTICE

Driving practice is only allowed during the designated times in the Practice Area.

DRIVER'S EQUIPMENT

Anytime the driver is in the cockpit with the engine running, the following approved safety equipment must be worn: helmet, suit, underwear, gloves, hand restraints, balaclava, and racing shoes (FS Rules, Rule T13.3 "Driver's Equipment").

SPECIAL NOTE FOR DRIVERS

All drivers should do a check of critical fasteners and components on their vehicles to assure complete control during the driving events. Fasteners do come loose; parts do break due to fatigue and occasionally someone forgets to torque a nut – you will be intimately held responsible if this happens.

REMEMBER: USE THE KILL SWITCH in case of an engine or brake malfunction!



FLAGGING

Flag signals are commands that must be obeyed immediately and without question. All drivers must know the event flagging signals.

Yellow Flag - Danger, the driver must slow down, something has happened beyond the flag station, no overtaking unless directed by the track marshals.



Green Flag - The session has started. The driver may enter the track under the direction of the track marshals. In the case of stalling, the vehicle can be restarted, but the driver must await another green flag as the opening in traffic may have closed. The driver is clear to re-enter the track after using the slow lane to let a faster vehicle pass. The driver may pick up speed again after a yellow flag was displayed.



Blue Flag - The driver should move to the overtaking area and let the faster car behind him pass.



Red Flag - The driver must come to an immediate safe and controlled stop on the track and must follow the track marshals' directions.



Black Flag - The driver must pull into the driver change area for discussion with the officials concerning an incident. A time penalty may be assessed.



Black and White Flag - Dangerous driving. Warning before elimination.



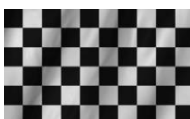
Black Flag with Orange Dot - Mechanical black flag. The driver must pull into the driver change area for a mechanical inspection of the vehicle.



Red and Yellow Striped Flag - The track is slippery, or something is on the racing surface. The driver must be prepared for evasive maneuvers to avoid the situation.



Chequered Flag - The session has been completed. The driver must exit the track on the first occasion.





No.	Document	Category	Deadline	Re-upload deadline (days)	Daily penalty points	Maximum penalty points	Last submission deadline	Document format/template
1	IAD Impact Attenuator Data	All	2022/03/18	7	15	De-registration	2022/03/25	pdf/FSG website
2	SES Structural Equivalency Spreadsheet	All	2022/03/18	7	15	De-registration	2022/03/25	xlsx/FSG website
3	SE3D Structural Equivalency 3D Model	All	2022/03/18	7	15	De-registration	2022/03/25	iges/FSG website
4	ESF Electrical System Form	EV	2022/04/01	7	15	De-registration	2022/04/08	docx/FSG website
5	HSD Hybrid System Description	HV	2022/05/06	-	10	No Limit	2022/05/20	pdf/FSAA website
6	BPES Business Plan Executive Summary	All	2022/06/17	-	5	50	2022/07/01	pdf/FSAA handbook
7	DSS Design Spec Sheet	All	2022/06/17	-	5	100	2022/07/08	xlsx/FSAA website
8	EDR Engineering Design Report	All	2022/06/17	-	5	100	2022/07/08	pdf/FS Rules 2022
9	BPPV Business Plan Pitch Video	All	2022/06/24	-	5	50	2022/07/08	link to Youtube
10	BPDD Business Plan Deep Dive	All	2022/06/24	-	5	50	2022/07/08	pdf/FSAA website
11	VSV Vehicle Status Video	All	2022/07/22	3	15	De-registration	2022/08/05	link to Youtube
12	CRD Cost Report Documents	All	2022/07/29	-	10	70	2022/08/05	pdf/FSG website
13	ESOQ Electrical System Officer Qualification	EV	2022/08/01	-	10	De-registration	2022/08/15	pdf/FS Rules 2022
14	DR Drivers' Registration	All	2022/08/09	-	15	No Limit	2022/08/23	xlsx/FSAA website
15	TMRF Team Member Registration Form	All	2022/08/09	-	15	No Limit	2022/08/23	xlsx/FSAA website



DOCUMENT UPLOAD

The maximum file size for each document must not exceed 10 MB (except for SE3D). The team is responsible for successful document upload. If the upload fails, please contact us [here](#). Keep in mind, that document upload could be slower right before the deadline.

DOCUMENT NAMING

All of the documents have to be named in the following format:

Car#_documentabbreviation_documentversion (e.g., 66_EDR)

*Document version in the case of a re-upload (v1, v2...)

**Car# should be 3 characters long, ### for CV and E## for EV

Not respecting the document naming convention can lead to up to 5 penalty points per document. Those penalty points will be deducted from the overall score.

SUBMISSION DEADLINE

All documents and links have to be uploaded by 13:00 CE(S)T on the deadline day. Documents that have to be uploaded to the FSG website do not have to be uploaded to the FSAA website.



● TECHNICAL AND SAFETY INSPECTION

The vehicle must pass the Technical and Safety Inspection (also referred to as Scrutineering) before being allowed to the Engine Running Area, Practice Area, or take part in the dynamic disciplines. All vehicles (CV & EV) must pass the following inspections:

CV	EV
Pre-Inspection	
Mechanical Scrutineering	Accumulator Scrutineering
	Electrical Scrutineering (EV1 & EV2)
	Mechanical Scrutineering
Noise test	Rain Test
Driver Egress	
Tilt Test	
Vehicle Weighing	
Brake Test	

The event technical inspection stickers will be placed on the nose of the vehicle. If a vehicle is no longer in compliance with the rules, the officials will set the vehicle's technical inspection status to fail, remove the respective inspection sticker(s) from the vehicle and note the reason for revoking the technical inspection approval in the technical inspection sheet. After technical inspection, the only modifications permitted to the vehicle are listed in FS Rules 2022 (Rule IN 14 "Modifications and Repairs").

Time slots and queue for scrutineering will be determined by the chronological submission of the Vehicle Status Video (VSV). Final time slot table will be uploaded to our website 7 days before the competition. If the team is not done with scrutineering in the given time slot, they must leave the scrutineering area and re-enter the queue at a later time.



MECHANICAL SCRUTINEERING

Date and Time:	Wednesday, 24 th August	08:30-13:00 & 14:00-20:30
	Thursday, 25 th August	08:30-13:00 & 14:00-20:30
	Friday, 26 th August	09:00-13:00
Location:	Scrutineering Area	

The following items must be presented at the mechanical inspection:

- The vehicle in ready-to-race condition
- All the helmets that you plan to use at the event
- All the drivers' equipment
- The tallest driver of the team must be present for roll bar height and egress checks
- All the tires you plan to use at the event
- 2 fire extinguishers
- Quick jack and push bar
- SES and IAD documents and test pieces if available.

NOTE: Four team members (incl. the tallest registered driver) are allowed to enter the technical inspection.

Once the Mechanical Scrutineering is passed, the team is allowed to proceed to the other inspections. If there are items that need to be rectified, the vehicle will not get the appropriate sticker and will have to be presented for scrutineering again.

The officials reserve the right to check any vehicle at any time during the event.

ACCUMULATOR SCRUTINEERING

Date and Time:	Wednesday, 24 th August	08:30-13:00 & 14:00-20:30
	Thursday, 25 th August	08:30-13:00 & 14:00-20:30
	Friday, 26 th August	09:00-13:00
Location:	Scrutineering Area	

Cell modules or stacks do not need to be disassembled when AIRs, fuses, pre- and discharge circuit, and positive locking mechanism of the maintenance plugs are reachable and visible to the officials. An official temperature logging device must be installed if used by the competition, see FS Rules 2022 EV5.8.5. The accumulator charger will be inspected and sealed. The set of basic tools will be checked.

SEALED accumulators will be accepted if they have passed accumulator inspection at any of the official competitions following the FS Rules 2022. Those accumulators will still be tested, but they can remain closed if properly sealed.



The following items must be presented at accumulator inspection:

- All TS accumulators
- Accumulator hand cart
- Accumulator charger
- Basic tools, see FS Rules 2022 IN 3.2.2
- A vehicle with a mounted TS accumulator
- Quick jack and push bar
- Samples of self-designed PCBs that are part of the tractive system and are outside of the accumulator container, FS Rules (Rule EV 4.3.6)
- Tools needed for the BSPD check, FS Rules (Rule T 11.6.9)
- Datasheets for all parts used in the tractive system
- Accumulator container hand cart
- Tools needed for (dis-)assembly of accumulator container
- Basic tools according to FS Rules (Rule IN 3.2.2)
- Charger
- Printed datasheets for used wiring, insulation materials, and high voltage components
- Laptop to display data of the AMS
- Spare samples of self-developed printed circuits with HV and LV
- Clear pictures of accumulator container and parts not reachable during the inspection.

ELECTRICAL SCRUTINEERING

Date and Time:	Wednesday, 24 th August	08:30-13:00 & 14:00-20:30
	Thursday, 25 th August	08:30-13:00 & 14:00-20:30
	Friday, 26 th August	09:00-13:00
Location:	Scrutineering Area	

The electrical scrutineering is divided into two parts – EV1 (referring to Low Voltage) & EV2 (referring to the Tractive System). Every EV must pass both parts to be able to continue with scrutineering.

The following items must be presented at the electrical inspection:

- One ESO
- A vehicle with a mounted TS accumulator
- Quick jack and push bar
- Samples of self-designed PCBs that are part of the tractive system and are outside of the accumulator container, FS Rules (Rule EV 4.3.6)
- Tools needed for the BSPD check, FS Rules (Rule T 11.6.9)
- Datasheets for all parts used in the tractive system
- Accumulator container hand cart
- Tools needed for (dis-)assembly of accumulator container
- Basic tools according to FS Rules (Rule IN 3.2.2)



- Charger
- Printed datasheets for used wiring, insulation materials, and high voltage components
- Laptop to display data of the AMS
- Spare samples of self-developed printed circuits with HV and LV
- Clear pictures of accumulator container and parts not reachable during the inspection.
- Sticker for passed accumulator scrutineering (only for EV2)

Special conditions for EV1 & EV2:

EV1: The TS accumulator must be outside of the car.

EV2: The car must be in ready-to-race condition. The Accumulator, Mechanical and EV1 scrutineering stage must be passed to start the EV2 scrutineering. TS accumulator mounting and some other mechanical aspects will also be examined at this point

DRIVER EGRESS

Date and Time:

Wednesday, 24 th August	09:00-13:00 & 14:00-20:30
Thursday, 25 th August	08:30-13:00 & 14:00-20:30
Friday, 26 th August	09:00-13:00

Location: Scrutineering Area

PROCEDURE: All drivers must be able to exit to the side of the vehicle in less than 5 seconds, with the driver in a fully seated position, hands in the driving position on the connected steering wheel (in all possible steering positions) and wearing the required driver equipment in accordance with the FS Rules 2022 (Rule T 13.3). The egress time will stop when the driver has both feet on the ground.

TILT TEST

Date and Time:

Wednesday, 24 th August	09:00-13:00 & 14:00-20:30
Thursday, 25 th August	08:30-13:00 & 14:00-20:30
Friday, 26 th August	09:00-13:00

Location: Scrutineering Area

PROCEDURE: The tilt test will be conducted with the tallest driver fully strapped in the normal driving position. The tilt test will be conducted with all vehicle fluids at their maximum fill level. The vehicle will be placed on the table and tilted to 60°. There must be no fluid leaks and all wheels must remain in contact with the tilt table surface.



NOISE TEST

Date and Time:	Wednesday, 24 th August	09:00-13:00 & 14:00-20:30
	Thursday, 25 th August	08:30-13:00 & 14:00-20:30
	Friday, 26 th August	09:00-13:00
Location:	Track Area	

PROCEDURE: The sound level will be measured during a static test. The vehicle must be compliant at all engine speeds up to the maximum test speed. Teams must bring a laptop to indicate the engine speed measured by the Electronic Control Unit (ECU). Measurements will be made with a free-field microphone placed free from obstructions at the exhaust outlet level, 0.5 meters from the end of the exhaust outlet, at an angle of 45° with the outlet in the horizontal plane. Where more than one exhaust outlet is present, the test will be repeated for each exhaust and the highest reading will be used. If the exhaust has any form of active tuning or throttling device or system, it must be compliant with the rules in all positions. Manually adjustable tuning devices must require tools to change them and must not be moved or modified after the noise test is passed. The position of the device must be visible to the officials and manually operable by the officials during the noise test. The test will be run with the gearbox in neutral. During this test, the vehicle must be jacked up using the quick jack. After passing the noise test the function of the master switch, the cockpit-mounted shutdown button, and the inertia switch will be tested. The functionality of the BSPD system will also be checked at the noise test area. After passing, the airtightness of the intake system will be tested by closing off the inlet after which the engine must stall.

RAIN TEST

Date and Time:	Wednesday, 24 th August	09:00-13:00 & 14:00-20:30
	Thursday, 25 th August	08:30-13:00 & 14:00-20:30
	Friday, 26 th August	09:00-13:00
Location:	Wet Area	

PROCEDURE: The vehicle must be in a ready-to-race condition. All components and constructions used to protect the vehicle from water during the rain test must be used during the entire event. The tractive system must be active during the rain test. The vehicle must be jacked up using the quick jack, and all driven wheels must be removed. The test will be conducted without a driver. Water will be sprayed at the vehicle from any possible direction. The water spray is like a vehicle driving in rain and not a direct high-pressure stream of water. The test is passed if the IMD is not triggered while water is sprayed at the vehicle for 120 s and 120 s after the water spray has stopped.



BRAKE TEST

Date and Time:	Wednesday, 24 th August	14:00-20:00
	Thursday, 25 th August	08:30-13:00 & 14:00-20:00
	Friday, 26 th August	09:00-13:00
Location:	Track Area	

PROCEDURE: With the vehicle at the start line of the station a green flag should be used to signal the start of each run. The driver must accelerate on a short straight (typically getting into 2nd gear) until reaching the braking area, which is a box defined by cones. After accelerating, the tractive system must be switched off by the driver and the driver must brake using only the mechanical brakes. It is acceptable for the TSAL to switch to green shortly after the vehicle has come to a complete stop as the reduction of the system voltage may take up to 5 seconds. Once inside the box, the driver must apply the brakes with enough force to demonstrate full lock-up of all four wheels at the same time. The vehicle must not rotate sideways. The vehicle is now allowed to enter the Practice Area or the dynamic events.

The Brake Over-Travel Switch (BOTS) will be checked at this stage, according to FS Rules 2022 (T 6.2).

NOTE: If the vehicle is unable to pass the brake test in three attempts, it can re-enter the queue. If repairs or major adjustments are required (bleeding the brakes etc.) these must be performed in the Pit Area. Re-certification may be required if work is performed on the vehicle's brake system or if the vehicle is involved in an incident that results in vehicle damage.

VEHICLE WEIGHING PROCEDURE

All vehicles must be weighed in ready-to-race condition. All fluids must be at their maximum fill level for weighing.



● STATIC EVENTS

BUSINESS PLAN PRESENTATION EVENT

Date and Time:	Friday, 26 th August	10:00-13:00 & 14:00-18:00
	Saturday, 27 th August	14:00-16:30 [Finals]
Location:	Cultural Centre “Ivan Rabuzin”	
	Finals @Main Tent	
Points:	75	

OBJECTIVE: The objective of the BPP is to evaluate the team’s ability to develop and deliver a comprehensive business model which demonstrates their product – a prototype race car – could become a rewarding business opportunity that creates a monetary profit. The judges should be treated as if they were potential investors or partners for the presented business model.

The presentation must relate to the vehicle entered the Rimac Group FS Alpe Adria 2022, although the state of the prototype itself must not be considered (this means even if the vehicle is not working or finished, at this static event it does not matter).

THE PRESENTATION: Competing teams must keep a presentation to potential investors or partners for the presented business model. The presentation should tie together all factors that would influence the marketability and manufacturability of their design and all risks conjuring this business idea. The technical aspects of the vehicle design should be presented to reinforce or support performance claims but should be reduced to the minimum necessary for an investment decision. The competitors should show an understanding of the marketplace and the targeted customer. Furthermore, they should show how their design fits into its expected market and how it is completed to a business model. Competitors must convince the Judges that their prototype and the related concept represent a profitable enterprise for the manufacturer/investor and that is simply an attractive investment.

PROCEDURE: Presentations are limited to a maximum of ten minutes. The judges will stop any presentation exceeding ten minutes. The presentation will not be interrupted by questions. Immediately following the presentation, there will be a five-minute-long question-and-answer session. One or more team members may present the business plan. All team members involved in the BPP must be in the podium area and must be introduced to the judges at the beginning of the presentation. The team members who have been introduced may answer the judges’ questions even if they were not presenting. Teams that fail to make their presence within their assigned time will receive zero points for the BPP.



JUDGING PROCESS: The judging at the event will start with initial judging where all teams are judged by different judging groups. The top 3 CV and 3 EV teams are then judged by business judges again in the BPP finals.

SCORING: The scoring of the BPP is based on the average of the scores given by each of the judges. The scoring formula for the non-finalist is calculated according to FS Rules 2022 (Rule S1.4 “Business Plan Presentation Scoring”).

DOCUMENTS: Before the event, teams must submit three business related documents by the deadline to the event website. Those documents are:

Business Plan Executive Summary (BPES) - One DIN A4 page long electronic text document, single-sided, containing a short summary of a Business Plan. The header/footer must include the Team name, Car #, and University name. The document can contain only text (except for the team logo in the header/footer). No graphs, pictures, or any other visualization is allowed. This is for BPES upload only, there are no limitations on complementary materials teams can bring to their BPP.

Business Plan Pitch Video (BPPV) - A short 30 s video in accordance with the FS Rules 2022 (S 1.3) uploaded by the deadline to the competition website.

Deep Dive Topic (DDT) report - The Deep Dive Topic will be announced on the 17th of June 2022 on the FSAA website. Teams will have until the 24th of June at 13:00 CE(S)T to research and submit a report about the topic. The document will have a minimum of 5 and a maximum of 7 pages (DIN A4 format, font size 12). The DDT doesn't need to be part of the Business Plan Presentation. It can be included in the BPP, at the teams' discretion. The final document will be uploaded to the competition website.

COST AND MANUFACTURING EVENT

Date and Time: Friday, 26th August 10:00-13:00 & 14:00-19:30

Location: Pit Area

Points: 100

OBJECTIVE: The objective is to evaluate the team's understanding of the manufacturing processes and costs associated with the construction of a prototype race car. This includes trade-off decisions between content and cost, make or buy decisions and understanding the differences between prototype and mass production. The Cost and Manufacturing event won't have a final at RGFSAA22.

PROCEDURE: Before the event, three Cost Report Documents (CRD) must be submitted to the FSAA website by the given deadline. A discussion topic for the »Cost Understanding« will be announced during the first Team Captain Briefing at the event.



During the event, a 30-minute-long discussion with the judges will take place, next to the team's vehicle. The discussion is split into two parts:

Part 1 "Bill of Material (BOM) Discussion":

A discussion to evaluate the team's ability to prepare an accurate engineering and manufacturing BOM for the complete vehicle. The discussion consists of two parts, which will be discussed simultaneously by two judges:

- Bill of Material (BOM) and Detailed Bill of Material (DBOM)
- Costed Bill of Material (CBOM) and Cost explanation file

Part 2 "Cost Understanding":

A discussion to evaluate the general cost and manufacturing knowledge of the team. At the first Team Captain Briefing, teams will be presented with a topic in form of a problem. Teams shall prepare an 8-minute presentation using no more than five pages. The presentation is followed by a discussion with the judges regarding the topic.

NOTE: »Real case« will not be a separate part of the Cost and Manufacturing event at RGFSAA 2022

Cost Report Documents (CRD): The CRD consists of the following documents:

- The BOM including DBOM and CBOM created online on the FSG website
- The supporting material file uploaded as a pdf file to the event website
- The cost explanation file uploaded as a pdf file to the event website.

Changes to the CRD will not be permitted after the deadline. A changelog of the changes on the vehicle since the submission deadline of the CRD can be presented at the BOM discussion to the judges. Missing parts of the BOM cannot be part of the changelog. All CRD must be brought either as a hard copy or digital version to the event discussion. The FSG website tool will provide a printable pdf version of the BOM. A hard copy must be in a ring binder with DIN A4 pages (or similar). The team must ensure that two judges can review the CRD independently. The presented CRD must be identical to the uploaded versions, otherwise, five penalty points will be deducted from the team's cost event score.

Bill of Material (BOM): The BOM is a sorted list for every vehicle part. The BOM must list all parts and equipment fitted to the prototype vehicle at any time during the event. The BOM is structured according to FS Rules (Section 2.4).

Detailed Bill of Material (DBOM): The manufacturing processes of all parts from a specified must be listed in the DBOM. Additional to the BOM, the DBOM has to include everything listed in FS Rules (Section 2.5). DBOM for the "Chassis and Body System" must be submitted for Rimac Group FS Alpe Adria 2022.



Costed Bill of Material (CBOM): The actual costs of the prototype vehicle as presented must be included for a specific system. The cost calculations must include the costs of materials, fabrication, bought parts and assembly to the vehicle and must be completed as realistically as possible. The cost calculations have to be done according to FS Rules 2022 (Section 2.6). CBOM for the “Suspension System” must be submitted for the Rimac Group FS Alpe Adria 2022.

Supporting Material File: The supporting material file is a document containing additional information which allows the judges to understand the BOM. It should include drawings, exploded view drawings, and/or pictures of the vehicle and the parts included in the BOM.

Cost Explanation File: The cost explanation file is a document containing additional explanations, which allow the judges to understand the costs within the CBOM part of the BOM. The cost explanation file should point out which cost model was used and which types of costs are included. It should also contain which specific cost figures were used, e.g. the cost of one machine operation hour.

Cost and Manufacturing Vehicle Condition: Vehicles must be presented for cost and manufacturing judging in finished condition, fully assembled, complete, ready-to-race and with their dry tires mounted. The judges will not start the evaluation of the vehicle if they consider it to be unfinished. If the car is not prepared within the designated time slot, no points are awarded for the event. Vehicles may be presented for judging without having passed the technical inspection, even if final tuning and setup are in progress. Covers and/or parts may be removed during the judging to facilitate access and presentation of components or concepts.

ENGINEERING DESIGN EVENT

Date and Time:	Friday, 26 th August	10:00-13:00 & 14:00-19:30
	Saturday, 27 th August	09:00-13:00 [Finals]
Location:	Pit Area	
	Finals @Main Tent	
Points:	150	

OBJECTIVE: The concept of the Design Event is to evaluate the students’ engineering process and effort that went into the design of a vehicle, meeting the intent of the event. Proprietary components and systems that are incorporated into the vehicle design as finished items are not evaluated as a student-designed unit but are only assessed on the teams’ selection and application of that unit.



PROCEDURE: At the event, teams will present their knowledge and their vehicle to the judges, who will evaluate the teams' performance following the design objectives. The scoring system for the Engineering Design Event is as follows:

Category	Points
Aerodynamics	25
Chassis and Ergonomics	25
Electrical and Control Systems	20
Overall Vehicle Concept and Management	25
Powertrain	25
Vehicle Dynamics	25
EDR	5

A completed Design Spec Sheet (DSS) and Engineering Design Report (EDR) must be submitted online on the competition website where the templates will be provided.

Teams may bring any photographs, drawings, charts, spare parts, or other material that they believe are supportive of the design event, but the space provided for design judging may be limited. The evaluation process will take 40 minutes with 5 minutes for judges to sum up all comments and 15 minutes break between each team. For the finals it will be 30 minutes for evaluation and 10 minutes break between each finalist.

Best 3 CV and 3 EV teams will advance to the finals, where they will be judged again.

[EV Only] Only sealed accumulator containers that passed the accumulator inspection may be presented or mounted in the vehicle. They must not be opened.

[EV Only] Only fully discharged and electrically shortened spare accumulator cells or spare stacks may be presented.

VEHICLE CONDITION: Vehicles should be presented for design judging in finished condition, fully assembled, complete and ready-to-race, otherwise points may be deducted. Vehicles may be presented for design judging without having passed technical inspection. Covers and/or parts may be removed during the design judging to facilitate access and presentation of components or concepts.

JUDGING CRITERIA: The judges will evaluate the engineering effort based on the teams' DSS and EDR, questions, and an inspection of the vehicle. The judges will inspect the vehicle to determine if the design concepts are adequate and appropriate for the application. The judges may deduct points if the team cannot adequately explain the engineering and construction of the vehicle.

Sections from FS Rules 2022, S3.1.3, S3.2.1, and S3.7.2 (see scoring table), do not apply as there are no DV categories at RGFSAA22.

If present in the vehicle, an evaluation of the hybrid powertrain system will also be part of the Engineering Design event.



● DYNAMIC EVENTS

GENERAL INFORMATION

The Dynamic Events at Rimac Group FS Alpe Adria 2022 are compliant with the FS Rules 2022 and additional FS Alpe Adria 2022 Rules. The following pages describe the additional procedures and key aspects. Other information will be provided at the Team Captains and Drivers briefings on the competition site.

TEAM LEADERS AND DRIVERS' BRIEFINGS

Team Captains briefing will be held at the Main Tent on Wednesday. Drivers' briefings will be held on Thursday, Friday, Saturday, and Sunday. All drivers for that day and team captains must attend. The briefings contain general event information and detailed information about the dynamic events of the day.

In total, a minimum of four and a maximum of six drivers are allowed for each team. The drivers must be registered and show a valid driving license. Before the event, teams need to send copies of the driving license for all registered drivers. An individual driver may not drive in more than two dynamic events. The endurance and efficiency events are considered a single event.

ACCELERATION

Date and Time: Friday, 26th August 09:00-13:00 & 14:00-19:30

Location: Track Area

Points: 75

EVENT CONCEPT: The objective of the Acceleration Event is to evaluate the vehicle's demonstrated acceleration capability by measuring the elapsed time required for the vehicle to travel 75m from a standing start. The event is designed to focus on engine performance and on the suspension's ability to maximize tire grip.

EVENT FORMAT: Each team has four runs driven by two drivers with two runs each. Starting order is based upon the time of arrival. Teams on their first run will receive priority. The fastest of the runs completed, including penalties will be used to calculate the team's score.

EVENT PROCEDURE: Stage your vehicle in the appropriate staging line for either driver 1 or driver 2. Vehicles in the driver 1 staging line will be given priority. The



vehicle must be in ready-to-drive condition. Each driver can choose to drive one or two runs in a row. The second run may be performed immediately after the first run without stepping back to the end of the queue. Vehicles will be staged approximately 0.3m behind the start line.

The driver is permitted to start an acceleration run only when the track marshal waves the green flag. Timing will start when any part of the vehicle crosses the start line. Once the vehicle passes the start line, the run has been officially attempted and cannot be re-started. If the vehicle stalls before triggering the timing lights, it can be pushed back for a re-start. This is only allowed once.

Timing will end when the vehicle crosses the finish line located 75m from the start line. The finish line is marked with a checkered flag.

SKID PAD

Date and Time: Friday, 26th August 09:00-13:00 & 14:00-19:30

Location: Track Area

Points: 75

EVENT FORMAT: Each team has four runs, driven by two drivers with two runs each. Each driver has the option to make a second run immediately after their first run. Starting order is based upon the time of arrival. Teams on their first run will receive a priority. The fastest of the runs completed, including penalties, will be used to calculate the team's score.

EVENT PROCEDURE: A green flag is used to indicate that the driver may start. The vehicle will enter perpendicular to the figure and will take one full lap on the right circle to establish the turn. The next lap will be on the right circle and will be timed. Immediately following the second lap, the vehicle will enter the left circle for the third lap. The fourth lap will be on the left circle and will be timed. Immediately upon finishing the fourth lap, the vehicle will exit the track perpendicular to figure eight, moving in the same direction as entered. Each driver can choose to drive one or two runs in a row. The second run may be performed immediately after the first run without stepping back to the end of the queue.



AUTOCROSS

Date and Time: Saturday, 27th August 09:00-13:00 & 14:00-17:30

Location: Track Area

Points: 100

EVENT FORMAT: Each team has four runs, driven by two drivers with two runs each. Starting order is based upon the time of arrival. Teams on their first run will receive priority. The fastest of the runs completed, including penalties, will be used to calculate the team's score.

EVENT PROCEDURE: The vehicle is staged at a staging line before the starting line. The vehicle must be in ready-to-drive condition. A green flag is used to indicate that the driver may start. Timing starts only after the vehicle crosses the starting line and stops after it crosses the finish line. Each driver can choose to drive one or two runs in a row. The second run may be performed immediately after the first run without stepping back to the end of the queue. If a vehicle fails during a driver's first run, vehicle repairs can be made to the vehicle and the driver can return to complete the second run.

NOTE: Once the vehicle passes the start timing line, the run has been officially attempted and cannot be re-started. If the vehicle stalls before triggering the timing lights, it can be pushed back for a re-start. This is only allowed once. If the vehicle demonstrates difficulty in launching, it will need to be pulled away and repaired.



ENDURANCE

Date and Time: Sunday, 28th August 09:00-13:00 & 14:00-18:00

Location: Track Area

Points: 325

EVENT FORMAT: The endurance is approximately 22 km long. Each team has two runs, driven by two drivers with one run each. Starting order is based on autocross qualification (reverse order). The event officials reserve the right to adjust the running order as necessary during the event to maintain safe operations and the flow of the event.

EVENT PROCEDURE: Only two crew members, alongside the two drivers, are allowed in the staging area for the vehicle. When the vehicle is called to the staging line, the team must push the vehicle in ready-to-drive condition to the staging line. The first driver enters the track and after finishing 11 km goes out to the place predicted for drivers' exchange. The second driver enters the track and drives 11 km before exiting.

[CV Only] Before entering the event, the fuel tank must be filled to the fuel level line. It can be allowed by the track marshal to warm up the engine in the designated area. No refuelling is allowed during the event.

[EV Only] At least one ESO must always be present in the dynamic area during dynamic events. If the current driver is the ESO, at least one of the other three team members must also be an ESO to successfully check the car during the driver change.

NOTE: According to the experience from previous Formula Student events, it is expected to have a sudden need for new teams in the waiting queue due to DNFs. To ensure fair and equal conditions for all teams, there will always be 3 cars on the track. It is the team's responsibility to make sure they are not late for their turn and to be at least 3rd car in the queue. If the team is late, it will be given a 2-minute penalty and a start at the end of the endurance event (if there is time left). Please be prepared to attend the queue on time!

No repairs or work may be performed on the vehicle during the event (except for tire changes due to weather conditions and to accommodate the second driver).

PASSING: Overtaking is only permissible in the designated passing zones and under the control of the track marshals. The passing rules do not apply to vehicles that are stopped on track or vehicles that have spun out and are not moving.

The Post Event Technical Inspection must be passed to score points in the endurance event.



EFFICIENCY

POINTS: 100

EFFICIENCY PROCEDURE [CV only]: Efficiency is measured after the endurance event. Only vehicles which score points in the endurance event will receive points for efficiency. Teams whose fuel volume used during the endurance event exceeds 26 L/100km receive zero points for fuel efficiency. Teams whose uncorrected elapsed endurance time exceeds 1.333 times of the uncorrected elapsed time of the fastest vehicle receive zero points for efficiency. Fuel pumps will be turned on and fuel valves will be opened to ensure complete refuelling.

EFFICIENCY PROCEDURE [EV only]: Energy efficiency is measured during the endurance event. The endurance energy is calculated as the time-integrated value of the measured voltage multiplied by the measured current logged by the data logger. Regenerated energy is multiplied by 0.9 and subtracted from the used energy. Only vehicles which score points in the endurance event will receive points for efficiency. Teams whose uncorrected elapsed endurance time exceeds 1.333 times of the uncorrected elapsed time of the fastest vehicle receive zero points for efficiency.

SCORING: Efficiency points will be awarded as stated in FS Rules 2020 (v1.0) D7.9, using the formulas below:

[CV only]

$$EFFICIENCY_SCORE = 100 \left(\frac{\frac{E_{min}}{E_{team}} - 1}{\frac{E_{min}}{E_{max}} - 1} \right)$$

E_{team} - team's efficiency factor

E_{min} - the lowest efficiency factor of all teams that are considered for efficiency

E_{max} - the highest efficiency factor of all teams that are considered for efficiency

The efficiency factor is calculated based on the following formula:

$$EFFICIENCY_FACTOR = \frac{T_{min} \cdot V_{min}}{T_{team} \cdot V_{team}}$$

T_{min} - fastest uncorrected elapsed driving time of all teams that are considered for efficiency

V_{min} - lowest corrected used fuel volume of all teams that are considered for efficiency

T_{team} - team's uncorrected elapsed driving time



V_{team} - team's corrected used fuel volume

The measured fuel volume of vehicles using E 85 fuel is divided by 1.4 to be comparable to vehicles using 98 RON.

[EV ONLY]

$$EFFICIENCY_SCORE = 100 \left(\frac{\frac{0.1}{E_{team}} - 1}{\frac{0.1}{E_{max}} - 1} \right)$$

E_{team} - being the team's efficiency factor

E_{max} - being the highest efficiency factor of all teams that are considered for efficiency

The efficiency factor is calculated based on the following formula:

$$EFFICIENCY_FACTOR = \frac{T_{min} \cdot EN_{min}^2}{T_{team} \cdot EN_{team}^2}$$

T_{team} - team's uncorrected elapsed driving time

T_{min} - fastest uncorrected elapsed driving time of all teams that are considered for efficiency

EN_{team} - team's corrected used energy

EN_{min} - lowest corrected used energy of all teams that are considered for efficiency

NO PERSONAL MOTORIZED OR SELF-PROPELLED VEHICLES (SCOOTERS, SKATEBOARDS ETC.) ARE ALLOWED ON THE COMPETITION SITE. DRONES OR OTHER AERIAL EQUIPMENT IS STRICTLY FORBIDDEN EXCEPT WITH WRITTEN PERMISSION FROM THE ORGANIZERS (CONTACT INFO POINT).

ANY VIOLATIONS OF THIS POLICY MAY LEAD TO DISQUALIFICATION.



● FSAA OFFICIALS

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At the venue, we will answer your questions directly. To contact us before and after the event, please write to us via

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