

# FORMULA STUDENT GERMANY

INTERNATIONAL DESIGN COMPETITION

August 4th – 8th 2010  
Hockenheim



**Formula Student Electric  
Event Handbook 2010**

VDI

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# 1. Emergency information

## Slight injury

### Medical Center:

Please accompany the injured person to the Medical Center. Emergency aid is provided there. The Medical Center is occupied each day round-the-clock.

## Severe injury

### Contact someone with a two-way radio:

Every Official and Security has two-way radio. Ask them to call the Medical Center or an ambulance on channel 11.

### Call an ambulance yourself:

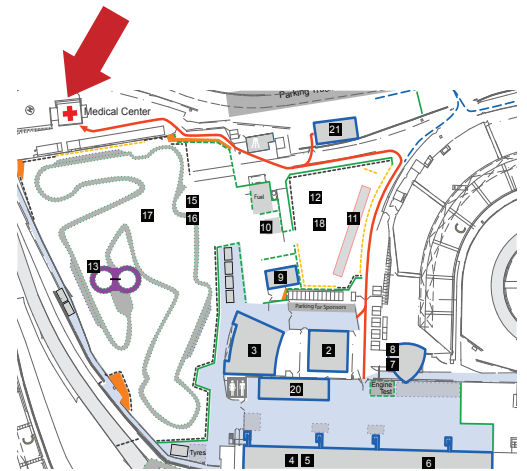
Call an ambulance yourself if someone is severely injured and needs urgent help. The Emergency Number for every phone and mobile phone is **112**. (See also information about emergency calls below.)

### During dynamics:

On Saturday and Sunday an ambulance is on site during the dynamic events. To contact them ask someone with a two-way radio (Official, Security) to call them.

### Hospital:

Main Hospital, Kreiskrankenhaus (Schwetzingen), Bodelschwinghstrasse 10, 68723 Schwetzingen  
phone: +49 (0) 6202 / 84-30 (See also directions in chapter 1.1)



## Emergency Numbers

# 112

In case of an emergency beyond competition times call 112. This number works with each phone, also with mobile phone or coin-operated telephone as international GSM-standard. It is always free of charge.

### Officials

Pit Marshal Konrad Paule:	+49 (170) 3043619
Pit Marshal Sebastian Seewaldt:	+49 (175) 5249739
Event Control Tim Schmidt:	+49 (176) 24316857

(In case of an emergency please call one of them, no matter what time it is.)

## Emergency Call Dictionary

The emergency control center will ask you some questions to ensure proper help for you. To support you at your call, here are some standard questions and some hints for your answers in English and German.

### Who is calling? (*Wer ruft an?*)

Say your name and your telephone number for callbacks. Digits in German: 1 (eins), 2 (zwei), 3 (drei), 4 (vier), 5 (fünf), 6 (sechs), 7 (sieben), 8 (acht), 9 (neun), 10 (zehn)

### Where did it happen? (*Wo ist es passiert? / Wo ist es geschehen?*)

the event site has the adress "Hockenheimring, Sachshaus, Am Motodrom", make it more precise!: pit lane (Boxengasse), dynamic area (Fahrerlager); the adress for campsite C2 near the Motodrom Hotel " Hockenheimring, Zeltplatz C2 beim Motodrom Hotel" and for campsite C3 on the other site of the highway "Hockenheimring, Zeltplatz C3 an der Continental Straße"

### What happened? (*Was ist passiert? / Was ist geschehen?*)

accident (Unfall), traffic accident (Verkehrsunfall), fire (Feuer), fall (Sturz), explosion (Explosion)

### How many people are affected? (*Wie viele Personen sind betroffen?*)

1 (eins), 2 (zwei), 3 (drei), 4 (vier), 5 (fünf), 6 (sechs), 7 (sieben), 8 (acht), 9 (neun), 10 (zehn)

### What kind of injury has happened? (*Welche Verletzung liegt vor?*)

fracture (Knochenbruch), bleeding (Blutung), unconsciousness (Bewusstlosigkeit), burn (Verbrennung), electric shock (Stromschlag), suffocation (Ersticken), heart attack (Herzinfarkt), shock (Schock)

Don't hang up after answering these questions! Wait if the control center has further questions!



## 1.1 Directions to the hospital

You start at the Hockenheimring. After 32 m you turn left into the Ernst-Wilhelm-Sachs-Straße, for 216 m you go straight ahead. Then you enter Hockenheim but continue following the Ernst-Wilhelm-Sachs-Straße for another 129 m.

Turn right to the Nordring and follow it for 1.02 km.

Enter the roundabout and leave it at the first exit to the Schwetzingener Straße. You leave Hockenheim. Follow the Schwetzingener Straße for 54 m. Then turn right and get on the federal road B36 which you stay on for 5.13 km until you enter Schwetzingen.

Continue following the B36: the first 577m after entering Schwetzingen the street is called Hockenheimer Landstraße, after turning half right the next 363 m are called Zähringer Straße.

Turn right into the Bodelschwinghstraße. After 123 m you have reached the hospital.

Altogether you will drive 7.82 km in about 10 minutes.

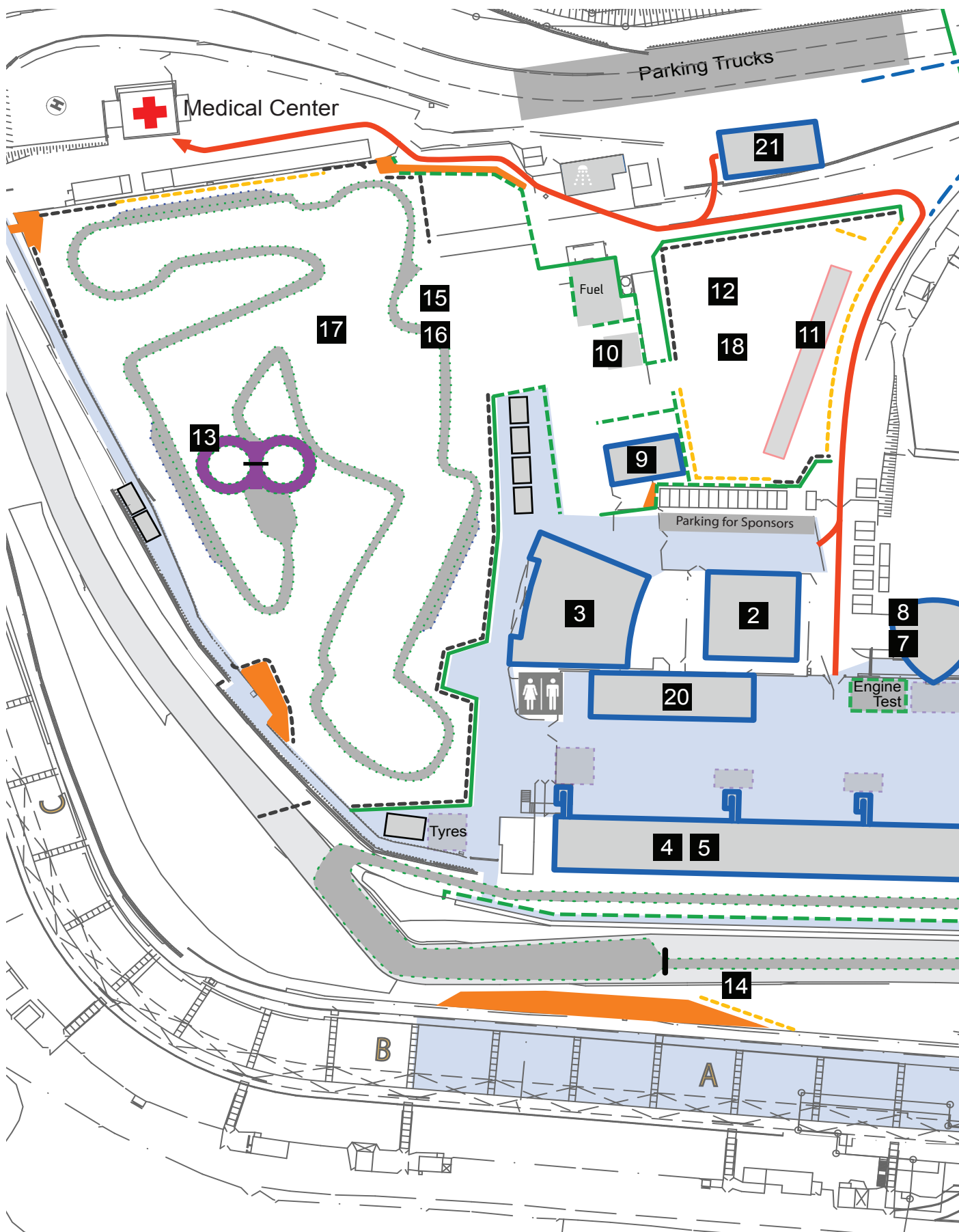


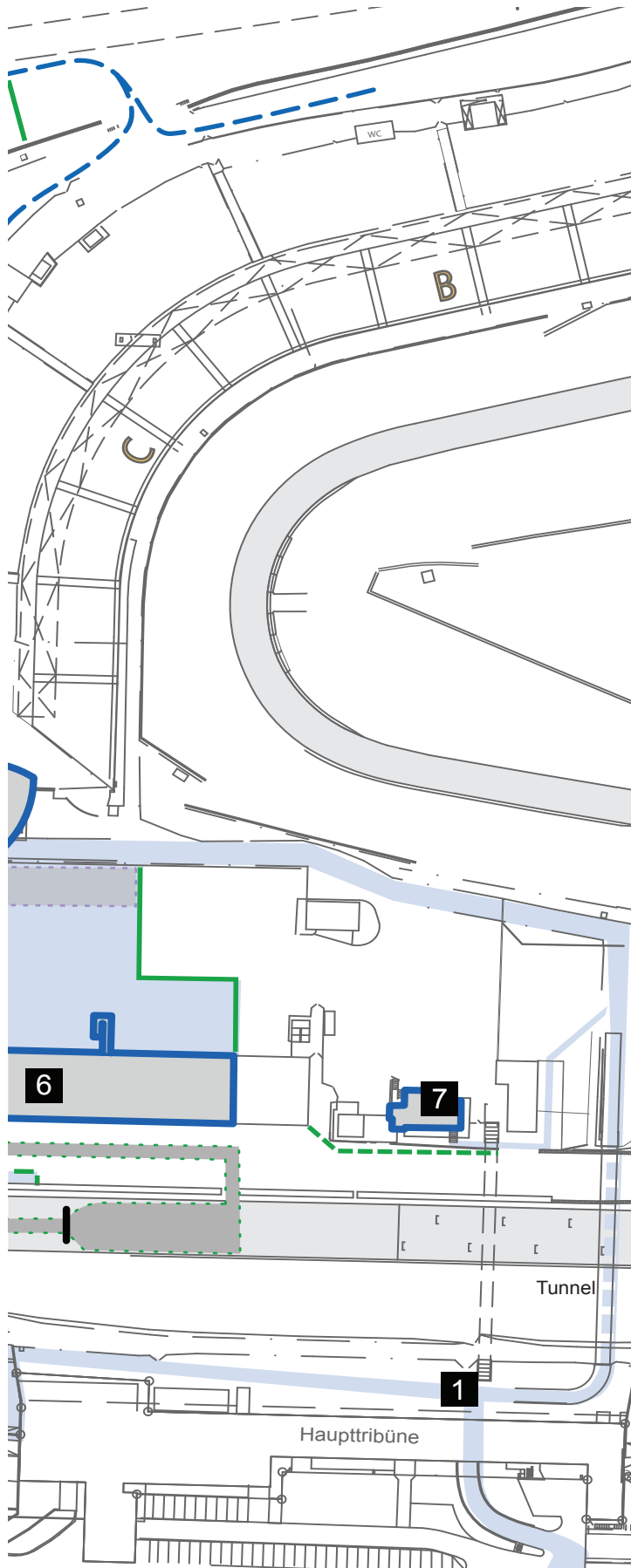
## 1.2 What should I do in case of electric shock?

- Call for medical help.
- Push one of the emergency shut down buttons and wait until the TSAL is switched off
- try to speak with the victim and ask him of his health
- Insulate yourself if you must move a victim away from a live contact - wear dry gloves or cover your hands with cloth and cover potential contact paths with the car with the HV isolation blanket. Ensure you have good footing and will 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 (from a fall, for example) unless it is absolutely necessary.
- Give artificial respiration if the victim is not breathing.
- Give CPR if the victim's heart has stopped (only if you are trained in CPR).
- Cover burns with a sterile dressing. On the surface electrical burns may not look serious but deeper in the tissue the burn can be severe.
- Keep the victim comfortable, warm and at rest, and monitor breathing.

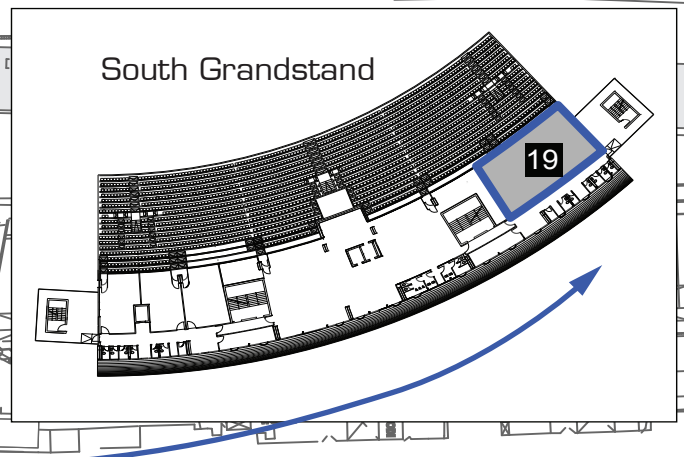
## 2. Event Details

### 2.1 Site plan





- |   |  |
|---|--|
| <b>1</b> Ticket Center  | <b>11</b> Brake test                           |
| <b>2</b> Event Control  | <b>12</b> Noise test                           |
| <b>3</b> FSG forum  | <b>13</b> Skid Pad (7th of August)             |
| <b>4</b> FSC Pits (ground floor)                                      | <b>14</b> Acceleration (7th of August)         |
| <b>5</b> Marquee above pits (first floor)                             | <b>15</b> Autocross (7th of August)            |
| <b>6</b> Engineering Design Event & Cost Analysis Event (first floor) | <b>16</b> Endurance (7th / 8th of August)      |
| <b>7</b> FSC Business Plan Presentation Event                         | <b>17</b> Test track (8th of August)           |
| <b>8</b> FSG Lounge   | <b>18</b> Test track (7th / 8th of August)     |
| <b>9</b> Scrutineering  | <b>19</b> FSE Business Plan Presentation Event |
| <b>10</b> Tilt table / Rain test                                      | <b>20</b> FSE Pits                             |
|   | <b>21</b> FSE Charging Area                    |
- Visitor's Area
  Press Area
- Tribunes



## 2.2 Schedule

### Wednesday, 4th of August 2010

08:30	Scrutineering and Registration Order Available
11:00 – 13:00	FSE Team Registration
12:00 – Sun 20:00	FSE Pits available
13:00 – 15:00	FSC Team Registration
13:00 – 19:00	FSE Scrutineering / Tech Inspection
14:00 – Sun 20:00	FSC Pits available
14:00 – 19:00	Event Control, Driver & Safety Responsible Registration
15:00 – 19:00	FSC Scrutineering / Tech Inspection
15:00 – 19:00	Ticket Center
20:30	Team Welcome

- 1 Ticket Center
- 20 FSE Pits
- 1 Ticket Center
- 9 Scrutineering 20 FSE Pits
- 4 FSC Pits
- 2 Event Control
- 9 Scrutineering
- 1 Ticket Center
- 5 Marquee above pits

### Thursday, 5th of August 2010

07:30 – 19:00	Ticket Center & Event Control
08:00 – 08:30	Team Briefing
09:00 – 19:00	Scrutineering / Tilt, Brake, Noise
09:00 – 18:00	Fuel / Engine Test / Testing
10:00 – 12:00	FSE Judge Briefing: Design & Cost
12:00 – 13:00	Lunch Break & Staging for Panoramic Photograph
13:30 – 18:00	FSE Engineering Design & FSE Cost Analysis
18:30 – 20:00	FSG Judge Briefing: Design & Cost
20:00 – 21:00	Reception for Faculty Advisors, Team Captains & Judges powered by BOSCH

- 1 Ticket Center 2 Event Control
- 5 Marquee above pits
- 9 Scrutineering 10 Tilt Table 11 Brake 12 Noise
- 17 Big dynamics area
- 8 BW Tower
- 17 Big dynamic area
- 6 Marquee above pits
- 8 BW Tower
- 3 FSG Forum

### Friday, 6th of August 2010

07:30 – 19:00	Ticket Center
08:00 – 08:30	Team Briefing
08:00 – 08:45	Judge Briefing: Business Plan Presentation
09:00 – 18:00	Scrutineering / Tilt table, Break test, Noise test
09:00 – 18:00	Fuel / Engine Test / Testing
09:00 – 18:30	FSC Engineering Design, FSC Cost Analysis FSC & FSE Business Plan Presentation
13:00 – 14:00	Lunch Break
20:00 – 21:00	Business Plan Presentation Finals
21:00 – 22:00	Awards Ceremony – Part I
22:00 – 23:00	Get-together for all Judges & Redshirts

- 1 Ticket Center 2 Event Control
- 5 Marquee above pits
- 8 BW Tower
- 9 Scrutineering 10 Tilt Table 11 Brake 12 Noise
- 17 Big dynamic area
- 6 Marquee above pits
- 7 BW Tower 7 Mobil-Tower 19 South Stand
- 5 Marquee above pits
- 5 Marquee above pits
- 8 BW Tower

### Saturday, 7th of August 2010

07:00 – 19:00	Ticket Center & Event Control
07:30 – 08:00	Team Briefing
08:30 – 20:00	Fuel / Engine Test / Testing
08:30 – 13:00	Skid Pad and Acceleration
11:30 – 14:00	Press & VIP Reception with guided tour
13:00 – 14:00	Lunch Break
13:30 – 14:00	Coursewalk
14:00 – 15:00	FSE Autocross
15:00 – 20:00	FSC Autocross
20:00 – 22:30	Engineering Design Finals (not public)
22:00 – 01:00	FSE Endurance & Parc Fermé

- 1 Ticket Center 2 Event Control
- 5 Marquee above pits
- 18 Small dynamic area
- 13 Big dynamic area 14 Start/Finish Line
- 3 FSG Forum
- 17 Big dynamic area
- 17 Big dynamic area
- 17 Big dynamic area
- 3 FSG Forum
- 17 Big dynamic area

### Sunday, 8th of August 2010

07:00 – 19:00	Ticket Center & Event Control
07:30 – 08:00	Team Briefing
08:00 – 08:30	Coursewalk
08:30 – 16:30	Fuel / Engine Test / Testing
08:30 – 13:00	Endurance Morning Session & Parc Fermé
13:00 – 14:00	Lunch Break
14:00 – 19:30	Endurance Afternoon Session & Parc Fermé
19:30 – 20:30	Design Review
21:00 – 22:00	Awards Ceremony – Part II
22:00 – 01:00	Party powered by MAHLE

- 1 Ticket Center 2 Event Control
- 5 Marquee above pits
- 17 Big dynamic area
- 18 Small dynamic area
- 17 Big dynamic area
- 17 Big dynamic area
- 3 FSG forum
- 5 Marquee above pits
- 5 Marquee above pits





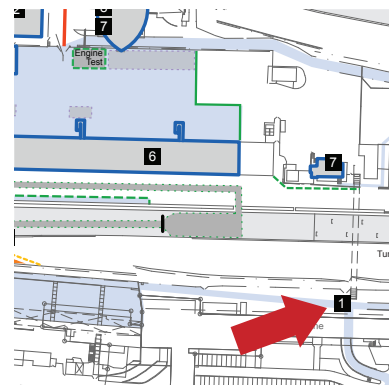
## 2.3 Contact information

### 2.3.1 Ticket Center

**Dates/Times:**

Wednesday, 4 August	15:00 – 19:00
Thursday, 5 August	07:30 – 19:00
Friday, 6 August	07:30 – 19:00
Saturday, 7 August	07:00 – 19:00
Sunday, 8 August	07:00 – 19:00

**Location:** at the entrance



Both teams and spectators receive their passes for entering the venue at the Ticket Center.

The Event Team Captain ONLY is allowed to pick up all the passes for distribution to the rest of his team members. No single passes will be handed out to team members. For the detailed procedure see chapter 2.4.1 Registration.

If you are not a member of a team, you may purchase tickets for yourself or any guests at the Ticket Center.

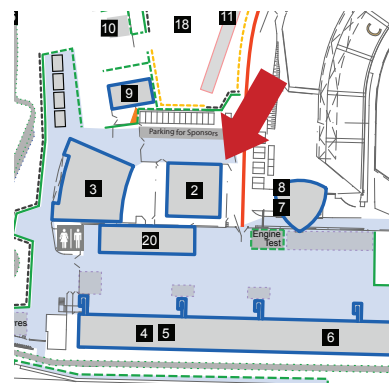
Prices: 10,- EUR for a one-day ticket  
25,- EUR for all 4 days of the event (Thursday to Sunday)

### 2.3.2 Event Control

**Dates/Times:**

Wednesday, 4 August	14:00 – 21:00
Thursday, 5 August	07:30 – 19:00
Friday, 6 August	07:30 – 19:00
Saturday, 7 August	07:00 – 19:00
Sunday, 8 August	07:00 – 19:00

**Location:** Event Control, on the back of the Sachs house



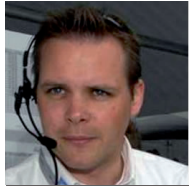
Event Control is the contact point for the teams and all requests concerning the event.

Tasks of the Event Control:

- Information point for all competitors (concerning schedule, general questions etc.)
- Contact interface to the Officials
- Registration of the drivers
- Handing out packages with programmes and T-Shirts to the teams
- Handing out the transponders for time-keeping
- Lost and found
- Feedback

### 2.3.3 FSG Team

At venue, we will answer your questions in the Event Control directly. For further contact, especially after the event, please contact us via e-mail (you can find the e-mail addresses on our website).



Tim Hannig

Board (Chairmen)  
KION Group GmbH



Rainer Kötke

Board (Finance)  
Executive Committee (Dynamics)  
Brunel GmbH



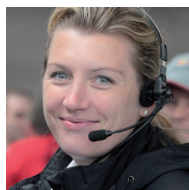
Ludwig Vollrath

Board (FS Academy & VDI)  
VDI Society for Automotive and  
Traffic Systems Technology

**Board**

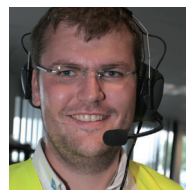
The Board is responsible for the Formula Student Germany and its cooperations as well as for sponsoring, finances and strategy.

Das Board trägt Verantwortung für die Formula Student Germany und ihre Kooperationen sowie für Sponsoring, Finanzen und Strategie.



Christine Hannig

EC (Communications)  
Hessian State Chancellery



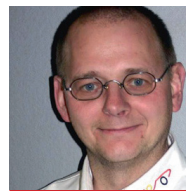
Peter Jakowski

EC (Scoring, Time Keeping)  
2D Debus & Diebold Meßsysteme GmbH



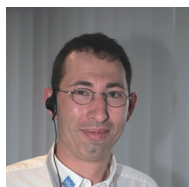
Barbara Schlögl

EC (Statics)  
CarboTech Composites GmbH



Ulf Steinfurth

EC (Scrutineering)  
University of Applied Sciences  
Stralsund



Matthias Brutschin

Event Support  
reinisch AG



Julien van Campen

Communications (Webseite)  
Delft University of Technology



Robert Fromholz

Cost Analysis Event  
Hönigsberg und Düvel IT Solutions GmbH



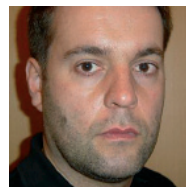
Henning Nissen

Communications (Guided Tours)  
Beuth Hochschule für Technik  
Robert Bosch GmbH



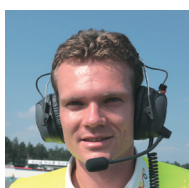
Johanna Scheider

Communications (FSG Forum / Redaktion)  
Zalbertus New Media GmbH



André Schmidt

Scrutineering  
Caterpillar Inc.



Karsten Stammen

Dynamics  
KLK Motorsport GmbH



Karl Weinreich

Scrutineering  
Bosch Engineering GmbH





Daniel Mazur

Board (Event Manager)  
mazur | events + media



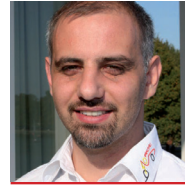
Frank Röske

Board (Rules)  
Executive Committee (Rules FSC)  
Porsche Leipzig GmbH



Matthäus Decker

EC (Personnel Support)  
Event Support  
Siemens Transportation Systems GmbH  
& Co.KG



Lukas Folie

EC (Formula Student Electric)  
Audi Sport



Tobias Michaels

EC (Formula Student Electric)  
Braunschweig Institute of  
Technology



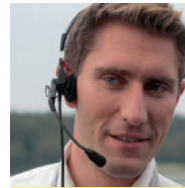
Konrad Paule

EC (FS Academy)  
Pit Marshal  
Volkswagen Motorsport GmbH

### Executive Committee (EC)

The Executive Committee stands for the design of the competition and the rules. Each member is responsible for a field, its preparation and realisation.

Das Executive Committee verantwortet Ausgestaltung von Wettbewerb und Reglement. Jedes Mitglied ist für Vorbereitung und Durchführung eines Bereiches verantwortlich.



Daniel Ahrens

Event Control (Front Desk)  
Aegis Media



Daniel Deussen

Dynamics, Scrutineering  
Weber Motor GmbH



Leona Ehrenreich

Registration, Visa  
Sassenberg Secondary Modern School



Sven Renkel

Communications (Press)  
Verein Deutscher Ingenieure e.V. (VDI)



Günther Riedl

Dynamics  
Stangl & Co. GmbH



Tim Schmidt

Event Control (Back Office)



Sebastian Seewaldt

Pit Marshal  
University of Stuttgart



Christopher Zinke

Engineering Design Event  
Braunschweig Institute of  
Technology

### Operative Team

The Operative Team completes the management team by bearing responsibility for preparations and smooth processes at the event and during the year.

Das Operative Team komplettiert das Management Team, indem es beim Event und übers Jahr Verantwortung für Vorbereitung und reibungslosen Ablauf übernimmt.

## 2.4 Organisational aspects

### 2.4.1 Registration

Wednesday, 4 August

08:30	Scrutineering and Registration Order Available (next to the Ticket Center)
11:00 – 13:00	Team registration (Ticket Center regular)
12:00	Pits available, trucks entering venue
14:00 – 19:00	Driver Registration (Event Control, at the back of the Sachshaus)

All team captains received a registration document with standard terms and personal information of all registered members. This document needs to be printed out, signed by ALL team members and brought to registration. Only the team captain has to sign this paper at registration and confirm with his signature the rightness and validity of all other signatures. With his signature the team captain also guarantees that only team members work on the car and follow the safety guidelines.

#### At the truck parking

The truck driver of each team waits at the truck stop for his team captain to hand over the Green Vehicle Entrance Pass with the entering number. While waiting there will be coffee available for free. Pay attention to not blocking emergency exits! Follow the instructions of the marshals. Do not move your truck to the gateway for entering FSG until the marshals order you to do so.

#### At the Ticket Center

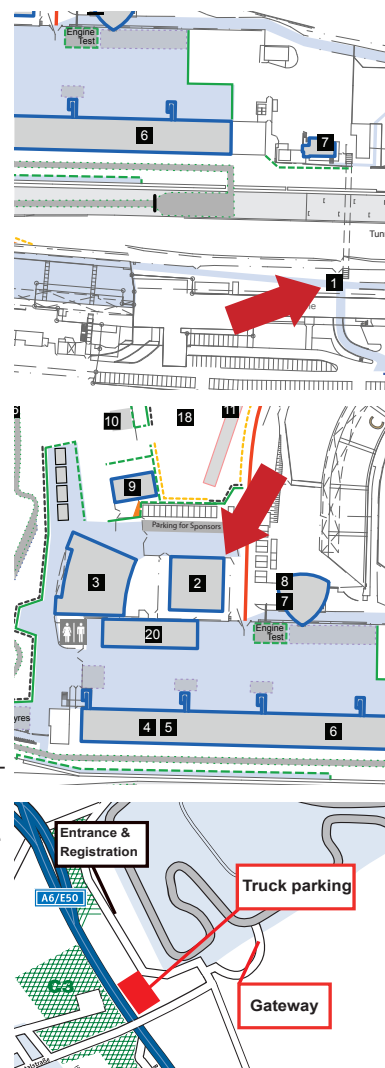
ONLY the Event Team Captain is allowed to register his team. He can be accompanied by only ONE team member! The Ticket Center consists of 3 containers: 1 for "guests & press" and 2 for "teams & visitors". Please check the Registration/Scrutineering order before getting in line. One of the "teams & visitors" containers deals with the odd and the other one with the even numbers of the Registration/Scrutineering order. Please try to get the right order in the queues. The Event Team Captain has to sign the document with all signatures and will then receive all passes for his registered team members, an Event Guideline Poster and a green vehicle entrance pass. The team is now ready to enter FSG in the given order.

#### Teams with missing or invalid Health Insurance Certificates (HIC)

The health insurance certificates (HIC) were checked by FSG in advance. In case a HIC was missing or invalid the team captain received an email demanding to provide a valid HIC for this certain person. This certificate has to be shown at the Ticket Center. There is a separate queue for teams with invalid HIC at the container for "guests & press". Without confirmed HICs there is no way to receive ANY passes for the team! Fix this first - and THEN go to the normal registration container.

#### In the Event Control

In the Event Control the Event Team Captain will then receive the package of shirts, programmes, etc. Large teams are allowed to bring 1 or 2 extra people to help with carrying.



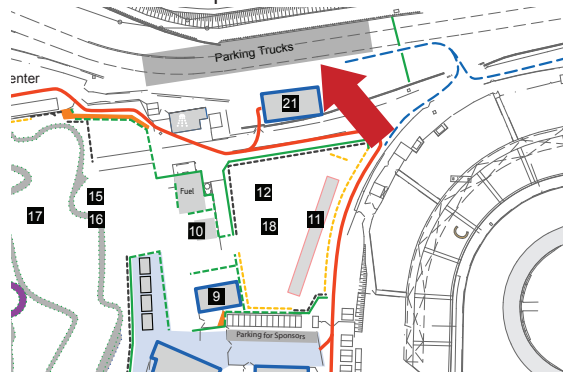
## Driver registration

Each team has to register at least 4 drivers. The drivers register themselves at the Event Control where they have to show their valid driver's license as well as a student ID. They will then receive wristbands marking them as drivers.

### 2.4.2 Parking / Vehicle Entrance Pass

You are allowed to enter the venue with a vehicle ONLY with a vehicle entrance pass. At the registration you receive a green vehicle entrance pass for 1 vehicle you want to park permanently during the event. On request you can receive additional yellow vehicle entrance passes that allow you to enter for 1 hour for reasons of unloading or loading it. No yellow passes will be given out after Sunday, 16:00. You will have to fill out the vehicle entrance pass with the license-plate number, the team name, the driver's name and the mobile phone number of the driver and display it behind the windscreen. When you enter the gateway, please line up in the queue on the right side at the barrier and wait until there is enough room for more vehicles to come in. Since all teams should get the chance to get on the ground fast please be so kind and unload quickly and follow the instructions of the officials. Don't stay on the ground with the yellow permits longer than necessary!

The parking area is on the "Querspange", on the other side of the fence behind the dynamic area. There for each team is one parking lot with approximately 25 m<sup>2</sup>. When entering the Hockenheim with the green vehicle entrance pass, you have 30 minutes to unload your truck in front of your pit. Afterwards the truck has to be parked on the "Querspange". Please note, that it is not possible to drive to the pits again. This means, that during and after the event, your team will have to transport all its equipment between the pits and your truck by foot. At the "Querspange" the trucks will be accessible at all times. If you come with a container or a trailer which needs more than 30 m<sup>2</sup> you have to deposit this in a parking area outside the venue. The parking area has to be left by Monday, August 9th, until 10:00.



Walking speed is the speed limit on the entire event site. Pavilions are not allowed on the entire event site.

### 2.4.3 Announcements

The event will proceed according to the official time schedule as far as it is possible. Listen to the announcements and look out for the placards at the Event Control for changes in the schedule. All announcements can be found on the following webpage as well:

<http://www.formulastudent.de/events/event-2010/announcements/>

### 2.4.4 Pit and Infield Times

The pits are open from Wednesday, 4th of August 14:00 to Sunday, 8th of August 20:00 24h per day. Thus all teams will be able to work all day and night in their pits. For visitors the infield closes at 00:00 except the Party on Sunday, which is open to Visitors until 01:00.

### 2.4.5 Pit equipment

In every pit group there is power supply and light. In the night the pits are guarded from 18:00 to 08:00. You can see which team is in which pit in the team list.

### 2.4.6 Surveillance

After 18:00 there will be a security company for surveillance of site, pits and cars. During the day each team is responsible for the security of its car and the equipment in its pits. Do not leave any valuables open in your pit at any time, security cannot survey everything at any time

PIT E1 5m x 5m	PIT E2 5m x 5m
PIT E3 5m x 5m	PIT E4 5m x 5m
PIT E5 5m x 5m	PIT E6 5m x 5m
PIT E7 5m x 5m	PIT E8 5m x 5m
PIT E9 5m x 5m	PIT E10 5m x 5m
PIT E11 5m x 5m	PIT E12 5m x 5m
PIT E13 5m x 5m	PIT E14 5m x 5m
PIT E15 5m x 5m	PIT E16 5m x 5m

## 2.4.7 Handing-out of the Transponders for time-keeping

### Starts on:

Friday, 7 August

15:00

### Location:

Event Control, at the back of the Sachs house

Transponders for time-keeping must be picked up on Friday, by the Event Team Captains. A deposit of 50 Euros in cash is required. Transponders must then be affixed to the car until Sunday, when they are turned in immediately after finishing endurance.

### Transponder mounting information

The transponder mounting requirements are:

#### Orientation:

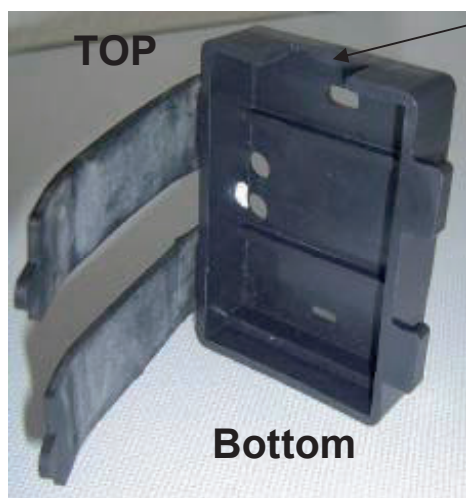
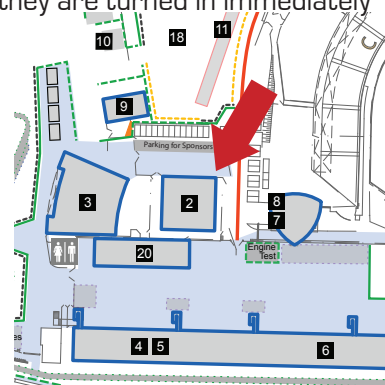
The transponder must be mounted vertically and orientated so the number can be read "right-side up".

#### Location:

The transponder must be mounted on the driver's right side of the car forward of the front roll hoop. The transponder must be no more than 60 cm (24in) above the track.

#### Obstructions:

There must be an open, unobstructed line between the antenna on the bottom of the transponder and the



ground. Metal and carbon fiber may interrupt the transponder signal. The signal will normally transmit through fiberglass and plastic. If the signal will be obstructed by metal or carbon fiber, a 10.2 cm (4 in) diameter opening can be cut, the transponder mounted flush with the opening, and the opening covered with a material transparent to the signal.

#### Protection:

Mount the transponder where it will be protected from obstacles.

#### Vehicle Identification System:

The Scruitneers will install a Vehicle Identification System based on RFID on your car. Therefor they will install 2 RFID tags on your car. This tags should not be remove until the competition ends.



## 2.5 Rules and Guidelines

Everyone (Participants, Volunteers, & Spectators) at Formula Student Germany would like to enjoy an accident free event! These Guidelines have been established to advise teams of potential unsafe practices in the paddock and pit area. The actual Dynamic Events are under the control of each Event Captain and are operated in a very safety-conscious manner.

### 2.5.1 Alcohol

PLEASE NOTE: Alcohol on the event site is strictly forbidden!

Along with the fun of this competition, we want a safe competition. There will be alcohol testing (breathalyzers) during the event. ‰ 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 0.0 ‰, he or she will be immediately disqualified for the rest of the event. The second person of the same team caught consuming alcohol will cause the entire team to be immediately disqualified.**

Motorsports are dangerous. Use common sense and let's all have a safe competition together! The prohibition ends with the beginning of the party on Sunday evening.

### 2.5.2 Working on the car

Activities on the tractive system have to take place in the FSE pit. A safety responsible (SR) and at least one more team member, who can interfere in case of emergency, have to attend every activity on the tractive system. Only members of your team and Scrutineers are allowed to stay behind the barrier tape.

After any activity on the tractive system during which seals were broken an E-Scrutineering is mandatory!

For activities on the inactive tractive system please keep to the following procedure:

1. Separate the car with a black-yellow barrier tape, provided by FSG.
2. Switch off the voltage of the tractive system.
3. Assure the tractive system against restart.
4. Check for zero-potential.
5. Short-circuit the tractive system.
6. Install a sign, provided by FSG that declares the car as electrically secured. Note the name of the safety responsible (SR) supervising the activities on the sign. This safety responsible (SR) is the only person who may remove the sign and the barrier.

In case of measurements on the active tractive system or an activation of the tractive system in the pit for testing purposes please keep to the following procedure:

1. Separate the car with a black-yellow barrier tape, provided by FSG.
2. The car has to be jacked up and the driven wheels have to be demounted.
3. One team member has to be prepared to push an emergency button at any time.
4. Team members who take part in the measurement activities have to wear compliant safety gloves and use appropriate measurement devices and tools.
5. The tractive system shall be activated for an as short as possible period of time.

Activities on the internal matters of the accumulator containers are exclusively permitted at the declared spots near the charging area and require the attendance of a safety responsible (SR). All team members who take part in the activities have to wear compliant safety gloves and use appropriate measurement devices and tools.

**If any of the above mentioned instructions is not obeyed, it may result in deduction of points or disqualification.**

### 2.5.3 Jacking

When supporting your car up off the ground you are required to use a safe, stable, load rated support device. The use of Coke crates, piles of wood, four strong team members, will NOT BE ALLOWED.

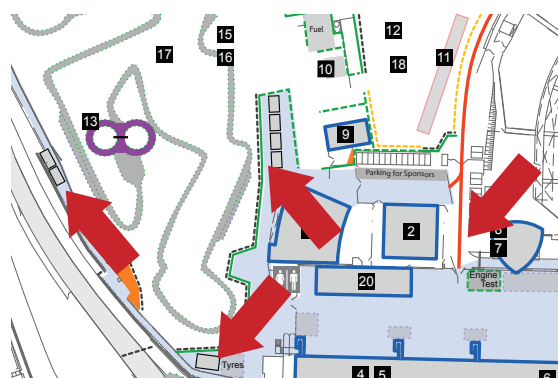
### 2.5.4 Setting the tractive system active

Any time the tractive system shall be activated a safety responsible (SR) has to be involved. The activation of the tractive system in the dynamic area requires the explicit approval of an FSG official. The activation of the tractive system or the spinning of motors in the pit is only permitted if the car is jacked up and the driven wheels are demounted. Please also see the guidelines in chapter 2.5.2 Working on the car.

### 2.5.5 Fires and Smoking

No open fires are allowed in the Pit area. This includes BBQ grilles, oxy-acetylene torches, heaters, cigarettes, etc. Smoking is strictly prohibited in the dynamic area, all buildings, any tents and the pit area.

Smoking is allowed in the area around the tribunes and in between the Event Control and the BW Tower.



### 2.5.6 Welding

FSG provides an approved welder (14:00 - 18:00 on Wednesday; 09:00 - 18:00 on Thursday till Sunday). Welding is only allowed in the designated welding area.

### 2.5.7 Tyres

FSG provides a tyre changing service. The Continental truck is open from Thursday to Sunday from 08:00 to 18:00.

### 2.5.8 Oil

Waste oil is to be taken to the fuel station for disposal.

### 2.5.9 Fire Extinguishers

Your fire extinguishers are to be immediately accessible at all times. All team members must be familiar with their use. At least one fire extinguisher must accompany the car wherever it goes.

### 2.5.10 Vehicle Modifications

If you make any major modifications to your car, you must re-submit it to Scrutineering for re-approval.





### 2.5.11 Flagging

All drivers must know the competition-flagging signals.

### 2.5.12 Behaviour

Alcohol and drugs have no place at this event. Alcohol is only allowed on the camp site and on Sunday at the Mahle-Party. Rollerblades, scooters, bicycles and self propelled vehicles are not allowed.

### 2.5.13 Driving Practice

Driving practice is only allowed in the designated test areas, during designated times.

### 2.5.14 How to wheel the car

- Whenever a car is moved around, there must be:
  - A driver wearing a full safety suit seated in the cockpit.
  - A fire extinguisher accompanying the car at all times.
  - Someone pushing the car with a pushbar.
  - The detachable handle or respectively key of the tractive system master switch taken-off and kept by a safety responsible (SR).

### 2.5.15 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 involved if this happens.

Driving reverse is strictly prohibited at any time.

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

**HAVE FUN – DRIVE SAFELY – USE COMMON SENSE!**

## 3. Dynamic Events

### 3.1 General information

The dynamics at FSG are compliant with the FSAE rules Part D and additional FSG Rules.

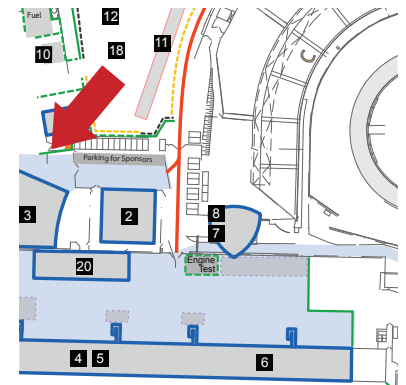
You will get additional procedures and key aspects on the following pages as well as at the morning briefings on site.

#### 3.1.1 Team/Driver-Briefings

There will be Team briefings every morning of the competition at the Marquee: On Thursday and Friday at 08:00, on Saturday at 07:30! All team captains and drivers for the day must attend. The briefing contains general event information and detailed information about the dynamic events of the day. We will hand out extra wristbands to briefed drivers, a new colour every day. Without these additional wristbands participation at the dynamic events of the day is not possible. The coloured wristband is added to the numbered wristband which has to be worn all the time. Missing the briefing means missing the dynamic events.

#### 3.1.2 Access to the dynamic area

Every team receives 4 armlets. With these armlets 4 team members including the driver may enter the dynamic area. Please notice that the armlets are not fireproof. Drivers may take them off for driving, but have to put them back on afterwards.



#### 3.1.3 Alcohol

PLEASE NOTE: Alcohol on the event site is strictly forbidden!

Along with the fun of this competition, we want a safe competition. There will be alcohol testing (breathalyzers) during the event. 0.0 ‰ is the allowable alcohol content during this event.

**If ANY team member (driver or not), is tested with an alcohol level higher than 0.0 ‰, he or she will be immediately disqualified for the rest of the event. The second person of the same team caught consuming alcohol will cause the entire team to be immediately disqualified.**

Motorsports are dangerous. Use common sense and let's all have a safe competition together!

The prohibition ends with the beginning of the party on Sunday evening.

#### 3.1.4 Weather

This is one of the factors which can not be influenced by event organisation. So please be aware that we won't change the timetable due to bad weather conditions.

Under normal conditions the track is declared dry. If it is necessary to declare damp or wet conditions, there will be signs and announcements at the dynamic area. Please read the rules for more information.

FSE cars which did not pass the voluntary rain test are not allowed to drive under damp or wet conditions or have to immediately interrupt their current run and shut down the tractive system, respectively.

### 3.1.5 Car set-up alterations (FSAE Rule B1.2.2)

Teams do not have to use the same car set-up for all the dynamic events and are encouraged to make adjustments (e.g. tyre pressure and suspension settings) to give the vehicle characteristics best suited to each specific event. However, the car must comply with the rules (e.g. ground clearance etc.).

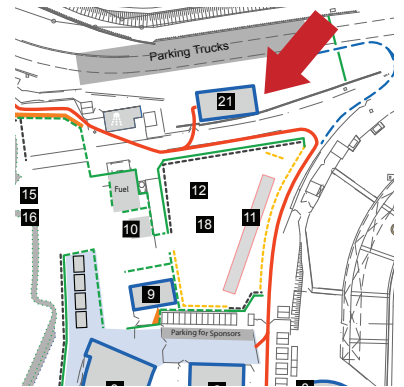
Teams that remove their car from the event site automatically lose all their stickers from technical inspection.

### 3.1.6 Charging Area

**Dates/Times:**

Thursday, 5 August	15:00 – 24:00
Friday, 6 August	00:00 – 24:00
Saturday, 7 August	00:00 – 24:00
Sunday, 8 August	00:00 – 10:00

**Location:** Dynamic area



The charging of tractive system accumulators is exclusively allowed in the charging area.

Only charging devices marked during E-Scrutineering may be used. If the accumulators shall be charged inside the car the tractive system master switch must be deactivated and the detachable handle or respectively key removed. The accumulator containers or the car itself, depending on whether the accumulators are charged externally or internally, must have a label with the following data:

- Team name
- safety responsible (SR)
- approximate time at which the charging period ends (date and time).

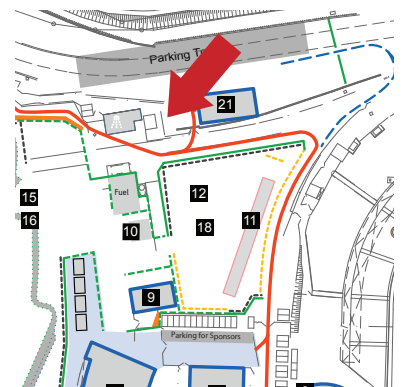
### 3.1.7 Accumulator workplaces

**Dates/Times:**

Thursday, 5 August	15:00 – 24:00
Friday, 6 August	00:00 – 24:00
Saturday, 7 August	00:00 – 24:00
Sunday, 8 August	00:00 – 10:00

**Location:** Next to charging area

Activities on accumulators are permitted exclusively at the accumulator workplaces. The access is only for FSE team members and FSG officials. A security guard is present at all times. Please also see the guidelines in chapter 2.5.2 Working on the car.



## 3.2 Technical & Safety Inspection

Cars have to pass a technical and safety inspection before being allowed to practice at the test tracks or take part in the dynamic disciplines. The technical inspection will be divided in an electrical inspection and a mechanical inspection. The electrical inspection will declare the car “electrically safe” and must be the first inspection. After passing E-Scrutineering the car can be presented for the normal mechanical Scrutineering. Your Scrutineering slot is determined by the result of the Scrutineering quiz. Should you miss your slot you will be the next team in Scrutineering after your arrival.

### 3.2.1 E-Scrutineering

#### Dates/Times:

Wednesday, 4 August	13:00 – 19:00
Thursday, 5 August	09:00 – 12:00, 13:00 – 19:00
Friday, 6 August	09:00 – 12:00, 13:00 – 19:00
Saturday, 7 August	on request

**Location:** Dynamic Area – DEKRA house

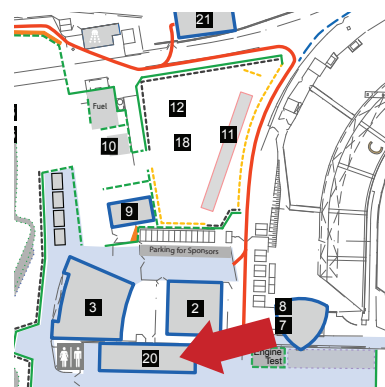
Before passing E-Scrutineering the car may only be moved around on the event site with all Master Switches and shutdown buttons in the off-position. Therefore the CS-Master Switch, the TS-Master Switch, the right, the left and the cockpit shutdown button have to be off! Furthermore the detachable handle or key of the tractive system Master Switch has to be removed and kept safe by a Safety Responsible.

Scrutineers will mark or seal various different approved parts (i.e. insulation monitoring device, accumulator containers, energy meter, tires, rims etc.). The car can be disqualified from any dynamic event by using unmarked parts or substituting marked parts. Parts with broken seals are equivalent to being unmarked.

Broken seals can only be replaced by a Scrutineer.

Each team has to present the following equipment:

- Accumulator charger to be used during the event
- All accumulator containers to be used during the event
- Data sheets for all used parts in the tractive system
- Copy of the ESF
- Copy of the FMEA
- Accumulator Container Hand Cart, if needed
- Insulated cable shear
- Insulated screw drivers
- Multimeter with protected probe tips
- Insulated spanners, if screwed connections are used in the tractive system
- Safety goggles
- HV isolating gloves
- HV isolating blanket of at least 1,5m<sup>2</sup>



Installation of the Energy meter:

Before making the HV tests during E-Scrutineering each car is equipped with the Energy Meter. This will be handed out during E-Scrutineering to the team to install it under the supervision of the Scrutineers.

Insulation Monitoring Device Test (IMDT):

The insulation monitoring device will be tested during E-Scrutineering. This is done by connecting a resistor between several parts of the tractive system and electrically conductive vehicle parts while the tractive system is active. The size of the resistor is defined as 500 Ohm/V related to the maximum tractive system operation voltage. The test is passed if the insulation monitoring device shuts down the tractive system whenever the resistor connects the tractive system to grounded parts.

The IMDT may be repeated at any time during the event. After the car passes the test for the first time, critical parts of the tractive system will be sealed. The vehicle is not allowed to take part in any dynamic event if any of the seals are broken until the IMDT is successfully passed again.

Once you pass the electrical Scrutineering, you will get the first inspection sticker.

### 3.2.2 Mechanical Scrutineering

#### Dates/Times:

Wednesday, 4 August	15:00 – 19:00
Thursday, 5 August	09:00 – 12:00, 13:00 – 19:00
Friday, 6 August	09:00 – 12:00, 13:00 – 19:00
Saturday, 7 August	on request

**Location:** Dynamic Area – DEKRA house

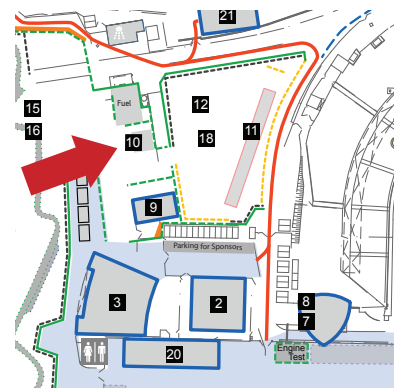
You can do this at any time during the specified hours and do not need to make an appointment.

All team members who want to participate at Scrutineering need a dynamic's gate ID.

The waiting queue for Scrutineering will start directly at the dynamic's gate so every team member can guide the car up to the queue.

To Scrutineering you must bring:

- The car (obviously),
- Copies of any Safety Structure Equivalency forms.
- Copies of any Impact Attenuator Data Requirement
- A test piece from the impact attenuator
- All the helmets you plan to use at the event
- All the drivers' suits and other safety gear
- The tallest driver of the team must be in attendance for roll bar height and egress checks.
- All the tyres you plan to use at the event.
- 2 Fire Extinguishers
- Quick Jack + Push bar
- Some Tools



- **NOTE: Four team members maximum (incl. the tallest registered driver) in the inspection box.**

When you pass the mechanical Scrutineering, you will get the second inspection sticker. The technical form will be retained by the Scrutineers and you should proceed to the Tilt Table. If you have items that need to be rectified, the form will be returned to you (the team), you will not get your sticker, and you will have to present your car for Scrutineering again.

Scrutineering reserves the right to spot check any car at any time during the event.

### 3.2.3 Tilt Table Testing

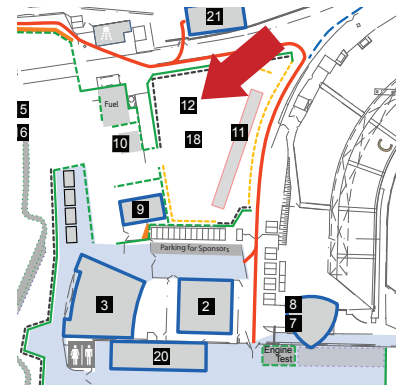
#### Dates/Times:

Thursday, 5 August	09:00 – 12:00, 13:00 – 19:00
Friday, 6 August	09:00 – 12:00, 13:00 – 19:00
Saturday, 7 August	on request

#### Location:

Dynamic Area

Tilt Testing checks if the vehicle complies with the liquid spillage and rollover stability rules. No vehicle is permitted at this station until it has passed E-Scrutineering and mechanical Scrutineering. The stickers that must be applied to the car will serve as proof of this.



At this point we want to remind the teams to bring the car in 'ready to race' condition. That means that all the liquids of the car should be filled properly, all components of the car are mounted. We will check this and may ask you to run the motors.

The vehicle will be placed upon the table with the tallest driver aboard. The vehicle should be oriented on the tilt table in the direction that is most likely to create spillage. The table will then be tilted to an angle of 45 degrees. There must be no fluid leakage at this angle. If the vehicle passes this test, the angle is increased to 60 degrees. This angle is used to represent a cornering force of 1.7 Gs. If the upper wheels remain on the table the vehicle passes. (Some vehicles may lift one wheel. The station manager(s) should be consulted if this occurs). The person in charge at the tilt table must sign off an inspection form, which travels with the car. A third sticker is applied (on the car), to indicate passing the tilt table test.

The vehicle is now free to proceed to the Brake Testing area. Should the vehicle fail at either of the two angles, the car must be repaired and re-tested.

Vehicles may be asked to return to this station for re-certification at the discretion of the officials.

#### Safety guidelines for the tilt area:

- Four team members maximum (incl. the tallest registered driver) in the Tilt Table Area
- All engines and master switches off, push car on and off table. Care must be taken to avoid damage to the vehicle when pushed on and off the tilt table.
- Inside wheels are to be placed against the guard of the tilt table.
- Attach a strap to rollover hoop and side of table which is to be elevated. Allow a little slack. (Team members may be asked to hold the car, if a strap is not available).
- Be sure table is clear before raising and especially when lowering. Inform people in area when raising or lowering (e.g. "Coming Down").
- Use absorbent material to soak up leaks. (May be obtained at fuel station). Keep a fire extinguisher at hand.



### 3.2.4 Brake Testing

**Dates/Times:**

Thursday, 5 August	09:00 – 12:00, 13:00 – 19:00
Friday, 6 August	09:00 – 12:00, 13:00 – 19:00
Saturday, 7 August	on request

**Location:**

Dynamic area, behind the DEKRA house

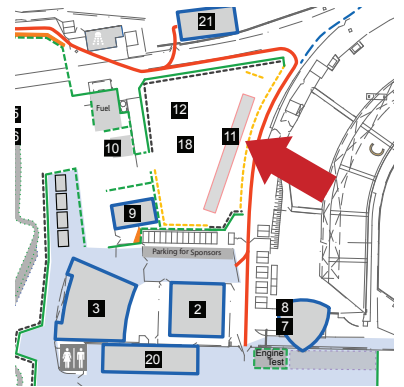
Brake Testing checks that the vehicle can be brought to a controlled stop. No vehicle is permitted at this station until it has passed E-Scrutineering, mechanical Scrutineering, tilt table testing and in case of damp or wet conditions also the rain test. Proofs of this are the respective “tech” stickers, which must be applied to the car.

Each driver must be instructed as to the proper procedure for the brake test. With the car at the start line of the station a green flag (or similar signal) should be used to signal the start of each run. The driver must accelerate on a short straight until reaching the braking area, which is a box defined by pylons. Before entering in this box, the tractive system has to be switched off by the driver and the brake pedal must be actuated as far as possible. The brake test is successful if all four wheels lock.

If the vehicle passes the test, the person in charge is to sign the approval form and provide the team with the last tech sticker. The vehicle is now free to proceed to the practice track or on to the dynamic events.

If the vehicle is unable to pass the test in three attempts, the car must be repaired and then brought back for retesting. The vehicle will not be allowed to compete without passing this test.

Re-certification may be required if work is performed on the vehicle's brake system or if the vehicle is involved in an incident which results in vehicle damage.



### 3.2.5 Rain test

**Dates/Times:**

Thursday, 5 August	09:00 – 12:00, 13:00 – 19:00
Friday, 6 August	09:00 – 12:00, 13:00 – 19:00
Saturday, 7 August	on request

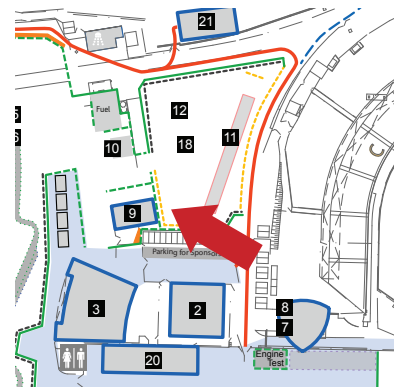
**Location:**

Dynamic Area

Teams may choose to try and pass a special rain test during Scrutineering. The car has to pass the insulation monitoring device test (IMDT) before the rain test can be conducted.

During the rain test the tractive system has to be active and none of the driven wheels are touching the ground. It is not allowed to have a driver seated in the car during the rain test.

Passing the rain test allows the car to drive under damp or wet conditions. Proof of it is the respective sticker that you receive.



### 3.3 Testing

**Dates/Times:**

Friday, 6 August 09:00 – 18:00

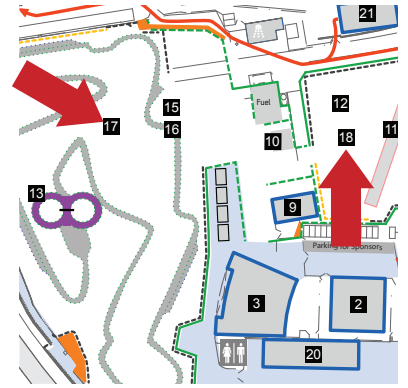
Saturday, 7 August 08:30 – 18:00

**Location:**

Dynamic area:

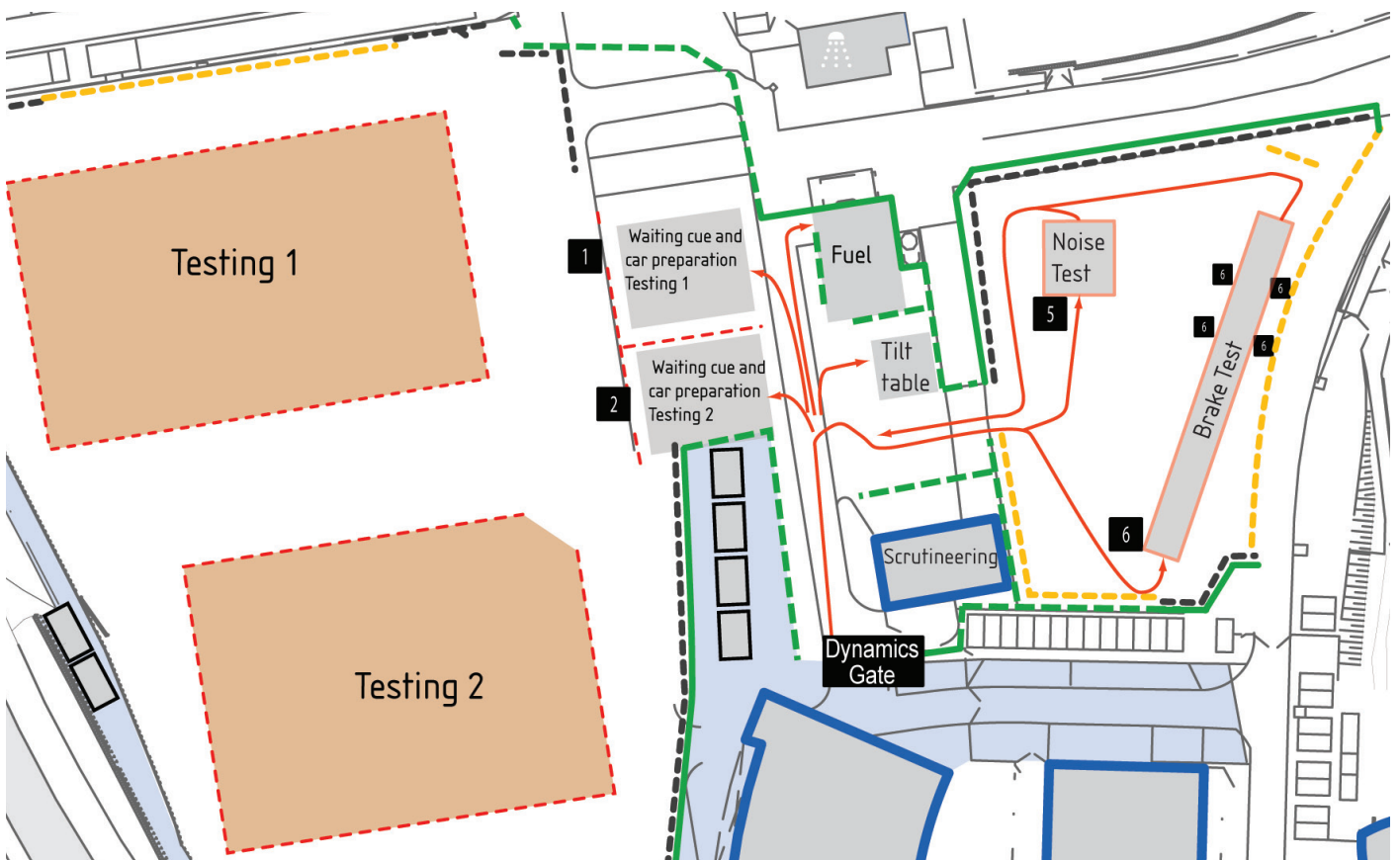
Friday, 6 August: two tracks left-hand

Saturday, 7 August: in the morning one track right-hand and one track left-hand, in the afternoon one track right-hand



On Friday there will be two vehicle test areas located on the Dynamics track area. The surface is asphalt. In these test areas you may set up and test your car, simulating any driving conditions you might need. The testing time per team depends on the waiting queue and will be 3 to 5 minutes per run. If you want to test more, please get in the queue again.

On Saturday and Sunday we will use the smaller dynamics area for testing. Unfortunately the surface of this area differs a lot from the one what is on the large dynamics area. It is concrete with colour on some spots and provides less grip and small bumps. Please keep that in mind when you set up your car for the events.



Dynamics Area on Friday – Testing / Technical checks





## 3.4 Dynamic Events – disciplines

### 3.4.1 Skid Pad

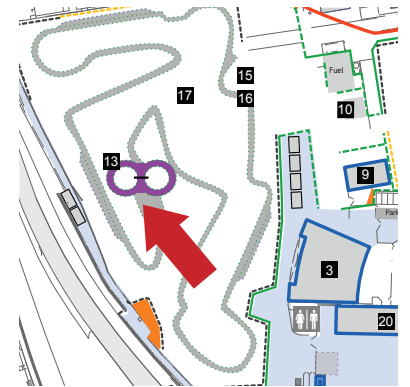
**Date/Time:**

Saturday, 7 August

08:30 – 13:00

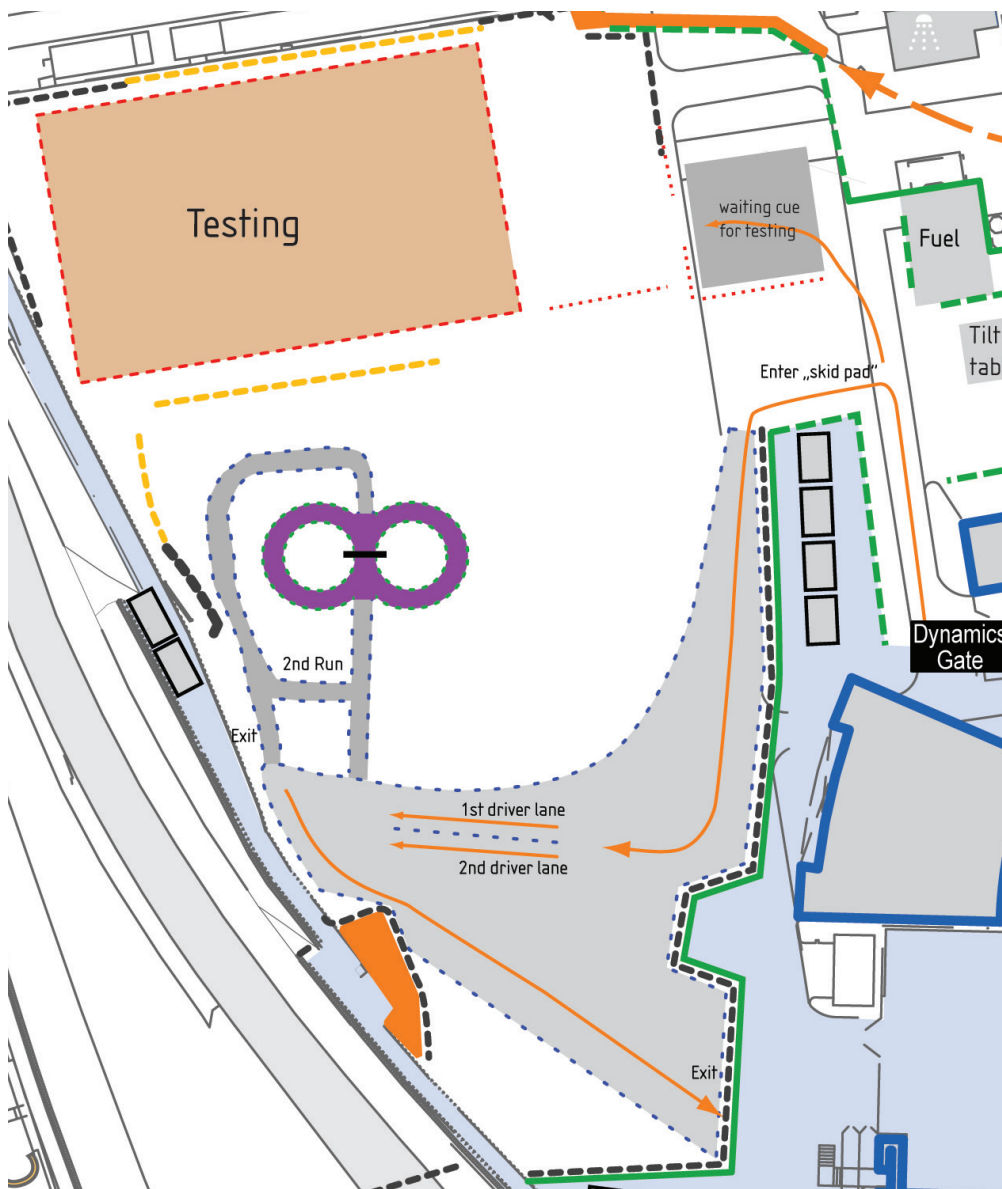
**Location:**

Dynamic area



The Skid Pad event runs simultaneously with the Acceleration event. There will be a two lane queue for this event. Lane one is for the first driver of the team, lane two for the second. The queue closes 15-30 minutes before the end of the event, depending on cars already waiting.

Each driver can choose to drive one or two runs in a row. The second run may be done immediately after the first run without stepping back to the end of the queue.



Dynamics Area on Saturday morning – Skid Pad / Testing

### 3.4.2 Acceleration

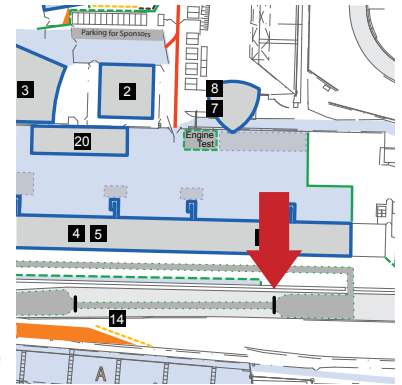
**Date/Time:**

Saturday, 7 August

08:30 - 13:00

**Location:**

Start/Finish Line of the Hockenheimring

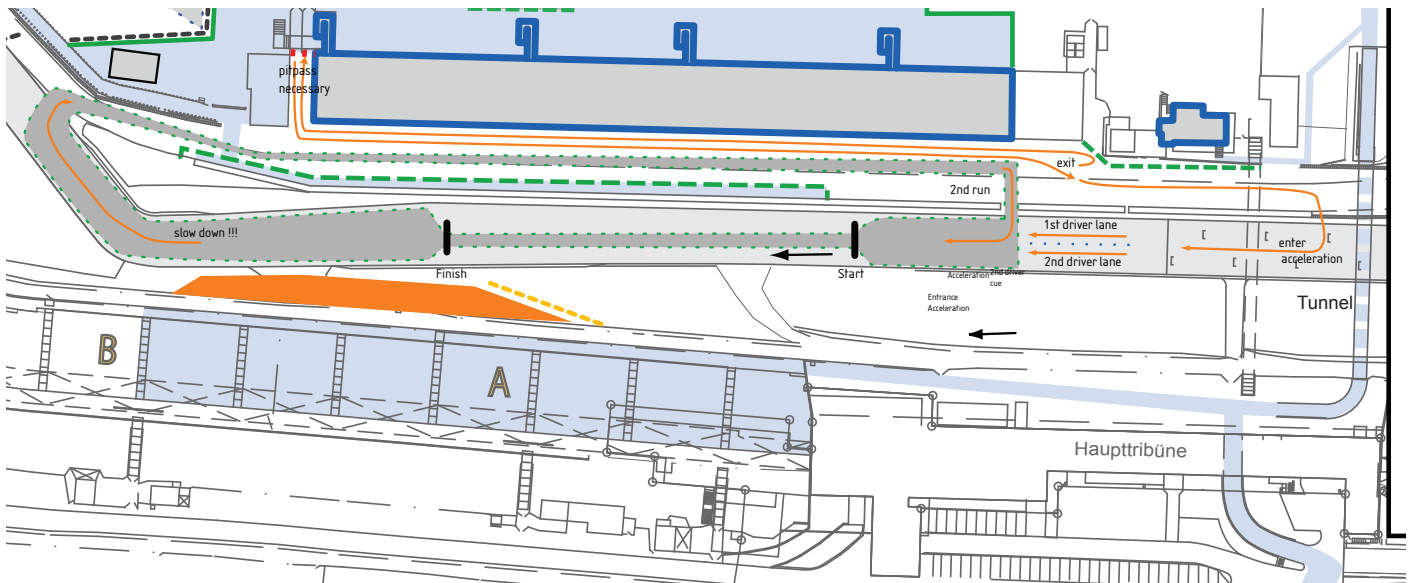


Similar to the Skid Pad event, the waiting queue for the Acceleration event is a two lane queue. Lane one is for the first driver of the team, lane two for the second.

The queue closes 15-30 minutes before the end of the event, depending on cars already waiting.

Each driver can choose to drive one or two runs in a row. The second run may be done immediately after the first run without stepping back to the end of the queue.

This year's acceleration event is located at the Start/Finish line of the F1 circuit. Waiting cue and warm up area is situated on the track. After passing the finish line of the Acceleration there is a big slow down area (Nordkurve) before you have to turn into the "F1 pit lane" to return to the start for the second run. In case of passing the spectator area while driving through the pit lane a slow car speed is recommended and controlled by the officials.



Dynamics Area on Saturday morning - Acceleration



### 3.4.3 Autocross

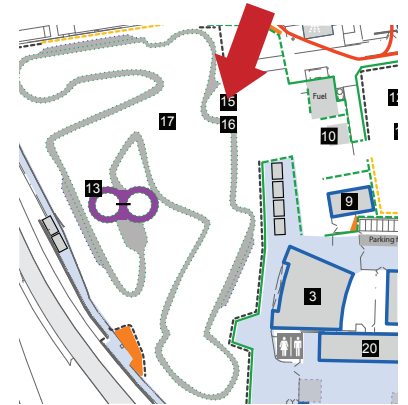
**Date/Time:**

Saturday, 7 August 13:30 – 14:00 Course walk (for all interested)

Saturday, 7 August 14:00 – 15:00 FSE Autocross

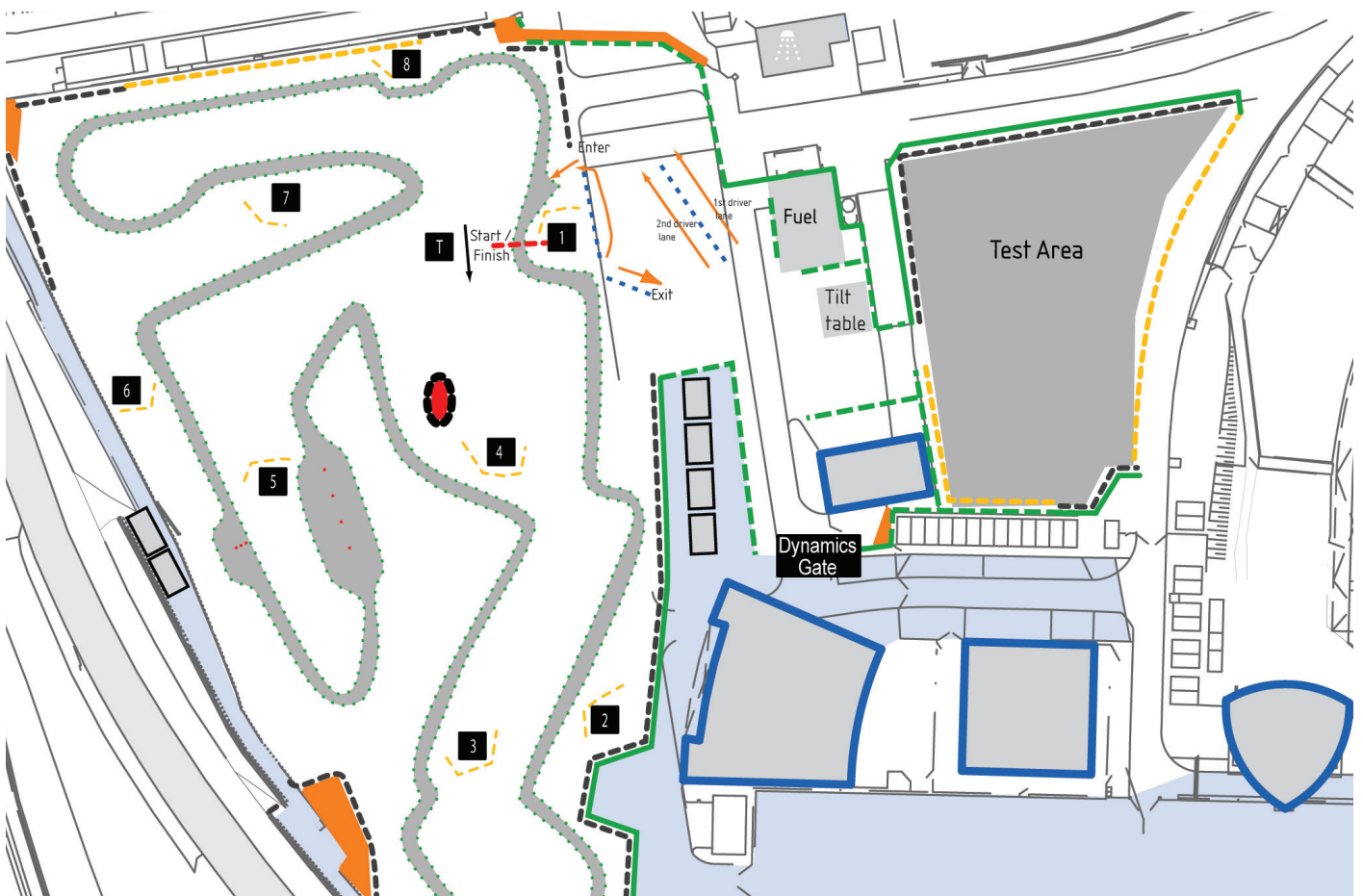
**Location:**

Dynamic area



The autocross is installed on the paddock of the Hockenheim GP Racetrack therefore the track is lined with cones. Green cones are used for the track boundary, orange cones are slalom cones and blue cones are used for entrance and exit of the course. Track direction is clockwise. Each run is only one lap with a flying start. There will be two cars at a time on the track with an offset of half a lap. Each driver can choose to drive one or two runs in a row. The second run may be done immediately after the first run without stepping back to the end of the queue. After the first run the driver must exit the course and drive slowly through the driver change area and back to the start for the second run. A two lap run is permitted.

Due to the fact that two cars are on the track simultaneously, a stalled car can influence the lap time of the other car. In this case the run for the stalled car is lost. For the other car this turn does not count and an immediate rerun of this lap is possible.



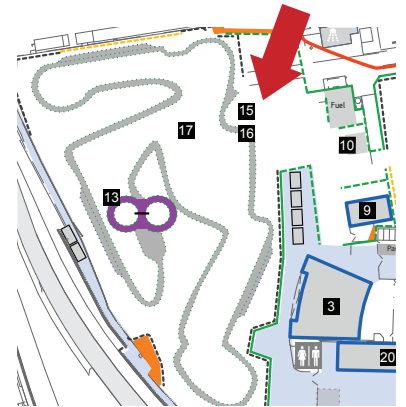
Dynamics Area on Saturday afternoon – Autocross / Testing

### 3.4.4 Endurance

#### Date/Time:

Saturday, 7 August 21:30 – 22:00 Course walk (for all interested)  
Saturday, 7 August 22:00 – 01:00 Endurance

**Location:** Dynamic area

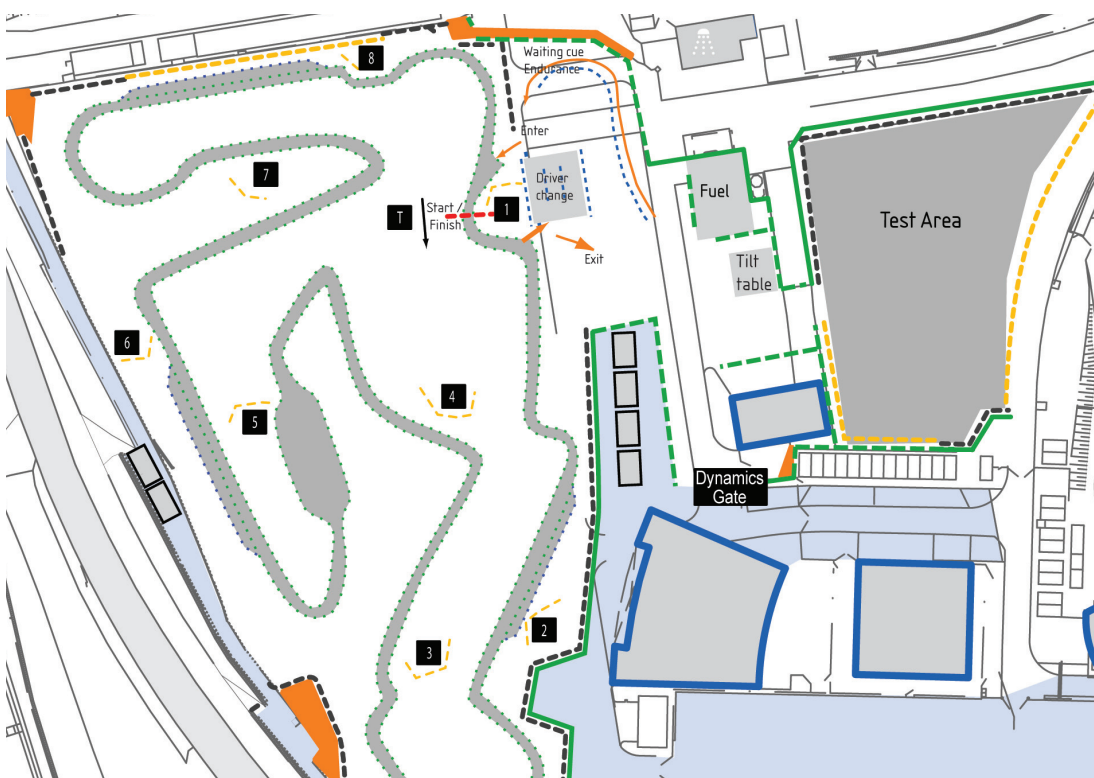


The endurance track will be set up Saturday evening. Everybody can visit the track between 21:30 and 22:00 on Saturday. The colouring of the cones is similar to the Autocross event. The three additional overtaking lanes are marked with blue cones.

The starting order for this event results from the Autocross times. The slowest car starts at 22:00. The following car starts 3 minutes later. We will have the maximum number of three cars on course at one time. Due to weather conditions the starting order may change. The valid order will be announced at 21:30 on Saturday and will be displayed at the FSG forum.

During the driver change two scrutineers will check your car. After successful driver change the second driver drives to the entrance gate. If the marshal stops the car through no fault of one's own, this stopping time will be subtracted from a possible exceeding of the 3 minutes of driver change time. Timekeeping will be watching for these incidents.

Cars who get a blue flag please drive into the next overtaking lane. You do not have to slow down before the overtaking lanes. Please start breaking / slowing down when you are in the overtaking lane NOT before. For the faster car it is necessary to not follow the car in front too closely. Otherwise it may cause serious damage if the cars contact each other. Rear-ending a slower car will definitely lead to a disqualification of the faster car!



All vehicles that successfully finish the Endurance Event must report to the Parc ferme. They will stay there until 30 minutes after the time limit for appeal.

Make sure that your driver helmets are not equipped with dark visors. The scrutineers will check this before the endurance.

Dynamics Area on Sunday – Endurance / Testing



## 4. Static Events

### 4.4.1 Static Events Schedule

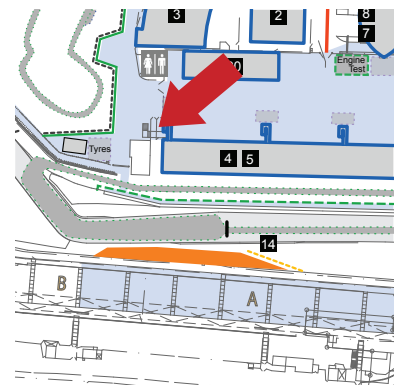
Team	Engineering Design 5.August 2010	Cost Event 5.August 2010	Bay	Presentation 6.August 2010	Room
Ecurie Aix e.V.	15:45 - 16:40	16:50 - 17:45	2	16:15 - 17:00	E1
zedX	16:50 - 17:45	15:45 - 16:40	3	10:50 - 11:35	E1
WHZ Racing Team Electric	13:30 - 14:25	14:35 - 15:30	2	14:25 - 15:10	E1
University of Hertfordshire	15:45 - 16:40	16:50 - 17:45	1	11:45 - 12:30	E1
munichMOTORsport	15:45 - 16:40	16:50 - 17:45	5	11:45 - 12:30	E2
GreenTeam Uni Stuttgart	13:30 - 14:25	14:35 - 15:30	6	14:25 - 15:10	E2
Stuba Green Team	16:50 - 17:45	15:45 - 16:40	7	10:50 - 11:35	E2
KA-RaceIng	16:50 - 17:45	15:45 - 16:40	4	15:20 - 16:05	E1
University Racing Eindhoven	15:45 - 16:40	16:50 - 17:45	6	16:15 - 17:00	E2
mosTEC.racing	14:35 - 15:30	13:30 - 14:25	7	9:00 - 9:45	E2
eMotorsports Cologne	14:35 - 15:30	13:30 - 14:25	4	13:30 - 14:15	E1
Fast Forest	14:35 - 15:30	13:30 - 14:25	3	9:00 - 9:45	E1
TU Graz E-Power Racing	13:30 - 14:25	14:35 - 15:30	1	9:55 - 10:40	E1
FHWT Racing Team	14:35 - 15:30	13:30 - 14:25	8	13:30 - 14:15	E2
AMZ Racing Team	13:30 - 14:25	14:35 - 15:30	5	9:55 - 10:40	E2
DART electric	16:50 - 17:45	15:45 - 16:40	8	15:20 - 16:05	E2

### 4.4.2 Engineering Design and Cost Analysis Event - procedure

The Judging Area will be located on the 2nd floor of the pits. The cars will be lifted with the FSG Car Lift. The cars need to be at the lift 1 hour before the judging will start.

The engineering design event and cost analysis will be back to back. As a team you will have 10 minutes to setup your car and all presentation devices like charts, boards etc. once in the Judging bay assigned to you. Your team will stay in this Judging bay for both events. After finishing the first event, you will have a 10 minute break, before the second Static Event. The Judges will come to your Judging bay. After the second event you are done and your car will be let down to the ground level. To find out your Judging bay and your judging times please check the schedule.

**Team & Car photo:** After these two static events we will take a photo of your team and car while you are waiting for the elevator which carries your car down to the ground level. Please ensure that any team members who did not participate in the static events are available for the picture.



### 4.4.3 Engineering Design Event

**Date/Time:**

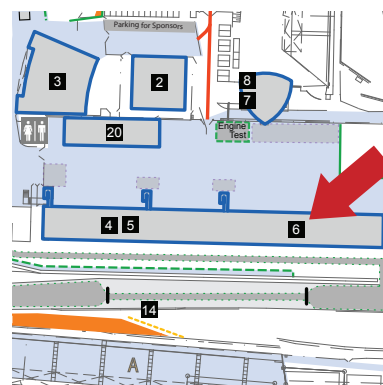
Thursday, 5 August 13:30 – 18:00 Engineering Design Event

**Location:**

Marquee above pits (Design Event)  
FSG forum (Design Finals)

**Chief Judges:**

Pat Clarke  
Steve Fox  
Rudolf Dittrich



Formula Student Germany is an international Design Competition. This means the Design Event is the most important static event. The winner of the Design Event will get 150 points.

Here are some tips to help you score higher in the Engineering design Event: Be on time! Make sure your car is in race-ready condition, and your team members are well prepared. Bring all engineering documentation with you. Read, and understand the rules.

You should start with a 3-5 minute overview presentation of the car. It is up to you how you use this presentation time, introducing the team, the car or the design goals etc. This presentation time will be followed by a 40 minutes discussion with the judges. You are done after 45 minutes.

To score high in the design event we would suggest bringing all necessary papers with you, which underline your engineering work. If you do any tests bring the results with you, Judges only believe what they have seen, not what you are telling them. Read the Caroll Smith “Everything You Wanted to Know about Design Judging” paper, available on the Formula SAE website.

The Judges will be around on Saturday and Sunday, feel free to ask them about your car. They will be more than happy to answer all your questions.

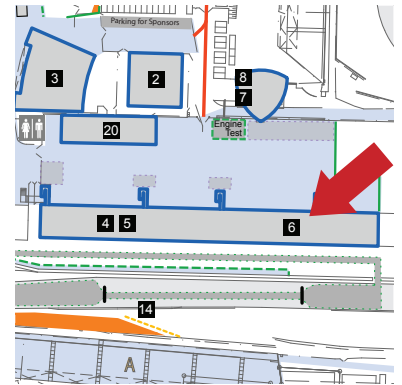


#### 4.4.4 Cost Analysis Event

**Date/Time:**

Thursday, 5 August                      13:30 – 18:00 Cost Analysis Event

**Location:**                                      Marquee above pits



#### The Cost Report

The actual cost report is due into the judges approximately six to seven weeks prior to the event at the venue. A printed copy of the report must be presented to the judges during the Cost Event. The cost report is judged on the basis of the cost of the car and quality of the cost report. The cost of the car is determined by the cost of the parts and fabrication using established manufacturing practices. The report will follow the guidelines set forth in the published rules. From this analysis the judges (in 8 distinct areas of expertise) will determine if all parts and processes were included and if unreasonably low (determined by the experience of the judges) - the judges will add penalties if there are errors, items omitted, or have costs below reasonable estimates by giving points for the event discussion.

#### “The “Real Case Situation”

Like any other situation in real life, nobody knows what’s coming next. Teams will be given a specific task after the submission of their cost reports. This task is developed by the judges and Steering Committee members of Formula Student Germany. The teams have to present their solutions in a 10 minute presentation during the cost event.

Addenda to the report can be taken into consideration to cover any necessary changes made in the car. These addenda will only be accepted at the time of registration at the event and must be in the format proscribed by the rules.

The final scores are tabulated and presented at the end of the judging day to the statisticians and are posted on the evening for the students viewing. Once posted, the scores may be protested for only one hour, after which time, all scores become final.

## 4.4.5 Business Plan Presentation Event

### Date/Time:

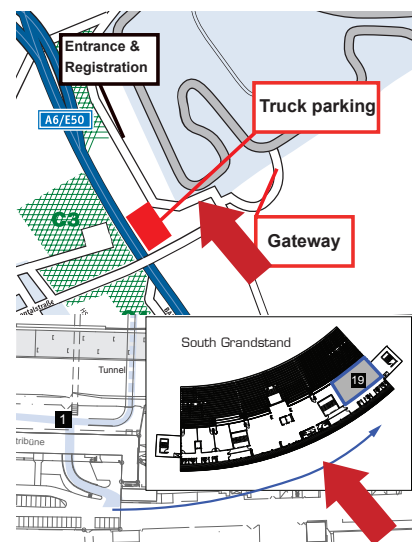
Friday, 6 August 09.00am - 21:00

### Location:

Sotuh Grandstand

### The Presentation

Competitors are to make a presentation to upper level executives of an imaginary manufacturer/investor. The presentation should tie together all factors that would influence the marketability and manufacturability of their design. The technical aspects of the vehicle design should be presented to reinforce or support performance claims but should be reduced to the maximum necessary for an investment decision. The competitors should show an understanding of the marketplace and the targeted customer, and show how their design fits into its expected market and is completed to a business model. Competitors must convince the judges that their prototype and the related concept represents a profitable enterprise for the manufacturer/ investor and simply an attractive investment.



### Judging Process

The Business Plan Presentation Event will be held in a three step approach. In advance every team has to submit an Executive Summary. The first presentation round (incl. DDT) will be relevant for all teams and the finals will be relevant only for the Top 3 - 5 finalists.

### Executive Summary

Prior to the Business Plan Presentation Event the teams have to hand in an Executive Summary. This summary must not exceed the size of one page. The Executive Summary should contain a brief description of the team's Business Plan, the two most outstanding technical features of the car and the production costs of the prototype and the series.

### Part of presentation: Deep Dive Topic (DDT)

After the submission of the Executive Summary the teams will receive a specific deep dive topic from the presentation judges prior the competition. Every team has to present this special deep dive topic in a detailed way as a part of the team's business plan presentation to the judges!





### **Schedule for each presentation:**

- Maximum 10 minutes for set-up & preparation
  - 10 min for presentation
  - 5 min maximum for surplus-time
  - 5 min for questions
  - 5 min for De-briefing and scoring decision of the judges
  - 5 min for instant feedback to the teams
  - 5 min de-installation
- 45 minutes maximum for each presentation

This time schedule needs to be followed strictly; otherwise the overall time schedule for the whole day will be disrupted.

During the presentations, only judges and the presenting team participate. Guests may be allowed to attend at the discretion of any Steering Committee member or the team.

## 5. Results

The results will be posted on the results board in the FSG Forum as soon as they are available.

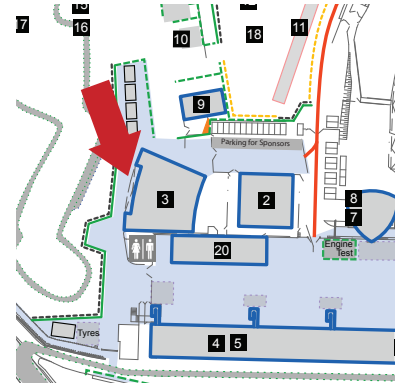
Endurance Scores will be posted in 2 steps. Before publishing the times the penalties will be posted, because these are finished before the data of the 2 timing systems are cross checked.

In the second step the endurance times will be published.

The time slot for the protests will be printed on the results page.

Please note that the protest time for the overall results could be on Monday morning from 9:00 – 10:00.

Please visit the Result board at the FSG Forum regularly and listen to the announcements.



## 6. Protest

(A) Required Review - Any team that intends to protest a rule, score, judge's decision or any other aspect of the competition, must present the issue to the FSG Rules Organizers, represented by Frank Röske for discussion, and possible resolution before the protest is filed. If you cannot locate Frank Roske, contact Event Control.

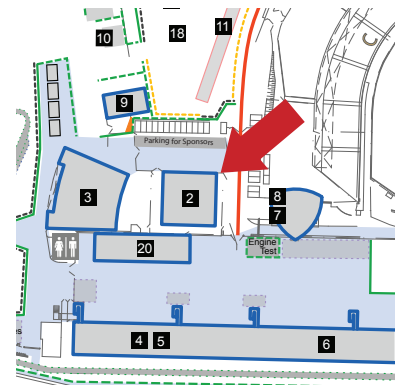
(B) Cause for Protest - A team may protest any rule interpretation, score or official action (unless specifically excluded from protest) which they feel has caused some actual, non-trivial, harm to their team, or has had a substantive effect on their score. Teams may not protest rule interpretations or actions that have not caused them any substantive damage.

(C) Protest Period - Protests must be filed within one (1) hour after the action being protested has occurred or the scores for the activity involving the protest subject are posted.

(D) Protest Format - Protests must be handed in in a written form and submitted by the team captain to Peter Jakowski. In case of not finding Peter Jakowski, contact Event Control.

(E) Protest Bond - The protesting team must post a twenty-five (25) points bond to be deducted from their score if the protest is denied.

(F) Decision - The decision of the officials regarding any protest is final.



## 7. Participating Teams 2010

CNT	City / University	Team	Car
DE	Aachen RWTH	Ecurie Aix e.V.	E21
DE	Berlin TU	zedX	E11
DE	Zwickau UAS	WHZ Racing Team Electric	E62
GB	Hatfield UH	University of Hertfordshire	E13
DE	München UAS	munichMotorsport	E22
DE	Stuttgart U	GreenTeam Uni Stuttgart	E26
SK	Bratislava TU	Stuba Green Team	E90
DE	Karlsruhe KIT	KA-RaceIng	E17
NL	Eindhoven TU	University Racing Eindhoven	E40
DE	Mosbach DHBW	mosTEC.racing	E69
DE	Köln UAS	eMotorsports Cologne	E12
DE	Deggendorf UAS	Fast Forest	E14
AT	Graz TU	TU Graz E-Power Racing	E15
DE	Diepholz UAS	FHWT Racing Team	E16
CH	Zürich ETH	AMZ Racing Team	E33
DE	Darmstadt TU	DART electric	E23

## 8. Awards 2010

### Formula Student Combustion

Formula Student Combustion Champion

Formula Student Combustion – 2nd

Formula Student Combustion – 3rd

FSC Engineering Design Award – 1st

FSC Engineering Design Award – 2nd

FSC Engineering Design Award – 3rd

FSC Cost Analysis Award – 1st

FSC Cost Analysis Award – 2nd

FSC Cost Analysis Award – 3rd

FSC Business Plan Presentation Award – 1st

FSC Business Plan Presentation Award – 2nd

FSC Business Plan Presentation Award – 3rd

FSC Endurance Winner

FSC Acceleration Winner

FSC Skid Pad Winner

FSC Autocross Winner

Most Fuel Efficient Car

powered by Kautex Textron GmbH & Co.KG

FSC 1st place Overall Dynamic Events

powered by VDI e.V.

Best Newcomer Award

presented by Formula Student Germany Academy

Best Use of Electronics Award

powered by Bosch Engineering GmbH

Most Innovative Powertrain Award

powered by BMW Group

### Formula Student Electric

Formula Student Electric Champion

Formula Student Electric – 2nd

Formula Student Electric – 3rd

FSE Engineering Design Award – 1st

FSE Engineering Design Award – 2nd

FSE Engineering Design Award – 3rd

FSE Cost Analysis Award – 1st

FSE Cost Analysis Award – 2nd

FSE Cost Analysis Award – 3rd

FSE Business Plan Presentation Award – 1st

FSE Business Plan Presentation Award – 2nd

FSE Business Plan Presentation Award – 3rd

FSE Endurance Winner

FSE Acceleration Winner

FSE Skid Pad Winner

FSE Autocross Winner

Most Energy Efficient Car

powered by HARTING Electronics

FSE 1st place Overall Dynamic Events

powered by Mercedes-AMG GmbH

Best E-Drive Packaging Award

powered by Daimler AG

Best Energy Management Award

powered by Bosch Engineering GmbH

E/E Architecture Award

powered by Continental AG

### Formula Student Germany

Best Lightweight Concept Award

powered by AUDI AG

FSG Sportsmanship Award

presented by Formula Student Germany Steering Committee

Best Prepared Car for Scrutineering

powered by DEKRA Automobil GmbH

Best Use of Adhesives Award

powered by Henkel



## 9. Additional Information

### 9.1 Internet

#### Free Internet access

In the FSG Forum there is free WLAN internet access for all teams. The FSG forum will be closed at 20:00 every day.

### 9.2 Pharmacies

Alte Apotheke (Hockenheim)

Untere Hauptstr. 5, 68766 Hockenheim, Tel.: 06205/18472

Central-Apotheke (Hockenheim)

Karlsruher Str. 11, 68766 Hockenheim, Tel.: 06205/7238

Engel-Apotheke (Hockenheim)

Heidelberger Str. 3, 68766 Hockenheim, Tel.: 06205/7173

Linden-Apotheke Gabriele Schotter e.K. (Hockenheim)

Schwetzingen Str. 18, 68766 Hockenheim, Tel.: 06205/15544

Löwen-Apotheke (Hockenheim)

Reilingen Str. 2, 68766 Hockenheim, Tel.: 06205/288928

Stadtapotheke Gabriele Müller e.K. (Hockenheim)

Heidelberger Str. 11, 68766 Hockenheim, Tel.: 06205/4277

Wasserturm-Apotheke (Hockenheim)

Karlsruher Str. 25, 68766 Hockenheim, Tel.: 06205/4542

### 9.3 Supermarkets

Aldi Süd (Hockenheim)

Lußheimer Str. 10, 68766 Hockenheim

Lidl Filiale (Hockenheim)

Lußheimer Str. 6, 68766 Hockenheim

Lidl-Märkte (Hockenheim)

Duttweiler Str. 2, 68766 Hockenheim, Tel.: 06205/18274

Mini Mal-Markt (Hockenheim)

Lußheimer Str. 2, 68766 Hockenheim, Tel.: 06205/283539

miniMAL (Hockenheim)

Lußheimer Str. 2, 68766 Hockenheim

PENNY-MARKT Filiale (Hockenheim)

Hirschstr. 1, 68766 Hockenheim, Tel.: 06205/923207

PENNY-MARKT Filiale (Hockenheim)

Ernst-Brauch-Str. 64-66, 68766 Hockenheim, Tel.: 06205/923218

PENNY-MARKT Filiale (Hockenheim)

Auweg 3, 68766 Hockenheim, Tel.: 06205/923227

real,- SB Warenhaus Hockenheim (Hockenheim)

Speyerer Str. 1, 68766 Hockenheim, Tel.: 06205/2070

## 9.4 Restaurants / Take Aways

### Italian

Holzofen-Pizzeria Pinocchio (Hockenheim)  
Schwetzinger Str. 11, 68766 Hockenheim, Tel.: 06205/14766

Pizzeria Cortina (Hockenheim)  
Untere Hauptstr. 20, 68766 Hockenheim, Tel.: 06205/101747

### Greek

Delphi (Hockenheim)  
Schwetzinger Str. 1, 68766 Hockenheim, Tel.: 06205/6780

Gaststätte Symposium im Guldernen Engel (Hockenheim)  
Heidelberger Str. 1, 68766 Hockenheim, Tel.: 06205/104680

### Chinese

China-Restaurant Kanton (Hockenheim)  
Untere Hauptstr. 8, 68766 Hockenheim, Tel.: 06205/13361

Chinarestaurant Kanton (Hockenheim)  
Untere Hauptstr. 8, 68766 Hockenheim, Tel.: 06205/13361

### Local Food

Bistro Karibik (Hockenheim)  
Hirschstr. 5, 68766 Hockenheim, Tel.: 06205/17709

Café Bistro Monokel (Hockenheim)  
Karlsruher Str. 27, 68766 Hockenheim, Tel.: 06205/286363

### Coffee & Ice-cream

Eis-Cafe Cortina (Hockenheim)  
Untere Hauptstr. 20, 68766 Hockenheim

Eiscafe La Perla (Hockenheim)  
Ottostr. 2, 68766 Hockenheim, Tel.: 06205/16441

### Fast-Food

McDonalds Restaurant (Hockenheim)  
Gleisstr. 8, 68766 Hockenheim, Tel.: 06205/189344

BURGER KING (Karlsruhe), distance: 50.3 km  
Kaiserstr. 64, 76133 Karlsruhe

BURGER KING (Heilbronn), distance: 63.5 km  
Neckarsulmer Str. 36-38, 74076 Heilbronn, Tel.: 07131/950220

## 9.5 Motorcycle Dealers / Parts

Kawadrom GmbH (Hockenheim)  
Speyerer Str. 12, 68766 Hockenheim, Tel.: 06205/15054

Walz Motorräder (Hockenheim)  
Pfälzer Ring 15, 68766 Hockenheim, Tel.: 06205/7101

Zweirad Zieger (Hockenheim)  
Kollmerstr. 1, 68766 Hockenheim, Tel.: 06205/9467-0



## 9.6 Automotive Parts Suppliers

Autodrom Gekeler & Hahn Kraftfahrzeughandels- GmbH (Hockenheim)  
Ernst-Brauch-Str. 68, 68766 Hockenheim, Tel.: 06205/18145

Autohaus Arno Ziegler GmbH (Hockenheim)  
Dresdener Str. 22 , 68766 Hockenheim, Tel.: 06205/7678

Autohaus Gehl GmbH & Co. KG (Hockenheim)  
Gleisstr. 2, 68766 Hockenheim, Tel.: 06205/2023-0

Pit-Stop Auto Service GmbH (Hockenheim)  
Speyerer Str. 1, 68766 Hockenheim, Tel.: 06205/17550

Autohaus Ibikli Meisterbetrieb e.K. (Hockenheim)  
Duttweiler Str. 14, 68766 Hockenheim, Tel.: 06205/922486

Autohaus Krauth GmbH & Co. KG (Hockenheim)  
Mannheimer Str. 2, 68766 Hockenheim, Tel.: 06205/9788-0

Autohaus Ruder GmbH (Hockenheim)  
Gleisstr. 8, 68766 Hockenheim, Tel.: 06205/2926-0

Ahmad El Dor (Hockenheim)  
Pfälzer Ring 7, 68766 Hockenheim, Tel.: 06205/286960

Arvelus Gümüşköyü-Cambuldu (Hockenheim)  
Schulstr. 22, 68766 Hockenheim, Tel.: 06205/8840

ASG Kraftfahrzeuge Stefan Grafenhorst GmbH (Hockenheim)  
Gleisstr. 16, 68766 Hockenheim, Tel.: 06205/4779

Auto Friesen GmbH (Hockenheim)  
Mannheimer Str. 9, 68766 Hockenheim, Tel.: 06205/2929-0

Auto Gauch GmbH (Hockenheim)  
Mannheimer Str. 8, 68766 Hockenheim, Tel.: 06205/2927-0

## 9.7 Building centers

Haas-Baumarkt (Reilingen)  
Hauptstr. 79, 68799 Reilingen, Tel.: 06205/283246

toom BauMarkt GmbH (Schwetzingen)  
Rudolf-Diesel-Str. 3-7, 68723 Schwetzingen, Tel.: 06202/57494-0

Hornbach-Baumarkt Aktiengesellschaft (Leimen)  
Riedwiesenweg 9, 69181 Leimen, Tel.: 06224/52493

Der Praktiker Bau-und Heimwerkermärkte AG (Heidelberg)  
Englerstr. 10, 69126 Heidelberg, Tel.: 06221/36325-0

## 9.8 Tips for websearch in Germany

Bi-directional translation English-German: <http://dict.leo.org/>

Yellow Pages: [www.gelbeseiten.de](http://www.gelbeseiten.de)

Map: [www.map24.de](http://www.map24.de)  
<http://maps.google.de/>



# EMERGENCY INFORMATION

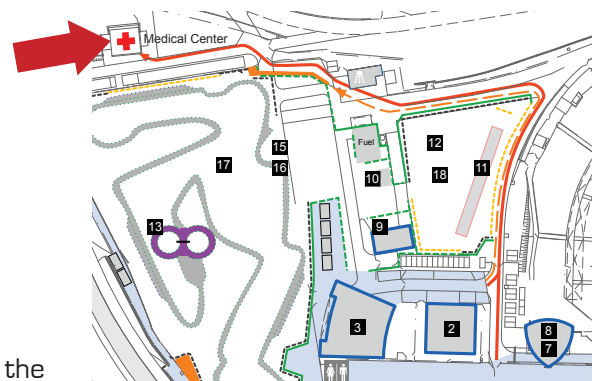
## Slight injury

Medical Center:

Please accompany the injured person to the Medical Center.

Emergency aid is provided there.

The Medical Center is occupied each day round-the-clock.



## Severe injury

Contact someone with a two-way radio:

Every Official and Security has two-way radio. Ask them to call the Medical Center or an ambulance on channel 11.

Call an ambulance:

Call an ambulance yourself if someone is severely injured and needs urgent help. The Emergency Number for every phone and mobile phone is 112. (See also information about emergency calls below.)

During dynamics:

On Saturday and Sunday an ambulance is on site during the dynamic events. To contact them ask someone with a two-way radio (Official, Security) to call them.

Hospital:

Main Hospital, Kreiskrankenhaus (Schwetzingen), Bodelschwinghstrasse 10, 68723 Schwetzingen  
phone: +49 (0) 6202 / 84-30 (See also directions in the Event Handbook in chapter 1.1)

## Emergency Numbers

In case of an emergency beyond competition times call 112. This number works with each phone, also with mobile phone or coin-operated telephone as international GSM-standard. It is always free of charge.

# 112

Officials

Pit Marshal Konrad Paule: +49 (170) 3043619

Pit Marshal Sebastian Seewaldt: +49 (175) 5249739

Event Control Daniel Ahrens: +49 (172) 5328399

(In case of an emergency please call one of them, no matter what time it is.)

## Emergency Call Contents

The emergency control center will ask you some questions to ensure proper help for you. To support you at your call, here are some standard questions and some hints for your answers in English and German.

Who is calling? (Wer ruft an?)

Say your name and your telephone number for callbacks. Digits in German: 1 (eins), 2 (zwei), 3 (drei), 4 (vier), 5 (fünf), 6 (sechs), 7 (sieben), 8 (acht), 9 (neun), 10 (zehn)

Where did it happen? (Wo ist es passiert? / Wo ist es geschehen?)

the event site has the address "Hockenheimring, Sachshaus, Am Motodrom", make it more precise:

pit lane (Boxengasse), dynamic area (Fahrerlager);

the address for campsite C2 near the Motodrom Hotel "Hockenheimring, Zeltplatz C2 beim Motodrom Hotel" and for campsite C3 on the other side of the highway "Hockenheimring, Zeltplatz C3 an der Continental Straße"

What happened? (Was ist passiert? / Was ist geschehen?)

accident (Unfall), traffic accident (Verkehrsunfall), fire (Feuer), fall (Sturz), explosion (Explosion)

How many people are affected? (Wie viele Personen sind betroffen?)

1 (eins), 2 (zwei), 3 (drei), 4 (vier), 5 (fünf), 6 (sechs), 7 (sieben), 8 (acht), 9 (neun), 10 (zehn)

What kind of injury has happened? (Welche Verletzung liegt vor?)

fracture (Knochenbruch), bleeding (Blutung), unconsciousness (Bewusstlosigkeit), burn (Verbrennung),

electric shock (Stromschlag), suffocation (Erstickten), heart attack (Herzinfarkt), shock (Schock)

Don't hang up after answering these questions! Wait if the control center has further questions!



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