

# Planned Major Rules Changes for FSE 2011

## 2.5 SR

The SR has to prove his qualification to the organisers in the form of a short text regarding his experience and explaining how he is involved in the design of the car.

### 3.3.1 Brake System Master cylinder actuation

It is allowed to apply a low amount of brake torque to the driven wheels, when the throttle is not actuated. Low means that the applied brake torque is comparable to the brake torque of a combustion engine.

## 3.7 Chassis

The used chassis has to comply to the FSAE2011 rules. An old chassis design, which was not entered in an FSE event before, may be used only if it complies to the FSAE2011 rules. In this case the chassis has to be rebuilt.

### New Rule: Power Limitation

The maximum power drawn from the battery must not exceed 100kW. This will be checked by evaluating the Energy Meter data.

Violating this value will lead to a DNF for the entire dynamic event in which the violation occurred. For example: if more than 100kW are drawn during one single acceleration run, the team will receive no points for the complete acceleration event.

### 3.11.4 Torque Encoder

At least two sensors have to be used as torque encoder. If an implausibility occurs between the values of these two sensors, the activation of the brake pedal has to shut down the power to the motors completely. If three sensors are used an implausibility check is also necessary, but no special action is required if one of the sensors fails. If two of three sensors fail, the activation of the brake pedal has to cut off the power to the motors completely. The sensors need to have connectors that enable a check of these functions during E-Scrutineering.

## 6.4 HV and LV

Whenever a circuit carries more than a nominal operational voltage of 40V DC or 25V AC RMS it is defined as part of the High Voltage system.

## 6.8 Rain test

The rain test will not be optional any more. Every car will have to pass it. The execution of the test will be modified. Teams have to make sure that water cannot aggregate anywhere in the chassis.

## 6.9 Measurement Points

The type and position of the measurement points will be standardized. Current plans are to install the measurement points next to the master switches.

## 6.11 TSAL

The TSAL will be moved away from the top of the main roll hoop. Colour, brightness, flashing frequency and power supply will be further specified.

## 6.12 Master Switches and Safety Circuit

If the tractive system is shut down by the BMS or the IMD an acknowledgement by the driver has to be required, before the tractive system can be set active again. For example: Applying an IMD test resistor between HV+ and control system ground must deactivate the system. Disconnecting the test resistor must not re-activate the system. All circuits that are part of the safety circuit have to be designed in such a way, that in de-energized state they are open with respect to the current controlling the AIRs.

The master switches and shutdown buttons are not allowed to be removable, e.g. because they are mounted to removable body work.

The master switches have to be of a rotary type, with a red, removable key, similar to the one shown in the picture. A minimum size of the emergency shutdown buttons will be defined.

### New Rule: Sole Activation of the Tractive System by the Driver

The driver has to be able to (re-)activate or reset the Tractive System from within the cockpit without the assistance of any other person. Resetting or re-activating the Tractive System by operating shut-down buttons or switches which can not be reached by the driver is considered as working on the car.

### New Rule: Ready-To-Drive-Sound

The car has to make a characteristic sound, once not continuous, when it is ready to drive. This sound may be further specified.

### **6.14 Energy Storage**

An accessible element/fuse/connector will be specified which should be able to disconnect the HV-system from the car in case of (a) stuck accumulator insulation relay(s) for example.

### **6.15 BMS**

The BMS must be capable of shutting down the tractive system, if critical values are detected.

### **6.16 AIR**

If the HV-connectors of the accumulator containers can be removed without the use of tools, a pilot contact/interlock line has to be implemented which breaks the current through the AIRs whenever the connector is removed.

### **6.19 Accumulator Container**

The container has to be completely closed at all times, when mounted to the car and also when dismantled from the car without the need to install extra protective covers. Openings for ventilation should be of a reasonable size, e.g. completely open sidepods containing accumulators are not allowed. The maximum size of ventilation openings may be further specified.

### **New Rule: Charging and Discharging Circuits**

Charging and Discharging Circuits will be further specified.

**Rules not named in this document may also be changed, clarified or further specified, but should not heavily affect design.**