

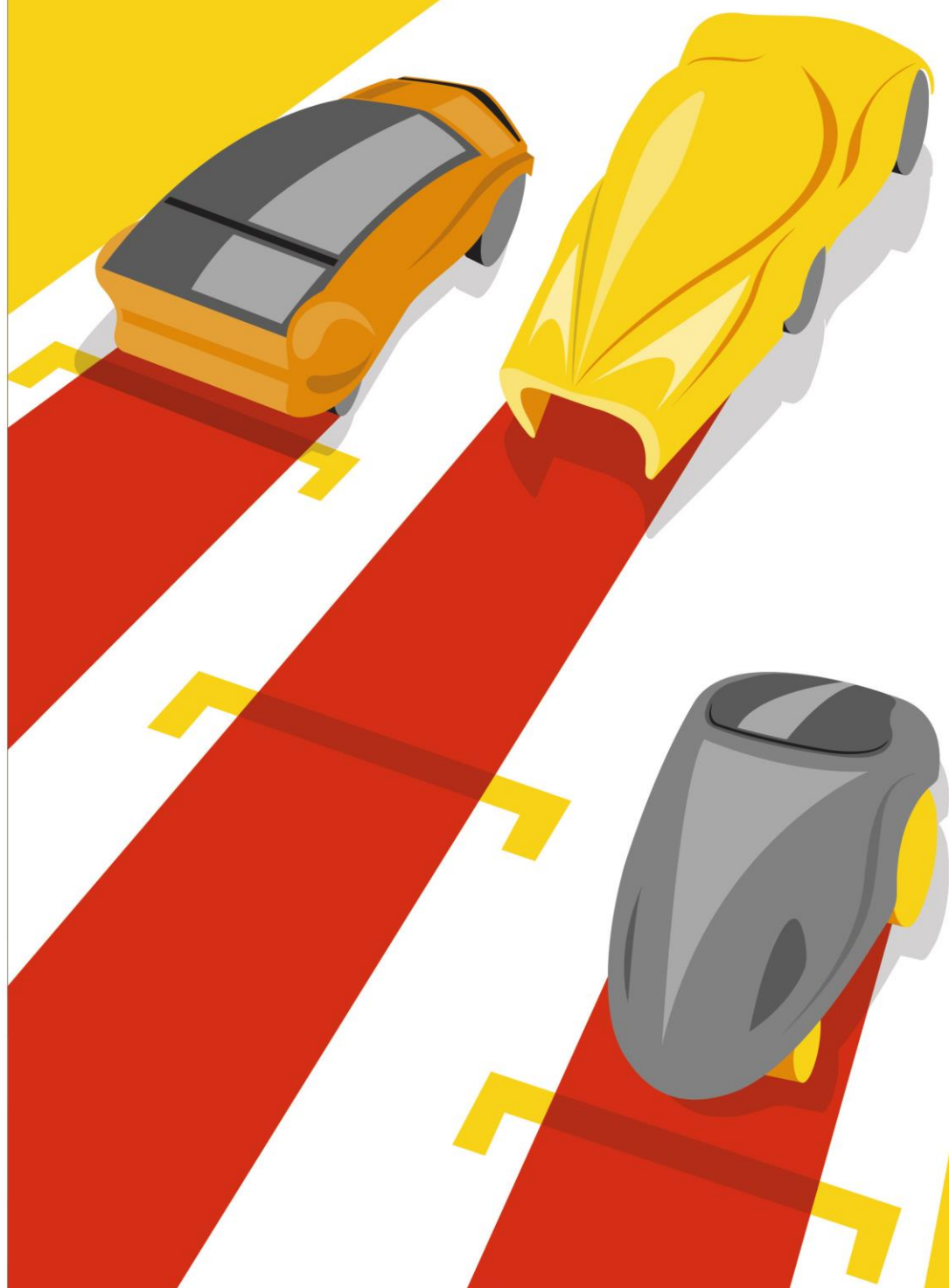


Shell  
Eco-marathon

DRIVERS'  
**WORLD**  
CHAMPIONSHIP

**OFFICIAL RULES**

CHAPTER III





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## **1. DRIVERS' WORLD CHAMPIONSHIP RULES**

### **ARTICLE 300: TERMS IN THIS DOCUMENT**

DWC: Shell Eco-marathon Drivers' World Championship

Visiting Team: A team invited to participate in the DWC Grand Final from the DWC Regionals

Parc Fermé: Secured area where competition vehicles are inspected and teams are not allowed to make modifications without approval.

### **ARTICLE 301: DEFINITION OF COMPETITION FOR THE DRIVERS' WORLD CHAMPIONSHIP REGIONAL**

The Shell Eco-marathon Drivers' World Championship Regional is a competition for the regional's best UrbanConcept teams that will compete together to find out who is the fastest energy-efficient driver. It serves as a qualifying round for the DWC Grand Final in Europe.

- a) Competitors will be grouped into three energy classes, Battery Electric, Hydrogen and Internal Combustion Engine, with the best 3 teams in each class being selected (9 total).
- b) Each vehicle will be given a fixed quantity of energy based on their Shell Eco-marathon Mileage Challenge performance. This will be done by having an energy measurement and control system provided by the Organisers.
- c) The winner will be the first vehicle to cross the finish line of the DWC Regional final. The first three vehicles to cross the finish line will qualify for the DWC Grand Final in Europe.

### **ARTICLE 302: DEFINITION OF COMPETITION FOR THE DRIVERS' WORLD CHAMPIONSHIP GRAND FINAL**

The Shell Eco-marathon Drivers' World Championship Grand Final is a competition for the winners from the DWC Regionals. The world's best UrbanConcept teams will compete together in Europe to find out who the fastest energy-efficient driver is.

- a) The DWC Grand Final will take place on the Shell Eco-marathon Europe track.
- b) The 3 winners of the DWC Regionals (a total of 9 vehicles) will participate.
- c) Each vehicle will be given a fixed quantity of energy based on their Shell Eco-marathon Mileage Challenge Europe performance.
- d) From a grid start, teams shall race a predefined number of laps in the fastest time possible within their energy allowance.
- e) The DWC winner shall be the first vehicle to cross the finish line.

### **ARTICLE 303: DRIVER QUALIFICATIONS**

Only registered drivers from the Shell Eco-marathon Mileage Challenge are allowed to drive in the Shell Eco-marathon Drivers' World Championship.

### **ARTICLE 304: PRACTICE LAP**

There will be a designated practice session for teams that qualify for the DWC. Drivers must NOT practice for the DWC during the Shell Eco-marathon Mileage Challenge.

**ARTICLE 305: FALSE STARTS**

During Drivers' World Championship races, if a car moves before the start signal is given, the team will be penalised per discretion of the Organisers. Infringements will be signalled by the race marshals.

**ARTICLE 306: ADDITIONAL INFORMATION**

The race distance, event schedule and a description of any awards and prizes for the DWC competition will be provided by the Organisers at a time closer to the respective events in the Q&A section of the DWC website.

**ARTICLE 307: CHAPTER I AND CHAPTER II RULES APPLY**

Chapters I, II, and III of the Shell Eco-marathon Official Rules all apply to the DWC.

**ARTICLE 308: VEHICLE TYPES**

The DWC competition is open to UrbanConcept vehicles only.

**ARTICLE 309: VEHICLE MODIFICATION**

The vehicle selected and used for the Shell Eco-marathon Mileage Challenge must be the same for the DWC:

- a) Chassis and body must be strictly identical.
- b) Powertrain can be repaired or modified, but may not be replaced.
- c) All modifications or adjustments to the powertrain must be approved by the Organisers.
- d) Energy allocation will be calculated with the powertrain used during Shell Eco-marathon Mileage Challenge.

**ARTICLE 310: ENERGY TYPES**

Teams must use the same energy type as used during the Shell Eco-marathon Mileage Challenge.

**ARTICLE 311: ENERGY CLASSES**

The competition is divided in three energy classes:

- Internal Combustion Engines (ICE)
- Hydrogen (H2)
- Battery Electric (BE)

**ARTICLE 312: MANDATORY BRIEFING**

The DWC briefings are mandatory for team manager and driver(s) of the participating teams. Only the driver(s) attending the briefing will be authorised to compete on track. If the team manager and/or driver(s) are not present at this briefing, the vehicle will be disqualified.

**ARTICLE 313: NOT USED****ARTICLE 314: MAXIMUM TYRE PRESSURE**

Tyre pressures must not exceed the maximum allowed tyre pressure stated by the tyre manufacturer.

**ARTICLE 315: FUELLING**

All fuelling operations must be performed by the Organisers.

**ARTICLE 316: SPEED LIMIT**

40 km/h is the maximum speed allowed on track during practice and competitions. All teams must provide their driver with accurate speed information by speedometer display in the driver compartment.

Teams exceeding the speed limit will be given one warning by the race marshals using a black flag. If the same team exceeds the speed limit a second time, they will be disqualified.

**ARTICLE 317: FLAGS**

The following flags will be used during the DWC competition:

- Green: Start
- Yellow: Danger on track, apply extra caution, reduce speed, and overtaking is not allowed.
- Red: **Stop immediately**. Race marshals will take charge of drivers and their vehicle.
- Black: Driver has exceeded the speed limit. If the same driver exceeds the speed limit a second time, during the same qualifying lap or race, they will be disqualified.

If a red flag occurs and the lead car has completed more than half the race distance, the current race classification counts as final.

**ARTICLE 318: NON-STARTING VEHICLES**

At the starting flag, drivers have 20 seconds to start the vehicle. If the vehicle is not able to move after this time, the team will be disqualified and the vehicle will be removed from the track by the marshals.

**ARTICLE 319: PENALTIES AND DANGEROUS DRIVING**

- a) Drivers are not allowed to push another vehicle with their car.
- b) Overtaking will follow the same rules as specified in Chapter I.
- c) Blocking another vehicle by changing driving lines is not allowed.
- d) If two vehicles arrive at the same time in a turn, each driver must keep their line on track.

The on-board computer and telemetry equipment will be installed prior to the Shell Eco-marathon Mileage Challenge and will also be used for the Drivers' World Championship.

**ARTICLE 320-323: NOT USED****ARTICLE 324: ELECTRICAL RELAYS**

For all vehicles participating in the DWC, an electrical relay will be provided by the Organisers and must be installed by the teams. The relay will be controlled by the Shell Eco-marathon on-board computer. The relay will be wired into the vehicle's electrical system so that the propulsion system will be disabled when the relay is activated.

**ARTICLE 325: EQUIPMENT MALFUNCTION**

Participants are informed of the experimental nature of the proprietary technology to be installed in their cars by the Organisers. Teams shall accept the risk of malfunction of that technology which may result in their car not completing the DWC or may cause an invalid result.



## **2. DRIVERS' WORLD CHAMPIONSHIP REGIONAL ORGANISATION AND COMPETITION**

### **ARTICLE 326: CRITERIA FOR PARTICIPATION/ACCEPTANCE**

Teams may participate in the DWC Regional by invitation only. The Organisers will issue a maximum of 9 invitations per region. These invitations will be distributed by the Organisers as follows:

- a) Energy Class rankings: At each regional competition (Asia, Americas, Europe) the Organisers will produce a ranking of all valid attempts for each of the UrbanConcept energy classes.
- b) DWC Regional invitations: DWC Regional invitations will be issued to the 3 teams with the best results in each of the energy class rankings, representing a total of 9 teams.
- c) Rules of Acceptance: All teams that receive DWC Regional invitations must return their signed invitation acceptance documents by hand to the Organisers within 30 minutes.

Accepting an invitation to the DWC Regional implies automatic acceptance of participation in the DWC Grand Final during Shell Eco-marathon Europe if qualified. Except in the case of "force majeure", all qualifying teams must attend the DWC Grand Final.

### **ARTICLE 327: ENERGY ALLOCATION**

For energy allocation, the Organisers will calculate the minimum energy required for each team to complete the DWC distance based on their best attempt at the Shell Eco-marathon Mileage Challenge. Teams will be given additional energy above the qualifying energy value based on how well they performed in the Shell Eco-marathon Mileage Challenge.

The additional energy is based on the final ranking position during the Shell Eco-marathon Mileage Challenge:

- 1<sup>st</sup> place in each energy category will receive a 20% bonus
- 2<sup>nd</sup> place in each energy category will receive a 10% bonus
- 3<sup>rd</sup> place in each energy category will receive a 5% bonus

*Example of energy allocation for 1<sup>st</sup> place:*

*E = amount of energy consumed during best attempt of Shell Eco-marathon*

*D1 = distance of Shell Eco-marathon attempt*

*D2 = distance of DWC race*

*Energy Allocation =  $((E/D1) \times D2) \times (1.2)$*

During the competition, when the energy allowance has been exhausted, the energy measurement and control system will disable the vehicle's propulsion system.

### **ARTICLE 328: DRIVER QUALIFICATION**

All drivers for the DWC Regional must drive their team's vehicle for at least 1 valid attempt during the Shell Eco-marathon Mileage Challenge.

**ARTICLE 329: TEAM QUALIFICATION**

- All teams must participate in the Shell Eco-marathon Mileage Challenge for UrbanConcept.
- The visiting teams will not be classified in the final rankings of the Shell Eco-marathon Europe 2018 Mileage Challenge and will not be eligible for any prizes or awards for this competition.

**ARTICLE 330: PARC FERMÉ**

Vehicles must be present at the Parc Fermé at the date and time announced by the Organisers. Teams that are not present in the Parc Fermé will be disqualified.

An additional technical inspection will be performed on each vehicle when they enter the Parc Fermé. Both the team manager and driver(s) must be present.

Once inside the Parc Fermé, teams may not make modifications to their vehicles. Any repair or adjustment of the vehicle must not change the original condition of the vehicle when it first entered the Parc Fermé. All repairs and/or adjustments must be approved beforehand and will be supervised by the Organisers.

Vehicles shall remain in the Parc Fermé until they are escorted to the start grid. Only two team members and one driver can accompany the vehicle.

**ARTICLE 331: STARTING GRID AND TRACK ACCESS**

A maximum of two team members and one driver may access the track. The Organisers will accompany the vehicle to and from the track. The driver must be in their vehicle while it is pushed by the two team members. One minute before the official start of the DWC race, the two team members must exit the track.

**ARTICLE 332: GRID POSITION FOR DWC REGIONAL**

Position on the starting grid for the DWC regional race will be based on a public, random drawing.

**ARTICLE 333: DRIVERS' WORLD CHAMPIONSHIP REGIONAL FINAL**

If two or more vehicles cross the finish line at the same time, the winner will be decided based on the vehicle that started furthest from the start line.

**ARTICLE 334: PROTESTS DURING THE DWC REGIONALS**

Teams have 10 minutes after the end of the race to lodge a protest with the race director. All decisions of the race director and the Organisers once issued are final and non-appealable.

**ARTICLE 335: WEATHER/ENVIRONMENT**

If the DWC Regional cannot take place, the Organisers will invite the teams to participate in the DWC Grand Final based on the Shell Eco-marathon Mileage Challenge results.

### **3. DWC GRAND FINAL ORGANISATION AND COMPETITION**

#### **ARTICLE 336: CRITERIA FOR PARTICIPATION/ACCEPTANCE**

Only the 3 finalists from the DWC Regionals are permitted to compete in the DWC Grand Final. As stated in [Article 326](#), except in case of "force majeure", all qualifying teams shall attend the DWC. If a team does not attend, then sanctions will be imposed.

#### **ARTICLE 337: IDENTIFICATION**

Visiting teams participating in the DWC Grand Final will receive a new set of official stickers before participating in the Shell Eco-marathon Europe Mileage Challenge. The new stickers shall be fixed to their vehicle body before the vehicle is presented to the Parc Fermé.

#### **ARTICLE 338: ENERGY ALLOCATION**

For energy allocation, the Organisers will calculate the minimum energy required for each team to complete the DWC distance based on their best attempt at the Shell Eco-marathon Europe Mileage Challenge. Teams will be given additional energy above the qualifying energy value based on how well they performed in the Shell Eco-marathon Europe Mileage Challenge.

All teams participating in the DWC Grand Final will be ranked against other competing DWC teams based on their best valid attempt from the Shell Eco-marathon Europe Mileage Challenge. The additional energy bonus will be based on the final ranking position during the Shell Eco-marathon Europe Mileage Challenge:

- 1<sup>st</sup> rank among DWC competitors in each energy category will receive a 20% bonus.
- 2<sup>nd</sup> rank among DWC competitors in each energy category will receive a 10% bonus.
- 3<sup>rd</sup> rank among DWC competitors in each energy category will receive a 5% bonus.
- 4<sup>th</sup> rank or lower among DWC competitors will NOT receive an energy bonus.

*Example of energy allocation for 1<sup>st</sup> rank among DWC competitors:*

*E = amount of energy consumed during best attempt of Shell Eco-marathon*

*D1 = distance of Shell Eco-marathon attempt*

*D2 = distance of DWC race*

*Energy Allocation =  $((E/D1) \times D2) \times (1.2)$*

During the competition, when the energy allowance has been exhausted, the energy measurement and control system will disable the vehicle's propulsion system.

#### **ARTICLE 339: QUALIFICATIONS FOR DWC GRAND FINAL RACE**

All European teams:

- Must participate in the Shell Eco-marathon Europe Mileage Challenge.

All visiting teams:

- Must make 2 valid attempts in the Shell Eco-marathon Europe Mileage Challenge.
- Must achieve an energy efficiency result on the Shell Eco-marathon Europe track that is at least 95% of their best regional result. Teams that do not achieve this result will be placed at the end

of the starting grid for the DWC Grand Final and will receive an energy reduction penalty.

- Will not be eligible for any prizes or awards for the Shell Eco-marathon Europe 2018 Mileage Challenge.

### **ARTICLE 340: PARC FERMÉ**

The Parc Fermé procedure for the DWC Grand Final will be the same as described in [Article 330](#).

### **ARTICLE 341: STARTING GRID AND TRACK ACCESS**

The track access procedure for the DWC Grand Final will be the same as described in [Article 331](#).

Position on the starting grid for the DWC Grand Final will be based on a public random drawing.

### **ARTICLE 342: DWC GRAND FINAL**

If two or more vehicles cross the finish line at the same time, the winner will be decided based on the vehicle that started furthest from the starting line.

### **ARTICLE 343: PROTESTS DURING THE DWC GRAND FINAL**

The protest procedure will be the same as described in [Article 334](#).

### **ARTICLE 344: WEATHER/ENVIRONMENT**

If the DWC Grand Final cannot take place, the winners will be decided by the Organisers.