

PROPOSAL OF HEL.I.E.V. FOR THE REPLACEMENT OF ARTICLE 3.6 OF THE FIA TECHNICAL REGULATIONS FOR HYBRID VEHICLES

3.6 Weight-to-Power Class WPC

The assignment of the correct “Weight-to-Power Class” (WPC) of a hybrid vehicle is done in three steps:

- In the first step, the “Nominal Vehicle Power” P_N is calculated with the formula given in article 3.6.1
- In the second step, the value of the “Weight-to-Power Ratio” (WPR) is calculated with the formula given in article 3.6.2
- In the third step, the WPR value is used in order to define the “Weight-to-Power Class” (WPC) of each vehicle in accordance with the “Hybrid Classification Table” (HCT) presented in the article 3.6.2

Neither the power of the internal combustion engine, nor that of the electric motor, nor the capacity of RESS registered in the Technical Passport may be changed. The WPC of a vehicle is kept only if the minimum weight according to the article 1.9.1 is not exceeded

It is the duty and the responsibility of the competitor to specify the correct WPC of the vehicle to the organizer

The FIA-AEC reserves the right to adjust the classification of a hybrid vehicle according to the “Hybrid Classification Table” (HCT)

3.6.1 Nominal Vehicle Power P_N

The Nominal Vehicle Power P_N is given for all hybrid vehicles by:

$P_N = P_{ICE} + P_E$ (or P_{RESS} , whichever is less), where

P_N = The nominal vehicle power in kilowatt [kW]

P_{ICE} = The maximum power of the internal combustion engine kilowatt [kW]

P_E = The maximum power of the electric traction motor or, if more than one electric traction motors are used, the sum of the maximum power of all electric traction motors in kilowatt [kW] according to the technical passport, and

P_{RESS} = The maximum power of the RESS in kilowatt [kW] according to the technical passport or by any other technical evidence officially issued by the manufacturer or the supplier of the RESS and presented by the participant

For series hybrid vehicles having not any mechanical connection of the internal combustion engine with the vehicle’s drive train, the value of P_{ICE} is equal to zero

3.6.2 Hybrid Classification Table HTC

The Weight-to-Power Ratio WPR for all hybrid vehicles is a value given by:

$$WPR = \frac{\text{Minimum weight according to the FIA-AEC technical passport in [kg]}}{\text{Nominal Vehicle Power } P_N \text{ in kilowatt [kW]} \times K_E}$$

The factor K_E is always equal with 1
 (Except if the Supplementary Regulation provides different values approved by the FIA-AEC)

Hybrid Classification Table HCT

Weight-to-Power Class (WPC)	Weight-to-Power Ratio (WPR)
1	Less than 7
2	From 7 to <9
3	From 9 to <11
4	From 11 to <13
5	From 13 to <16
6	From 16 to <19
7	From 19 and above

Example

Parallel or split type of Hybrid Vehicle 1550 kg weight, 55 kW ICE power, 15 kW electric motor and RESS power in excess of 15kW

$$P_N = 55 + 15 = 70 \text{ kW}$$

$$WPR = 1550 / 70 = 22,14$$

$$WPC \text{ (from the HCT)} = 7$$

Organizers Handicap Scale K_E

The organizers may provide in the Supplementary Regulation of the event a handicap scale of factors K_E based on the “Hybridization Factor” (HF) of the hybrid vehicles which must be approved by the FIA-AEC.

The aim of this handicap scale it could be to adapt the technical characteristics of the participated hybrid vehicles to the specific character of the event.

A practical example is the following:

$$\text{“Hybridization Factor” HF} = \frac{P_E}{P_{ICE} + P_E \text{ (or } P_{RESS}, \text{ whichever is less)}} \dots$$

Hybridization Factor HF	Handicap Factor K_E
Up to <30%	2,0
30% up to <40%	1,7
40% up to <50%	1,5
50% up to <60%	1,3
Above 60%	1,0