

## INVITATION TO TENDER

15 October 2019

### Electric Powertrain Supply – Bambino and Cadet Karts from 2021

#### Introduction

The Royal Automobile Club Motor Sports Association Limited trading as Motorsport UK ('Motorsport UK') is the national membership organisation and governing body for four-wheel motorsport in the UK including kart racing, and a founding member of the world governing body, the Fédération Internationale de l'Automobile ('FIA') as well as the world governing body of kart racing, the Commission Internationale de Karting ('CIK') and is recognised by UK statute as being so authorised.

Among the Categories of kart racing Permitted and Regulated by Motorsport UK are Categories known and defined by Regulation as 'Bambino' and 'Cadet'.

Hitherto and presently the motive power provided for each of Bambino and Cadet is petrol combustion.

Motorsport UK wishes to progress the sport of karting while recognising the development of electric and hybrid power systems.

Tender applications are invited for the supply of a full electric powertrain and associated accessories for the Bambino and Cadet Categories. This may be a single powertrain capable of meeting the criteria for both Categories, or separate powertrains and/or accessories for each Category. The supply will be with a view to the creation of 2 Motorsport UK sanctioned and Regulated electric Classes and/or Championships, 1 Bambino and 1 Cadet. The minimum supply term for any written agreement will be 3 years, which may be extended at the discretion of Motorsport UK and by further agreement of the parties by a further period of 2 years upon review in September of year 3.

#### Scope and aims

The powertrain(s) must be compatible with any current Bambino or Cadet chassis as appropriate, with no – or limited – modifications. Upon successful demonstration to Motorsport UK of the concept, the basis will be initial supply of 100 units minimum and an ongoing supply forecast of 30 units minimum per annum.

The development of the powertrain(s) will be carried out to achieve the following aims:

- A performance level comparable to that of existing Bambino and Cadet Category karts, as appropriate
- Parity of performance between competitors through powertrain uniformity
- Reduction of barriers to entry through cost levelling, maintenance reduction and technical competency threshold of competitors.

Any application should be focussed on improving customer experience in the current competitive karting industry and on generating open-entry grass roots level motorsport classes with a view to widening participation, as well as offering other periphery benefits such as environmental credentials.

Any supply agreement will be for the complete system(s), which is defined as comprising of the following components: motor, battery, controller (with loom) and charger.

Supply of components will be reliable and will meet the commercial target of **01 January 2021**. Applications based on speculative technology will not be considered. Demonstration of the concept during 2020 is encouraged, and adherence to the technical requirements detailed herein must be demonstrated before **01 August 2020**.

### **Technical requirements**

The technical specification of the powertrain(s) will be commensurate with Bambino and Cadet Category karts, as appropriate. Failure to satisfy these requirements will result in the application not being considered.

For safety reasons the system voltage will be nominal 48V and must stay below 60V in all situations, including fault conditions.

The components of the powertrain(s) will be effectively sealed to prevent tampering.

The total weight of the complete powertrain (to be fitted to the kart) should not exceed 25kg for Bambino and 30kg for Cadet and will be supplied as ready to assemble components.

Supply availability of all components of the complete system(s) will meet the demand requirements herein.

A single electric motor will be the sole method of propulsion for the kart.

Specific technical requirements for the key component parts are detailed below:

#### **Motor**

- Brushless and air-cooled only
- Target power output of 2-3kW for Bambino and 4-5kW for Cadet to maintain existing performance levels. Deviation from the target power output will be considered with justification indicating how the delivered performance will match existing Bambino or Cadet levels as appropriate
- Details of mounting points for attachment to the chassis must be supplied.

#### **Battery**

- Total weight 15kg maximum for Bambino and 20kg maximum for Cadet
- Total volume 25 litres maximum
- Cycle life target of 500 cycles minimum, with capability for deep discharge without permanent damage
- Battery chemistry is free, provided that performance metrics and commercial objectives are achieved
- High-performance run-time of 60 minutes minimum, utilising up to 2 batteries maximum.

## **Controller**

- Manage the battery with respect to appropriate safety and life optimisation
- Power management to prevent voltage sag to maintain performance consistency during a complete day of racing
- Ability for control inputs from the driver
- Appropriate safety manual cut-off/isolation switch for marshal operation
- Demonstrate power and torque output parity, with a given tolerance
- Will include the loom connecting the three main components of the drivetrain (motor, battery and controller). There will be sufficiently weatherproof and reliable connections to each component.

## **Charger**

- Will be capable of charging the battery via a standard domestic power supply (UK).

## **Costs**

Proposed cost of the complete system(s) must be clearly detailed, including sub-division of costs by components as relevant.

The proposed cost framework must be measurable against existing internal combustion engine powertrains in the Bambino and Cadet Categories as relevant.

## **Application format**

Applications should clearly demonstrate compliance with all requirements in this document. Additional information and supporting documentation may be appended. A technical overview must also be included.

In addition to the technical elements, evidence of previous experience in this – or any relevant – field would be advantageous.

Applicants are also invited to demonstrate shared values with Motorsport UK and with karting in general going forwards.

The Application must identify with particularity all intellectual property embedded howsoever within the Application and where applicable must evidence all and any necessary Third Party Permission to utilise the intellectual property for the purposes of the Tender Application and the subsequent competitive use envisaged by the supply agreement to be entered into between Motorsport UK and the successful tenderer.

## Submission

Applications must be submitted to Motorsport UK by no later than **12-noon** on **Friday 22 November 2019**.

Please send your application, and any supporting information to:

Joe Hickerton  
Motorsport UK, Motorsport UK House, Riverside Park, Colnbrook, SL3 0HG, U.K.  
joe.hickerton@motorsportuk.org

## Short-listing and presentations

Applicants who are successfully short-listed following initial submission will be invited to a formal presentation from Tuesday 26 November 2019 at the earliest, where they will be requested to present to the Tender Selection Panel their full detailed proposal and technical information including, but not limited to:

- loom wiring diagram and overall system diagram;
- performance simulation data or – preferably – actual performance data demonstrating the system to be fit for purpose;
- evidence of supply capability;
- and costing information with respect to the unit quantities

For the avoidance of doubt Motorsport UK will treat the disclosure afforded by the Presentation Process as being confidential and shall respect the intellectual property in the technical system presented pursuant to this tender invitation and any subsequent appointment to formal supply agreement.

Motorsport UK reserves the right to call for additional including current and historical financial stability information as well as the identification of connected parties.

## Collusion and inducements

Any collusion with any other potential proposer will invalidate your application. By submitting an application, you declare that it is a bona fide application, intended to be competitive and that you have not fixed or adjusted the terms of the application by or in accordance with any agreement or arrangement with any other person.

Offering an inducement of any kind in relation to obtaining this, or any other, contract with Motorsport UK will disqualify your application from being considered and may constitute a criminal offence.