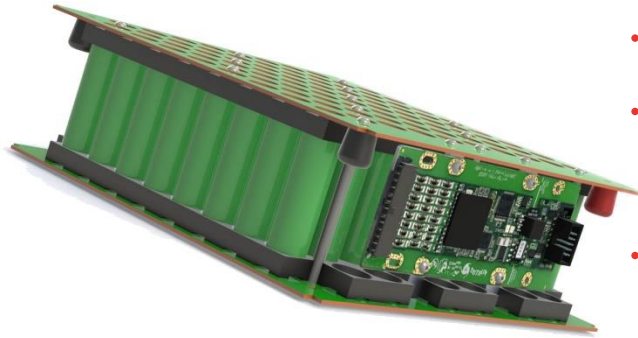


## Integrated Mobile Power Systems



- **Reliable, race proven architecture.**
- **Developed in partnership with the world's leading solar car technology provider Tritium.**
- **Software and battery management solutions developed and used by experienced solar car racers.**

### **RACE PROVEN**

A reliable, proven architecture based on 20 years of solar car learnings and race tested in events around the world

### **HIGHEST ENERGY, LOWEST WEIGHT**

Designed by experienced solar car racers, the pack has the highest energy density low weight architecture available.

### **TECHNICAL SUPPORT**

Building a car can be a daunting experience. With Prohelion you are supported by our experienced team.

### **DESIGNED FOR SAFETY**

A simple, safe design that reduces the inherent risks involved in developing high power solutions for mobile vehicles.

TeamArrow, Australia's premier solar car team, has successfully competed in Bridgestone World Solar Challenges and other international competitions since 2013, producing highly efficient and reliable battery systems for each race.

Prohelion emerged from TeamArrow to commercialise race proven technologies. We have partnered with Tritium, to use their trusted CMU and BMS controllers to produce the Prohelion Integrated Mobile Power System (IMPS), a high capacity battery specifically tailored to meet Bridgestone World Solar Challenge (BWSC) 2019 Regulations.

### **Prohelion IMPS**

The Prohelion Integrated Mobile Power System utilises a modular, flexible design to produce battery packs in multiple configurations. The packs designed for 2019 BWSC Challenger Class use five power sub-modules and one control module to provide systems with over 5kWh capacity, encapsulated in a strong and light carbon-fibre/fibreglass case.

### **Battery Cells**

The Prohelion IMPS will use the LG LG18650MJ1 cell as the building block of the pack. This cell has the highest energy capacity of its class, ensuring an out of the box, competitive battery.

### **Battery Sub Module**

Each Battery Sub Module is rated at approximately 1kWh, monitored by a Tritium CMU and can be combined to make larger packs of any capacity.

### **Control Module**

The Control Module is the brain of the IMPS controlling the pack using a Tritium BMS. It also provides safe state isolation, fusing, 12V functionality and CAN bus interface to monitor and control the Prohelion IMPS



## Battery Features and Benefits



### Battery Pack

The IMPS will come in two configurations for Challenger Class designed to be compatible with the two most popular motors from Marand and Mitsuba.

### Marand Configuration

- 418 cells: 38 series, 11 parallel
- Nominal Voltage: 138V
- Capacity: 5318 Wh

### Mitsuba Configuration

- 406 Cells: 29 series, 14 parallel
- Nominal Voltage: 105V
- Capacity: 5165 Wh

### Physical Dimension and Layout

The box is constructed from carbon fibre with a fibreglass internal lining, providing a strong yet lightweight containment with the benefit of an electrically insulated interior. A lightweight, transparent lid is provided for ease of inspection of the battery cells. The battery enclosure includes the ability to be sealed upon completion of scrutineering.

The completed box has the following dimensions: H: 95mm, W: 460mm, D: 670mm

## Software and Tools

Monitoring of the Prohelion IMPS can be performed with Tritium BMS software or via our custom Android app which provides a live dashboard of key battery statistics over a wi-fi connection.

## Optional Leasing

For teams who wish to avoid the risk, delay and difficulties associated with shipping batteries, a battery may be leased in Australia for the duration of the event. We will deliver a fully specified battery to teams overseas for testing which can remain in the home country and provide an identical battery in Australia to be used on the event.

Battery Setup	Cell	Marand	Mitsuba
Series cells		38	29
Parallel cells		11	14
Total Cells		418	406
min (V)	2.5	31.9	72.5
max (V)	4.2	53.7	121.8
nom min (V)	2.5	95.0	72.5
nom max (V)	4.2	159.6	121.8
nom (V)	3.635	138.1	105.4
rated (Ah)	3.5	38.5	49.2
nom (Ah)	3.5	38.5	49.2
rated (Wh)	12.72	5,318	5,165
nom (Wh)	12.72	5,318	5,165
cell mass (kg)	0.049	20.48	19.89

### MANAGEMENT TOOLS

Out of the box management and upgrades, via our integrated, race proven software solutions that run on tablets, web and PC.

### COMPLETE TURNKEY SOLUTION

Plug and go solutions, compatible with leading solar car suppliers like Tritium, Marand and Mitsuba.

### SCRUTINEERING SUPPORT

Prohelion has worked closely with the WSC faculty to ensure compliance with regulations. Providing you do not make modifications to the battery passing scrutineering will be a breeze. Plus, we will be there to support you if you need help.

For more information on any of our products or services please visit us on the Web at:

[www.prohelion.com](http://www.prohelion.com)

