What is aluminium air?

This below diagram provides a brief overview of how our fuel cell-like technology, Aluminium air functions in order to generate an electric current. Unlike a secondary power source such as a lithium-ion battery that is dependant on a primary source of power, this primary source of power is independent while providing the advantage of a safe electrolyte liquid within each configuration.
This technical information provides a simple overview of basic factors such as energy/volume and the dimensions to expect for each module within your integrated configuration. Although data bespoke to your planned vehicle or device you plan to combine with our technology will be made available during a Level A contract; we may be able to clarify further expectations in our free virtual technology presentation, such as peak current drain and compatibility with safety standards.

Patent number (Aluminium-air Technology)

WO2016178017A1

<table>
<thead>
<tr>
<th>Energy/weight</th>
<th>Energy/volume</th>
<th>Power (small REX example):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.35 kwh/kg</td>
<td>800 wh/litre</td>
<td>206W/kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Principle safety standard</th>
<th>Standard module dimensions</th>
<th>Standard module weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS EN IEC 62840-2:2019</td>
<td>W8cm x D11cm x L44cm</td>
<td>4.5 kilos</td>
</tr>
</tbody>
</table>
How we compare

The graph below can be used to visualise how aluminium air technology compares to competing power solutions on the market, both in specific power (W/kg) and specific energy (Wh/KG). In summary, although our technology retains and exceeds the energy advantage of past fuel cell technologies, our unique chemistry enables a power that is comparable to certain Lithium Ion batteries; and this is expected to improve in future Level B prototype development projects. Warwick University (reference graph below)
Métalectrique Advanced Aluminium Power System (MAAPS)

The original aluminium-air system developed by MAL, MAAPs, best illustrates the versatility with which a module can be designed while maintaining the core universal components of an aluminium plate and our patented electrolyte liquid. In addition, this original model best demonstrates the ability of our modules to be combined together into larger units, enabling our system to power both small and large appliances.
Building on a MAAPs-inspired module design, one possible application could be aviation.

This could either be as a hybrid configuration, allowing an aluminium-air and lithium power source to work together; or this could be in the form of a full power source replacement depending on the dimensions of the plane. It is expected that many plane manufacturers will opt for a CO2-free replacement for their source of power by 2030, and the unique safety advantages of aluminium air make our technology an excellent alternative for cleaner and longer-range flights.
In addition to modes of transport such as aviation, possible configurations could also be used for larger marine applications, replacing the original units in the engine room compartment in the boat. In contrast to the rectangular design of smaller configurations for range extenders for automotive, this visualisation illustrates the advantage of the circular design and how this would maximise available space in this scenario.
Endorsements

UK government endorsement of Métalectrique advanced Aluminium Air technology, March 2011

French Atomic Agency endorsement of Métalectrique advanced Aluminium Air technology, June 2006
Endorsements

French Scientific endorsement of Métalectrique advanced Aluminium Air technology, June 2016

To who might be concerned

Nantes, August 4, 2016

Dear Sir or Madam,

This is to confirm that electrochemical tests presented by Trevor Jackson from Métalectrique Company were also independently verified in my team (former name of the team LGMPA - Laboratoire de Génie des Matériaux et Procédés Associés). They were conducted on Bipolar proton-exchange/galvanostat using EC-lab as acquisition and data analysis software. Both potentiostatic and galvanostatic techniques were used with the help of boosters when required.

The electrolyte that was used undoubtedly presents superior performance compared to standard NaCl electrolyte. Additionally, it allows the use of ordinary aluminium, it hinders side reactions, it limits the formation of gel as well as heat generation, and subsequently allows steady and long-duration power.

The use of such electrolyte combined with the technology of Métalectrique would be an asset for implementation in various stationary and transportation applications.

Thierry Broussac, distinguished Professor
Vice-Dean of the University of Nantes in charge of Technology Transfer
President of the evaluation committee for energy storage for French National Research Agency (ANR), 2010-2014
Associate Editor for the publications of the Electrochemical Society
Next steps
Next stages for preparation

You can use our website at www.metalectrique.com to request further information.

**Step 1:** Schedule a free demo call

**Step 2:** Choose your option

**Step 3:** Schedule your onboarding

**Step 4:** Begin your programme