

# AFC Energy PLC

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## AFC Energy's technology produces energy from ammonia

AFC Energy PLC (LON:AFC) has taken on the zero-emission challenge by designing alkaline fuel cells that generate electricity through processing ammonia.

These cells employ potassium hydroxide, which is an alkaline liquid, to convert oxygen and hydrogen into electricity, water and heat.

The oxygen is taken from the air and the hydrogen from a supply, which in AFC Energy's strategy is ammonia.

According to the AIM-listed firm, ammonia is an excellent carrier of hydrogen and a commodity that has the potential to be shipped into areas where it is too expensive to produce hydrogen.

The key, according to AFC Energy's chief executive Adam Bond, is its cost benefit.

"The entire system has been designed around affordability," he told Proactive.

These technologies do not create much waste by default - their by-products are heat and water - which can be either fed into the grid or re-used within the plant.

The systems can also be operated at a low temperature meaning the equipment will suffer less wear and tear.

Another strong point is that hydrogen fuel cells have no moving parts, eliminating the mechanical step.

AFC Energy is working on four products using the alkaline method.

There are fuel cells, designed to either be used across large scale industrial applications or smaller ones for stationary and mobile applications, hydrogen power systems such as an off-grid charger for electric vehicles, and an anionic exchange membrane programme.

The latter, which can be applied in several industrial processes, is AFC Energy's alternative to the PEM (polymer electrolyte membrane), which are usually fuelled with pure hydrogen supplied from storage tanks or reformers and use an acid, rather than alkaline, substance.

According to experts, the challenge for both systems is to avoid carbon dioxide (CO<sub>2</sub>) poisoning, as even the small amount of CO<sub>2</sub> in the air can dramatically affect cell performance and durability due to carbonate formation.

In PEMs, costs are driven up when the system needs additional equipment to reduce CO<sub>2</sub> if the hydrogen is derived

**Price:** 18.5

**Market Cap:** £85.61 m

### 1 Year Share Price Graph



January 2019 July 2019 January 2020

### Share Information

**Code:** AFC

**Listing:** AIM

<b>52 week</b>	<b>High</b>	<b>Low</b>
	28.2	3

**Sector:** Renewable Energy

**Website:** [www.afcenergy.com](http://www.afcenergy.com)

### Company Synopsis:

*AFC Energy produces generating units that can be either used for large-scale electricity production, co-located in commercial or business premises or integrated into bespoke application units.*

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from a hydrocarbon fuel.

This is one of the disadvantages of using natural gas, alongside the environmental impact of producing carbon emissions.

Currently, AFC Energy is putting together a 10-kilowatt prototype of an electric vehicle (EV) charger employing one of its fuel cell systems that will be shown to investors in December.

The aim is to produce a fuel cell as big as a shipping container box that will generate 1-2 megawatts of power, "probably the most-dense" in the market today, Bond said, and ideal for electric vehicles charging.

While the initial focus is on the UK, the offer will be expanded on other markets once the business is established, with "potential for hundreds of megawatts per year".

Shares rose 33% to 9.3p.

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