

Ionic wind powered flight

Posted on **November 23,2018** by **admin**

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[1280px-heathrow_lon_04_07_77](#) I read an interesting news report on ionic wind powered flight this week. I like most people have never heard of such a thing. I was going to do a blog on a report on hard to cut carbon intensive areas (and plan to still do so). This report covered industrial sectors and shipping but left out other areas of extreme difficulty for decarbonisation namely heat and flying. On the whole I'm a bit cynical when people say to me all we need is some form of completely new technology. This is since I see it as an excuse for inaction and also I think most of the technology we have is as up to the job as its going to be and we should not rely on some mythical new technology. Just occasionally something brand new shakes this worldview and this is one of these points. First a brief explanation on the physics of flight. There are two types of objects that take to the air those that are lighter than air (airships/some seeds) and those that are more dense and heavier (almost anything else). These latter objects must be powered to move through the air, the former will at least drift. There are four fundamental forces that act on heavy airborne objects; gravity (no explanation required), thrust (to move object usually forward), drag (friction essentially acting against the forward motion) and lift (an upwards reaction to the motion of the object through the air). Air is described as a fluid since the force needed to deform depends on the speed of deformation, not how much it deformed. As long as thrust is enough to overcome gravity and drag then the resistance caused by the wing moving through the air will at least keep the object airborne. Up until now thrust has come from turboprop engines or post WWII jet engines. There is talk of [electric aircraft](#) covered on this blog in past. But these are based on conventional turboprop aircraft powered by electricity rather than oil. Ionic wind powered flight is completely different. The wing of the aircraft is fitted with electrodes. A thin wire seems to protrude forward from the aircraft wing. This is positively charged compared to the electrode on the wing. The potential difference ionises nitrogen in the air. This moves to the other electrode displacing air and generating thrust. Don't get too excited yet there has been a simple demonstration that it works. Which it does. The system has the following advantages if it can be scaled up. Its inherently quiet and electricity powered. It would be lighter than an aircraft using electricity to power turboprops since it misses out the heavy engines. This could increase range/decrease power consumption etc. The big problem is where is the electricity going to come from when all the other sectors of our economy require electrification? Does any aircraft really overcome this problem? An interesting idea though. Neil

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