

Drone Self-Charging System

“Request for Information”
“DARPA-SN-22-43”

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As clearly stated in the RFI "This energy transfer ability may extend range and operations, with a..." it is quite clear that the main purpose of this request is innovative technologies and solutions to increase the range and operations of the Unmanned Aircraft System (UAS). In line with the mentioned goal, I would like to make a more efficient and optimal proposal instead of presenting a proposal about Airborne Energy Well, which, while being simple and cost-effective, with its high operational capability, will provide the main goal mentioned.

From the beginning of the aviation industry until today, engineers and experts in this field have always thought of more confrontation with the drag force with different methods, be it with aerodynamic design, the shape of the wings, etc. This is despite the fact that no one thought of controlling this force and providing energy from it at the same time as confronting it. My proposal is very simple and does not require complex explanations and many specialized details. Therefore, I will only briefly explain the plan: according to the point mentioned above, to simultaneously use the drag force as an energy supplier, it is enough to create small channels on the body of the aircraft or UAS (without to create a disturbance in their aerodynamic shape). Inside these channels, turbines are placed that have the ability to produce electricity, and the incoming high-pressure air exits from the end of the channel after turning these turbines. (The details can be easily designed and implemented by any expert in this field).

It can be confidently stated that with an optimal design (optimal design of channels, turbines and necessary components), it is easy to use the electric energy produced by the turbines to charge the batteries, energy storage or saving in the energy source, etc. which in any case, the main purpose of this RFI will be met.

Airborne Energy Well, even if realized and operationalized, may have limited uptake due to its high complexity, increased project cost and reliance on third-party sources, while the benefits of this plan include the following:

- 1- Ability to run on current and future platforms
- 2- Low cost and less technical complexity in design and implementation
- 3- Not relying on external sources to supply at least part of the energy
- 4- The need for less space and weight to increase the range and operations
- 5- Having a direct relationship between drag force and energy production

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