

UAVs & UGVs Hybrid hydrogen Fuel integration



The UAV - Unmanned Aerial Vehicle & UGV - Unmanned Ground Vehicles as market niches, **Beecroft Technology** is committed to developing a powerful lightweight power and at the same time eco-friendly power supply unit, extending the range of current power source.

As a result of R&D phase period, **Beecroft Technology** together with the upstream partner team had developed a patented Fuel-Cell / Ultracapacitor Hybrid Engine system which is well suited powering to all UAVs and UGVs vehicles. We are trusted that we can already provide a wide array of UAVs & UGVs reliable power supply solutions for more UAVs & UGVs power autonomy, soon the laboratory results technical data will be published on this website.

An UAV Fuel-Cell is more compelling than just a lab demonstration or even a Fuel-Cell system powering a house. With a UAV model, really push the limits of durability, robustness, power density and efficiency.

Fuel-Cells, are attractive energy sources because of their high energy density, which translates into longer endurance.

Though Fuel-Cells don't produce enough power for the propulsion systems of commercial passenger aircraft, but they could power smaller, slower vehicles like Unmanned Aerial Vehicles (UAVs) and provide a low cost alternative energy source.

Such Unmanned Vehicles could also track hurricanes, patrol borders, conduct general reconnaissance, crops inspection and all dangerous inspections like wind-turbine and bridges survey, disaster rescue activities into areas like flooding, snow avalanches, etc.



Important points to keep in mind

Hydrogen power requires a drastically different approach to aircraft design compared to conventional planes powered by conventional batteries, observed our project chief engineer.

To construct the UAV Fuel-Cell power unit, we had used our developed Hybrid Engine (Fuel-Cell / Ultracapacitor) and modifying it extensively: Adding systems for hydrogen delivery, refueling, thermal management and air management adapted to the new miniature configuration. The build of new control systems is another challenge, such as data acquisition as well, so the collected information could be transmitted during flight.

Among design challenges for **Beecroft Technology** and associate team

- Slim performance margins. Our researchers developed innovative computer tools to analyze performance, which enabled them to optimize the propulsion system by innovative power supply unit.
- Weight management: For example creative methods were used to trim grams, such as using carbon foam for the power plant's radiator.
- Miniaturization of one of models: Finding components small enough to fit in this space required some ingenuity, such as using a pump from a liquid-cooled computer and a hydrogen tank designed for a paintball gun.

During the next few months, the team will continue to test and refine the UA Vehicle H2 energy source, making it more reliable, robust with higher power autonomy.

