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Novel hybrid-powered stand alone autonomous unmanned aerial vehicle (AUV) ground base station

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The technology of Autonomous Unmanned Vehicles (AUV) for air, land or sea applications has grown dramatically in the recent years, and continue to grow exponentially. With the above increase, in both autonomous systems and autonomous navigation algorithms a demand for efficient and reliable alternative renewable power sources is vital to fully support long endurance autonomy. Recently, a new type of Ground Stations has arisen, which it is fully autonomous, self-contained and automated in terms of Autonomous Unmanned Vehicle (AUV) deployment, refueling, recharging and storing. Two of the main and highly desirable requirements for the above state-of-the-art Ground Stations for Autonomous Unmanned Vehicles are; to be off-grid and to have a low maintenance interval (by a human technician and/or operator). Thus, it can be permanently and reliably located to remote locations and perform a variety of tasks from agriculture and geology to defense and surveillance. Therefore, a safe, low maintenance, efficient and high-power density energy source is needed to enhance and support a hybrid power architecture and extend the power autonomy of such AUV base station. The main outcome of the current project will be the design and development of a novel hybrid renewable power system (combination of battery, supercapacitors, solar, wind, and hydrogen), which will be part of the design and development of the prototype of the stand-alone novel Ground Stations for Autonomous Unmanned Vehicles.

Biography

Dr. Evangelos I. Gkanas has completed his PhD in Advanced Energy Materials at the National Centre of Scientific Research "Demokritos", Athens, Greece. He continued his research endeavors as Research Fellow at the University of Nottingham (UK). He is the leader of the Hydrogen for Mobility Research Group at Coventry University (UK), where he is also an Assistant Professor in Thermodynamics. He has published more than 20 scientific outcomes at peer-reviewed journals and serving as an editorial board member in several journals.

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