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HYDRO GREEN ENERGY, LLC TURNS THE TIDE WITH VALIDATION FROM SATOP

HOUSTON, Texas – HydroGreen Energy, LLC, is creating a new wave in renewable energy technology: by placing hydro-turbines in the flow of tidal currents, the company can produce energy at a higher capacity than with traditional methods. To validate the energy output and to determine the best model of hydro-turbine, HydroGreen CEO Wayne Krouse contacted the Space Alliance Technology Outreach Program (SATOP) for expertise and advice.

SATOP provides free engineering assistance to small businesses with technical challenges through the expertise of the program's Alliance Partners – 50 aerospace companies and universities involved in the U.S. Space Program.

HydroGreen Energy is a for-profit renewable energy project developer and integrator that designs, builds and operates kinetic hydro-power projects. These projects generate electricity from moving water currents, as from a river, tide or ocean, without having to construct dams, impoundments, conduits or other infrastructure projects.

The company created several prototypes of a hydro-turbine that would effectively produce electric power from water currents; however, to prove which design would be most effective the company had to perform a costly analysis involving complicated computations. A computational fluid dynamics (CFD) simulation was needed to evaluate each turbine design and select the most efficient model.

“I had tried to determine the actual amount of energy produced, but without the CFD software, as well as the lack of familiarity with the program, the analysis was prohibitive for the company,” said Krouse.

It was then Krouse turned to SATOP. He picked up a SATOP brochure at the Houston Technology Center and subsequently filed a Request for Technical Assistance (RTA). Alicia Baker, project engineer for SATOP Texas, matched HydroGreen Energy, LLC with Dr. Alain Kassab, professor, and Dr. Eduardo Divo, assistant professor, from the University of Central Florida (UCF). UCF is a Platinum level SATOP Alliance Partner.

“The engineering expertise possessed by UCF professors make the university a valuable Alliance Partner,” said Baker. “With regard to the equipment and platforms necessary to complete this particular RTA, UCF was the best fit.”

Kassab, with assistance from Divo, completed a study for HydroGreen at a computational fluid dynamics laboratory. Using commercial CFD code, they were able to perform several simulations under several flow conditions. The results of these simulations were then presented for evaluation. Based on the findings, HydroGreen was then able to determine which hydro-turbine, with regard to kinetic energy, would ultimately be manufactured.

“This seemed like such a simple project at first, but it has lead to very interesting results,” said Divo. “Features that have arisen during this study have broadened our knowledge and understanding of restricted flow.”

After the RTA was completed, Krouse believes that SATOP has given affirmation and credibility to the hydro-turbines. “With confirmation from Drs. Kassab and Divo, HydroGreen is now capable of moving forward with a patented hydro-turbine and look forward to implementing this new renewable energy source,” said Krouse.

About SATOP

The NASA-funded Space Alliance Technology Outreach Program (SATOP) provides small-businesses with free technical assistance through the use of the U.S. Space Program, as well as aerospace contractors, NASA field centers, universities and colleges. These organizations join SATOP as Space Alliance Partners, which donate time and expertise to help SATOP speed the transfer of space technology to the private sector. Platinum level Space Alliance Partners include AJT & Associates, Lockheed Martin, TEAM Specialty Products, and The Boeing Company. For more information about SATOP, or to request technical assistance, please visit www.SpaceTechSolutions.com.

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