

Electric Boat Competition Sparks Interest in Naval Science Careers



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Student engineering teams from Princeton, Washington College and the University of Alabama have won first place in their respective events at the “Promoting Electric Propulsion” (PEP) boat races, sponsored by the Office of Naval Research (ONR) and the American Society of Naval Engineers (ASNE).

In just six years, this electric boat-building competition has grown from a single university to 34, with more than 200 students who took part in the five-mile races on Broad Bay in Virginia Beach. Dr. Steve Russell, program officer, Sea Warfare and Weapons department, said he launched the PEP competition with a colleague from ASNE, Dr. Leigh McCue, and Tim Cullis, Naval Sea Warfare Center Carderock, after seeing a public race by local hobbyists in the Chesapeake Bay.

“It gave us the idea this would be a good way for the Navy to get engineering students interested in electric propulsion, so we did it.”

Russell said they are reaching hundreds of science and engineering students every year. The PEP racing event not only offers students valuable learning experiences, it provides the Navy and Marines with a workforce for the future.

“The goal is to create a pipeline of graduating engineers who have worked on a suite of problems that are currently issues within the U.S. Navy. They come out of school after having designed and built a boat like this, and learning about high

power electronics, propulsion, hull design, cooling and boat stability – the naval architecture parts of it,” Russell said. “So far, we’ve hired many of them into the warfare centers and our industry partners.”

The teams of college students come from universities all over the country. Some are very well known, like Princeton and Texas A&M, but others are much smaller and not necessarily easily recognized. That doesn’t mean the smaller universities aren’t as competitive. Russell said Washington College in Maryland came in first and second place, respectively, in the 2022 and 2023 manned race, as well as placing first in 2024.

“They don’t even have an engineering school. It’s just a group of students who go to school near the Chesapeake Bay and they built a couple of very good boats,” he said.

The PEP competition includes manned and unmanned boat races. Russell said the manned competition seems to be more exciting for the students. It is a race, after all – and they can go pretty fast. Most of the entrants, though, register for the unmanned competition. Regardless of which category the teams fall into, they are all involved in meaningful and, in some cases, record-breaking work.

“While we’re not really looking to use any of the techniques that the students come up with, their innovation has been very impressive. For example, the Princeton team last fall took their boat down to a river in North Carolina and beat the world record for electric boat speed on the water with an average speed of 114 mph,” Russell said. “What we’re really trying to do is to get them interested in solving Navy-related problems, and hopefully they will pursue careers in the Navy.”

It’s also become something of an industry event where the students are introduced to industry partners in the area.

Since its inception in 2018, the PEP competition has helped recruit 44 engineering graduates for the Navy. Eleven others gained engineering positions with industry partners.

For more information on PEP, visit their website at <https://www.navalengineers.org/Education/Promoting-Electric-Propulsion-PEP>