California Maritime CWC Metrics Report

Overview:

CSU Maritime's 2022-2023 connection creation plan can be summarized as follows: we began within our campus to recruit students from a variety of backgrounds and experience levels, then branched out to our alumni, industry professionals from varying positions, and maritime industry societies to spread awareness about the competition and learn about the growing offshore wind industry. In the meantime, our social media activity and engagement has sharply increased in relation to previous years to bring more students into the fold.

Turbine Design Expansion

In 2022, the turbine design team was comprised of eight members comprised of 2 junior and 6 senior engineers. Our university's engineering program is broken up into mechanical engineering design and engineering technology, the former emphasizing mechanical system design and the latter emphasizing power plant operations & maintenance, and the make-up of our team was 3:1 mechanical engineer to engineering technologists. Importantly, that was the first year that the turbine design team saw a sizable contribution from their junior year cohort. Continuing this tradition, this year's turbine design team brought three juniors into the team through tying class projects, namely our mechatronic system design course, towards contributing to important subsystems of the turbine. This serves the purpose of introducing our junior cohort to the operation of wind turbines at the competition scale to better prepare them for future CWC participation and, most importantly, continuing the legacy. In that same vein, the turbine design team recognized the need for high-speed testing as well as for the recruitment of more underclassmen. This year, we recruited three sophomores to design and construct a wooden frame supporting a turbine to be mounted on a truck. Unlike the junior class, this was purely extracurricular and was managed by the turbine design lead. The participants, in addition to the juniors, were able to gain exposure to the engineering side of the project.

Project Development Expansion

On the project development side, the team consisted of five members from four different majors. These included Global Studies and Maritime Affairs, International Business and Logistics, Marine Transportation and Facilities Engineering. Together, this team worked to develop the logistics behind their wind farm design. The team developed presentations that were given to multiple audiences in preparation for the final CWC event. The team conducted research meetings on a weekly basis to effectively develop their plan.

Social Media Plan

This year's social media plan was to increase our overall presence and expand on the amount of people reached. This was done by having a steady flow of weekly posts about the current progress. This approach reflected a significant growth in accounts reached on our Instagram platform, around 213% when compared to last year. The number of likes we received per post also increased by around 40%. Some examples of successful posts include the engineers testing their truck mounted turbine test rig and our alumni dinner.

Interviews

The plan with our interviews was to reach a diverse set of professionals, ranging from data scientists to vice presidents, among the onshore and offshore wind industry to get a holistic perspective on the state of the industry.

On September 29th, 2022, we kicked off the competition with an interview with Guido Reuter, who is the Director of Engineering for Siemens Gamesa. This had the highest attending interview, with 22 people participating not only from the turbine design and project development teams, but also faculty from outside of the team. Our inquiry consisted of career questions such as Guido's day-by-day as the director of engineering and what it's like to manage a diverse team of people. Guido also helped us learn about the logistic limitations facing modern onshore wind turbines, and ultimately took away the fact that developing offshore wind energy is of utmost importance.

On April 8th, 2023, the CWC Team with the accompaniment of Program Advisor Dr Nordenholz, Meet with Walter Musial from the National Renewable Energy Laboratory. The primary topic of this meeting was to discuss this year's foundation design, as Walter is highly knowledgeable in this area. After some introductions and general discussion, the team explained the current design, sources of inspiration. One of the main points of the discussion was the link between the team's hybrid design approach to the industry. In this discussion the scalability as well as feasibility of the teams foundation was brought up, with the conclusion that it is possible and there is applications for the design.

Outreach Events

Next, we hosted the Society of Naval Architects and Marine Engineers (SNAME) student paper night at our campus on March 14th, 2023, with a reception and presentation emphasizing our substructure foundation design and siting plan. The purpose of this was to spread awareness of the wind industry's push towards offshore wind energy development to maritime professionals. There were twelve participants from SNAME with six students outside of CWC that listened to our presentation, and it was received very well by the members of SNAME. Several thoughtful questions were asked from different perspectives of the project, ranging from scalability of the turbine prototype to the logistics of the vessels used for the wind farm. In retrospect, we gained a substantial amount of insight from professionals in the maritime industry on a variety of different topics, not limited to the ones stated previously.

In that same week, we participated in the annual Solano County Science & Engineering Fair (SCSEF) on March 16th, 2023, in the spirit of local outreach. Its purpose is to enable adolescents to gain exposure to the STEM field on a broader scale, and CSU maritime sent two engineers to add wind energy engineering underneath the STEM umbrella. We brought different elements of our turbine design such as the previous year's turbine, foundation prototype, electronics boxes, and generators to showcase the different engineering disciplines involved in the project. This made for some interactive conversations with the youth visiting our booth, and we were received quite well by the fair participants. We expect this event to lead to future admissions in our engineering programs and, subsequently, future participation in CWC for CSU Maritime's wind team.

One of our most successful outreach events was Kidwind, where we had six teams consisting of three middle schools and three high schools. Each team presented a turbine design of their own that was graded by members of the Cal Maritime Wind Team. This was a great opportunity to connect with future generations of the wind industry. The event really showed how bright of a future the wind industry wind industry has and how talented these individuals are. This event also benefits Cal maritime as multiple students expressed their interest in the university.

CSU Maritime hosted our annual alumni dinner where we had around 30 attendees. This event consisted of the presentation of both the project development and the turbine design team projects. The alumni then provided some of their personal information to help fill in the gaps in what we were missing in. Our reports. This acts as a trial run before the final presentation and helps to promote future members. This year's dinner was generously sponsored by Hornblower shipyard.