Energy &
Homeland Security

SANDIA INTERACTIVE WAVE ENERGY EDUCATION DISPLAY (SIWEED)

Developed by Sandia summer interns, the Sandia Interactive Wave Energy Education Display (SIWEED) comprises a small wave tank (about the size of a fish tank), a wave maker, a small wave energy converter, and a small model town. As participants change the waves amplitude and frequency by operating a graphic user interface, they observe how the energy generated by the wave energy converter (WEC) changes, lighting up the model town. This experience gives users a rare, up close opportunity to interact with marine hydro kinetic energy, and its possible applications to the blue economy.

OBJECTIVES

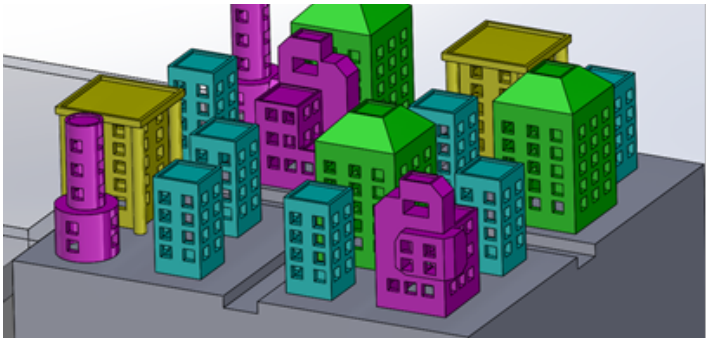
To provide an accessible means for a wide-ranging audience to learn about wave energy:

- "What is a wave energy converter (WEC)?"
- "How do different waves travel?"
- "How does the power generated change in different waves?"
- "How do different WEC controller tunings change the power generated?"

Sandia interns review their summer project.

PROJECT OVERVIEW

- The user controls and changes wave dimensions and sees the power output by the WEC
- Graphic user interface (GUI) to control:
  - Wave input
  - WEC control tuning
- A small mock city lights up based on the amount of energy received by the WEC



Early rendering of the mock city to be lit by the WEC.

SYSYEMS DETAILS

- Open-source system implemented with inexpensive hardware (with Arduinos)
- ¾ inch acrylic tank, 1.5m x 0.3m x 0.5m
- 3D printed town and plunger
- Screw drive train
- Interactive graphic user interface
- Real time wave data display

CONTACT:

Ryan Coe
rcoe@sandia.gov | energy.sandia.gov/SIWEED

Watch the Sandia Interactive Wave Energy Education Display (SIWEED) at: www.youtube.com/watch?v=PcOHZWLTsHc

U.S. DEPARTMENT OF ENERGY NNSA National Nuclear Security Administration

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525. SAND2022-6945 O

Sandia National Laboratories