

STEM in the News

The U.S. is coming closer and closer to being able to install more than 1 gigawatt (GW) of offshore wind capacity. According to Business



Network for Offshore Wind (BNOW), CEO Liz Burdock states that the offshore wind industry can continue growing despite the economy taking a hit

from the coronavirus pandemic. However, BNOW is concerned that upcoming construction plans could be jeopardized by long-term shutdowns and recessions due to the pandemic. The BNOW implores the federal government to approve construction plans so that offshore wind construction is not slowed down. Let's hope it all works out!

Source:

<https://www.utilitydive.com/news/when-will-the-us-get-1-gw-of-offshore-wind-on-the-grid/575180/>

"I have not failed. I've just found 10,000 ways that won't work." - Thomas Edison

STEM Career Spotlight

Boiler operators are responsible for handling maintenance in large buildings that contain boilers and engines. Their main job is to handle high- and low-pressure power boilers and hot water systems. The average salary for a boiler operator is \$23.39 per hour or \$58,530 per year. Required education: at least a high school degree

STEM in History

As we all know, Benjamin Franklin discovered electricity— actually, no, he didn't. In 1752, Benjamin Franklin found that lightning was a form of electricity and conjured the idea that it had positive and negative charges. Long before that, in about 600 B.C., Ancient Greeks came across static electricity. In the 1600s, scientists had invented early versions of electrostatic generators, and people had classified objects and materials as conductors and insulators. This isn't to say that Benjamin Franklin wasn't a genius, only that his discovery helped to expand the knowledge of electricity, and energy and power all around us.

STEM Across the Curriculum

Energy and power are used to help fuel all working things around us! What better way to expand this "powerful" subject than through social studies? In this activity, students choose two individuals who helped make a breakthrough in energy and power (i.e., Thomas Edison, Benjamin Franklin, etc.). Students then research their accomplishments and create a Venn diagram to compare and contrast how we use their innovations. How are they similar in the way we use them, and how are they different? Then, students share what they've learned with their peers, adults, and parents!

STEM Movies

Iron Man (2008) is a sci-fi film focused on sarcastic billionaire inventor, Tony Stark. In the movie, Tony Stark is captured by terrorists called the “Ten Rings” and is forced to build a missile in exchange for freedom. During the incident, Stark is wounded and ends up with shrapnel in his chest. Energy and power are present during which Stark implements a small electric arc reactor inside him that keeps him alive. This reactor generates 3 gigajoules/second (=3,000 megawatts/second), sufficient enough to power three million homes! He utilizes the reactor by powering a suit of armor he creates, which aids in his escape. Using his arc reactor and his suit, he fights for justice around the world under the name “Iron Man.”

*“...Ignorance is never better than knowledge.” -
Enrico Fermi*

#STEM@ADM Spotlight

Ms. Wilson teaches Science Research at Alice Drive Middle School. She incorporates technology into her lessons with assignments that involve the exploration of machinery. Energy and power are more specific fields that she integrates through projects that research environmental energy such as wind and solar power. Mrs. Wilson does a superb job of teaching her students the many uses of energy and power!

Famous STEM Person

Nikola Tesla was a mechanical engineer who had dozens of breakthroughs in the electric power industry. He designed the AC electric system, which is used across the world today, and created the Tesla coil in 1891.

STEM Challenge

Air Convection Challenge

Materials: Two-inch mosquito coil w/ stand, matches, 2 one-quart jars w/ lids, lamp, 9” x 12” black construction paper, & a 3” x 5” index card

Steps:

1. Find sturdy table with a nearby outlet and wall.
2. Plug the lamp in.
3. Place the construction paper behind where to place the jars.
4. Place one of the quart jars in the freezer.
5. Find a place outside that is not windy.
6. Using a match, ignite the mosquito coil & set it on the stand.
7. Invert the other jar over the burning coil until the jar is filled with smoke; it should take 2-3 minutes.
8. Turn the jar right-side-up and immediately cover the top with an index card. Walk it over to your table.
9. Get the other jar from the freezer and immediately place it upside-down on top of the smoky jar.
10. Lift the top jar slightly to remove the index card, and carefully and quickly put the two jar openings together.
11. Observe what happens.

Source: <https://www.education.com/science-fair/article/convection-air-motion/>

STEM Puzzle

Reassemble the words to form terms!

owrep _____ ltovs _____
 rengye _____ engeraotr _____
 ttaws _____ gaigtwats _____
 mgaetatws _____ cpataciy _____

power, volts, energy, generator, watts, gigawatts, megawatts, capacity, answers, in order: