# 15-Year-Old Develops $12 Machine That Converts Ocean Currents into Usable Electricity

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*Herbst receives her cash prize from the 2014 winner.*

by Cat DiStasio

15-year-old inventor Hannah Herbst developed a low-cost method of producing energy from ocean currents – and her idea won top prize at the 2015 Discovery Education 3M Young Scientist Challenge: $25,000 cash. The prototype she built for the competition, a probe that converts the natural movements of the ocean into useable electricity, costs just $12 to make. The ultra-low cost was all part of Herbst's goal to develop a solution for developing countries, where electricity is sparse and unreliable.

The Florida teen was inspired to develop a low-cost energy capture method by communities which lack reliable access to electricity, such as in Ethiopia where she has a nine-year-old pen pal. Herbst's friend wrote to her about conditions in her hometown, and the ninth grader set about analyzing the problem with a scientific approach.

What she came up with is a floating probe with a 3D-printed propeller, a small pulley, and a hydroelectric generator. The device converts the ocean's movement into usable energy. It isn't

enough to fire up a power grid, but the electricity generated can be used to run equipment, like a desalinization machine which converts ocean water into drinking water.

Herbst's invention was pitted against entries from nine other students. Over the past three months, the students have been working directly with a 3M scientist to develop their inventions for the competition. Jeffrey Emslander was paired with Herbst; he's a 3M corporate scientist whose research and patents have helped 3M reduce emissions to the environment and use less energy in the making of products.