Artificial Leaf Produces Energy from Dirty Water

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Back in 2011, researchers at MIT developed an artificial leaf technology that could produce energy from water and sunlight. The artificial leaf is essentially a silicon solar cell that has different catalytic materials bonded to each side that allow it to split water molecules into oxygen and hydrogen, the latter of which could be stored and used as clean fuel. While that technology is groundbreaking enough, the project team, led by Daniel G. Nocera, Ph.D., has announced that the technology now has the ability to self-heal and produce energy from dirty water.

Gizmag reports, "Because bacteria can build up on the leaf's surface and stop the energy production process, previous versions of the device required pure water. Now Nocera's team has found that some of the catalysts developed for the artificial leaf actually heal themselves, meaning the process can work with dirty water."

“Self-healing enables the artificial leaf to run on the impure, bacteria-contaminated water found in nature,” Nocera said. “We figured out a way to tweak the conditions so that part of the catalyst falls apart, denying bacteria the smooth surface needed to form a biofilm. Then the catalyst can heal and re-assemble.”

This feature will make the device even better suited for use in developing countries where clean water (and a reliable energy source) isn't always accessible.

The artificial leaf is designed to be a cheap energy source and it’s made from abundant materials like silicon, cobalt and nickel. It’s also opens the door to solar technology that produces a clean fuel that can be stored and used at night.

Ultimately the research team wants to combine the artificial leaf with technology that converts the hydrogen into a liquid fuel to power everything from traditional portable electric generators for homes to cars.

You can see a video about the technology of the technology at work below.

Video by Artificial Leaf: https://youtu.be/LEEhxk-CiOQ