

energy



VERTICAL AXIS WIND TURBINES

Vertical axis wind turbines are a radical new direction for wind power. The curved blades and vertical axis can harvest omnidirectional winds at any wind speed without spinning fast enough to harm passing wildlife. *Why does it matter?* We can now expand the reach of wind power, since before they were too obtrusive, noisy, or harmful to wildlife to use anywhere urban.

Researchers at Harvard have created an “artificial leaf” that uses a combination of solar energy, water, carbon dioxide, a cobalt-phosphorus catalyst, and engineered bacteria (*Ralstonia eutropha*) to create an energy dense fuel. *Why does it matter?* This turn atmospheric carbon into a usable energy form revolutionizing the biofuels that are accessible in any location.



ALTERNATIVE PHOTOSYNTHESIS



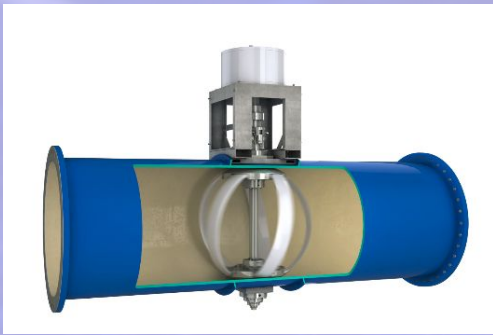
IN CONDUIT HYDROPOWER

Water is pressurized at purification plants to approximately 100 psi, but it must be depressurized to approximately 40 psi for domestic usage. While this extra pressure is intended to speed the water to its destination, much of the energy is waste through pressure release valves which can be replaced with turbines! *Why does this matter?* It's completely safe recoverable energy!

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PRIMARY PROS AND CONS

compared to traditional
HYDROPOWER...



IN CONDUIT
HYDROPOWER



... no habitat destruction
...very easily deployable
... but also much less power

compared to traditional
WIND POWER...



VERTICAL AXIS
WIND TURBINES



... more usable near cities
... no danger to wildlife
... but much lower capacity

compared to traditional
BIOMASS...



ALTERNATIVE
PHOTOSYNTHESIS



... sequesters more carbon
... places less importance
on conservation

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For the long term, I believe wind energy is the most sustainable. While solar is more predictable, it currently uses carbon-intensive silicon wafers that are not reusable or recyclable. Wind turbines primarily just use large quantities of high quality steel and fiberglass and some carbon reinforced materials. These may not be perfect either, but have the potential to be a much cleaner mechanical solution to provide clean energy. I interviewed my friend who now works at Clean Line Energy about vertical axis wind turbines, and she shares my enthusiasm for this emerging technology, but cautions that this technology is still years away from market viability. Despite this, the idea of small scale, silent, beautiful, safe wind turbines across our cities each lending a thread of power is a great source of inspiration.

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Travis Kwee

2 mins · 🌐 ▼

It's fascinating the solutions that are possible to address the volatility of wind. In Europe, despite uneven sourcing of wind and a mismatch in capacity of wind and solar, models are being created to show how transmission lines between the Balkans and the North Sea countries can neatly balance the wind power capacities between the areas when needed.



It's always windy somewhere: Balancing renewable energy in Europe

Harnessing wind in the Balkans and Scandinavia would get Europe consistent power.

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