

Acuvane: Maximizing Wind Turbine Clean-Electricity Generation

École de technologie supérieure



Wind farm in Gaspésie - Québec

It might not look like it to peer at the large blades of a wind turbine, but if one vane is misaligned by just five degrees, the resulting energy could blow away millions of dollars. This problem often makes the production of clean electricity still more expensive than producing fossil-fuel energy.

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For a 100-megawatt wind farm of 150 turbines, this could represent \$20 million in losses over 20 years,” said Francis Pelletier, PhD in wind-energy production at Montréal’s École de technologie supérieure (ETS).

As the world faces an ecological crisis and unprecedented economic challenges, Pelletier and his academic supervisor,

Souheil-Antoine Tahan from ETS's Department of Mechanical Engineering, agreed to adapt existing technology to solve this problem. Their research revealed that a wind turbine misaligned by five degrees can cause a 1% energy loss, and the idea of an alignment process to calibrate wind turbine blades caught on.

"It must also be robust, feasible and cheap," Tahan said.

After five years of effort, the researchers invented the first laser wind-vane aligner. This new technology enables wind turbines to be oriented as precisely as possible in the wind direction, enabling energy savings of 1 to 2%; for one 100-megawatt wind farm this powers an additional 200 to 250 homes. The improved precision considerably reduces stress on mechanical components and extends their lifespan. In the future, Francis hopes that wind energy alone will be enough to power all major cities around the world.

In 2011, the invention was declared to Aligo Innovation, the outside technology-transfer firm that took the lead to protect the intellectual property and undertake the process of licensing it.

It was exclusively licensed to TECHÉOL, a company specializing in technical services for wind farms, to use, manufacture and sell the laser wind-vane alignment system. The technology is now marketed under the name ACUVANE™.

"TECHÉOL is very proud to be the exclusive distributor of this invention, which already allows us to export this service outside Québec, in addition to helping us promote our other services to our customers," said Evan Mulrooney, Founder and co-owner of TECHÉOL.

Patent Number(s): US: 14,067,206; Canadian: CA 2,832,070; Mexican: MX a,2013,012718

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