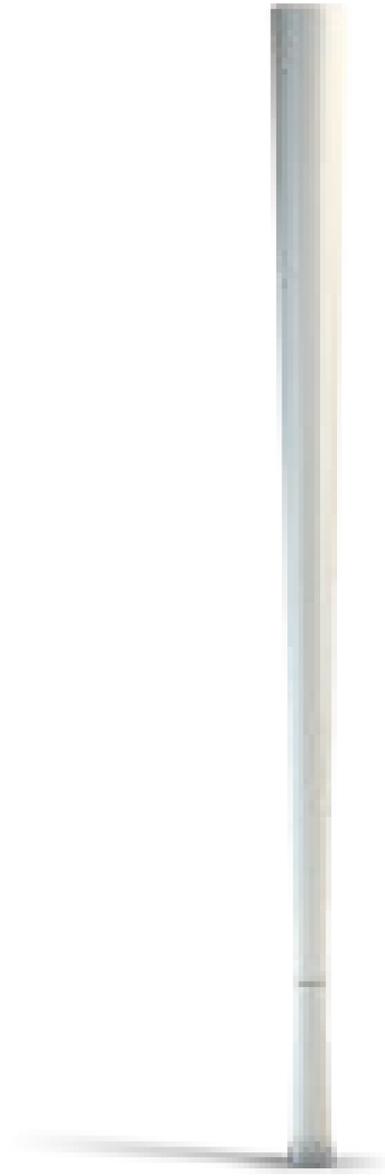


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VORTEX



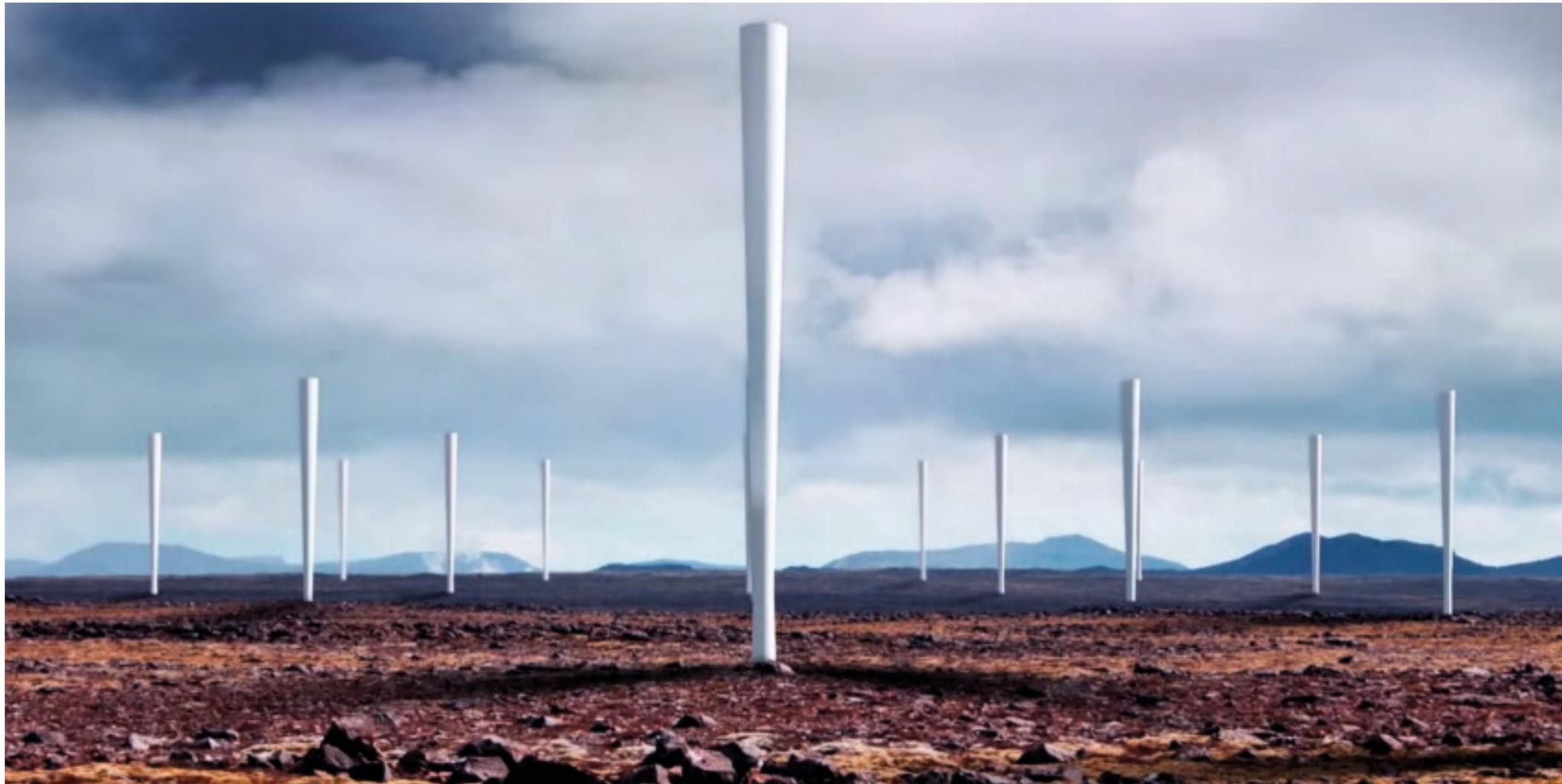
The turbines we currently use for wind power are incredibly advanced pieces of technology. Everything inside of them –from the shape of their airfoils to the generators they spin– has been painstakingly engineered for maximum efficiency. They’re a very mature technology, but that’s not to say an alternative concept might not be an improvement.

Case in point: these incredible tube-like wind turbines from Spanish startup Vortex Bladeless. Through a clever manipulation of physics, the company’s turbines are able to generate electricity without the help of any large, spinning blades. It sounds crazy, but it’s totally legit — Vortex has been developing the turbines for the past few years, and even went so far as to build its own wind tunnel to prove the technology works.

Instead of capturing energy through the circular motion of a propellor, Vortex turbines take advantage of a physical phenomenon known as vorticity — an aerodynamic effect that creates a pattern of spinning vortices or whirlwinds. Think about the little eddies that form around the edge of a canoe paddle when you move it through the water. This is the same principle — except substituting air instead for water, of course, and with the air moving around a stationary paddle (the turbine) that sticks out of the ground.

As the wind blows past the turbine, little whirlwinds are created behind it, and when they get big enough, they cause the structure to oscillate. This kinetic energy is then used to power an alternator, which multiplies the frequency of the tower’s oscillation and converts the motion in to usable electricity.

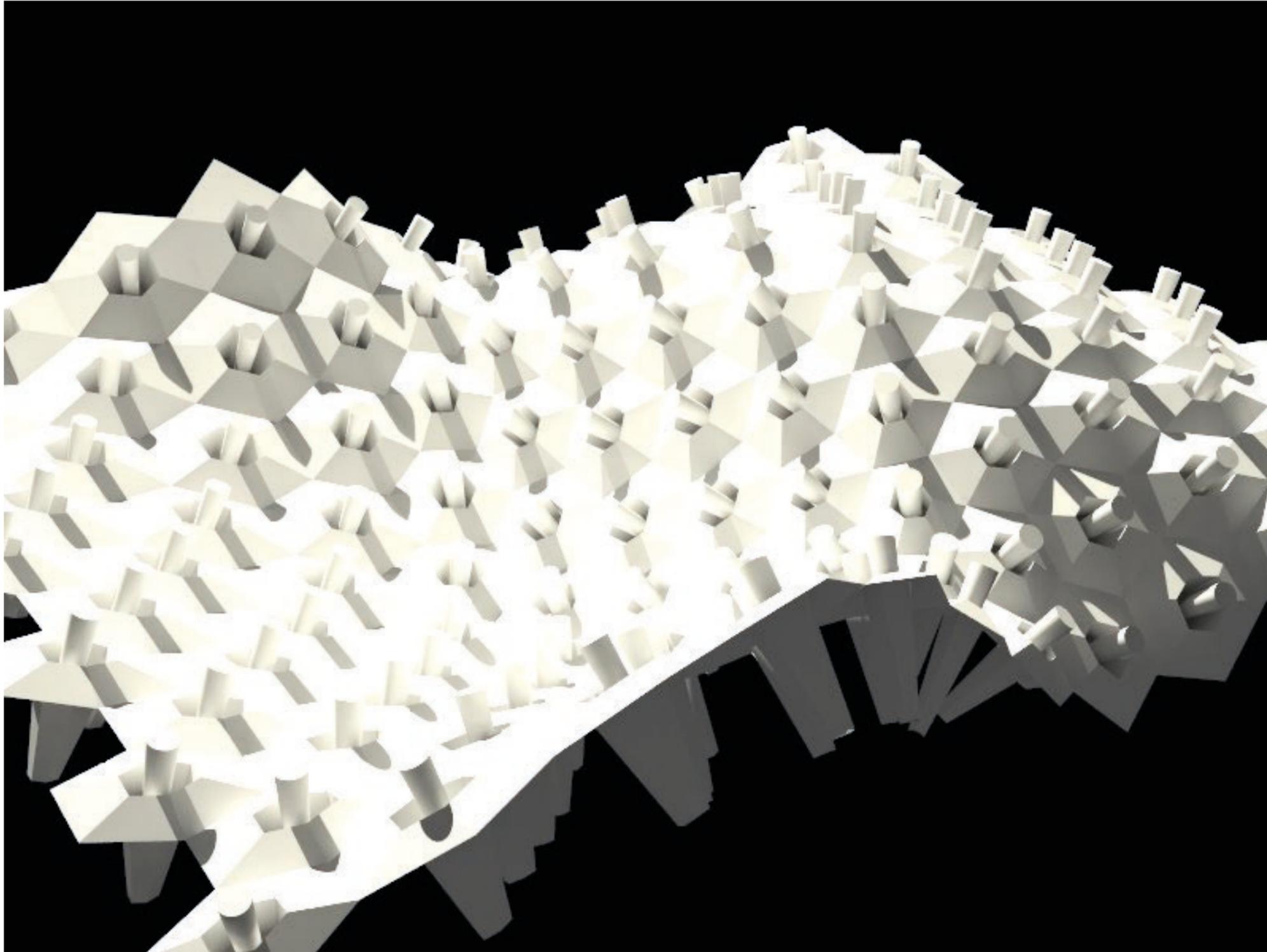
The result? A drastically cheaper wind turbine. Vortex claims that its design can reduce manufacturing costs by 53%, cut maintenance costs by 80%, and would represent a 40% reduction in both the carbon footprint and generation costs when compared to conventional bladed wind turbines. They’re also quieter, and present a much lower risk to birds who fly near them.



<http://www.vortexbladeless.com/home.php>  
<https://www.youtube.com/watch?v=WqcNc9bKlNY>



*Simulation runned on two point of the bar  
Above: the wind flow is applied in the lower part  
Below: the wind flow in the upper part provides a much larger vortex*



In order to use the maximum wind energy flowing along the surface I tried to set the bars inside the holes creating a pattern over it.



*An example of the application of the technology to a vertical surface in the project*