

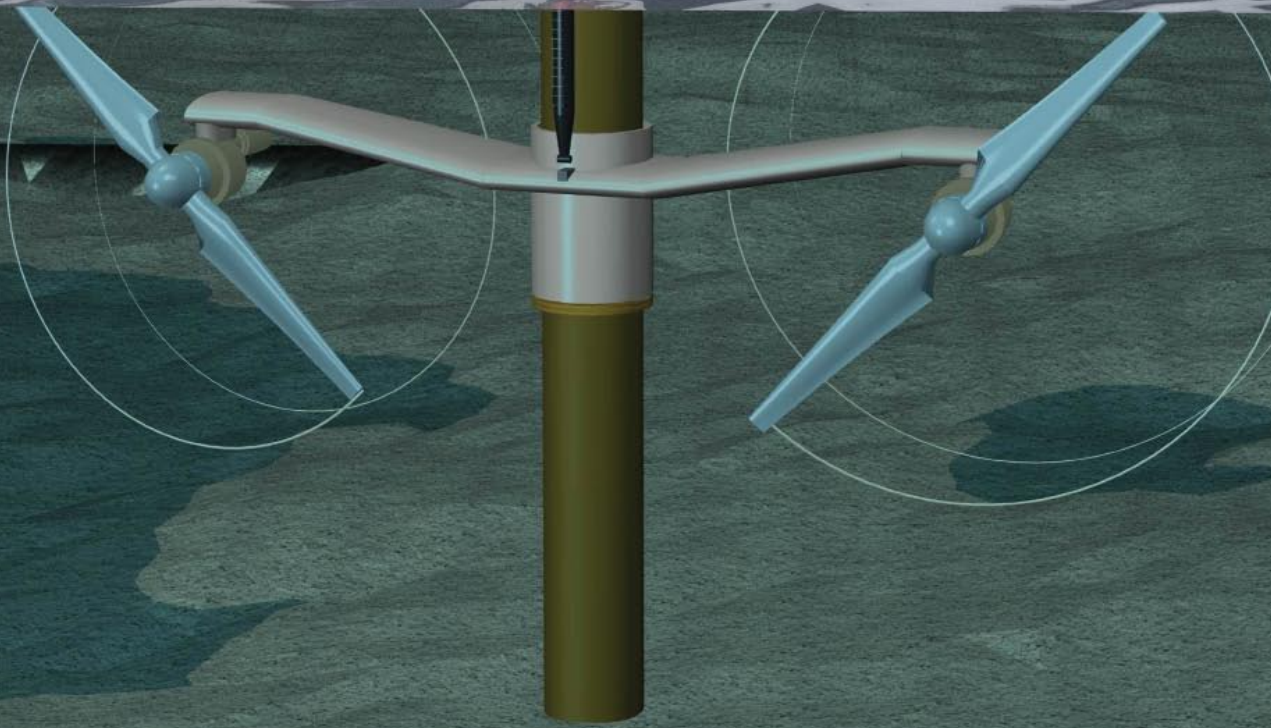
SEAGEN: TURNING THE TIDE

In our efforts to extract power from the natural forces on earth, we long ago turned to wind currents. From ancient, sail-driven devices to today's fully aerodynamic models, the windmill has continued to evolve in functionality and efficiency. Now, it has gone through yet another design progression - it has been turned upside down and dunked in the ocean. At least, that's one way to describe the SeaGen Tidal Energy generator that has been deployed in Strangford Narrows off the coast of Northern Ireland. Consisting of two submerged, windmill-like rotors



that are turned by strong undersea currents, SeaGen is capable of producing 1.2 megawatts, enough to provide completely clean electricity to 1,000 homes.

The undersea blades on SeaGen can be pivoted to increase or decrease the speed at which they turn, and can even be completely reversed to take advantage of incoming or outgoing tidal flow. The rotors can also be slid up the main shaft to which they're attached for easy servicing, avoiding the need for divers to face unsafe underwater conditions.



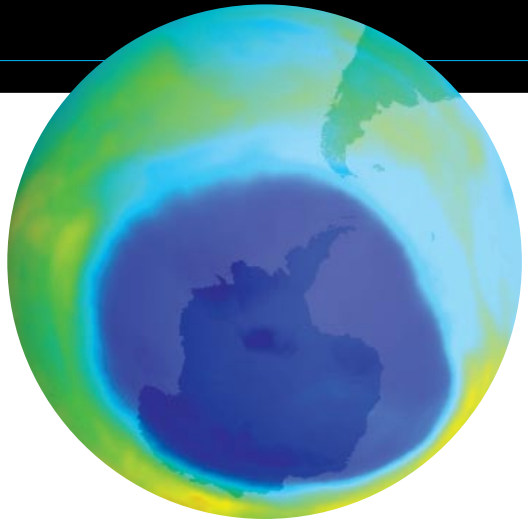


Wet Wipers

Paper towels are great for cleaning up oily messes and spills. But when it comes to soaking up oil spills floating on the ocean, they wouldn't be the first choice. However, a global team of scientists working with the Massachusetts Institute of Technology has created a material with the look and feel of paper but made by weaving together thousands of nanowires. These miniscule filaments can be penetrated by oil but are hydrophobic, meaning they don't absorb water. In fact, the material could be submerged in a lake for months and still emerge completely dry. But if there was oil in that lake, the super-towel would hold up to 20 times its own weight of the polluter. The nanowires are made from potassium manganese oxide which can withstand high temperatures. So, once the towel has absorbed its fill, it can be heated to evaporate the oil, which can then be condensed and refined again. Both the oil and towel can then be reused. With an estimated 200,000 tonnes of oil spilled at sea since the start of the decade, the new nano-towel could come in very handy indeed.

What Hole?

Widely regarded as highly successful, the Montreal Protocol provides for the steady phasing out of chlorofluorocarbons (commonly known as CFCs) in response to the thinning area of the atmosphere called the "ozone hole." First drafted in 1987, the protocol was eventually signed by 191 countries. As a result of the protocol, scientists predict that the ozone layer will be completely healed by 2070. And while this is great news, it also illustrates just how fragile the web of natural forces really is. Once the ozone hole is closed, scientists



The hole in the ozone layer has been a long-term source of concern - but now it is vanishing, it could bring other problems.

are worried that it will impact the Southern Annular Mode (SAM) winds in Antarctica. These giant air currents act as a shield, protecting the centre of Antarctica from warmer air flow from the north, and keeping things extra-cry so the temperature in the interior of Antarctica gets ever colder instead of warming up. Some scientists believe the gradual

closing of the ozone hole will degrade the existing SAM wind pattern, resulting in Antarctica warming up and possibly having a detrimental affect on weather patterns and agricultural seasons as far away as Australia and South America. It seems that even when we fix things in our atmosphere, other problems come as thick and fast as ever.