The History of Wind Energy

Go back to Home Page

3200 BC	Early Egyptians use wind to sail boats on the Nile River
0	The Chinese fly kites during battle to signal their troops
700s	People living in Sri Lanka use wind to smelt (separate) metal from rock ore. They would dig large crescent-shaped furnaces near the top of steep mountainsides. In summer, monsoon winds blow up the mountain slopes and into a furnace to create a mini-tornado. Charcoal fires inside the furnace could reach 1200°C (2200°F). Archaeologists believe the furnaces enabled Sri Lankans to make iron and steel for weapons and farming tools.
950 A.D.	The first windmills are developed in Persia (present-day Iran). The windmills look like modern day revolving doors, enclosed on two sides to increase the tunnel effect. These windmills grind corn and pump water.
1200s	Europeans begin to build windmills to grind grain. They also built the first post mills out of wood. The Mongolian armies of Genghis Khan capture Persian windmill builders and take them to China to build irrigation windmills. Persian-style windmills are built in the Middle East. In Egypt, windmills grind sugar cane.
1300s	The Dutch invent the smock mill. The smock mill consists of a wooden tower with six or eight sides. The roof on top rotates to keep the sails in the wind.
1500s	The tower mill is developed in Spain, Greece, Southern Europe, and France.
1600s	The Dutch began to use drainage windmills to pump water. The windmills dried out flooded land below sea level, doubling the size of the country. European settlers begin building windmills in North America.
1700s	By the early 1700s, both the Netherlands and England have over 10,000 windmills. As a boy, Benjamin Franklin experiments with kites. One day, he floats on his back while a kite pulls him more than a mile across a lake.
1854	Daniel Halladay builds and sells the Halladay Windmill, which is the first windmill designed specifically for the West. It has thin wooden blades and turns itself into the wind.
1888	Charles F. Brush, a wealthy inventor and manufacturer of electrical equipment in Cleveland, Ohio builds a giant windmill on his property. The windmill generates power for 350 electric lights in his mansion. In the basement, a battery room stores 408 battery cells-glass jars filled with chemicals that store the electricity generated by the windmill. In later years, General Electric acquires Brush?s company, Brush Electric Co.
Late 1880s	The development of steel blades makes windmills more efficient. Six million windmills spring up across America as settlers move west. These windmills pump water to irrigate crops and provide water for steam locomotives.
1892	Danish inventor Poul LaCour invents a Dutch-style windmill with large wooden sails that generates electricity. He discovers that fast-turning rotors with few blades generate more electricity than slow-turning rotors with many blades. By 1908, Denmark has 72 windmills providing low-cost electricity to farms and villages.
1898-1933	The U.S. Weather Service sends kites aloft to record temperature, humidity, and wind speed.
1900s	Wilbur and Orville Wright design and fly giant box kites. These experiments lead them to invent the first successful airplane in 1903.
1920s	G.J.M. Darrieus, a French inventor, designs the first vertical axis wind turbine.
1941-1943	In 1934, engineer Palmer Putman puts together a team of experts in electricity, aerodynamics, engineering, and weather to find a cheaper way to generate electrical power on a large scale. In 1941, the first large-scale turbine in the United States begins operating.
1945-1950s	After World War II ends in 1945, engineers decide to start the turbine up again, even though it has formed cracks on the blades. Three weeks later, one of the blades breaks off and crashes to the ground. Without money to continue his wind experiments, Putman abandons the turbine. By the 1950s, most American windmill companies go out of business.
1971	The first offshore wind farm operates off Denmark?s coast.
1973	The Organization of Petroleum Exporting Countries (OPEC) oil embargo causes the prices of oil to rise sharply. High oil prices increase interest in other energy sources, such as wind energy.
1974	In response to the oil crisis, the National Aeronautics and Space Administration (NASA) develop a two-bladed wind turbine at the Lewis Research Center in Cleveland, Ohio. Unfortunately, the design does not include a "teetering hub"- a feature very important for a two-bladed turbine to function properly.
1978	The Public Utility Regulatory Policies Act (PURPA) requires utility companies to buy a percentage of their electricity from non-utility power producers. PURPA is an effective way of encouraging the use of renewable energy.
1980	The Crude Oil Windfall Profits Tax Act further increases tax credits for businesses using renewable energy. The Federal tax credit for wind energy reaches 25% and rewards businesses choosing to use renewable energy.
1980s	The first wind farms are built in California, Denmark, Germany and other European countries.
1983	Because of a need for more electricity, California utilities contract with facilities that qualified under PURPA to generate electricity independently. The price set in these contracts is based on the costs saved by not building planned coal plants.
1984	A large vertical axis turbine, Project École, is built in Quebec, Canada. It is 110 meters high (360 ft.).
1985	Many wind turbines are installed in California in the early 1980s to help meet growing electricity needs and take advantage of incentives. By 1985, California wind capacity exceeds 1,000 megawatts, enough power to supply 250,000 homes. These wind turbines are very inefficient.

1988	Many of the hastily installed turbines of the early 1980s are removed and later replaced with more reliable models.
1989	Throughout the 1980s, DOE funding for wind power research and development declines, reaching its lowest point in fiscal year 1989.
1990	More than 2,200 megawatts of wind energy capacity are installed in California-more than half of the world?s capacity at the time.
1992	The Energy Policy Act reforms the Public Utility Holding Company Act and many other laws dealing with the electric utility industry. It also authorizes a production tax credit of 1.5 cents per kilowatt-hour for wind-generated electricity.
1993	U.S. Windpower develops one of the first commercially available variable-speed wind turbines, over a period of 5 years. The final prototype tests are completed in 1992. The $20 million project is funded mostly by U.S. Windpower, but also involves Electric Power Research Institute (EPRI), Pacific Gas & Electric, and Niagara Mohawk Power Company.
1994	Cowley Ridge, in Alberta, Canada, becomes the first utility-grade wind farm in Canada.
1999-2000	Installed capacity of wind-powered electricity generating equipment exceeds 2,500 megawatts. Contracts for new wind farms continue to be signed.
2000s	North Hoyle, the largest offshore wind farm in the United Kingdom, is built. The Energy Policy Act of 2005 strengthens incentives for wind and other renewable energy sources.

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Go back to Home Page