

World History of Windmills

Early civilizations could not help but notice the power of a roaring wind. They found a way to channel this force by attaching sails to their boats. Ancient fleets plied the Mediterranean, augmented by oars to help control direction and speed. Naval battles determined the course of empires.

Aware that sails could drive boats, Persians adapted them in constructing the earliest known windmills, in the sixth-to-eighth centuries A.D. They mounted pieces of cloth to a framework of reeds around a vertical shaft. When winds blew strong, this machine rotated parallel to the ground and produced enough power to grind grain. Because the wind that filled sails in one direction also worked against the sails that were returning in their rotation, this design was somewhat inefficient.

Windmills began to dot medieval Europe around 1300AD, with a singular change in design: Blades were mounted to an upright wheel that turned around a horizontal wooden shaft. Builders probably got the idea for a vertical wheel from water wheels, long in use beside streams.

Windmills were the engines of pre-industrial Europe, supplying clean energy for pumping water, grinding grain, draining dykes, milling lumber, making pigments, and processing spices. The Dutch constructed all-in-one “tower mills,” fortress-like buildings with a post mill on the uppermost story and a grindstone, storage rooms, and living quarters on floors below.

With the rise of steam power around 1800, windmills fell into disfavor in Europe, but developments continued in the United States. In 1854 Daniel Halladay of Connecticut created a windmill that turned automatically toward whatever direction the wind was blowing and that slowed itself down in high winds. By 1888 manufacturers were replacing fragile wooden construction with blades of galvanized steel.

Windmills played a major role in settlement of the American West. Across the vast semi-arid landscape, windmills pumped water to slake the thirst of livestock, railroads and incipient towns.

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