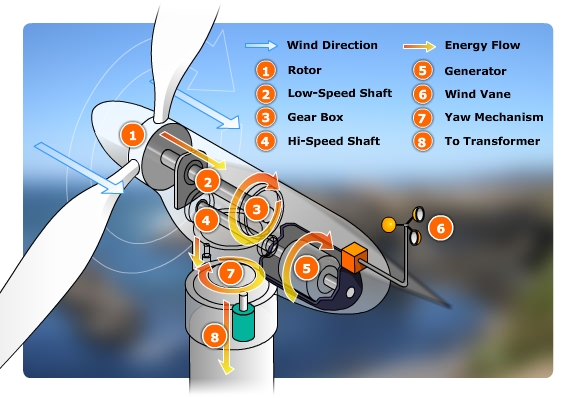
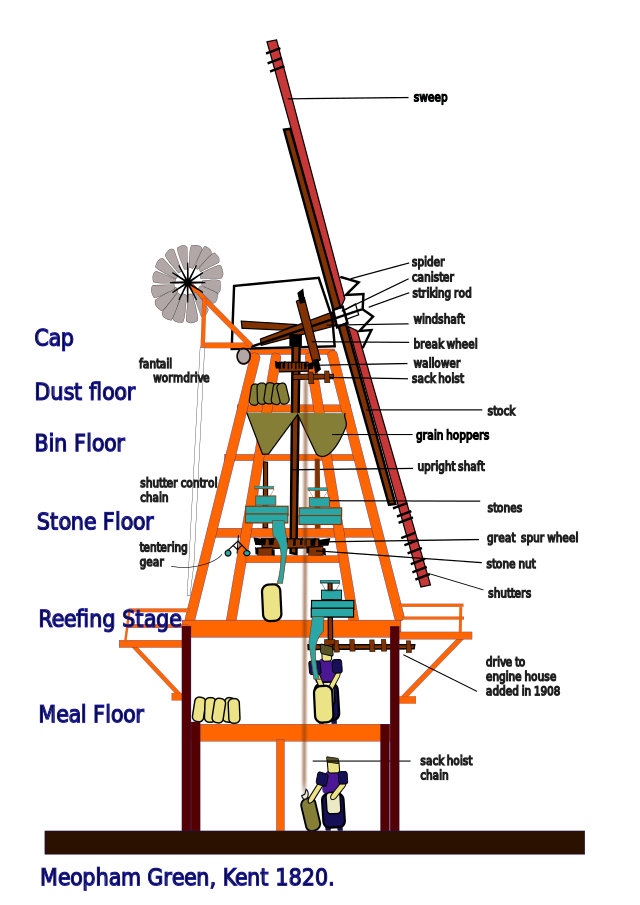
Use the following two descriptions of modern and historical windmill technologies along with your knowledge of angular dynamics to choose a difference between the two technologies and explain how the more modern version of the technology improves upon the older version. Write a short paragraph on this topic, making sure that you explain each thought clearly and thoroughly and that you utilize angular dynamics relationships to mathematically justify your explanation.

A [wind turbine](http://en.wikipedia.org/wiki/Wind_turbine) is a windmill-like structure specifically developed to generate electricity. They can be seen as the next step in the development of the windmill. The first wind turbines were built by the end of the nineteenth century by [Prof James Blyth](http://en.wikipedia.org/wiki/Prof_James_Blyth) in [Scotland](http://en.wikipedia.org/wiki/Scotland) (1887),[[28]](http://en.wikipedia.org/wiki/Windmill#cite_note-Shackleton-28) [Charles F. Brush](http://en.wikipedia.org/wiki/Charles_F._Brush) in [Cleveland, Ohio](http://en.wikipedia.org/wiki/Cleveland,_Ohio) (1887–1888)[[29]](http://en.wikipedia.org/wiki/Windmill#cite_note-29)[[30]](http://en.wikipedia.org/wiki/Windmill#cite_note-30) and [Poul la Cour](http://en.wikipedia.org/wiki/Poul_la_Cour" \o "Poul la Cour) in Denmark (1890s). La Cour's mill from 1896 later became the local powerplant of the village Askov. By 1908 there were 72 wind-driven electric generators in Denmark, ranging from 5 to 25 kW. By the 1930s, windmills were widely used to generate electricity on farms in the United States where distribution systems had not yet been installed, built by companies such as [Jacobs Wind](http://en.wikipedia.org/wiki/Jacobs_Wind), Wincharger, Miller Airlite, Universal Aeroelectric, Paris-Dunn, Airline, and Winpower. The Dunlite Corporation produced turbines for similar locations in Australia.

The earliest certain reference to a windmill in Europe (assumed to have been of the vertical type) dates from 1185, in the former village of Weedley in Yorkshire which was located at the southern tip of the [Wold](http://en.wikipedia.org/wiki/The_Wolds" \o "The Wolds) overlooking the Humber estuary.[[19]](http://en.wikipedia.org/wiki/Windmill#cite_note-19) A number of earlier, but less certainly dated, twelfth-century European sources referring to windmills have also been found.[[20]](http://en.wikipedia.org/wiki/Windmill#cite_note-Price2005-20) These earliest mills were used to [grind cereals](http://en.wikipedia.org/wiki/Gristmill). Gears inside a windmill convey power from the rotary motion of the sails to a mechanical device. The sails are carried on the horizontal windshaft. Windshafts can be wholly made of wood, or wood with a cast iron poll end (where the sails are mounted) or entirely of cast iron. The brake wheel is fitted onto the windshaft between the front and rear bearing. It has the brake around the outside of the rim and teeth in the side of the rim which drive the horizontal gearwheel called wallower on the top end of the vertical upright shaft. In [grist mills](http://en.wikipedia.org/wiki/Grist_mill), the great spur wheel, lower down the upright shaft, drives one or more stone nuts on the shafts driving each [millstone](http://en.wikipedia.org/wiki/Millstone). Post mills sometimes have a head and/or tail wheel driving the stone nuts directly, instead of the spur gear arrangement. Additional gear wheels drive a sack hoist or other machinery. The machinery differs if the windmill is used for other applications than milling grain. A [drainage mill](http://en.wikipedia.org/wiki/Windpump) uses another set of gear wheels on the bottom end of the upright shaft to drive a scoop wheel or [Archimedes' screw](http://en.wikipedia.org/wiki/Archimedes%27_screw). [Sawmills](http://en.wikipedia.org/wiki/Sawmill) use a crankshaft to provide a reciprocating motion to the saws. Windmills have been used to power many other industrial processes, including [papermills](http://en.wikipedia.org/wiki/Papermill" \o "Papermill), [threshing](http://en.wikipedia.org/wiki/Threshing) mills, and to process oil seeds, wool, paints and stone products.