

Kaizen Kidwind Research Statement

Wind has been used for thousands of years as a source of power. Sailboats are one of the purest, and simplest examples of the use of wind power. Similarly, a wind turbine is a rotary mechanical device which creates wind power. Wind turbines are a reusable source of energy that uses kinetic energy which is extracted from the turbine. Wind turbines convert the kinetic energy in the wind into mechanical power and is safe and beneficial to the world.

The design of the base stabilizes and affects the performance of the wind turbine. So does the blade's shape, size, weight, and angle. . Wind energy is a domestic source of energy, produced in the United States and *our* nation's wind supply is abundant.

On the contrary fossil fuels, such as coal, natural gas, and oil are burned to generate power and as such harm the environment. These resources are used as an energy source in the electricity and transportation sectors and a leading source of the world's global warming.

The advantage of using more wind turbines versus using fossil fuels is the reduction of harmful polluting gases that are produced by non-renewable energy

sources. As solar radiation heats the earth's surface, hot air rises and cool air fills the voids. This air movement is defined as wind energy. Wind that is harnessed by mechanical means is also referred to as wind energy.

There are two basic types of turbines: horizontal-axis and vertical-axis. A vertical-axis turbine looks like an eggbeater. However, the horizontal-axis wind turbines are more common. The energy in wind turns the blades around a rotor that is connected to the main shaft, which itself spins a generator to create electricity. Propeller-like blades catch the wind and cause them to spin. Energy caused by the blade's movement turns the main shaft. The main shaft is connected to a generator that then generates electricity.

Energy produced by wind doesn't pollute the air with toxins or emit the dangerous greenhouse gases driving climate change. Power plants that rely on the combustion of fossil fuels like coal, oil, or natural gas to create electricity do both of those things in abundance. Wind is capable of creating electricity or a mechanical force and, this is wind power. With wind farms, wind's kinetic energy is converted into mechanical energy that turns into electrical energy

and supplies increasing number of homes with clean, renewable energy.

Our turbine is a "Horizontal-axis wind turbine. (HAWT)"

More About Blade Shapes:

How do the blade shape, measurement, and angle affect the energy output? The shape of the blade, the measurements, and the angles directly affect the amount of energy the turbine produces. The power output of a wind turbine is dependent on the efficiency of the blades because when the wind turns a turbine blade, the rest of the blades are forced to move with it since they are attached to the same hub. In other words, a factor in the amount of energy produced is based on the shape, angles and measurements of the blades. Furthermore, some of the factors affecting wind turbine performance include blade weight, strength, angle, measurements and shape. Blade strength is indirectly important to wind turbine performance because unless the blades are strong enough, the blades are not able to reliably and safely meet their performance requirements, so clearly the angle and measurements of the blades undeniably matter.

The base and how it affects the performance:

The base is another crucial factor of the turbine and it has a great impact on the performance of the turbine. For instance, if the base is built poorly, it ends up being wobbly and shaky. This would lead to a negative effect toward the turbine's ability to go fast and provide energy. However, if the turbine is built properly and is stable, then it will manage to maintain balance and not mess up the turbine's performance.

Wind Power/Kinetic Energy:

Wind energy is a domestic source of energy produced in the United States and certainly other parts of the world. A wind turbine is a non-polluting and renewable source of energy because it only extracts the kinetic energy from the wind and uses the wind power to turn it into mechanical energy for us to use in our daily lives. Therefore it doesn't harm or have any type of threat towards anyone or the planet.

How wind turbines benefit society/ humankind?

Wind turbines benefit society and humankind because wind turbines are renewable energy resources, which don't pollute the Earth with harmful gases.

Therefore, they benefit us because unlike other sources of energy, wind turbines don't use fossil fuels or produce greenhouse gases or radioactive or toxic

waste. Moreover, wind turbines don't pollute the air like the power plants that rely on combustion of fossil fuels, such as coal or natural gas. Wind turbines don't produce atmospheric emissions that cause acid rain or greenhouse gasses. Wind energy is a domestic source of energy produced in the United States. They have helped millions by producing mechanical energy for use. They are a clean fuel source; as previously stated, wind energy doesn't pollute the air like power plants that rely on combustion of fossil fuels, such as coal or natural gas. Other sources of energy, emit particulate matter, nitrogen oxides, and sulfur dioxide causing human health problems and economic damages.

OUR KIDWIND PROJECT

The purpose of this project is to create a working turbine that generates electricity by the blades spinning and extracting kinetic energy. The turbine extracts kinetic energy and turns it into mechanical energy for our use. The purpose is to find the right material for the blades, the correct angle, the perfect measurements, a proper gearset, and a stable base in order to generate optimum power in milliwatts. We have managed to

build a turbine that generates the most power output in our series of tests.