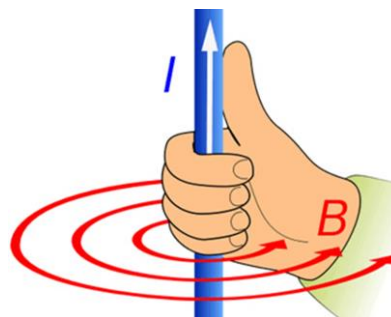


Vocabulary: Electromagnetic Induction



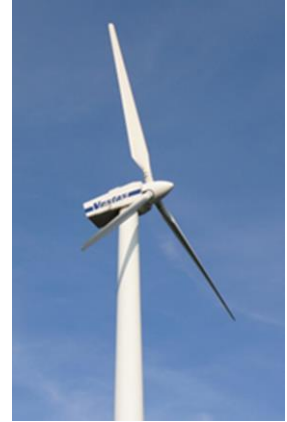
Vocabulary

- **Current** – the flow of electrical charge.
 - In a metal wire, current is the flow of negatively charged particles (electrons).
 - In many applications, “conventional current” is shown as the theoretical flow of positive charge in a wire.
 - Current is measured in amperes (A).
 - In equations, the symbol for current is I .
- **Electric field** – a region in space that surrounds charged object.
 - Charged objects and moving magnets within the electric field experience a force.
 - *Vectors* in the electric field represent the direction and magnitude of the electromagnetic force on a positively charged particle.
- **Electromagnetic induction** – the process of creating a current in a circuit by a changing *magnetic field*.
- **Magnetic field** – a region in space that surrounds a magnet or moving charged particle.
 - Magnets and moving charges within the magnetic field experience a force.
 - Magnetic field lines show the direction magnetic objects such as iron filings or compass needles will align to.
 - Magnetic forces are greatest where the magnetic field lines are closest together.
- **Magnetic flux** – a measure of the strength of the magnetic field through a given area.
 - Informally, the magnetic flux is proportional to the number of magnetic field lines that cross a given area.
 - The symbol for magnetic flux is “ Φ_M .”
- **Right-hand rule** – a way to visualize the magnetic field produced by an electric current.
 - The thumb points in the direction of conventional (positive) current, while the fingers show the direction of the magnetic field.
 - The electric field produced by a moving magnet can be visualized with a “left-hand rule” in which the thumb of the left hand points in the direction the north pole of a magnet is moving and the fingers represent the electric field.



Right-hand rule

- Vector – a quantity that has both magnitude and direction.
 - Vectors are represented graphically as arrows.
 - The magnitude of the vector is shown by the length of the arrow.
 - The direction of the vector is shown by the direction of the arrow.
 - Vector quantities include displacement, velocity, acceleration, and force.
- Voltage – a measure of the electrostatic potential energy in a circuit.
 - Just as pressure causes water to flow through a pipe, voltage can be thought of as “electrical pressure” that causes electrical charge to flow through a circuit.
 - Voltage is measured in *volts* (V).
 - In equations, the symbol for voltage is *V*.
- Wind generator – a device that converts wind energy to electricity.
 - Most wind generators consist of a turbine, or propeller, that is connected to an electrical generator.



Wind generator