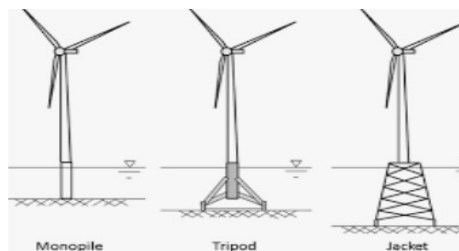
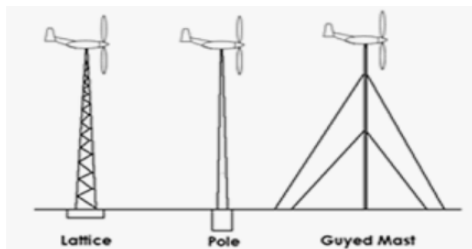


Real life examples

Wind turbines are tall **towers** topped with a **turbine** which consists of **blades** and a **shaft**. The **blades** are connected to a vertical shaft, or rod. The wind is the **input** which causes the **blades** to spin creating kinetic energy. This energy is then transferred through the **circuit** to a machine called a generator. This produces an **output** of electrical energy, known as electricity.

Towers supports the structure of the **turbine**. Taller towers enable turbines to capture more energy and generate more electricity because wind speed increases with height. The tower needs to be supported to ensure it is stable. Here are some examples of how the tower is supported:



Vocabulary:

ammeter	a measuring instrument used to measure the flow of electric current in a circuit
blades	the flat, wide sections of propeller on the wind turbine
circuit	a closed path that allows electricity to flow from one point to another
frame structure	a structure made from thin components such as wood
input	what goes into a system
Lattice structure	a framework consisting of a criss-crossed pattern of strips of wood, metal etc
laminating	glue together several layers of card
output	what comes out of a system.
product	something made by means of either
prototype/scale model	A 3D model that is smaller and represents how a bigger version will look.
triangulation	the use of triangular shapes to strengthen a structure.
Tripod support	A 3 legged support to a structure

Steps to Success

Designing:

- What type of structure shall I make? What will be its purpose? Who will use it?
- What will be the best shape for the turbine? What features will it have?
- How long will the blades be?
- How will you make your structure stable and strong?
- What materials and equipment will you use?
- What order will you work in? What constraints are there?

Making:

- How will you measure your materials?
- How are you going to cut your materials?
- How are you going to join your materials together?

Evaluating:

- Is your wind turbine functional? Is it strong, stable and secure?
- Does it meet the needs of the user?
- How much power does it produce? How will you measure this?
- Is there anything you could improve?



Golden Threads

User	who the product is for
Purpose	the job your product is supposed to do
Functionality	to do the job (purpose) it is meant to do
Design Decisions	making choices about your design
Innovation	using your own ideas or methods
Authentic	making a real life product