Energy and Power Fact Sheet

Energy is a term we use frequently and yet it is often misunderstood. One reason for this is that energy comes in many forms; some examples are given below.

Kinetic energy; is in the form of movement. An example of this is a car when it is moving, a bullet from a rifle or a spaceship orbiting our planet.

Chemical energy; is in the form of chemical compounds and reactions. Examples of it are inflammable gas, explosives, or batteries.

Electrical Energy; is in the form of atomic particles being forced through a resistive material and is a very versatile form of energy.

Heat Energy; brings about a change in temperature as a result of its increase or decrease within a piece of material. NB when heat energy is given out we call it **exothermic** and when it is taken in it is **endothermic**.

The unit of **energy** is the **joule (J)** and energy can be though of as "the ability to do work." All energy uses this unit what ever form it may come in.

The unit of **power** is the **watt (W)** and represents the number of joule used per-second.

It is common place for energy to transfer between the different forms it may exist. As an example: electricity can be made in a traditional power station a by steam turbine. The burning of coal releases heat energy from chemically stored energy, the rotation of a steam turbine is kinetic energy, the product from the attached generator this is electrical energy, and that can be used to then produce heat, power washing machines (kinetic), create light or charge batteries in our homes (back to chemical again). So you can see that it can go through many changes in our energy supply systems.

As power (watt) is the rate at which energy is consumed, then the formula for power becomes: power = energy, where the second is the unit of time (s)
                                                         time

For example: A battery gives out 4800J in a period of 12s. What is the rated power output?

Answer: P = 4800 J = 400W
                    12s

Ans: The power output is 400 watt