Unit 301: Understand the fundamental principles and requirements of environmental technology systems

Worksheet 4: Biomass (Tutor)

Using your notes and the internet (refer to Resource 1, 'Micro-renewable energies') answer the following questions:

1. State briefly with examples, how biomass can be considered a sustainable energy source.

Biomass is biological material derived from living, or recently living organisms.

As biomass material is used it can be replaced in the short term. For example, trees can be felled to make pellets to be burned in a biomass boiler with new trees being planted to replace those being felled.

As long as this replanting takes place the fuels source is considered sustainable.

2. It is said that biomass 'virtually carbon neutral'. Describe briefly what this means and why biomass is not carbon neutral.

Biomass is biological material derived from living, or recently living organisms which produce CO_2 when burned. However, when this material is replace, eg trees replanted, the trees will take in CO_2 from the atmosphere and give out oxygen and this good for the environment, as no additional CO_2 enters the cycle.

The cycle is not usually carbon neutral because the fuel needs to be transported from the growing point to the point of use and the means used to transport the fuel will often use fossil fuels that will emit non-recyclable CO_2 into the atmosphere.

3. List the Approved Documents of the Building Regulations that are applicable to biomass systems.

- **F**
- **J**
- **L**
- **G**
- **P**

4. List **six** advantages of biomass.

- **Biomass is a sustainable fuel source if managed correctly.**
- **It's virtually carbon neutral.**
- **If biomass boilers are well maintained and run they will produce very little smoke.**
- **Biomass is a good way of using up waste wood.**
- **Less susceptible to price increases than traditional fuels such as oil and gas.**
- **Can reduce your carbon dioxide output by around 9.5 tonnes per annum.**

5. List **seven** disadvantages of biomass.

- **The boilers need more space.**
- **Only a small number of biomass systems can be used in a smokeless zone.**
- **Biomass fuel cost.**
- **Initial costs are high compared with traditional gas or oil installations.**
- **Fuel needs to be kept dry if it's to burn cleanly and efficiently.**
- **It's more labour-intensive than traditional gas or oil installations.**
- **You'll need a reliable supply of fuel, as all the various types of biomass fuel are not always readily available close to your home.**