**P5 – Explain types of control systems**

**Introduction**

In this assignment, I will be talking about control systems. They are different types of control systems and I am going to be talking about open loop system and closed loop system. I will explain both of them and say what the point of having these systems is. After this is complete, I will be naming the advantage and disadvantage of the open and closed system. I will do it for both of the systems.

**Open loop system**

An open loop system is to set input signal that activates the output signal and its aim/purpose to use this system is to achieve its direct objective. They is no way that the system can check whether the system has achieved its objective. This is because they is no feedback form for this system. It does not give any feedback to the system whether it has been complete. However, closed loop systems have a feedback form that is why they are compared with each other. An example could be the most common traditional view of a heating system. The input is ON. The process is the BOILER and the output is the RADIATOR.

An example of an open loop system could be:

* Washing Machine
* Stepper Motors
* Central Heating

**Advantage**

* Stable
* Simple layout
* As it has an easy layout, it will be easy to layout
* As it is easy and simple to build, it will be cheap

**Disadvantage**

* http://img.tfd.com/mgh/cee/thumb/Openloop-control-system.jpgIt is easy to build, but the reliability and accuracy due to its non-feedback mechanism it might give an inaccurate reading.

**Fig 1.1**

Referring to figure 1.1, it demonstrates how an open loop system would work. The procedures of what an open loop follows is simple. Without the feedback, it will only have the ‘input 🡪 controller 🡪 process 🡪 output’.

**Closed loop system**

A closed loop system is a system that is able to correct if there is a mistake during the process. It is like an extension of open loop system, but upgraded. Unlike open loop system, this closed loop system is only allow to correct the mistake by the system giving it back feedback. The system gets around to this way and makes it easier for the system to get the achieved objective. An example for this system could be in the heating system placed in any household. It is the same process for the open loop system, but the difference is that if the room is too cold, it will apply the hot temperature and vice versa. Unlike the open loop system that is used traditionally, this is the modern system and is currently used a lot.

**Example**

An example of this system could be:

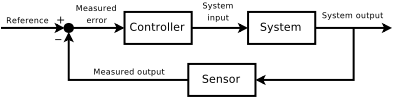
* Central heating
* Air conditioning
* Remote control on a TV

**Advantage**

* Accuracy
* Prevents any noise that comes from the input or output

**Disadvantage**

* Complex structure
* If the feedback is wrong, it would cost it to fix the problem **Fig 1.2**



Referring to figure 1.2, it demonstrates the structure of this of how a closed loop system works. As you can see the extension of the sensor. This is the fixing part of the process.

**Reference**

<http://www.bbc.co.uk/schools/gcsebitesize/design/electronics/industrial_designrev3.shtml>

<http://www.123mylist.com/2012/01/open-closed-loop-system-advantages.html>