

OPEN-LOOP SYSTEM

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An open-loop system is a type of feedback control system in which the output has no effect on the input signal. This type of system is also known as a non-feedback control system and is typically used in simple applications such as washing machines and refrigerators. Open-loop systems are often preferred because they are simpler to design and maintain, and require less energy to operate.

In a closed-loop system, the output of the system is fed back to the input in order to maintain a desired state. This feedback is used to control the system and adjust the output in order to achieve the desired outcome. In an open-loop system, however, the output has no effect on the input signal. This means that the system must rely solely on the input signal to control the output.

The most common application of an open-loop system is in automated processes. For example, a washing machine may use an open-loop system to determine when to turn on and off the motor, and when to move the clothes from one cycle to the next. This type of system is also used in many industrial applications, such as controlling the temperature of a heating system or the speed of a conveyor belt.

Open-loop systems can also be used to regulate the output of a system, such as in a thermostat or in an automatic door opener. In these applications, the system will use the input signal to determine the desired output, and the output will remain constant until the input signal changes.

Open-loop systems are also used in robotics. In this application, the input signal is typically a set of instructions, and the output is the action taken by the robot. This type of system can be used to automate complex processes, such as assembly line production.

Open-loop systems have several advantages over closed-loop systems. They are simpler to design and maintain, require less energy to operate, and are often more reliable than closed-loop systems. However, open-loop systems are not suitable for all applications, as they are unable to adjust to changes in the environment or the input signal.

In conclusion, open-loop systems are an important type of feedback control system. They are used in a variety of applications, from automated processes to robotics, and are often preferred due to their simplicity and energy efficiency.

References

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