

Control System Terminology

Desired Response – the idealised instantaneous behaviour that we would like from the system.

Transient Response – the gradual change in the system as it approaches its approximation of the desired response.

Steady-State Response – the response of the system once it has finished changing and is now approximating the desired response.

Error – the difference between the input and the output of the system.

Steady-State Error – the difference between the steady-state response and the desired response.

Stability – the ability of the system to settle into a steady-state response.

Controller – the part of the system that generates the input to the plant or process being controlled.

Open-Loop – a system that does not monitor its output. Open-loop systems can not correct for disturbances.

Closed-Loop – a system that monitors its output and makes corrections to reduce error. By monitoring the output the system can correct for disturbances.

Disturbance – a signal that is not modelled or calibrated in the system leading to corruption of the expected behaviour.

Compensator – a system inserted into the controller to improve performance.

Feedback – a path that allows signals from the output of some sub-system to flow back and affect the input of some sub-system earlier in the system signal path.

Robust – a system that will still work as expected with changes to the system parameters, as might be caused by wear of components, or a change in behaviour with temperature.