**Abstract**

Automation is the technology by which a process or procedure is performed with minimal human assistance.Automation or automatic control is the use of various [controlsystems](https://en.wikipedia.org/wiki/Control_system) for operating equipment such as machinery, processes in factories, boilers and heat treating ovens, switching on telephone networks, steering and stabilization of ships, aircraft and other applications and vehicles with minimal or reduced human intervention.Automation covers applications ranging from a household [thermostat](https://en.wikipedia.org/wiki/Thermostat) controlling a boiler, to a large industrial control system with tens of thousands of input measurements and output control signals. In control complexity, it can range from simple on-off control to multi-variable high-level algorithms.In the simplest type of an automatic [control loop](https://en.wikipedia.org/wiki/Control_loop), a controller compares a measured value of a process with a desired set value, and processes the resulting error signal to change some input to the process, in such a way that the process stays at its set point despite disturbances. This closed-loop control is an application of negative feedback to a system. The mathematical basis of [control theory](https://en.wikipedia.org/wiki/Control_theory) was begun in the 18th century and advanced rapidly in the 20th.Automation has been achieved by various means including mechanical, [hydraulic](https://en.wikipedia.org/wiki/Hydraulics), [pneumatic](https://en.wikipedia.org/wiki/Pneumatics), electrical, electronic devices and [computers](https://en.wikipedia.org/wiki/Computer), usually in combination. Complicated systems, such as modern factories, [airplanes](https://en.wikipedia.org/wiki/Airplane) and [ships](https://en.wikipedia.org/wiki/Ship) typically use all these combined techniques. The benefit of automation includes labor savings, savings in [electricitycosts](https://en.wikipedia.org/wiki/Electricity), savings in material costs, and improvements to quality, accuracy, and precis