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AUTOMATION SYSTEMS

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Ця стаття про системи автоматизації та їх використання у різних галузях промисловості та житті людини.

Automation, the application of machines to tasks once performed by human beings or, increasingly, to tasks that would otherwise be impossible. Although the term mechanization is often used to refer to the simple replacement of human labour by machines, automation generally implies the integration of machines into a self-governing system.

Automation or automatic control, is the use of various control systems 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 with minimal or reduced human intervention. Some processes have been completely automated.

In general usage, automation can be defined as a technology concerned with performing a process by means of programmed commands combined with automatic feedback control to ensure proper execution of the instructions. The resulting system is capable of operating without human intervention. The development of this technology has become increasingly dependent on the use of computers and computer-related technologies.

Automation technology has matured to a point where a number of other technologies have developed from it and have achieved a recognition and status of their own.

The technology of automation has evolved from the related field of mechanization, which had its beginnings in the Industrial Revolution. Mechanization refers to the replacement of human (or animal) power with mechanical power of some form. The driving force behind mechanization has been humankind's propensity to create tools and mechanical devices. Some of the important historical developments in mechanization and automation leading to modern automated systems are described here.

One of the most important application areas for automation technology is manufacturing. To many people, automation means manufacturing automation. In addition to the manufacturing applications of automation technology, there have been significant achievements in such areas as communications, transportation, service industries, and consumer products.

Over the years, the social merits of automation have been argued by labour leaders, business executives, government officials, and college professors. The biggest controversy has focused on how automation affects employment. There are other important aspects of automation, including its effect on productivity, economic competition, education, and quality of life.

The developments described above have provided the three basic building blocks of automation: (1) a source of power to perform some action, (2) feedback controls, and (3) machine programming.

In conclusion, I would like to say that advantages commonly attributed to automation include higher production rates and increased productivity, more efficient use of materials, better product quality, improved safety, shorter workweeks for labour, and reduced factory lead times. A main disadvantage is often associated with automation, worker displacement. Other disadvantages of automated equipment include the high capital expenditure required to invest in automation. Also there are potential risks that automation technology will ultimately subjugate rather than serve humankind.

Literature:

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