

- c) humidity at the inlet;
- d) pressure loss;
- e) velocity field and temperature after drying;

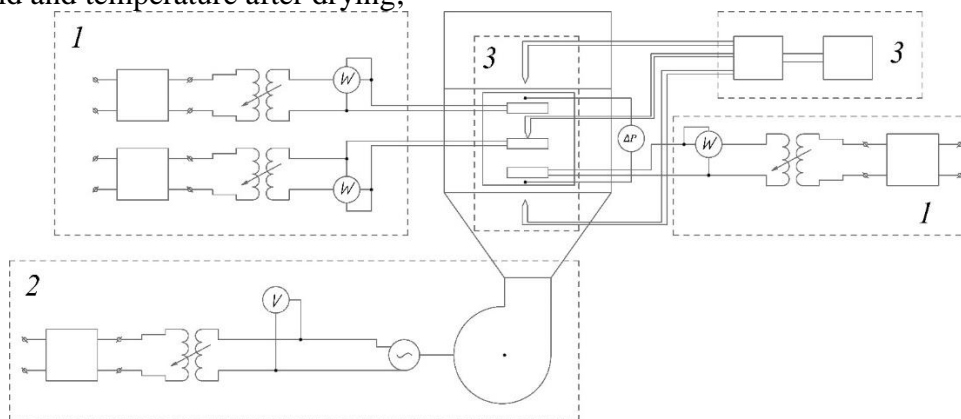


Fig. 1 Installation diagram for investigating the process of drying wood chips

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AUTOMATION IN THE MODERN WORLD

Constantly developing technological progress pushes production to a constant and continuous change by updating the methods of manufacturing the product, the emergence of new automated lines that allow the production process to become more capacious and technological. Modern machines and equipment allow minimizing the production time of products, as well as improving its quality.

The essence of production automation is in transferring management and control functions from a person to equipment. Automation is perhaps the only and best solution in improving the quality and solving the issue of low labor productivity.

In the conditions of automated production, the most urgent task is a set of measures for the development of technological processes and the creation of high-performance machines based on them. Nowadays automation of production is one of the promising areas in the development of industry. However, despite the obvious progressiveness of automation and increased attention to it, its implementation is carried out at a slower pace at modern enterprises.

The introduction of automated production is a complex process that requires long time costs and large financial investments, that means that an economic entity that does not have the necessary financial capabilities can partially automate its enterprise.

The development of automated systems in the production process should be carried out in accordance with the following requirements: open and flexible architecture of a mutable system, interaction and integration between different levels of the system, phased commissioning of the system, its expansion and development; effectively implemented automation of production provided; improving product quality; positive dynamics of labor productivity growth; improving the efficiency of the business entity; increasing security.

Positive components of the implementation of the investigated process will also be an increase in the organization's profits, a decrease in defective products; reduction in product cost, improved quality control of the manufactured products. At the same time, automated production also has negative sides, among which we can single out the complication of the production

system, retraining of existing personnel, and the appearance of vulnerabilities in work systems, rising unemployment.

One of the most significant problems associated with the automation of production is “technological unemployment”, which represents the loss of jobs caused by technological changes. This problem causes negative views regarding the introduction of automation. Also, another big problem is the lack of qualified personnel, as specialists working in enterprises do not know the modern standards of work. Nevertheless, the positive aspects of automation are much greater than the negative ones, that is why the majority of business entities tend to switch over to automated work. The impact of deficiencies can be minimized by creating an effective production control system.

Thus, acceleration of scientific and technological progress opens up great opportunities for the development of production forces, improvement of equipment and the emergence of new methods of production, which is the solution to many problems. Automation of production can reduce the time of production, improve its quality, exclude harmful or difficult working conditions, as well as increase the competitiveness of the enterprise and expand the market for goods.

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ELECTRICAL STIMULATION

Today I'll tell you about the invention that have brought hope to people with locomotor disorders people.

Electrical muscle stimulation, also known as neuromuscular electrical stimulation is the elicitation of muscle contraction using electric impulses. It has received an increasing amount of attention in the last few years for many reasons, and most important of them is one thing it could be used as a rehabilitation and preventive tool for partially or totally immobilized patients.

Epidural electrical stimulation (EES) of the spinal cord restores locomotion in animal models of spinal cord injury but is less effective in humans. Here we hypothesized that this interspecies discrepancy is due to interference between EES and proprioceptive information in humans. Computational simulations and preclinical and clinical experiments reveal that EES blocks a significant amount of proprioceptive input in humans, but not in rats. This transient differentiation prevents modulation of reciprocal inhibitory networks involved in locomotion and reduces or abolishes the conscious perception of leg position. Consequently, continuous EES can only facilitate locomotion within a narrow range of stimulation parameters and is unable to provide meaningful locomotor improvements in humans without rehabilitation. Simulations showed that burst stimulation and spatiotemporal stimulation profiles mitigate the cancellation of proprioceptive information, enabling robust control over motor neuron activity. This demonstrates the importance of stimulation protocols that preserve proprioceptive information to facilitate walking with EES.

When you stimulate the nerves like this it triggers plasticity in the cells. The brain is trying to stimulate, and we stimulate at same time, and we think that triggers the growth of new nerve connections. Also, in many spinal cord injuries a small portion of nerves remain intact but the signals they carry are too feeble to move limbs or support a person's body weight.

According to doctors from EPFL – technical university, the timing of the pulses – to coincide with natural movement signals that were still being sent from the patients' brains – was crucial. It appeared to encourage nerves that bypassed the injuries to form new connections and improve the men's muscle control.