

PRODUCTION EQUIPMENT SAFETY

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Annotation: This article describes the safety rules for the operation of equipment used in manufacturing plants. Every part of the machine is carefully examined during the design process to ensure human safety.

No matter how high-quality and necessary the parts in the enterprise are, the safety of workers and employees involved in the process of their manufacture is in the first place. By ensuring a safe working environment, you can prevent and reduce the number of accidents in the enterprise.

Key words: equipment, working bodies, safety, technological process, remote control, automatic control.

The safety of production equipment is the property of production equipment to maintain compliance with labor safety requirements while performing specified functions under the conditions established by regulatory and technical documentation.

The basic safety requirements of production equipment, in accordance with which the confirmation of conformity is carried out, are regulated by state standards, including the fundamental standards of the Occupational Safety Standards System [1].

In accordance with State industry standard production equipment must ensure safety requirements during installation (dismantling), commissioning and operation both in the case of autonomous use and as part of technological complexes, subject to the requirements (conditions, rules) provided for in the operational documentation.

The safety of production equipment is ensured primarily by the correct choice of principles of operation and design solutions, energy sources and characteristics of energy carriers, parameters of working processes, control system and its elements. The materials used in the construction of equipment should not be hazardous or harmful. Component parts of production equipment (including wires, pipelines, cables, etc.) are made in such a way as to exclude the possibility of their accidental damage causing danger. All moving parts, if they are sources of danger, are securely shielded. Removable, folding and sliding guards of working bodies, as well as opening doors, covers, shields are supplied with locks, which exclude their accidental removal and opening (locks; removal with a tool, etc.); if necessary, interlocks are provided to ensure the termination of the working process when removing or opening the fence [2].

The structural elements of the equipment should not have sharp corners, edges and surfaces with irregularities, if their presence is not determined by the functional purpose of the equipment. In the latter case, measures of protection against possible injury are provided.

To warn of a deviation from the normal operating mode, the equipment design provides for an alarm, and in operating modes close to dangerous, means for automatically stopping and disconnecting the equipment from energy sources.

The working bodies of the equipment, as well as gripping, clamping and lifting devices are equipped with means. Preventing the occurrence of danger in the event of complete or partial cessation of the supply of energy carrier (electric current, fluid in hydraulic systems, compressed air, etc.). To the drives of these devices, as well as by means that exclude the very inclusion of the drives of the working bodies when the supply of energy carriers is restored.

When designing equipment, the characteristics of the human body, its physical capabilities are taken into account, so that in the future the operator will be able to understand and use the information coming to him. For this purpose, the controls should be located taking into account the forces and directions required for their movements, have a shape, size and surface that are safe and convenient for work; their layout should take

into account the sequence and frequency of use, as well as the significance of their functions.

The management of production equipment belonging to the same group is unified (the location of handles, pedals, buttons, instrumentation, control rules, standard inscriptions, signs, etc.). The movement of the controls must coincide with the direction of movement of the executive (working) bodies or the equipment itself, unless the design and functional features do not allow it [3].

To prevent incorrect switching sequence, especially when several people operate the equipment at the same time, the controls must be interlocked.

If during the technological process it is possible to release harmful, explosive and fire hazardous substances, the equipment design provides for built-in means (or places for installing such means) for their removal directly from the places of formation. If necessary, the equipment is supplied with devices for dumping hazardous and noxious substances into receivers or places for disposal and neutralization.

To ensure the safety and convenience of lifting and moving equipment and its individual parts (during installation and repair work) with the help of lifting means, special devices are designed in equipment structures (special tides, holes, trunnions, etc.).

Remote control of units, machines and machine tools allows you to take a person out of the danger zone and facilitate his work. Remote control is of particular importance as a means of safety in the production and use of explosive, toxic, flammable substances and in the processing of radioactive materials. Production conditions sometimes require quick turn-on, turn-off, or precise control of the process to avoid accidents. These tasks are also successfully solved by remote and automatic control. The following five remote control systems are most widely used in industry:

- - a mechanical system that provides the transmission of movement over short distances by levers, cables, chains and special manipulators;
- - a pneumatic system that provides opening of cranes on overhead lines and allows you to control mechanisms from a distance;
- - hydraulic system using pressurized fluid. The nature of the liquid (oil, water, etc.) is selected based on the specific production conditions;
- - electrical system. It exercises control at a considerable distance from the executive body and is increasingly being used due to its simplicity;
- - a combined system, which is a combination of various systems - electrical, hydraulic, pneumatic, as well as a combination of remote control systems with television.

Recently, control machines have been introduced that reflect the most advanced remote control system for complex production processes.

The labor protection requirements that the law provides for organizations contain rules, procedures and criteria that are aimed at preserving the life and health of employees in the process of working. They are mandatory for both legal entities and individuals when they carry out any types of activity, including the design, construction (reconstruction) and operation of facilities, the design of machines, mechanisms and other equipment, the development of technological processes, the organization of production and labor.

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In order to ensure the safety of technological processes and production equipment, the legislation prohibits construction, reconstruction, technical re-equipment of production facilities, production and introduction of new technology. And also the introduction of new technologies without the conclusions of the state examination of working conditions on the compliance of projects with labor protection requirements, as well as without the permits of the relevant state supervision and control over compliance with labor protection requirements.

Machines, mechanisms and other production equipment, vehicles, technological processes, materials and chemicals, means of individual and collective protection of workers, including those of foreign production, must comply with state regulatory requirements for labor protection and have a declaration of conformity and (or) a certificate of conformity ...

In order to ensure the safety of technological processes and production equipment, in accordance with labor legislation, organizations conduct a state examination of working conditions, public control over the working conditions of workers, labor protection services, labor protection committees (commissions) are created.

No matter how high-quality and necessary the parts in the enterprise are, the safety of workers and employees involved in the process of their manufacture is in the first place. By ensuring a safe working environment, you can prevent and reduce the number of accidents in the enterprise.

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