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AUTOMATION OF PRODUCTION IN THE FOOD INDUSTRY

The production of food products in most cases is carried out by the current method. The current production method is based on the transfer of products from one technological operation to another using conveyors. Conveyors establish and regulate the rate of production, ensure its rhythm, contribute to increased productivity and increase output.

In the food industry in the technological processes for the transportation of any goods used stationary and mobile conveyors, lamellar, tape, scraper-bucket, hanging, screw, etc. To prevent injury to people, moving parts of the conveyor to which the access of service staff and persons operating near conveyors, should be fenced with metal casings or a grid.

The food industry conveyor must meet the following criteria:

- chemical neutrality with respect to a product transported along the line;
- the simplicity and convenience of cleaning after the end of work;
- simplicity of design;
- high reliability.

Conveyor is a continuous machine designed for transportation of loaded cargos such as minerals, rocks, laying materials, etc. It is widely used in quarries, in mines, in concentrating factories [1].

Main types of conveyors are screw, roller: driven and non-driven (gravity), ribbon, tape-cable, tape-chain, scraper, vibration, lamellar and others.

Conveyors also include elevators and escalators.

Basic elements of the conveyor are traction, cargo or tugs; supporting and guiding elements; conveyor belt, pickup truck.

By structural features conveyors are distinguished with a flexible pulling body and without a traction organ. In the first conveyors, the load moves together with the traction organ on its working branch (tape, tape-cable, tape-chain, scraper, lamellar conveyors, elevators). In other conveyors, the forward movement of the cargo is carried out with oscillating or rotary motion of the working elements (inertial, vibrating, screw, roller conveyors). For feeding of conveyors electric, less often hydraulic and pneumatic energy is used.

At the angle of rise distinguish horizontal and weakly oblique, sloping, steep bending conveyors [2].

The conveyor line can be both straightforward and curvilinear, becoming a conveyor of constant or variable length. Conveyors are stationary, semi-stationary and mobile, for purpose are for underground, open mines, general purpose, special (for example, feeders, reloaders, etc.). A special kind of conveyor is a conveyor train.

The conveyor section is part of the conveyor construction. For the belt conveyor consists of supports with attached roller bearings of the cargo and idle branches. The main element of the section of the scraper conveyor is the cistern.

Other elements of conveyor construction: knife cutter, scraper, conveyor belt.

Advantages of conveyors are continuity of moving of loads, loading and unloading without stops, high productivity, long transport time, high degree of automation, maintenance of work safety conditions, high technical and economic indicators.

For example, in belt conveyors, the biggest disadvantage is the difficulty in transporting piles, hot and heavy pieces of cargo, and also at the angles of inclination of the route, which exceeds 18-20°C [3].

In Ukraine, conveyors are produced by the Production Association Yuzhny *Machine-Building Plant* named after A.M. Makarov, the Lviv Conveyor Factory, the Kharkov «Svet Shakhtera» (*Miner's Light*) Plant and other enterprises.

For the first time, the streaming system based on the maximum conveyorization of production was used by the largest American businessman G. Ford. He united the technological process into small operations, the execution of which required the workers only the simplest, mechanically repetitive movements. Such system completely ignored the subjective «human factor» which is the attitude of man to his work, so already in the early 1970's. There was a reassessment in the nature of the use of the conveyor. His negative features, such as rigid regulation of the rhythm, high speed, narrow specialization and monotony of executed operations, insufficiency or lack of creative elements, limited prospects for professional growth, have become very noticeable. The attitude of workers to work got worse, the economic output of production decreased. As a result, more and more people began to receive conveyors with intermittent action. To eliminate the monotony, large single conveyors with forced rhythm were divided into several «mini conveyors» at a lower speed. Each occupied group of workers whose functions are periodically changed, for which the workers master several operations, their work becomes more meaningful, more creative. Current production was based on different methods of group technology. Changing operations, performed by the workers, eliminated the monotony of their work, reduced fatigue. Increased level of tasks solved at the level of the master, the brigade. They were able to independently manage the activity of the site, the brigade, to exercise control functions, define the organizing of work. Due to this job satisfaction is growing, public significance of staff is increasing [1].

Growing rates of productivity, requirements for improving quality and expanding the range of products at industrial enterprises have created the need for the creation and implementation of complex mechanized and automated lines.

REFERENCES

1. Мала гірнича енциклопедія : у 3 т. / за ред. В.С. Білецького. – Д. : Східний видавничий дім, 2004-2013.

2. Конвейеры: Справочник / Р.А. Волков, А.Н. Гнутов, В.К. Дьячков и др, Под общ. ред. Ю.А. Пертена. – Л.: Машиностроение, Ленингр, отд-ние, 1984. – 367 с.

3. Бобров В.П., Чеканов Л.И. Транспортные и загрузочные устройства автоматических линий: Учеб. пособ. / В.П. Бобров, Л.И. Чеканов. – М.: Машиностроение, 1980. – 119 с.