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AUTOMATION OF THE PROCESS OF PRESSING COTTONSEED

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ABSTRACT

The article presents the results of studying the influence of such factors as results of automation of the oxygen production process based on pressure swing adsorption. The implementation of technological process control provides for a two-level structure using modern microcontrollers.

Introduction. In the mass of crushed seeds are not crushed and partially crushed. The content of seeds is 25%, crushed kernels 15%, oily powder - 15%. Centrifugal Seed Grinding Machine (Figure 1). Disintegration the required seeds are stored in a flat, continuous stream on a storage rack (3). transmitted. Here the seeds are spread in a thin layer over the entire area, through the cracks in the lattice. The cleaned seeds are then sucked into the radial channels (6) on the working discs (4) using a spreader (2). comes with air. From the radial channels the seeds are thrown into the ring decals (5). In this case, the seeds are crushed by a single blow to the large axis. The rotor shaft (7) is driven by an electric motor, the rotor rotation frequency 2100 ... 2400 min. The Rushanka is cylindrical of the cyclone (12) from the housing (1) along the pipes (11) came to the sieve (13) and was cleaned of greasy dust, the dust was removed through the pipe (9), then added to the peeled kernel (seed kernels). Rushanka comes to the aspiration cleaner through the pipe (10).

Research methods. That's the decent thing to do, and it should end there that is, the seeds are oriented along a long axis when they hit the deca. Such in the percussion type, all the force is on the pulse, and the nucleus is almost does not crush, and in crushing the force of the impact is equal to that of the nucleus and resulting in increased fat loss with luz.

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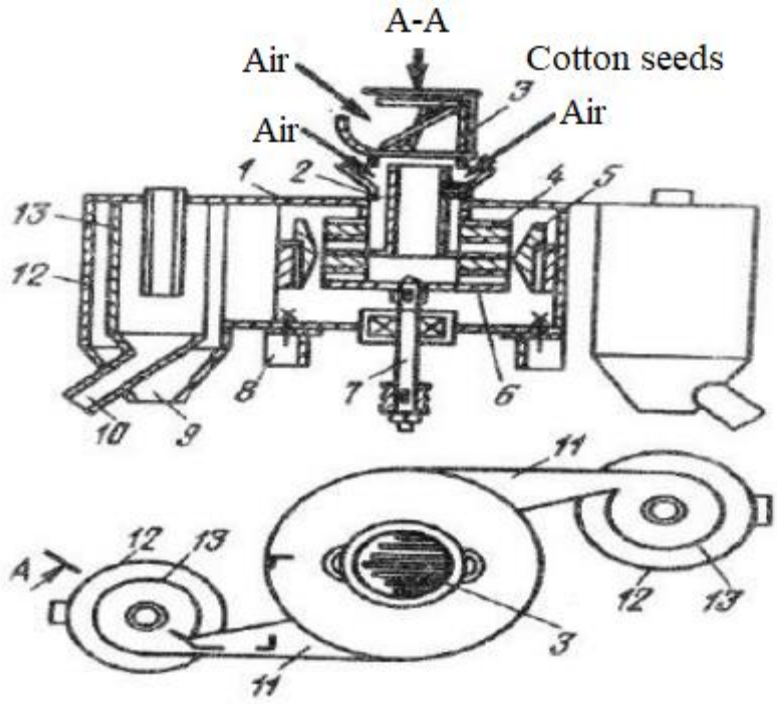

Figure 1. RZ-MOS centrifugal seed pulverizer

The kernel matures when exposed to hydrothermal vents. The mature commodity is called mezga. This ripe (roasted) core has a unique structure. The core coming out of the lower part of the boiler is talc-orange, the temperature is 108-110ºC and the humidity should not exceed 3.5%. In oil mills, where the pulp is double-pressed, part of the pots is used for frying the first (primary) product, the second part is partially compressed, and the flour is greased. Such pots should be constantly heated with talc and moistened with hot or steam (saturated steam) [1].

It is advisable to dry the talc with saturated steam at the bottom of the boiler or on the moving auger of the expeller boiler. The pulp should be fried in as airless as possible, otherwise it will react with oxygen and cause the fermentation process to begin, resulting in poor quality of the resulting oil.

According to the technological scheme, the humidifier screw installed before the boiler is one of the most important units, which carries a continuous flow of goods. Mix the product well and moisten all the layers evenly. The boiler consists of flat boilers, which have blackening, steaming, receiving, heating and discharging the finished product. The boiler has one boiler and many boilers. In the past, some small oil refineries used cast iron boilers for heating. They were heavy and uncomfortable to use. Nowadays, steam boilers are used. They are made of 4, 5, 6, 7, 8 shells. Their shell can withstand a pressure of 4-5 atm. Of particular importance are the boilers produced at the Rostov Machine-Building Plant and the Karl Libknext plant in GDP. These boilers are of 2 types in terms of heating [2].

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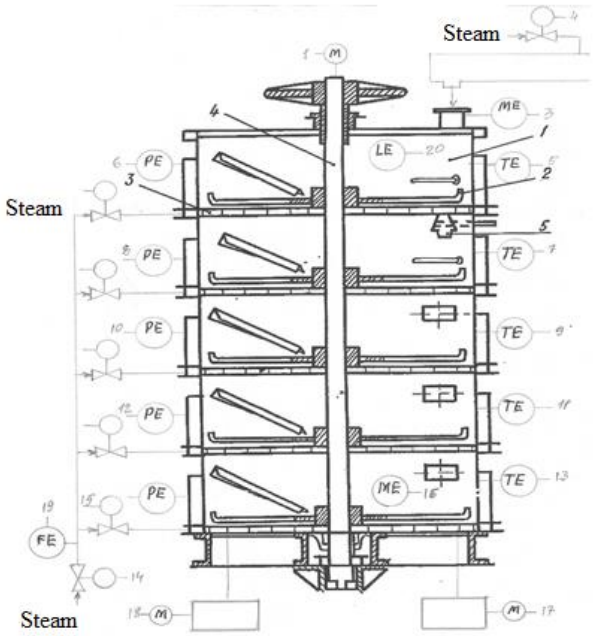

Figure 2. Scheme of automation of roasting and pressing process.

Boilers can be heated only from the bottom and from the bottom and sides. When we look at the boilers separately, we see that they are attached to the inner wall (1) and the outer sheath (2) with a seam (3). The steam enters the cavity of the boiler through the steam connected to the nozzle (4), transfers its heat to the grinder, condenses and falls to the bottom of the boiler through the pipe (5). To prevent the roasting core from burning, evenly distribute the steam and keep the core layer even, the boiler is equipped with a blade, which is fastened to the vertical axis with bolts. These blades are 3-sided and are mounted at a distance of 5 mm from the wall of the boiler and 2-3 mm from the bottom. Therefore, the pulp does not stick to the wall or bottom of the pot. In order to make the mixture even better, a triangular steel reversing tooth (otval) is placed on the boiler body. The roasted core is rotated with a knife blade, the overturn hits the tooth, falls back and is sucked forward again with the blade. As a result, the meat is fried in a casserole. There is a special hole in the lower lid to remove the prepared core from the pot.

The degreased material is transferred to the toaster VIII by means of the extractor VII located at the top of the extraction column, in which the solvent is pumped from the slag. the solvent and water vapor come to the condensers through the scrubber IX, and the shrot is transferred to the shrot elevator by means of a discharge auger X with a humidifying auger XI and a pneumatic conveyor [3].

Receiving devices (sensors) together with transducers 18a, 19a, 20a, 18b, 19b, 20b are installed in the room of the extraction shop at different markings, where the most probable presence of solvent vapors. Supply and signaling blocks are installed on 18v, 19v, 20v central shield. When the concentration of solvent vapors in the air exceeds the lower limit of explosiveness by 20%, 18g, 19g, 20g light signals NA1, NA2 sound signal is given.

A STX-IV4 flammable gas detector is used to control the complete expulsion of the solvent from the sieve and to prevent the sieve from passing through the sieve during start-up. A special receiving device 21a is connected to the output screw X. The converter is installed in

place 21b, the supply and signaling block 21v is installed in the central shield.

When the solvent is expelled unsatisfactorily from the sieve, solvent vapors of different concentrations are released in the auger X. The alarm is set in such a way that it signals an excess of solvent in the cell. In this case, the flammable gas alarm activates and the light 21g and sound signals connect NA1 and NA2, according to which the duty staff must identify the causes of unsatisfactory expulsion of the solvent from the cage and take measures to eliminate them.

The amount of water used for humidification is controlled by RPM-0.2e J type pneumatic rotometers 34a, 34b, and PV4 1E type secondary instrument 34v.

Functional diagram and description of technological process automation

The filtered micelles are heated in a micelle storage container in a heater and fed to the first pre-distiller. The heating temperature is transmitted to the PLK63-R-M controller in the form of a 4-20 mA current signal via a SITRANS TR200 manometric thermometer (pos.1-1) with an electrical output signal. You can also print the current value and save it in memory [4].

The micelles heated to about 70 ° C are fed to the first pre-distiller. The distiller operates at atmospheric pressure. In the first distiller, the micelles are heated to 85ºC and the concentration is increased to 35%. To do this, the temperature at the outlet of the first pre-distiller is adjusted. The control signal transmitted to the controller is generated by a program based on a pre-programmed PI adjustment law. The control signal from the controller is fed to the SITRANS TF2 electrical signal converter (pos.2-2). The signal is converted into an electrical signal by a converter, the adjustment effect signal is transmitted to the electric adjustment valve (pos. 2-3) and the temperature is adjusted. From the first distiller, a micelle concentration of 35% is pumped to the second distiller using a pump. Magnetic drive PM12 (pos.3-1) to control the electric drive of the pump, universal switch 3SB3 1 NR1 NZ (pos.3-2), control button PKE-212 (pos.3-3) and alarm lamp WEG W22 (pos.Z-4) is used. The electric signal from the first distiller is transmitted to the PLK63-R-M controller in the form of a 4-20 mA current signal through a manometer (pos. 4-1). You can also print the current value and save it in memory. In the second distiller, the micelles are heated to 95-100 ° C and the concentration rises to 85-90%. To do this, the temperature at the outlet of the second front distiller is adjusted. the temperature is transmitted to the PLK63-R-M controller in the form of a 4-20 mA current signal via a SITRANS TR200 manometric thermometer (pos.5-1) with an electrical output signal. The control signal transmitted to the controller is generated by a program based on a pre-programmed PI adjustment law [5].

The control signal from the controller is fed to the SITRANS TF2 electrical signal converter (pos.5-2). The signal is converted into an electrical signal by a converter, the adjustment effect signal is transmitted to the electric adjustment valve (pos. 5-3) and the temperature is adjusted. The second distiller operates in a vacuum. the pressure is transmitted to the PLK63-R-M controller in the form of a 4-20 mA current signal through a SITRANS Z Compact 3051S manometer (pos.6-1) with an electrical output signal. The control signal transmitted to the controller is generated by a program based on a pre-programmed PI adjustment law.

The control signal from the controller is fed to the SITRANS Z Compact electro-pneumatic signal converter (pos. 6-2). The signal is converted into an electrical signal by a converter, the adjustment effect signal is transmitted to the electric adjustment valve

(pos. 6-3) and the pressure is adjusted. The third distiller is heated to 110 ° C with micelles. Magnetic drive PM12 (pos.7-1), universal switch 3SB31 NR1 NZ (pos.7-2), control button PKE-212 (pos.7-3) and signal lamp WEGW22 (pos.7-4) is used. The SITRANS TR200 manometric thermometer (pos.8-1) with an electrical output signal for temperature adjustment is transmitted to the PLK63-R-M controller in the form of a 4-20 mA current signal. The control signal transmitted to the controller is generated by a program based on a pre-programmed PI adjustment law. The control signal from the controller is fed to the SITRANS TF2 electrical signal converter (pos.8-2). The signal is converted into an electrical signal by a converter, the adjustment effect signal is transmitted to the electric adjustment valve (pos. 8-3) and the temperature is adjusted. The oil level in the complete distillation cube must be maintained at the level of 600 mm specified in the technological regulations. To do this, the layer is transmitted to the controller brand PLK63-R-M in the form of a signal with a current of 4-20 mA through an electric level meter (pos. 9-1) with an electrical output signal. The control signal transmitted to the controller is generated by a program based on a pre-programmed PI adjustment law. The control signal from the controller is fed to the electrical signal converter (pos. 9-2). The signal is converted into an electrical signal by a converter, and the adjustment effect signal is transmitted to the electric adjustment valve (pos. 9-3) and adjusted.

The complete distiller also operates in a vacuum. To adjust the vacuum, the pressure is transmitted to the PLK63-R-M controller in the form of a 4-20 mA signal through a manometer SITRANS Z Compact 3051S (pos.10-1) with an electrical output signal. The control signal transmitted to the controller is generated by a program based on a pre-programmed PI adjustment law. The control signal from the controller is fed to the SITRANS Z Compact electro-pneumatic signal converter (pos.10-2). The signal is converted into an electrical signal by a converter, the adjustment effect signal is transmitted to the electric adjustment valve (pos. 10-3) and the pressure is adjusted.

Conclusion. Seeds of oilseeds serve as raw materials for the oil industry do. Contains a lot of fat in its parts (mainly seeds) plants are conventionally called oilseeds. These include seeds, sunflowers, soybeans, rapeseed, flax, cannabis, mustard, and more. Their some, such as seeds and flax, are mainly used for fiber production grown, and at the same time these crops are both textile and oil-bearing are a raw material for industry.

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