UDC 631,227

Modern equipment in the maintenance of laying NESUCHOKTBK DL from Company "VO techno"

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Investigated innovative equipment for breeding chickens from domestic producers Ltd. "PA techno" printed on the advantages and disadvantages.

Automation of processes, dvanadtsyatyyarusna battery cage, mesh platform.

Formulation of the problem. The farm is operated by Ukraine more than foreign equipment by domestic producers. While domestic poultry equipment is not inferior to foreign analogues.

Analysis of recent research. The population of the planet is steadily growing and a large number of people it is not enough food is provided. In some regions of the Earth's population holodaye [1, 2]. Poultry - this is a sector in which the fastest recovering livestock and its products (eggs and meat) are high in protein and other nutrients necessary for human life. [3] In Ukraine fertile land, hard-working and highly intellectual people. Our country can invest a significant contribution by taking part in addressing food security in the world.

The purpose of research. To explore innovative dvanadtsyatyyarusne Cage equipment for the maintenance of laying hens TBA NAM produced by "PA techno".

Results. For equipment for the maintenance of laying hens TBA NAM previously we conducted tests for its identification and security (certification). With extensive experience testing poultry equipment and materials certification tests TBA NAM [4], hold the projected research equipment for the maintenance of laying hens TBA DL.

Cellular equipment TBA (Fig. 1) is for the maintenance of laying hens in rooms with controlled microclimate [5]. Equipment TBA may have a membership of three battery cages

to twelve layers (3 TBA, TBA ... DL). In the test equipment that works at JSC "Poultry factory" Ukraine "(p. Krushynka Vasylkiv district, Kyiv region). Dvanadtsyatyyarusnyh seven batteries TBA 12/7. The

equipment can be used in the technology of keeping laying hens in all climatic zones of Ukraine.

Fig. 1. Battery cage for keeping laying hens TBA.

The feature of this equipment is that in Ukraine for the first time used for poultry 12-storey cage battery and made it a domestic manufacturer. This level of equipment - a rarity in the world. And this proves that our domestic producer of "PA techno" occupies a high position among the world's leader manufacturer of poultry equipment.

The equipment consists of batteries and cellular systems: feeding (feed storage and kormorozdachi); Drinking (preparation and supply of water to napuvalok); transportation and collection of eggs (with batteries and outside the poultry house); removing litter (with batteries and outside the poultry house); creating a microclimate; electrical equipment.

Series production equipment TBK started in 2006. The equipment operates in Ukraine, Russia, Belarus, Uzbekistan, Kazakhstan, Kyrgyzstan, Georgia, Tunisia, Iran, Lithuania and Argentina. Only in 2013 were manufactured and installed 49 sets of equipment TBA [6].

The structure TBA NAM equipment to be tested includes: tank storage of food; horizontal and inclined conveyor loading feed; Water treatment unit; dvanadtsyatyyarusni cage batteries that include (mobile silos, feeding lines watering with nipple and krapleulovlyuvachamy, transporters remove litter cellular batteries, conveyer equipment for poultry raising of cellular batteries elevator mechanism for system equipment for poultry raising system transporting eggs (TA), the cross conveyor removing litter premises, advanced conveyor loading manure

into a vehicle platform between the sixth and seventh layers, automated climate control system in the poultry house, with electrical control unit.

Battery - two-row ram. Battery Cage composed of sections of cells placed in tiers. The basis of batteries are studs, bent galvanized steel sheet with a thickness of 2.5 mm.

The feature of equipment DN TBA is that the level between the sixth and seventh layers of cell batteries around the poultry house space designed mesh platform on which staff can not only walk, but moved on a trolley service to the upper (9-12) layers (Figure . 2). The platform is mounted between the panels to beams embedded in the design of the battery; between the wall and the battery - to a beam in the battery and metal attached to the wall. The cell consists of the following elements: floor (pidnizhnoyi lattice), which lies on galvanized wire, door, side, front and rear mesh walls. The floors of cages made of wire mesh (wire diameter -2.2 mm) With holes the size (25h50) mm and set at an angle to 7º free eggs rolling on yaytsezbirnyy longitudinal conveyor (Fig. 3).

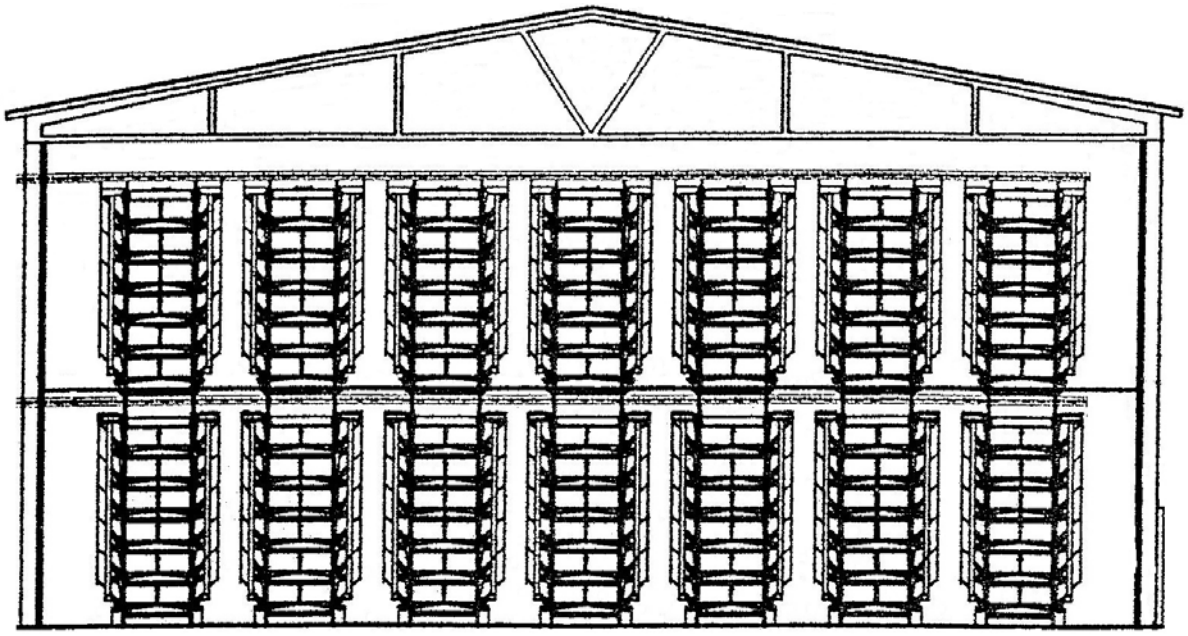

Fig. 2. Scheme dvanadtsyatyyarusnoho equipment DL TBA production of "techno".

Fig. 3. The system of collection of eggs Nam equipment TBA.

Equipment that provides kormorozdachu, water and cleaning litter identical to the classic (TBA). Eggs from the longitudinal conveyor belts hit the elevator conveyor and further conveyor system transporting eggs (Fig. 4).

Fig. 4. The system of transport of eggs and the equipment TBA DL.

As a result of technical expertise during the certification testing equipment TBA seen satisfactory quality of production. All elements of cellular batteries are made of galvanized metal. The equipment has a stable rigid structure through the use of adjustment screws installed in

the base of each riser, to align horizontally batteries, which significantly increases the reliability of the equipment. The quality of the parts and components production equipment - satisfactory, damages the protective coating were found. Ingredients equipment securely mounted to the reference frame batteries preclude unauthorized shift.

1. Specification TBA NAM [4].

Indicator	According to Test TBA DL
Battery Dimensions, mm:	
- length	119490
- width	1540
- height	7325
Dimensions of cells, mm:	
- width	770
- depth	575
- height	400
Tilt pidnizhnoyi lattice degrees.	7
The size of the lattice cells pidnizhnoyi mm	25 × 50
Wire diameter, mm	2.2
Bunker storage of food:	
- type	Cylindrical
- The volume m3	21,9 × 2 pcs.
Vehicle loading feed:	
- working body type	Spiral
- pipe diameter, mm	90
Kormorozdachi system:	
- Type;	Mobile distributor
- *Speed of the mobile feeding, m / min*	11.5
Drinking systems:	Nipple with a drop trap
- type	
System cleaning litter:	
- type	Belt
- Velocity transporters, m / min:	
- longitudinal	7.9
- Cross and older	38.0
System equipment for poultry raising:	
- Type conveyor	Belt rods
- Speed of movement of the conveyor, m / min:	
- longitudinal	2.3
- Transverse and longitudinal	5.5

Installation of equipment held by a specialized team of sixteen people for one month. The specific complexity of installing the equipment is 0,027 man-hours per ptahomistse. Given the complexity of its novelty

and high speed assembly work, this figure shows the extremely high technical level of manufacturing items of equipment and organization of production and assembly. Technical characteristics of the test equipment presented in Table. 1. Operating electrical TBA meet GOST 19348 normalized value UHL-4 for indoors. The degree of protection of electrical equipment from environmental influences - IP 54 [4].

Electrical equipment meets the requirements of regulations on electrical safety. The nominal parameters of the electrical meet its mode of operation.

Energy performance of electrical equipment (without ventilation system): installed capacity of drives on equipment - 43.06 kW: system load feed - 0,75 kW; kormorozdavannya system in cellular batteries (each battery cage used on three occasions to 0.55 kW) - 11.55 kW; cleaning litter system (Cage on each battery is used two drives of 1.5 kW) - 25.4 kW; system for collecting eggs (on each battery cage used on two drives 0.37 kW) - 5.36 kW.

Based on the results of certification tests found that indicators of safety and ergonomics Cage equipment for the maintenance of laying hens TBA meets the requirements of GOST 12.2.042, GOST EN 292-2-2001 ISO and EN 60204-1: 2004 [4].

Regarding welfare, the bird is placed in a battery cage, where the density of planting poultry house floor is 121.61 Ch. / M2. Note that in the cold season with such a density of poultry, there is no need for heating poultry. Used in poultry house ventilation system that provides the necessary microclimate. The room temperature for the period was 22.5 certification tests°C, humidity - 70% [5]. The design of cellular batteries TBA NAM allows efficiently accommodate poultry and creating satisfactory conditions for its maintenance. The specific area pidnizhnoyi lattice cage is 402.5 cm2 / Ch.

Poultry watering system performs satisfactorily workflow water supply napuvalky. And spraying water leaks in the system are not observed. Napuvalka for 7 chapters, corresponding normative value [7]. Napuvalky placed between adjacent cells at a height accessible to birds.

Line feeding provides satisfactory performance of the process of acceptance and distribution of dry food. The loss of food during transportation, filling bird feeders and bird feeding are not available. Specific front feeding is 7.35 cm / Ch.

In a survey of owners of equipment: safety of livestock that provides equipment, satisfied. Product quality is high, as implemented outside Ukraine (Argentina).

Automation of technological processes in newest equipment greatly reduces the impact of human factors on the quality of their performance. We can therefore say that the equipment performs TBA DL workflow

maintenance of laying hens in battery ram type of cell in rooms with controlled microclimate high.

Regarding the analysis of operational and technological assessment, the hardware can be kept TBA NAM 37,937 goal. population of laying hens. Specific electricity consumption when using the equipment up 0.95kWh /1000 pieces. eggs per day. Specific electricity consumption of individual systems specified equipment shown in Fig. 5.

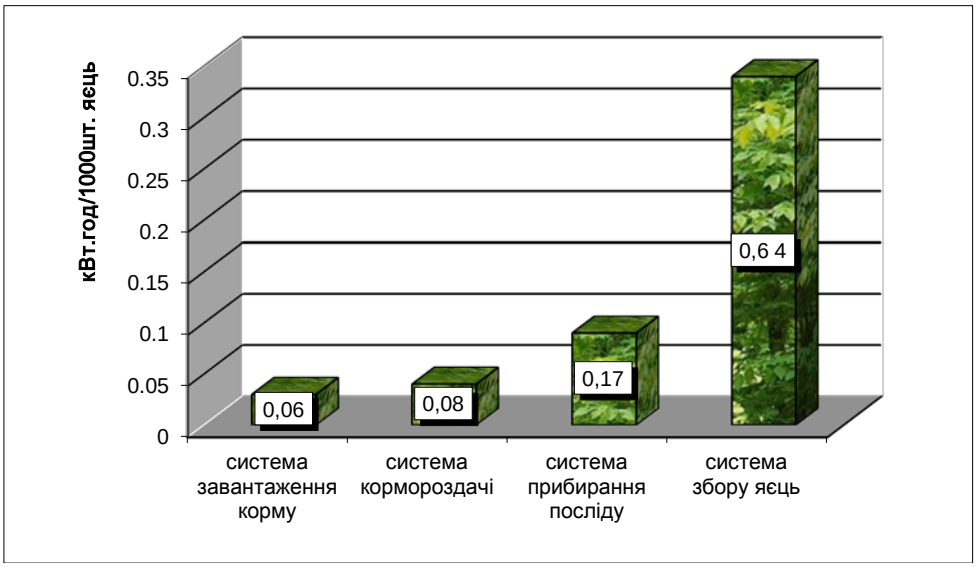

Fig. 5. Specific electricity consumption in various systems equipment TBA DL.

Unfortunately, price TBA NAM equipment - trade secret, so it is impossible to give an economic assessment. But one could argue that due to the high density of birds landing on the floor poultry house (performance of equipment) economic indicators are high.

Benefits researched equipment, high performance equipment, technical level and economic indicators; application of automated process control systems and systems for transporting and collecting eggs.

The disadvantage: the maintenance of a large number of birds requires excellent work and high qualifications of veterinary and livestock services, because a small inaccuracy in the service can lead to large losses.

Conclusions

It must be emphasized that sensationalism cage equipment for breeding chickens in Ukraine, which has 12 tiers. Few European firms osylyly production development of such complexity, indicating a high international level Ukrainian producer of "PA techno".

Equipment TBA NAM does not require significant labor costs for its technical and technological services, since all processes, including the creation of microclimate automated.

Low power consumption for poultry. Specific electricity consumption using up equipment 0.95 kWh /1000 pieces. eggs per day.

The equipment has high reliability. The specific complexity of installing the equipment is 0,027 man-hours per ptahomistse.

TBA DL the technical characteristics and consumer properties has a high technical level with the best foreign analogues, ensures quality performance of all processes.

Cage equipment for the maintenance of laying hens TBA NAM produced by "PA techno" allows the most efficient use volume production facilities, which undoubtedly gives good economic performance.

Poultry sector has good prospects because of the relatively favorable compared with other types of livestock production, feed conversion rate and light vidnovlyuvanosti livestock. The development of the industry also contributes to the low supply of animal protein in a large number of population.

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Ynnovatsyonnoe of research equipment for the chickens from otechestvennoho CONTENT producer of LLC "PA techno" ukazanы ego disadvantages and advantages.

Tehnolohycheskyh automation processes, dvenadtsatyyarusnaya kletochnaya battery setchastaya platform.

The innovative equipment for the maintenance of hens from domestic producer of TOV "VO Tekhna" is investigated its shortcomings and advantages are specified.

Automation of technological processes, twelve level cage battery, grid platform.

UDC 631,371: 620.92

STUDY energy efficiency rotary digesters

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An inspection of the main provisions of conclusions and analytical research on the study of energy expenditure to drive the rotary reactor for biogas depending on its filling ratios and dive.

Biomass digesters, biogas, mixing efficiency.

Formulation of the problem. Improving the energy efficiency of biogas plants is one of the main directions of improving the process of biogas production, and therefore justification methods for determining the specific power and energy parameters of operation of biogas plants requires constant improvement. The operation of biogas plants showed that promote contact with anaerobic bacteria biomass substrate is provided by the mixing of the substrate, but with intensive mixing must be avoided, as this can lead to poor anaerobic digestion at the expense of symbiosis atsetohennyh and methanogenic bacteria. In practice, the compromise achieved by slow rotation of agitators or

within a short time. [1] At the same time, operating experience biogas reactors showed that almost impossible to remove bundles of biomass in a reactor in mineral and organic sediment floating biomass, indicating weaknesses in the operation of the mixing biomass [2, 3].

Analysis of recent research. As a result of research we have patented a number of technical solutions that largely eliminate the separation of biomass by providing biomass mixing layers using embedded rotating biogas reactors. Defined as the level of immersion in the rotating liquid methane tanks and rate of filling, depending on its geometric parameters and density of the liquid, which is immersed rotating digesters in securing its location in a suspended state. [4]