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Determination Of Operational Efficiency Of Air Cooling Equipment Created To Ensure Microclimate Parameters In Poultry Buildings.

Sattorov Akbarali Bahodir o'g'li

Samarkand state architecture-construction university PhD student

sattorovakbarali68@gmail.com

Abstract : Egg for intended Poultry in factories poultry for necessary has been microclimate parameters create for created don't build with vermiculite nozzle part on the walls convection it 's hot transmission and heat mass exchange processes analysis take on went studies as a result equipment laboratory conditions samples prepared and to practice current done Prepared don't build the air channels dimensions 0.8...12mm in between experience works take went and most A convenient option is a 10 mm interval choose received Poultry buildings for microclimate provider nozzle part from vermiculite prepared from the equipment use as a result external access of air temperature decreased by 8-10 °Cand relative air humidity increased by 60-70%.

Key words : vermiculite material , nozzle , relative moisture , water evaporation , optimal conditions , air channels , water elasticity , convection heat transfer , heat mass exchange

Poultry optimal microclimate in buildings parameters creator energy thrifty the air cooler in the part vermiculite from the material used equipment to the building to be given external the air water vaporization the way with equipment nozzle the air in the channels convection heat transmission and heat mass exchange processes expressing giver indicators this created equipment incoming external the air high level cooling the ability with is evaluated .

Transferred experience works during this to processes Poultry to the building to be given external of air temperature and relative humidity parameters depends will be That's why for water vaporization the way with incoming external the air cooling in the process incoming external the air parameters different character in values acceptance done and created don't build the air parameters again work according to experience test works was conducted .

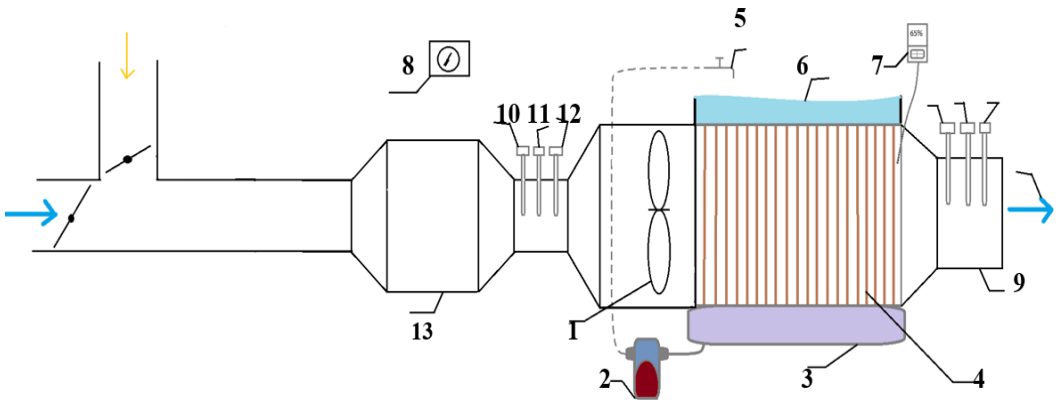

Figure 1.1 . A general overview of the air humidification cooling system made of vermiculite.

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1-fan; 2-water pump; 3-water collecting tank; 4-vermiculite nozzle; 5-return water; 6- supply water; 7-HTC-2-thermometer hygrometer; 8- BASETech WT-034 stopwatch; 9-outgoing air channel; 10-testo405i thermoanimometer; 11-TA298-psychrometer; 12-testo405i thermometer; 13th air traffic controller.

The results of the parameters of the outdoor air processed in the equipment, the theoretical analysis of the processes of heat and mass exchange are depicted in graphs 1.1 and 1.2 below. From these graphs, we can see that the higher the temperature of the supplied outdoor air, the better the process of heat mass exchange in the equipment and the greater the supply of coldness and moisture to the incoming outdoor air. In this case, air with a high temperature absorbs moisture better than air with a relatively low temperature. From this process, we can see that the temperature and relative humidity of incoming air moving in a high humidity environment are inversely proportional.

Above experience from work received to the results relied on in case in the graph curve lines explaining let's go To us known low temperature of air contained humidity quantity temperature high has been into the air relatively high will be From this it seems temperature high has been external the air equipment using again work in the process humidity to himself good absorb our understanding can

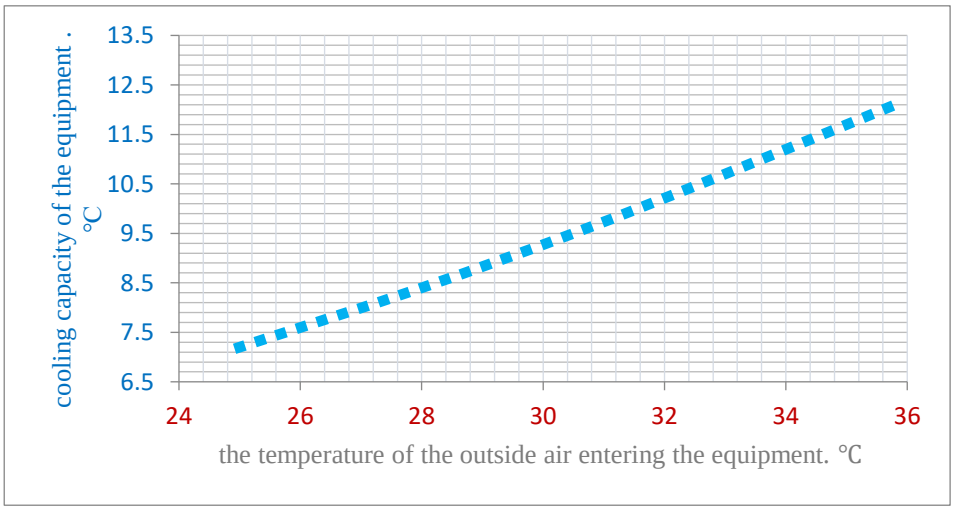

Figure 1.1. To the building to be given external the air again work in the process temperature construction work efficiency effect

To the equipment being given external of air temperature when it decreases his contained relative humidity quantity increased goes and vermiculite to the material swallowed of water evaporation and heat mass exchange processes to slow down we'll see and of this due to equipment the air wet cooling power decreases .

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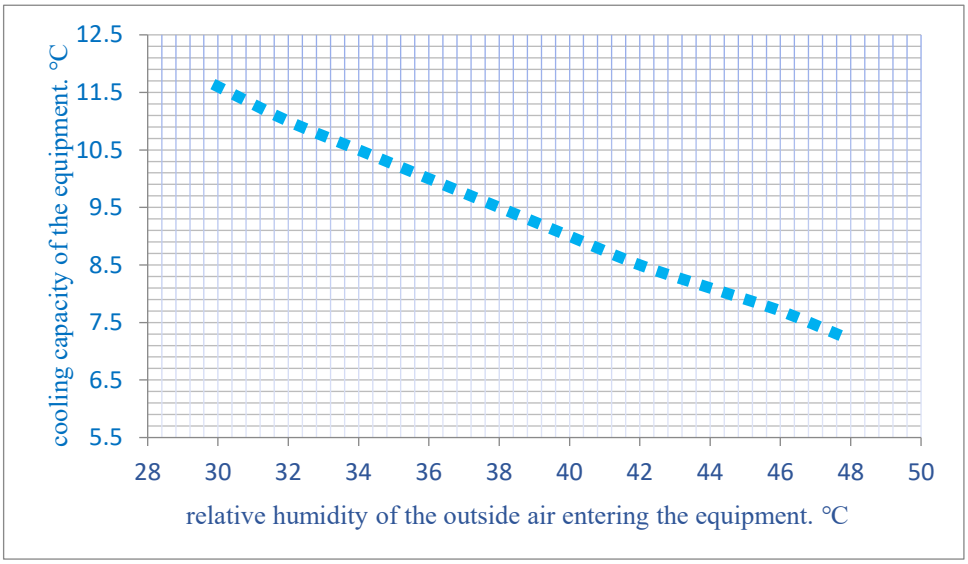

Figure 1.2. To the building to be given external the air again work in the process relative of moisture construction work efficiency effect

To the structure being given external the air differently in indicators acceptance to do incoming external into the air coldness and humidity with processing to give to processes effect does But from the equipment again working came out of air temperature and humidity parameters constant respectively unchanged alike to provide we will reach That is to the equipment to be given external the air parameters hot and transition how during periods from being strictly look to the equipment to be given water amount and the air movement manage through constant respectively Poultry in the buildings microclimate parameters our provision can

To be given external the air the air parameters again work in processes external the air parameters equipment work productivity effect from the analysis then , to the equipment incoming the air again work in the process nozzle the air of channels intermediate of the distance even right to be selected attention focus necessary In this regard conducted experience in their work heat mass exchange processes satisfactory pass for , nasadka the air in the channels the air movement one in moderation to be for the air channels different in widths choose taken experience works take went and necessary the air channel range choose received (Graph 1.3).

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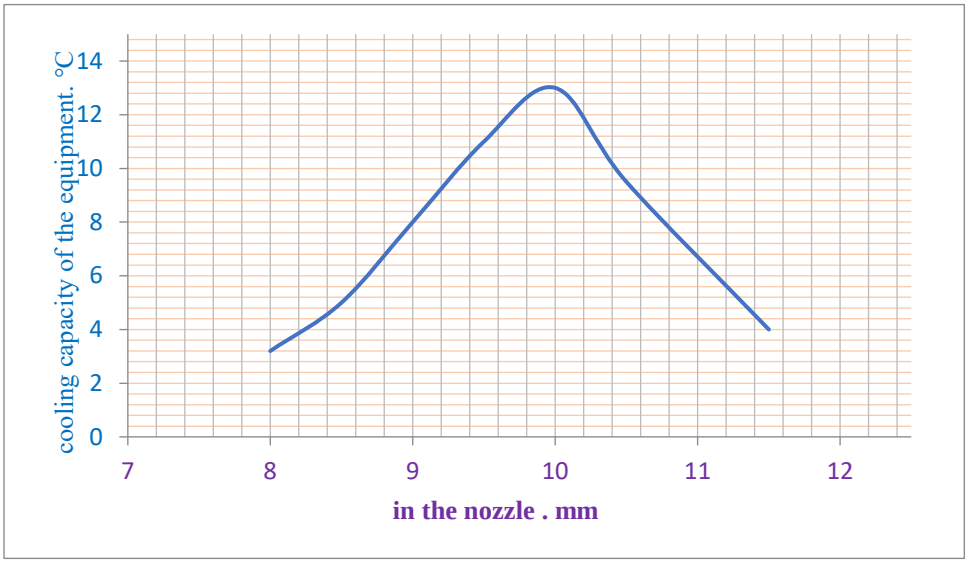

Figure 1.3. Heat mass exchange process efficiency the air of channels of size effect

It can be seen from the graph 1.3 as it is of the nozzle vertical the air of channels intermediate dimensions choose received the most acceptable from size increased or decreased to leave , in the equipment heat mass exchange and the air wet cooling processes unsatisfied to pass main factor is considered As a result of this Poultry optimal microclimate in buildings conditions in creating difficulty gives birth

Experimental work was carried out in nozzles made of highly water-absorbing vermiculite material using the water evaporation method to create microclimate parameters in poultry houses.

The results obtained during the processing of the external air supplied to the poultry buildings during the conducted experiments are given in the following table 1.1.

Indicators of changes in air parameters as a result of processing with the help of the created structure to the parameters of the outside air entering the building

Table 1.1 .

No	parameters of the air entering the equipment			δ, мм	ρ, г/м^3	F, м^2	air parameters from the equipment	
	v, m/s	$t_{кир}$, °C	$\varphi_{кир}$, %				$t_{кир}$, °C	$\varphi_{кир}$, %
1	1.85	28.0	45.2	12.0	1,103	0.9	18.7	68.2
2	1.92	31.3	4 2.5	1.7	1,103	0.9	19,1	6 7.5
3	1.98	33.5	39.3	11.5	1,103	0.9	19.6	67.3
4	2.0	35.4	38.0	10.5	1,103	0.9	20.2	66.8
5	2.09	36.7	37.5	10.0	1,103	0.9	20.9	66.1
6	2.15	37.8	36.2	9.5	1,103	0.9	21.3	65.7
7	2.23	39.2	34.7	9.0	1,103	0.9	21.9	65.2
8	2.36	41.0	32.5	9.2	1,103	0.9	22.3	64.8

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9	2.48	42.5	31.0	8.0	1,103	0.9	22.8	64.5

Summary instead of that's it separately our emphasis should be taken went experience works and theoretical of information from the analysis and received to the results based on poultry farming in the buildings microclimate parameters by creating giver don't build work productivity in improvement one how many to factors separately attention our focus necessary will be

First , energy thrifty the air water steam way with cooler created equipment nozzle part for material in choosing of the material water elasticity feature attention focus necessary of the material this feature how much level high to the indicator have if so , incoming external the air again work process in improvement water and electricity energy spend so much many p to be saved reach can Created in the equipment this such as the problem eliminate reach for water elasticity high has been vermiculite from the material used .

Second , equipment using to the building to be given external the air again work during heat mass exchange process good to be for nozzle the air moving channels in choosing the most comfortable size is 10 mm was selected and to the building necessary to be the air quantity and to the movement looking ventilators even was selected .

Taken away experience test that's the job thing known that's it , don't build nasadkasi for used vermiculite material has all the physical and mechanical properties expected from it and allows for normal operation of evaporative coolers for a long time.

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