Round timbers, drying technology, drying stresses, process control.

UDC 674,047

ANALYSIS OF THE DRYING PROCESS OAK PIECES THE COMPANY LLC "YURA LAMBERT»

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The results of research quality dry oak blanks in convection dryer. Revealed violations technologies that have led to poor quality and lower productivity drying chambers.

Oak blanks, convection dryers, drying quality.

Dry woodis highly durable, resistant to decay processes are well glued, easy to work better. Any timber, regardless of breed, is always affected by changes in humidity and environment through such property it can be attributed to shortcomings. For the manufacture of certain products of wood raw material - pyloproduktsi. It should be dried to the moisture, which meets the requirements of the products from it.

Enterprise LLC "Yura Lambert" specializes in drying oak pieces to be used in joinery and furniture manufacturing. Therefore, they should be dried for category II as drying to the final moisture content Wk = 8%. Therefore, the process of drying oak pieces need to follow, to determine the quality of drying, dry as dust products are exported to Europe, at very stringent requirements.

The purpose of research - Identify factors that improve productivity and quality camera dry oak pieces.

Material and methods of research - research for drying was used as the main provisionsISO 4921: 2008 "Pyloproduktsiya. Quality Evaluation drying "[1].

Research uniformity circulation drying agent in the material held by the methodology of Technical Guidance materials from lumber drying chamber technology [2].

Studies were conducted using vysushuvanoho material thickness blanks enterprise -dubovyh 27 mm.

Results. The process of drying Ltd. "Yura Lambert" is organized as follows: first pidsushuyutsya packages blanks on the area of atmospheric

drying, and then dosushuyutsya in convection lisosusharkah Czech company «Katres». Plot atmospheric drying is the imitation arranged in two rows of four convection dryers with natural circulation of air in which no side wall. The roof and end walls have no insulation, and in the last staggered diameter holes are made 10 mm of pitch 10 cm to remove moisture. The drying process is monitored automation system which responds to the drying speed, braking last if necessary by additional humidification by spraying water through nozzles located under the roof along the sides of the "atmospheric dryers."

There were two experimental drying oak pieces in different cells «Katres». Blanks dried in the company soft mode. The maximum temperature, which is drying agent during the process is 55 ° C. This mode allows the wood to dry without changing its physical and mechanical properties (strength, color). Blanks with oak wood thickness 27 mm with primary Wpoch humidity = 16% = 19% Wpoch been dried to a moisture content Wkin = 8% at 15 and 19 days respectively.

Quality assessment of dry oak pieces was made on the results of the process in two chambers. Each chamber was placed more than 20 packets, so according to [1] should be investigated to 4 packets that were selected from different zones cameras. The size of each packet sampling is given in Table. 1, where the given interval is calculated as sampling from the batch number of results humidity measurement and calculation parameters as moisture drying. Measuring moisture oak pieces performed using conductometric hydrometer brand «Brykohyis» (Netherlands) with an accuracy of measurement of ± 1,0%.

1. The test results are dried oak blanks against the second category as drying by moisture indicators.

The indicators which were tested	Camera 1				Camera 2			
	Pa-Cat 1	Pa-Cat 2	Pa-Cat 3	Pa-Cat 4	Pa-Cat 1	Pa-Cat 2	Pa-Cat 3	Pa-Cat 4
The size of the sample pieces, pieces.	48	41	54	57	49	51	50	54
Interval selection Designs items	5	3	3	2	11	11	2	7
Mean values of quality drying:								
The required final moisture parties Wzid.kin.%	8	8	8	8	8	8	8	8
The actual average final humidity packets Wfakt.kin%	7.9	7.7	7.2	7.3	8.5	8.6	9.4	9.1
Number of sample packages that do not meet the regulatory value for ad-	1	2	-	1	3	1	18	15

ΔW index for the second category quality drying (ΔW = ± 1,5%), pieces								
Reject final moisture individual pieces in the party from the specified final moisture content pieces, ± 2σW.kin%	1.45	1.32	1.35	1.44	1.44	1.16	1.41	1.43

The results of measuring the velocity of circulation of the drying agent by material showed the following results: Broadcaster №1 average speed air circulation was v1 = 1,01 m / s, and the coefficient of variation in the material - Vv1 = 34,6%. The camera 2 attempts to reduce the cost of electricity by turning off half the installed fans, which reduced the rate of air circulation around stacks to v2 = 0,25 m / s and, accordingly, increased aerodynamic uneven field - Vv2 = 77,3%. From Table 1 shows that the blank in the cell number 1 on all parameters correspond to the second category as dry, but as the camera №2 Packs 3 and 4 do not meet the desired level of quality in terms of drying ΔW,%, - Reject the average final moisture content in the blanks Party on a given final moisture content. Number dried pieces of these packages in 3-3.5 times higher than normal. According to the requirements of ISO 4921: 2008 [1] party pieces that bull dried Broadcaster №2 not be recognized under the second category as drying.

Change the current humidity blanks can be observed using remote views moisture (Fig. 1). The chart shows that the initial moisture content is different pieces that have a negative impact on the length and quality of the drying process. Before loading the blanks in the drying chamber is desirable sort them in terms of initial moisture content to avoid a situation where after drying is both nedosushena and overdried pyloproduktsiya.

Analysis of the causes of inadequate quality dry preparations showed that the most significant of these is the uneven thermal field camera, caused a high coefficient of variation in the speed of circulation stack. Since the cameras have the same design, we can consider it their disadvantage, in addition to the typical single cells dried material. However, the cell was broken №2 recommended by «Katres» drying technology, namely, the process was conducted with the participation of only half working fans. Thus, a false desire to reduce electricity consumption has led to poor drying pyloproduktsiyi.

Effect of uneven heat dissipation fields on final moisture content in the party preparations is illustrated in Fig. 2 for: actual curve of the current humidity on material Wser%, according to moisture probes of automatic process control drying; actual dispersion curve of the current

moisture in the material - 2σW,%., camera №1 fact and estimated (by the algorithm submitted in [3], transformed to determine the standard deviation ± 2σW) curve of the scattering material in the current humidity ± 2σW, % №1 camera calc.

In addition, we calculated the possible dispersion of moisture present in the party vysushuvanyh blanks if the camera №1 disable half the fans, leading to uneven thermal field, which was observed in the cell №2. The results of these calculations is shown in Figure 2 illustrates the curve
± 2σW,%, 2 camera calc.

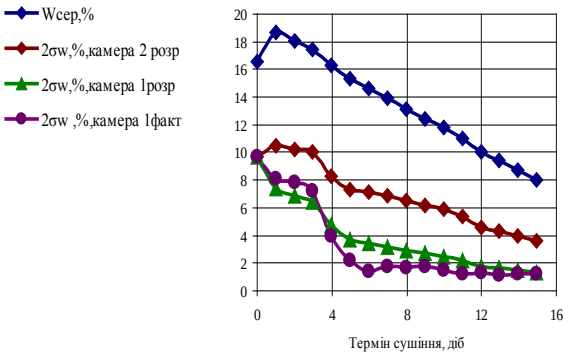

Fig. 1. Curves drying chamber pieces in number 2.

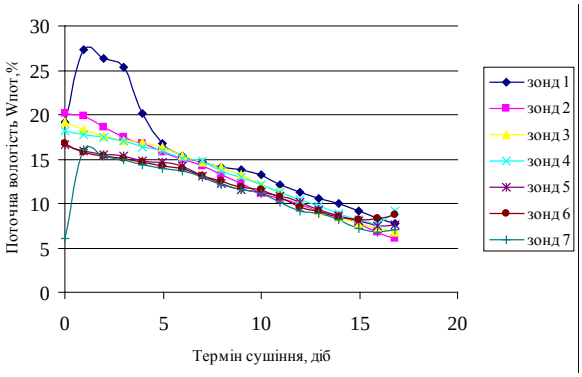

Fig. 2. Change the current average humidity chamber pieces in number and results of calculations of the scattering material in the party.

So unwarranted abuse of technology, leading to poor drying are unacceptable and confirmed as theoretical calculations and production testing.

Conclusions

1. Past studies as dry oak blanks in the cells of the firm Katres »the company LLC" Yura Lambert "showed dryers installed capacity to provide quality category II drying.

2. Analysis of drying technology that is used in the company discovered violations that lead to poor quality of the process as a result of unreasonable waste of equipment.

3. To increase productivity and reduce the cost of cameras process should not adjust the processing mode by lowering the temperature of the drying agent from 70 ° C to 55 ° C. Blanks entering the chamber is dried, ie with humidity W <30% and the impact on them of high temperatures does not degrade the physical and mechanical properties of wood.

References

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Results of the study Pryvedenы qualities drying oak blanks in konvektyvnыh cells. Obnaruzhenы violations technologies, pryvedshye for Reducing Quality and proyzvodytelnosty drying chambers.

Dubovыe blanks, konvektivnye dryers, drying Quality.

The results of drying quality oak stocks investigations in the chambers are given. The technology disorders' that led to make worth drying quality and chambers productivity were discovered.

Oak stocks, chambers, drying quality.

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ANALYSIS OF MODERN furniture and woodworking industry UKRAINE

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A feasibility study facilities for the production of furniture and wood products in Ukraine. The effect of export-import operations in the state of Ukraine's domestic market. Proposed measures to implement the existing potential furniture and woodworking industry.

Power, furniture, wood, export, import, measures potential.

In the analysis of economic growth in the global market leaders often overlooked that one of the main factors of market expansion is a powerful lisoderevoobrobna industry. Currently, according to the UN, the volume of world trade in forest products is over 1trl. $, Is projected to continue its steady growth. The most important prerequisites for the development of woodworking industry of Ukraine is the availability of domestic raw materials and powerful woodworking enterprises. So for the rational use of required analysis and development of measures to stimulate production.