

MODEL PREDICTIVE CONTROL OF CONVECTIVE DRYING PROCESS OF LUMBER

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ABSTRACT

A programmable control system for the convective drying process of lumber in chambers is developed, based on specially designed drying algorithm, which allows for computing the set-point values for the temperature and the relative humidity of the heating and drying air as a function of the wood species, lumber thickness and the initial and desired final wood moisture content.

The system allows for carrying out model predictive automatic control, by means of which, after the operator enters the data on wood species and thickness of the lumber, as well as the initial moisture content and the desired final value of the moisture content, the programmable controller in the system calculates the current values for the temperature and the relative humidity of the processing air medium, and also the duration of the separate stages of the drying process, and carries out an automatic realization of the computed parameters.

An application of the developed system for predictive automatic control of the convective drying process of pine lumber with thicknesses of 32 mm and 76 mm is given and visualized..

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