

УДК 621.3

OPTIMIZATION OF THE POWER MODES OF ELECTRICAL  
EQUIPMENT OF THE BRUSHING MACHINE

С. В. ОСМОЛОВСКИЙ

Научный руководитель Б. Б. СКАРЫНО, канд. техн. наук, доц.  
Консультант Г. И. СВИДИНСКАЯ  
Белорусско-Российский университет

The thesis is entitled “Optimization of the power modes of electrical equipment of the brushing machine”.

Brushing machines are widely used at Belarusian textile mills. Unfortunately, they are not produced in former USSR countries. The main suppliers of them are Italy and Taiwan. That is why it is important to modernize these machines and to prolong their service life.

Our design is based on the Taiwan machine model CMh1-RA2 by the Charming Star International CO., LTD.

The aim was to find the optimal ways of increasing its energy efficiency.

First of all, to increase energy efficiency, we needed to increase the efficiency of the system. This can be done in three ways:

Reducing losses using a variable frequency drive for each mechanism;

Simplification of the mechanical part using a gear motor;

Using a modern control system.

As a result of these changes, energy loss was reduced by 25...35 %.

The modern control system allows us to expand the range of produced tapes. Tapes have different amounts of nap. As the result of using a frequency-adjustable drive in this system, it is easier to control the rotation speed of the drums, which increases the accuracy of the settings and the quality of the tape. This control system allows us to save 10% of electricity.

A variable frequency drive system is more expensive than an unregulated drive. But it has an increased service life and has great potential to set up. This system will pay for the costs in a few years. In the process of the research, the most optimal number of tapes produced at the same time without loss of quality was considered.

This development can be used in other textile machines modernization.