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NEW CONCEPT OF ELECTRICAL DRIVES FOR PAPER AND BOARD MACHINES BASED ON ENERGY EFFICIENCY PRINCIPLES

ABSTRACT

In this paper, it is described how the reconstruction of the facility of paper machine has been conducted, at the press and drying part of the machine in June 2001., as well as the expansion of the Paper Machine with the "third coating" introducing, that has been done in July 2002., in the board factory "Umka". The existing old drive of the press and the drive of drying groups were established as a Line Shaft Drive [LSD], 76m long. The novel drive is developed on the basis of conventional squirrel cage induction motor application, with frequency converter. The system control is carried out with the programmable controller, and the communication between controllers, converters and control boards is accomplished trough profi-bus. Reconstruction of the coating part of the machine, during technological reconstruction of this part of the machine, was being conducted with a purpose to improve performance of the machine by adding device for spreading "third coating". The demands for the power facility were to replace existing facility with the new one, based on energy efficiency principles and to provide adequate facility for new technological sections. Also, new part of the facility had to be connected with the remaining part of the machine, i.e. with the press and drying part, which have been reconstructed in 2001. It has to be stressed that energy efficiency principles means to realize new, modernized drive with better performances and greater capacity for the as small as possible amount of increased installed power of separate drives. In the paper are also, graphically presented achieved energy savings results, based on measurements performed on separate parts of paper machine, before and after reconstruction.

KEYWORDS

paper machine, energy efficiency, electric drive, frequency converters, PLC control

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