у проекті використовується окремий модуль керування, в якому можна підлаштовувати швидкість намотки. Представлений проект реалізований у вигляді окремої додаткової мобільної конструкції, яку можна надбудовувати до інших моделей ламінаторів чи на аналогічних технологічних стадіях, що робить її універсальною та затребуваною. Наведене інженерне рішення прискорює виробничий процес виготовлення поліграфічного замовлення та зменшує відсоток браку готової продукції.

UDC 686.12.056

© **Olha Pidvyshenna**, 3rd year student, Publishing and Printing Institute National Technical University of Ukraine 'Igor Sikorsky Kyiv Polytechnic Institute', Kyiv, Ukraine, 2021 y.
Supervisor: A. I. Ivanko, PhD in Engineering Sciences, Assistant Professor, Publishing and Printing Institute National Technical University of Ukraine 'Igor Sikorsky Kyiv Polytechnic Institute'

PNEUMATIC CONVEYOR FOR SHEET MATERIALS

В цій статті розглядаються пневматичні транспортери для переміщення аркушевих матеріалів. Їх принцип роботи ґрунтується на основі використання та подачі підготовленого повітря. Процес транспортування має ряд позитивних характеристик, опис яких наведений у цій публікації.

Using of pneumatic systems for the transportation of sheet materials is now being rapidly introduced into printing industry. These transport systems have a number of advantages over traditional mechanical conveyors.

The main components of the pneumatic conveyor for the transportation of the sheet materials, which is described, are the conveyor belt of a certain length; the pneumatic chamber; the limiting elements of the pneumatic chamber and the inclined nozzles, which are placed in it.

The characteristic property of the work of pneumatic conveyors is that the sheet materials getting on the conveyor belt is transported by compressed air. The air accumulated in the pneumatic chamber flows out through the inclined nozzles and forms a so-called air cushion under the sheet materials. Due to the fact that the nozzles are settled at a certain angle, the material can be transported in the right direction. Depending on the geometric parameters and the type of material, the amount of supplied air can be programmatically adjusted.

The combined transportation systems can be used by using prepared evacuated and compressed air in pneumatic atmosphere. Compressed air is used when the semi-finished product is fed outside the closed atmosphere. And evacuated air is used when it is necessary to transport in the closed atmosphere of the transport system.

Depending on the size and properties of the material, the appropriate supply pressure of compressed or evacuated air is selected. The main requirement for compressed and evacuated air is following. The working atmosphere must be clean and dry to ultimately obtain minimal positioning errors of the sheet material.

Transportation of sheet materials using pneumatic technologies has a number of advantages. Firstly, these transport systems do not take up much place and do not have a large mass and can be quite powerful and fast, which is a great positive factor for further design of printing conveyors, which usually occupy a large area and have a large mass. Secondly, the creation of an air atmosphere is relatively inexpensive and always available. Also, pneumatic systems with proper operation have a long mechanical life. Additionally, the actuators deteriorate less and do not require frequent replacements, and the systems are protected against overloads.

Pneumatic conveyors do not require mechanical grippers and clamps. Accordingly, the sheet materials are not deformed or damaged, and in the end we get a qualitative printing product.