PROCESS AUTOMATION THROUGH PD PROVIDER IMPROVEMENT

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Annotation: Currently, the PD feeder is mainly installed on gin, 1-XK, SCH-02 equipment. The main function of this equipment is to pick and supply seeded cotton. The process is automated by improving the integral parts of the PD provider.

Keywords: PD feeder, pile drum, 1-XK, SCH-02, IVA variator, vibration sensor, gin, mesh surface, rod, conveyor.

Introduction

In today's fast-paced business environment, optimizing processes is essential for staying ahead of the curve. One avenue for achieving this optimization lies in harnessing the power of Process Automation through PD Provider Improvement. This approach involves not only automating repetitive tasks but also enhancing the performance of service providers to maximize efficiency and quality. In this introduction, we will explore how organizations can leverage process automation and provider development to streamline operations, drive innovation, and ultimately achieve their strategic objectives. Join us as we embark on a journey to uncover the transformative potential of Process Automation through PD Provider Improvement.

The main task of the feeder installed on the gin is to deliver the seeded cotton to the working chamber of the gin evenly. The working process of the PD model ginning equipment is as follows: seeded cotton falls into a shaft mounted on the ginning machine. Counter-rotating feed rollers (1) carry the seeded cotton evenly from the shaft to the pile drum (2), which drags the cotton over a mesh surface (3) to give it a final clean of fines. Cleaned seed cotton is transferred to the rod (4) using

a pile drum and falls into the working chamber of the gin. Separated dirt is removed from the equipment using a belt conveyor (5).
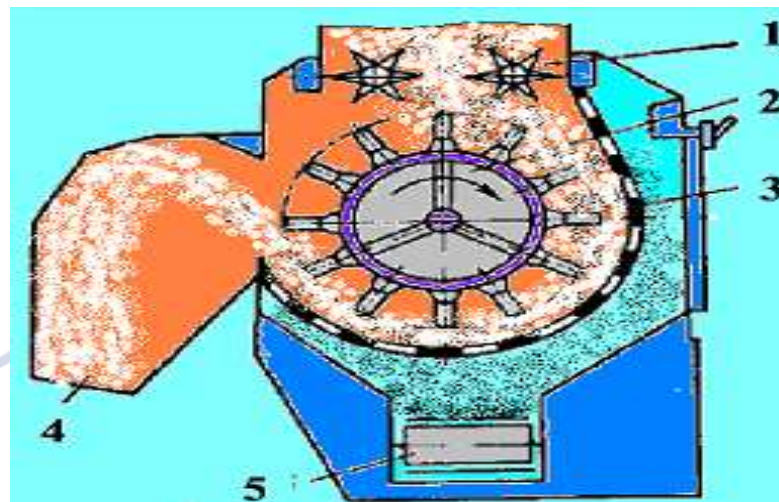

Figure 1.

The main working parts of the PD model gin feeder equipment are pile drum with feeder shaft. The structural structure and dimensions (parameters) of these working parts are similar to the structure of the supply shaft and pile drum installed in seed cotton cleaning equipment (1XK, SCH-02), only there may be differences in their dimensions. Due to the fact that the rotation speed of the supply rollers (1) is adjusted by the IVA type pulse variator installed on the axis of this roller, the volume of seed cotton transferred to the working chamber of the gin can be more or less, that is, it provides an opportunity to control the productivity of the gin equipment [1].

Variator is a device that smoothly changes the transmission ratio between the drive and the working mechanism. The stepless transmission is the main part of the variator. It ensures the operation of machines and mechanisms at optimal speeds in various conditions [2].

Summary

In conclusion, it should be said that the automation of equipment and reduction of the human factor will certainly be somewhat beneficial to the enterprise. The PD drive can operate at a speed of 0-20 rpm. Stopping or moving the PD provider is done by the human factor with the help of a variator.

In order to improve this, we install a vibration sensor on the mechanical force acting part of the working chamber.
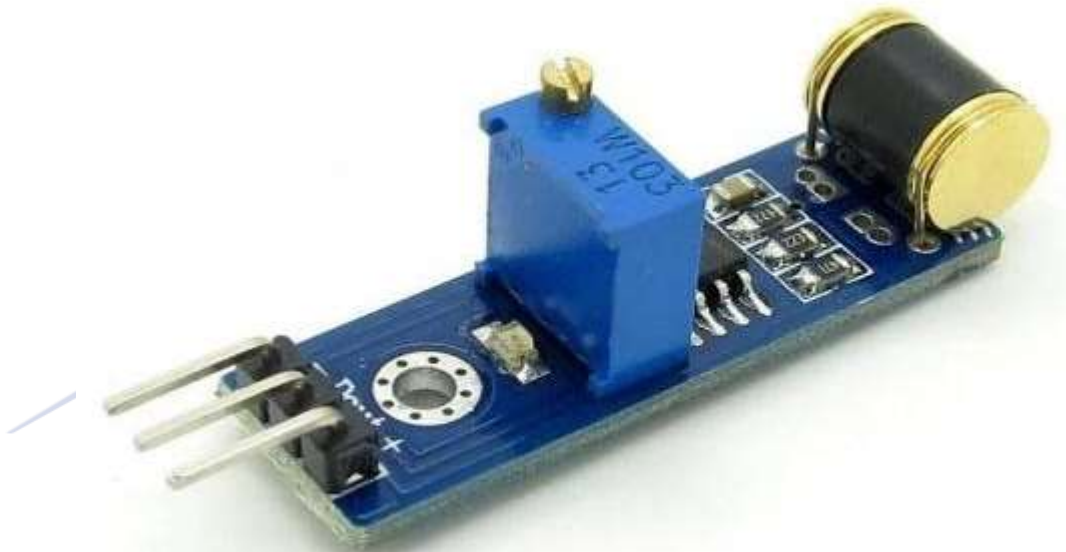

Figure 2. Vibration sensor[3].

It is known that the movement of the PD feeder is inextricably linked with the density of seed cotton in the working chamber. That is, when jams occur in the working chamber, the supply roller stops, and on the contrary, it is started again with the help of a variator when the seeded cotton is processed. If a vibration sensor is used, the sensor automatically stops the movement of the feed roller when jams occur in the working chamber. It does not require additional manpower and therefore does not result in excessive spending of money. In addition, control integrity is ensured. Therefore, the change in the quality of raw materials is noticeable.

References:

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