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Industry Notification - Printing Machinery

Delta Compact Vector Control Drive
Print Cutting Solution for Plastic Woven Cloth

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Introduction

- **Function**

  This application uses an inverter to process raw plastic woven cloth into finished woven bags products via the printing and cutting procedures. The print cutting machine drives the motor with the inverter, and pulls the plastic woven cloth on the feed reel to the printing mechanism. After the pattern printing is completed, the folding procedure is then performed, followed by the fixed-length cutting and heat sealing that are carried out after positioning by the AC servo system, which ultimately produces the woven bag with the printed pattern.

- **Application**

  Suitable for printing, sewing, folding, and cutting all kinds of cylindrical woven cloth. Its products are mainly used on packaging bags for cement, fertilizer, and metal ware.

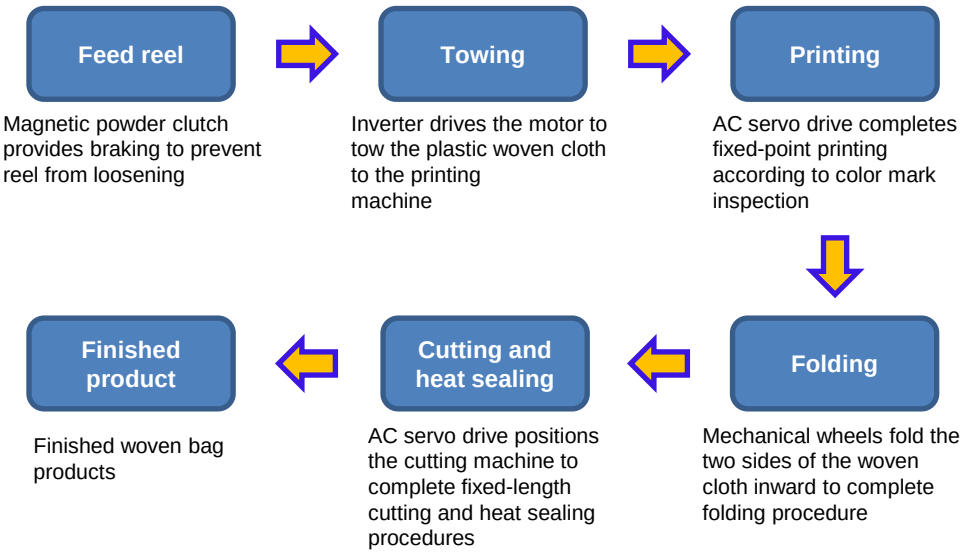
Process

- **Description**

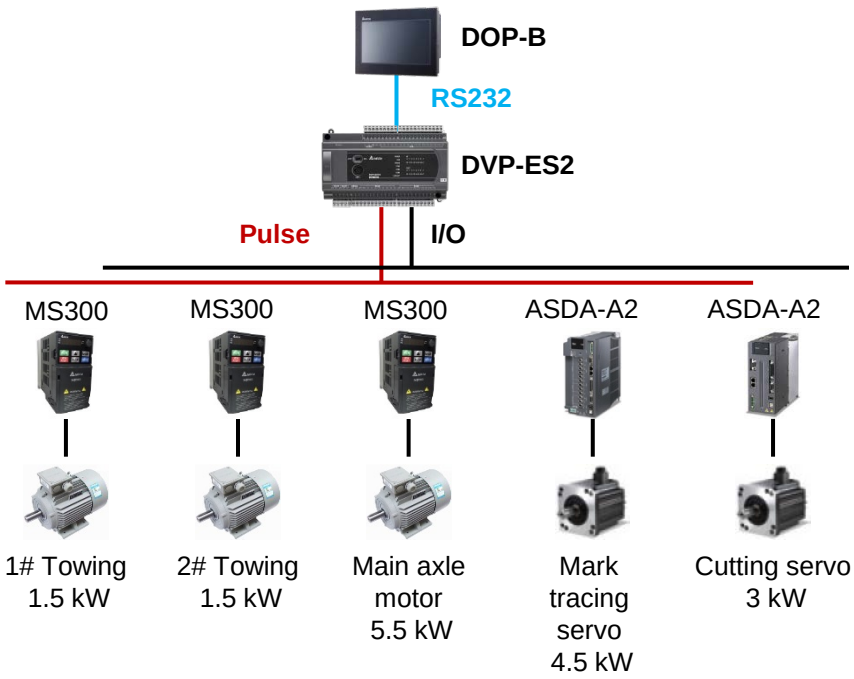
  The technological structure of this application uses the Standard PLC DVP-ES2 Series as the main control. Considering the motor’s deceleration ratio and the reel diameter for the plastic woven cloth as critical factors, the controller program uses the pulse train to transmit the speed frequency command to the inverter's MI7 terminals to achieve the motor driving.

  In addition, the system is comprised of two sets of Vector Control Compact Drives MS300 series, with one driving inverter used for controlling the main and auxiliary frequencies, while the other is used with PID control for the two frequencies. Among them, the linear speed frequency is used as the auxiliary frequency, and the PID output is used as the main frequency. The tension pendulum (0 ~ 10V) is used as the PID feedback signal.

  The two AC Servo Systems ASDA-A2 Series perform electric cam function. One set of AC Servo Drive prints the patterns on the plastic woven cloth by positioning the printer to perform fixed-point printing. The other set of AC Servo Drive positions the cutter to complete the fixed-length cutting and heat sealing for the plastic woven cloth.



Delta Solution



Device List

Type	Function	Model	Quantity
Standard PLC	Main controller	DVP32ES2	1
Vector Control Compact Drive	Motor to tow the drive	VFD4A2MS43ANSAA	2
	Drive for main axis motor	VFD13AMS43ANSAA	1
AC Servo Drive	Positioning of mark tracing and printing	ASDA-A2-4543-U	1
	Positioning of cutting and heat sealing	ASDA-A2-3043-U	1
10.1-inch Widescreen HMI	System status setup and operation	DOP-B10S615	1

Features and Advantages

The AC Servo System features built-in electric cam for precise positioning

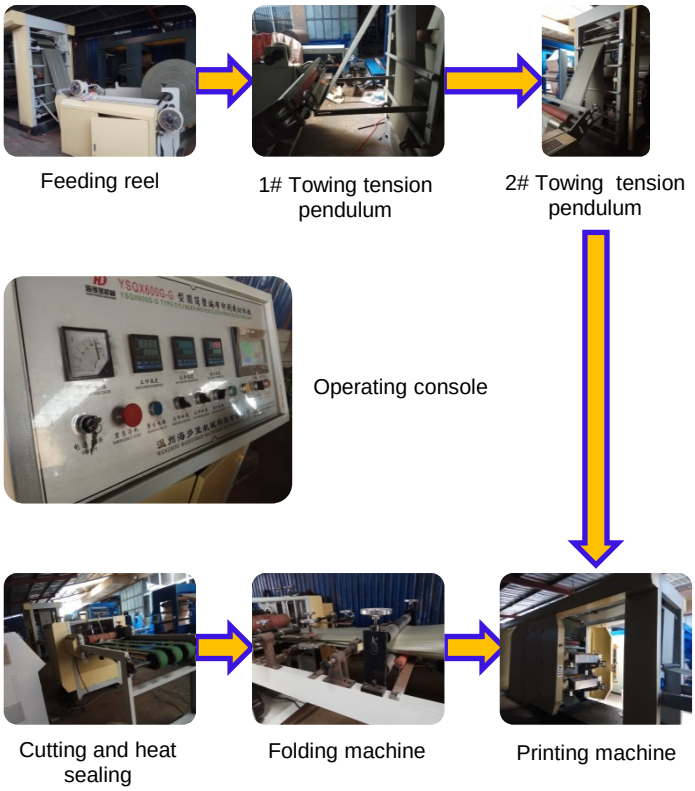
- Cam profile with up to 720 points for powerful positioning.
- Smooth interpolation can be automatically set between any two points on the curve to ensure smooth motion of machinery.
- Suitable for rotary cut, flying shear, or other motion functions to achieve precision positioning.

Inverter’s main and auxiliary frequency PID application for perfect vector control

- With PID tension control built inside inverter, programming of the controller can be effectively simplified to facilitate equipment tuning and maintenance.
- As the auxiliary frequency, the linear speed is directly transmitted to the inverter's MI7 terminal via pulse communication. It can quickly respond to the equipment’s speed adjustment and reduce the risk of communication interference.

Delta Compact Vector Control Drive offers superior performance to create system advantages

- Delta Compact Drive MS300 Series features built-in PID function for the main and auxiliary frequency that can be used on the retractable reel with tension feedback
- The MI7 terminals receive pulse communication as a frequency command to simplify commands of the control system, shorten the tuning cycle, and reduce the cost of system configuration



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