UNICO

Overview

The RDC™ drive controls a rotary die cutter for corrugated, paper, and other nonmetallic web applications. Specifically engineered die cutter application software embedded within the drive eliminates the need for an external controller. When used in conjunction with a programmable logic controller (PLC), the drive forms a powerful automation work cell that can be easily integrated with other Unico automation cells to build a complete processing line control system. The drive can also be configured to stand alone with discrete I/O and a dedicated HMI. Embedded control reduces system complexity while taking full advantage of the exceptional performance, flexibility, and ease of use of Unico drives.

Features

Cut-to- Register

The rotary die cutter control cuts a continuous web or precut sheets of material into specified register lengths. Two different modes offer the choice of cutting relative to either a leading-edge sheet sensor or to printed registration marks using a mark detector to scan the web. Windowing features minimize spurious mark errors during registration cutting.

Cyclic or Constant -Velocity Modes

Master/slave control simulates line shafting and can replace traditional mechanical gearing in constant-velocity applications. A cyclic mode allows single or multiple die plates/toolings per revolution of the cylinder, giving the flexibility to run repeat registers longer than the register repeat length of the machine. A typical example is leading and trailing edge tab cutouts with scoring within the body of the sheet.

Dynamic Register Correction

A dynamic correction feature ensures repeated registration on the fly, eliminating the traditional trial and error as well as the associated scrap. In constant-velocity mode, this feature may or may not be used depending upon the web and tooling on the die cylinder. Small corrections are possible within the revolution when the tooling is not in contact with the web or where there is minimal contact without web or tooling damage. In cyclic mode, correction is automatic and occurs during disengaged angle(s) of the tooling on die cylinder. The maximum correction per cylinder revolution is a scalable variable.

Simulators

Two simulation tools facilitate setting up, testing, and troubleshooting a rotary die cutter system. A line simulator makes it possible to run the die cutter without material by simulating material feedback. A mark detector simulator provides marks at a specified separation to allow testing in cut-to-mark mode.

Micro Advance/Retard Adjustment

A micro adjust feature compensates for errors caused by slippage or register mark variation.

Features
(continued)

Maximum Line Velocity Calculations

The program calculates the maximum velocity at which the line can operate in cyclic mode. The velocity is computed using a number of parameters that describe the die angles of engagement and number of stops per revolution of the cylinder.

Cam Outputs

Software-generated programmable limit switch (PLS) outputs replace mechanical cams by electronically following the position of the rotary die cutter. These cams can be used to trigger/cycle external devices with each cylinder revolution at settable angles.

Communications Protocols

The drive supports a variety of serial communication protocols for connecting to virtually any PLC or HMI. The drive can also operate in a stand-alone mode using the built-in keypad/display with an ANSI protocol connection to a simple serial display unit.

• ControlNet	• EtherCAT	• CANopen
• CC-Link	• Profibus	• DeviceNet
• Ethernet	• ProfiNet	• Modbus RTU

Inputs & Outputs

All inputs and outputs are user-enabled and are mapped to hardware I/O points to allow customization of the control. They are also accessible through a high speed serial communication link.

Inputs

- motor on
- fault reset
- motor thermal ok
- motor blower ok
- jog forward
- goto position
- goto auto off
- auto
- order change
- follow source
- dereference
- cut to mark
- skip mark
- set window
- advance offset
- retard offset
- reference

Outputs

- motor on
- no fault
- no warning
- manual
- auto
- reference
- at position
- cut error
- line too fast
- at goto position
- at auto off position
- batch complete
- early warning
- missed mark
- open window
- cut to mark
- forward motion

- no ref warning
- thermal warning
- motor rms warning
- cam 1
- cam 2
- cam 3
- cam 4
- cam 5
- cam 6
- cam 7
- cam 8

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Unico is a leading global innovator of motion-control solutions for industry. Founded in 1967, the company develops, manufactures, and services variable-speed drives, application-engineered drive products, integrated drive systems, and ancillary products that improve operations by increasing productivity, safety, and equipment life while lowering energy and maintenance costs.