

...Application SOLUTIONS

Industry:
Packaging

Application:
Plastic Bag Sealing & Cut-To-Length

From Cleveland Motion Controls, Inc.

Background Description:

A manufacturer's bag machine was limited to 60 bags per minute at 6 inch lengths and bag lengths no greater than 20 inches (the length of the longitudinal sealer). The length limitation restricted products to only food packaging. Product change over time took about one hour. Parameter adjustments were difficult. The registration sensor required manual adjustment for registration mark alignment. Production was restricted because line speed cycled from high speed to creep speed to enable the registration sensor to identify the registration mark.

Problem:

Increase production rate, reduce setup time and increase bag length capacity.

Objective:

A competitive market required reducing bag manufacturing costs by increasing production rates and reducing setup time. Market opportunities required the machine to be modified to produce a broader

product range, including large non-food packaging. It would also enable the machine to be aligned with other continuous in-line processes.

CMC® Product Solutions:

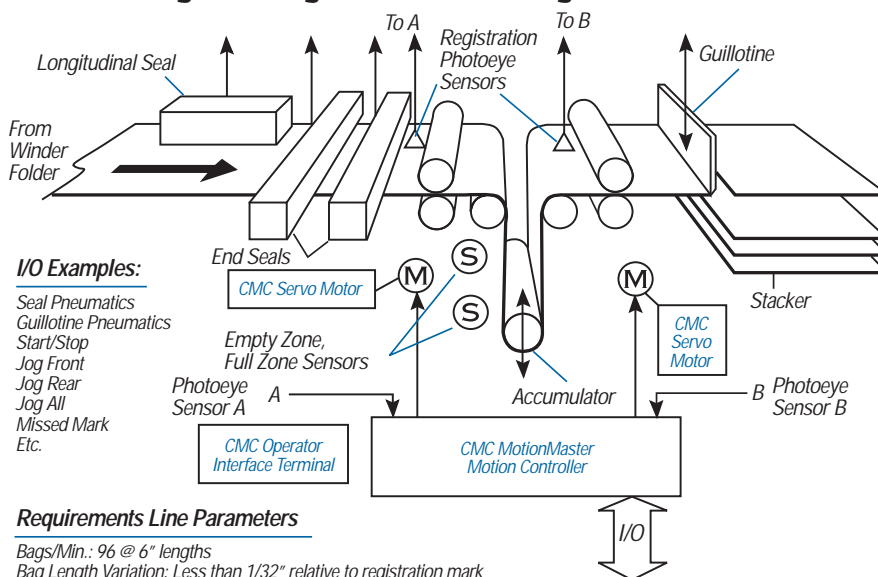
- CMC Multiple-axis coordinated MotionMaster® Motion Controller utilizing a two-axis integrated Drive/Controller Chassis including:
 - (2) Multifunction Interfaces (MFI).
 - (2) Thirty-two I/O Chassis.
 - Panel-mounted View Pad.
 - Four-line Vacuum Fluorescent Display.
 - Panel-mounted Paper Tape Printer.
 - (2) ACM 4500 AC Brushless Rare Earth Magnet, Servo Motors.

Key Features & Benefits:

- Two-axis CMC Distributed MotionMaster Motion Control System offers a total application solution:
 - Increasing production up to 60%.
 - Reducing setup time from 1 hour to only minutes.

- Increasing throughput and improving quality with parameter adjustment that can be made "on the fly."
- Eliminating memory loss due to power failures or shut downs with parameters stored in non-volatile memory.
- Reducing setup time with machine settings correlated by product (available from memory on-line or printed hard copy).
- Preventing miss-entry of information with a fail-safe setup that checks each entry to be within pre-established bounds.
- Minimizing troubleshooting time with a large library of diagnostic messages.
- Providing consistent quality and eliminating misread registration marks by allowing identification of a registration mark within print clutter.
- Maximizing up-time and providing consistent quality with a missed mark alarm that indicates dirty or defective registration sensors or poorly printed marks.
- Assuring consistent quality with accurate registration mark windowing that looks for a registration mark within a defined length segment.
- Minimizing installation time because system is delivered, assembled and tested with proven custom software.

Plastic Bag Sealing and Cut-To-Length Line



I/O Examples:

Seal Pneumatics
Guillotine Pneumatics
Start/Stop
Jog Front
Jog Rear
Jog All
Missed Mark
Etc.

Requirements Line Parameters

Bags/Min.: 96 @ 6" lengths
Bag Length Variation: Less than 1/32" relative to registration mark
Seal time Accuracy: 10 µ. second

Why CMC?

- Offered single source responsibility for complete motion control system.
- Provided cost-effective solution that met performance and delivery requirements.
- Application engineering assistance and know-how.
- Complete system documentation, start-up and operator training.
- 25 years of industry expertise.

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Key Reasons For CMC Product Selection

Cleveland Motion Controls provided a cost-effective engineered system solution that met the performance, application, and delivery requirements of the customer. CMC's application engineers worked closely with the manufacturer to provide the production rates and machine flexibility required. Productivity increased dramatically and generated system payback within months.

A two-axis CMC MotionMaster Motion Control Servo System was used on the two independent sections of the machine, sealing and cut-to-length. One axis was controlling the nip rolls in the sealing section, to index according to bag length or the intermediate length dictated by seals greater than the longitudinal sealer. The second axis was controlling the cut-to-length section's nip rolls to control bag length. The accumulator section isolates the sections to satisfy intermediate storage for multiple seal bags with lengths greater than the longitudinal seal. High speed communications between each axis provided coordinated control for each section's nip rolls based on bag length. Sensors are used as inputs to the CMC MotionMaster Motion Controller to provide automatic cycle adjustments when the accumulator is too full or too empty due to web threading, registration hunt, or product length change.

Competitive Considerations

Several competitors actively pursued this project, including the vendor whose equipment that was originally installed on the machine. CMC provided the most comprehensive solution, supporting the performance and payback claims with comprehensive engineering analysis. CMC's total solution

overcame the fact that CMC was not the lowest priced bidder. Actual operating results met or exceeded all claims. The customer has several additional machines to

be retrofitted as a result of this successful retrofit.

Other CMC® Integrated Solution Capabilities:

CMC MotionMaster® Process Control Systems For Factory and Machine Automation

- PC-based, open architecture allows "plug and play" with other PC-based equipment for plant-wide networking, man machine interfaces, logic control, etc.
 - PLC: Allen Bradley PLC/5, Siemens, Modicon, GE, and Reliance, interface directly with almost any proprietary or open PLC communications network.
 - Operator interfaces: flexible connectivity to PC hardware and software such as Wonderware™, Factory Link™, Panel View™, Genesis™, Icom™.
- High speed connection and multitasking capability allows the CMC Motion Controller to meet your most challenging objectives.
- Real-time machinery automation control systems for both motion and logic control for automating a wide variety of industrial machinery.



Motors and Amplifiers: Brush-type and Brushless

- 0.75 in-lb. to 450 in-lb. Continuous Stall Rating, 0.4 KW to 16 KW
- Maximum speeds above 40,000 RPM (slotless)

Aximaster® and Aximate® Motion Controllers: Aximaster

- Digital, single-axis motion controller.
- 14 in-lb. to 375 in-lb., 0.4 KW to 3.4 KW, 1000 RPM to 9300 RPM.
- 1 MHz high-speed registration input.
- True multitasking capability.
- Random in-feed sequencing.
- Easy connection with operator interfaces and PLCs.

Aximate

- Cost-effective, multi-axis motion controller.
- High level programmability, and communication capability.

DC Drives

- 1/4 HP to 1000 HP
- Digital and analog version.

Web Tension

- Sensors, indicators and controllers.

DIGIVECT™ Flux Vector High Performance AC Drives

- 10 HP to 150 HP high performance AC drives deliver 100% full load torque at zero RPM.

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