

...Application

SOLUTIONS

Industry:
Packaging

Application:
Ice Cream Filler

From Cleveland Motion Controls, Inc

Background Description:

A well-known ice cream manufacturer was encountering packaging line problems with respect to registration errors, offset, and reliability problems emanating from the packaging line's existing clutch/brake mechanical system.

Key Reasons For CMC

Product Selection:

The CMC Aximaster was selected because of its ability to provide a cost effective, maintenance free reliable solution that would easily adapt to the existing system. The Aximaster with its self contained

'state space' servo controller, digital amplifier and power supply makes it the perfect solution where size and performance are a factor.

Problem:

The existing system was slow, inaccurate and a maintenance problem. A decision was made to retrofit the line with a new servo system. The system had to include complete programming and startup assistance, and interface with an existing PLC that controlled the overall process

Objective:

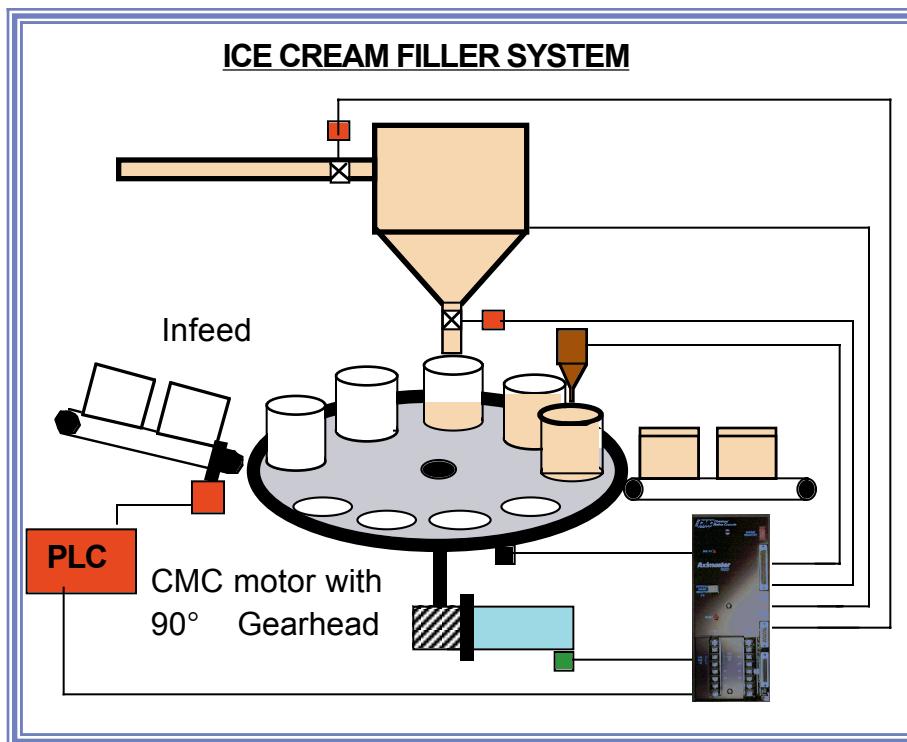
The manufacture wanted to increase the accuracy and correction ability of a ice cream filler system. The system had to work with an existing PLC system to quickly index the platen without spilling the soft product. This all had to be accomplished with a continuous flow of ice cream to the system

CMC® Product Solutions

- Aximaster 9000D Single-Axis Motion Controller
- BMR4000 Series AC Brushless Servo Motor
- View Pad Operator Terminal for the Aximaster 9000D

Key Features and Benefits:

- The Aximaster 9000D Motion Controller provided a total integrated system solution
- Improved process repeatability with Aximaster's hardware registration
- Reduced installation time with the compact-sized Aximaster enclosure that easily fits into existing control cabinets.



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Solution:

The Aximaster 9000D was used to drive a BMR4000 series motor to index a platen thru a 5:1 right angle gear box. To start the process the Aximaster would be given a home command from the PLC. When the home command was received, the Aximaster would arm its hardware registration, and index the platen until a registration input was received. When the registration input goes true, the Aximaster will drive the platen to the proper starting position. At this point the Aximaster will index the platen several times to get empty containers under the fill spout. With the containers in place, the Aximaster will start the product flow by energizing two solenoid valves. For greatest efficiency, once the solenoid valves are opened, they will stay open. Generally the flow of product will not stop until the end of the run. As the container is filling, the Aximaster will wait for a 'full' signal from a load cell before indexing to the next container. The positioning accuracy is very important in the next step of the process. When filling ice cream containers, the process may call for a second fill station to top off the container with a 'decorative' rich fill. This is important for ice cream containers having 'windowed' lids.

Multi Tasking:

The Aximaster is capable of eight simultaneous user defined program tasks. While this program is doing its motion, it is also handling an operator station with several I/O's and an RS232 display terminal. The I/O consists of operator switches such as jog, start, stop, auto, manual and others. While in auto (run) mode,

In manual mode, the display and its numeric keypad are used to enter container size and index distance, and to home the platen to the in feed and out feed belts.

The automatic mode supports an enhanced diagnostic feature to display several system variables for trouble

Other CMC Integrated Solution Capabilities:

Aximaster 9000D Motion Controller

- Easy-to-use digital motion controller is versatile and can be quickly configured in a variety of single and multiple axis control solutions.
- Fast, convenient setup through controller's RS-232 port connected to any IBM PC compatible computer.
- Precise control repeatability with digital circuitry that eliminates potentiometer and uses auto-drift compensation and auto tuning capability.
- Future configuration changes accommodated with flexible open architecture design.
- Random in-feed sequencing.

Operator Interfaces for Aximaster 9000D

- Choose from a variety of operator interface solutions.

AC or DC Brushless Servo Motors

- Meeting the needs of applications that demand fast response, accurate control and maintenance-free applications.
- Highly responsive, providing smooth operation throughout the speed range.

CMP2000 32 Bit Controller

- High performance State Space control algorithms, provide 'on the fly' corrections
- Programmable- Jerk limiting, Electronic CAM profiling, Moving frame of reference, Master Slave synchronization and Registration
- Up to 230 axes + of motion control
- High level Multi-tasking programming language with embedded editor and compiler

Aximate CAN

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

DC Drives

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

Why CMC?

- Our ability to respond to your performance and delivery requirements.
- Single source for all your motion control requirements.
- Customer support before during and after the sale.

the display terminal is used to show the container size and containers per minute.