

# Application Note: Indexed Motion

May-04



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## INDEXED MOTION - SYNCHRONIZED TO RAM POSITION AND SPEED!

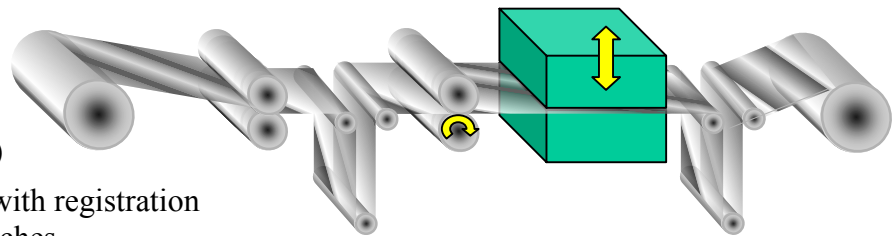
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### OBJECTIVES

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A customer wanted to upgrade their production printing and embossing machines that used complex gears and mechanisms. In addition to being cost effective, the solution needed to:

- ④ Support multiple-pass operation.
- ④ Simplify setup to handle batch mode operation (JIT)
- ④ Improved product quality with registration accuracy less than 0.002 inches.
- ④ Reduce machine complexity and maintenance issues



Since this customer's products varied in length, lot size, and production rates, a less sophisticated control solution would be insufficient.

### WHY EUROTHERM DRIVES, INC.?

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Unique features of the 637 series servo controls make it an ideal solution for this application. Using input from speed and position sensors connected to the ram, the 637 intelligent servo controller calculates the optimum motion profile. It indexes the material into place during the ram's up-portion (angular position) in the cycle to allow production at various ram speeds. The built-in non-linear acceleration profile minimizes many of the mechanical issues.

### BENEFITS

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- ④ Operation from 460VAC and small size allowed installation into existing control enclosure
- ④ Non-linear acceleration profile minimized many of the material and mechanical issues.
- ④ High resolution feedback provided the desired positional accuracy
- ④ Re-registration capability allows multi-pass production material
- ④ HMI simplifies input of system parameters and recipe items



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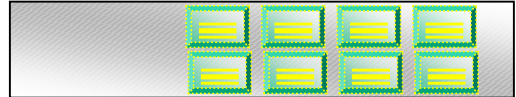
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## CONTROL REQUIREMENTS

The Servo Control system replaced the mechanical gearing components utilized by the original OEM. Our **NX series** servomotor supplied with a low backlash gearhead provides the motion.

Operators use an HMI to input of index distance, registration offset and production

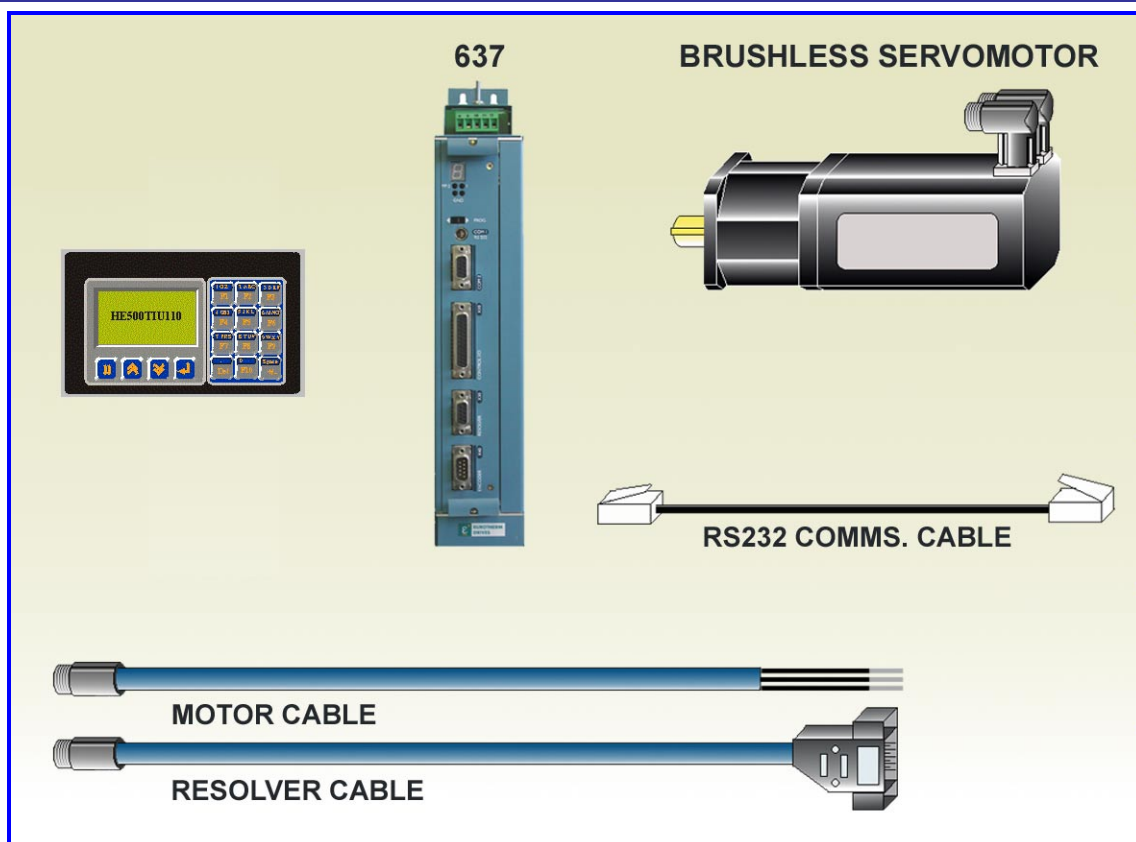


lot size. The 637F dynamically calculates the optimum motion profile as a function of HMI parameters, Ram speed and position. Its extensive I/O allowed the machine to retain Jog functions and interface into the existing PLC and controls. Down time and changing of mechanical gears is eliminated.

## OTHER USES

This solution can also be used on high accuracy cut-off applications.

## COMPONENTS USED



**Business into Motion!**