

Doc No.: AN-1003

Version: 1.0

Date: 27 March 2025

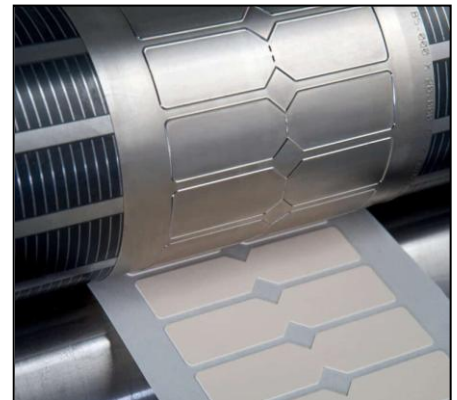
Subject: Rotary Die-Cutting Machines with Trio Motion Solution

APPLICATION NOTE

www.triomotion.com

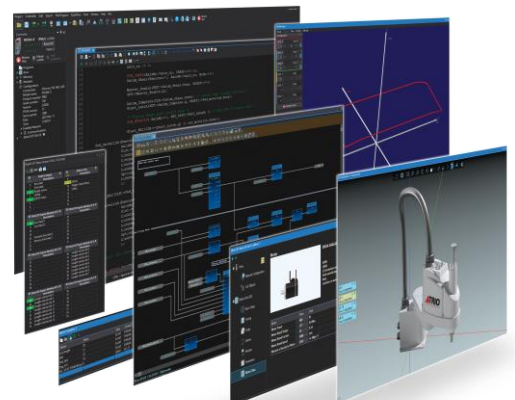
Introduction

Die cutting machines require precise synchronized motion between servo axes for accuracy. The Trio Motion solution is a high-performance motion control system designed to enhance the speed and efficiency of die-cutting machines. High level motion functions make it easy to implement and shorten development time. This application note highlights some of these features and capabilities to support die cutting.



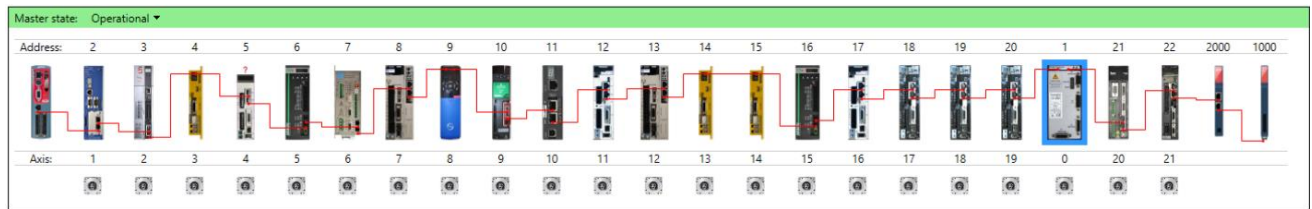
Key Features of Trio Motion Controllers:

- **User-Friendly Software:** Streamlines Motion and HMI programming, servo parameter configuration, tuning, and commissioning through intuitive tools in our Motion Perfect development environment, which seamlessly integrates with the all-in-one terminal for enhanced efficiency and ease of use.



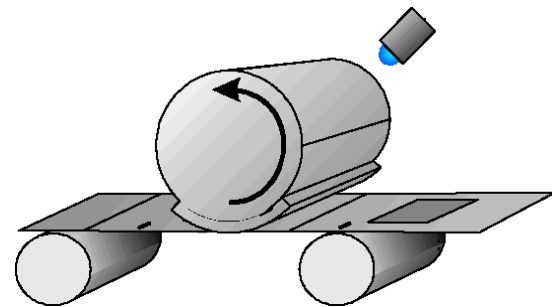
- **EtherCAT Integration:**

Seamless communication with multiple axes and devices for real-time control.



- **Advanced Motion Profiles:**

High-level motion command such as FLEXLINK, MOVELINK enables tight synchronization and coordination of multiple axes, ensuring precise motion control. This is particularly beneficial in die-cutting machines where high-speed and accurate alignment of cutting tools are critical for maintaining product quality and reducing waste that improves efficiency and throughput.



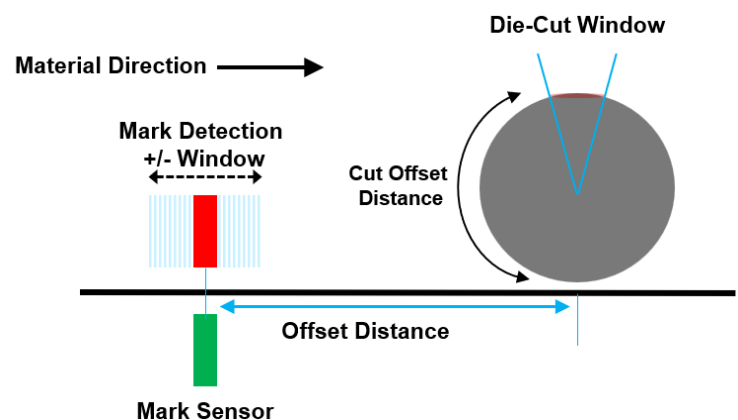
- **Flexible Tension Control:**

Superimposed Position functions enable seamless dynamic position adjustments across multiple roller axes within the machine. This helps minimize tension and reduce following errors, all while the axes remain synchronized and geared to a master.

In addition, for the winder/unwinder application, you can utilize Torque mode over EtherCAT (CST). This allows you to leverage the actual motor feedback to accurately calculate the roll diameter for internal computations.

- **Accurate Registration Mark Capturing:**

Trio Motion's accurate registration mark capturing (60 to 125µs) ensures precise detection and synchronization with registration marks, optimizing alignment and reducing waste in high-speed applications like packaging and die-cutting.



- **Cost-Effectiveness:**

Trio's solution in die cutting minimizes the need for extra software by seamlessly integrating HMI, PLC, motion control, and drive setup within a single, unified platform.

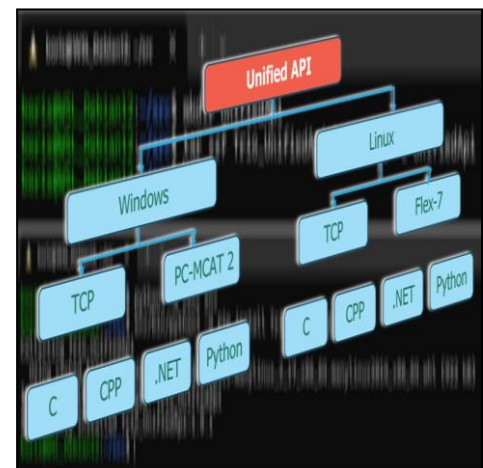
- **DC BUS Sharing:**

Trio's DX Series servo drives support DC bus sharing that reduces space and costs by eliminating the need for brake resistors on each axis. DC bus sharing ensures high-speed efficiency and error-free operation by redistributing regenerative power between axes.



- **Easy integration with PC-Interface:**

The Trio's solution offers seamless integration with PC interfaces through its Unified API. This API provides a shared memory interface or TCP/IP connection, enabling efficient communication between the PC and Trio's Motion Coordinator that simplifies programming across different platforms and compatible with **Windows** and **Linux**.



In summary, die cutting and labeling machines require high-performance of synchronized servo axes. Features such as MOVELINK and tight registration make Trio Motion solutions ideal for improving productivity, precision, throughput, and cost-efficiency in these applications.

For more information, visit [Trio Motion Technology](https://www.trio-motion.com).