

## Application Examples with 6000 Based Software

### Position-Based Following

Position following is a standard feature on all 6K and 6000 series controllers. Position following is commonly used in applications such as:

- Electronic gearbox
- Flying Cutoff
- Random Timing Infeed
- Web Processing
- Product Spacing
- Cut-to-Length

Positioning following can include continuous, preset, and registration-like moves in which the velocity is replaced with a ratio.

Position Following allows for these capabilities and more:

- The slave may follow in either direction and change ratio while moving.
- Phase shifts are allowed during motion.
- Ratio changes or new moves may be dependent on master position or based on receipt of a trigger input.
- A slave axis may perform following moves or normal time-based moves in the same application because following can be enabled and disabled at will.

In position following, acceleration ramps between ratios are dependent upon a specified master distance. Product cycles can be easily specified with the "master cycle concept."

### Continuous Process Automation

In any continuous process, throughput can often be increased if familiar motion functions are done on moving targets as opposed to stopping the process. For example, a conveyor belt carries trays of parts which are to be unloaded. If a controller could detect and track the motion of the tray and then perform pick and place operations on those parts without stopping the process, overall efficiency would be dramatically increased.

The Position Following feature of the 6K and 6000 controllers has the capability to solve continuous automation process applications. Controller capability requirements range from simple concepts, such as electronic gearbox, track ball and slave feed-to-length, to complex changes of ratio based on master position. Common applications include packaging, printing, continuous cut-to-length, and coil winding.

The following examples represent common applications in packaging and printing. Each application demonstrates the advance and retard capabilities or the use of the Periodic

Master/Slave Synchronization features of the 6K 6000 controllers. The latter feature is important for applications in which periodic operations must occur in intervals which are not perfectly repeatable. For these, the master and slave must be resynchronized every cycle.

The features of the 6K and 6000 controller's following package that are used here are not specific to these applications. They can be combined in a variety of ways to solve almost any application which requires coordination and synchronization of multiple axes. Even if you do not recognize your exact requirements in these examples, there is a very good chance that your synchronization application could be solved using these features.

### Electronic Gearbox

Two or more axes are "electronically" geared together to maintain an exact relationship between the different axes and allow any mechanical gearing or linkages to be removed. Mechanical backlash and wear are eliminated.

### The Following Applications are Highlighted:

#### Random Timing Infeed

Randomly spaced product on a conveyor is adjusted so that it is placed precisely on another conveyor for a later process. See following description.

#### Product Spacing

A method of spacing out product that may have been cut in a flying cutoff process without stopping the product. Production times are reduced as the product does not have to be stopped to be separated.

#### Web Processing

Any process that must be performed on a continuous web of product can be accomplished on the fly with following. See following example on next page.

#### Flying Cutoff (cut to length)

A continuous bar sheet or other extrusion of material is cut to specific lengths while the material is in motion. Production times are reduced as product does not have to be stopped to be cut.

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