

Customer: **Extreme Packaging Machinery**

Application: **Shrink Packaging Systems**

Product Used: **TCF Drive**



Shrink to Fit with TCF Series Drives

Extreme Packaging Machinery's automatic shrink-packaging systems are found in industries from games and software to sporting goods, automotive supplies and home improvement. First introduced in 1999, their EXTREME Series can be fitted with a wide variety of indexers, product accumulators, collators and feeders for easy integration into any product line.

Controlling the uniform speed of the conveyor belt and of the mechanically linked wrapping mechanism in the EXTREME shrink wrappers was a crucial design concern. "Maintaining consistent spacing between the products is paramount to obtaining good results in the wrapping and cutting process," explains engineer Mike Laurin.

A sudden change in load can cause the conveyor to slow down, disrupting the entire operation; a variable frequency drive (VFD) notices the change and adjusts the speed accordingly. Focusing on meeting the performance/price ratio, engineers at Extreme chose an open-loop vector drive from **Lenze-AC Tech**. As a result, they could increase the belt speed and maintain better control without any cost increase by using the open-loop vector control capabilities of the **TCF VFD**.

The target speed for the belt was 100 feet per minute. In tests using a tachometer to measure it, the target speed fluctuated one to two feet per minute in non-vector mode. However in vector mode, the speed fluctuated

one-half foot per minute. Using the **TCF** in vector mode Extreme engineers attained excellent speed control, economically and with no complications. Based on the varying speed wrapping requirements of items as different in size and weight as toys, paper and home improvement products, the **TCF** proved the perfect fit.

Since a closed-loop vector drive relies on the use of a motor fitted with an encoder to monitor speed and position, it adds considerable expense. The **TCF** open loop vector drive uses a standard "off the shelf" AC induction motor and creates an internal "model" of the motor. The model is based on motor specs input by the user and by an auto calibration function whereby the drive calibrates itself to the applied motor during commissioning. The motor modeling and current sensing circuitry of **Lenze-AC Tech's TCF** create a system that delivers near closed-loop performance.

Product Benefits

- Improved speed and accuracy
- High performance current sensing circuitry
- Economical, cost-effective system component
- Compact size, rugged construction

TCF

