



Application Story

Pulse Train Output Features Cut and Bend Laminations for Core Transformers

For over 40 years, Electro-Core, Inc. of Washington, MO has been producing quality silicon steel magnetic core products for commercial, medical and defense industries. Simply put, they cut and bend thin (averaging 0.010" thick) laminations for transformer cores.



The electrical sheet steel that is used to make the transformer cores is delivered in rolls of a given thickness and width. The construction of a transformer core requires precisely cutting and bending pieces off of these rolls in constantly varying dimensions. In this case, a PLC was needed to control the feeding mechanism, the bending die, and the shear- all of which is integrated into one machine.

The V130-33-TR34 was chosen to complete this task. This high-speed output model needed to be able to take all the specification parameters into account, and determine the number of laminations needed to make a finished core. It also needed to calculate the lengths and bend locations of each individual lamination which change in regards to their position in the finished part. Floating point math and trigonometric function blocks were used to make the precise length and location calculations. The V130 had to solve the calculations in real time and control a servo motor running in stepper emulation mode. Ladder logic conveniently used subroutines to break the calculation and feed routines into manageable and easy to troubleshoot code blocks. The HMI conveniently allowed the core setup of the parameters to be entered directly on the control.

The PTO function further simplified the development of the machine controller. "The PTO function collection was used to control a servo motor acting in stepper emulation mode to feed material." Said Joe Tauser, a Unitronics distributor. "The PTO function kept us from having to write a custom protocol serial driver for the servo controller and simplified the system." The V130 provided a cost effective solution to the project by minimizing complexity and maximizing development time.