



Product

Tension Control System

Application

Aluminum Tape Making Machine

Highlights

- MTB 10-0-2 modular electromagnetic disc brake, with twin magnets, designed for consistent unwind tension control
- Low cost, open loop TCS 200-1 analog/manual control designed for use with electro disc tension brakes
- UT 30 analog ultrasonic sensor

A SE Asian aluminum tape manufacturer needed to upgrade the tension control on its primary tape making machine in order to improve their quality and throughput. The machine's existing system included a Warner Electric MTB 10-0-2 (modular electro-magnetic brake with two magnets) along with a manually-adjusted 0-24 volt control. The goal was to create a system that automatically adjusted the brake to compensate for the constant change in roll diameter during manufacturing. This modification would free up the machine operator to address other production needs.

Part of the challenge was that a wide range of products was manufactured on the single machine. Tape web widths varied from 1-3 inches and had a 10:1 range of tension. By careful calculation of performance, it was determined that the very low brake voltage required when the machine operated at lower tensions and thinner webs, led to quality consistency issues.

To free the operator from having to make manual adjustments, a Warner Electric UT 30 Analog Ultrasonic sensor was added, along with a TCS 200-1 Warner Electric control. The sensor provides an output signal within a 4-20ma range that reflects the changing diameter of the roll as it unwinds. The TCS 200-1 control takes the 4-20ma input and provides a 0-24 volt output to the brake allowing the brake to adjust automatically.

The application performance analysis also revealed that only one of the brake's magnets was needed for thinner and lighter tape webs. To meet these lower minimum values, a switch was added to disable one brake magnet when those materials are being run. The brake's second magnet can be easily activated when heavier and wider materials are processed.

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