

from Bodine Electric Company

■ Synchronous Gearmotors Simplify Design



Automated Bag Sealer / Packaging Equipment

Continuous band polybag sealers are used to package products from ground coffee, to snack foods, and from pet supplies to electronic products. They can seal almost any thermoplastic material, including polypropylene, polyethylene and foil laminates. These machines typically have two driven conveyors: the lower one moves packages through the machine, and the upper one drives the unsealed packages through two continuously heated

jaws. To insure that both top and bottom run at precisely the same speed the two conveyors are frequently coupled together with chains and sprockets.

By taking advantage of the unique properties of Bodine type 30R-D and 34R-WX AC **synchronous**, three-phase, inverter duty gearmotors, our design team worked with a packaging equipment OEM manufacturer on a solution that radically simplified their design.

Rather than joining the two conveyors mechanically, the team suggested that each conveyor should have its own gearmotor. By linking both gearmotors to a single AC speed control (VFD = variable frequency drive), the speed of both conveyors would always be precisely in sync. This not only eliminated the bulky chain and sprocket assembly, it also meant that there would be no need for feedback devices (encoders) or an expensive servo-drive system.

Choosing the right gearmotor was a matter of simple mathematics: if multiple AC synchronous gearmotors are operated from one inverter drive, the sum of rated motor power for all synchronized axes must be equal or less the rated output power of the VFD.

For a deeper dive into the unique characteristics of AC synchronous gearmotors and motors, view or download our latest tech note by clicking [here](#).

application insights

The Design Requirement

A manufacturer of an automated bag sealer required that two conveyors within the same machine operate at synchronous speeds.

The Solution

- Each conveyor is driven by a synchronous AC inverter duty gearmotor
- One AC speed control (VFD) was used to precisely sync both gearmotors
- This design upgrade allowed for the elimination of mechanical linkages (chains and sprockets) between the two conveyors



Custom Bodine type **30R-D** (top) and **34R-WX** AC (bottom) synchronous gearmotors.

We look forward to working with you on your next fractional-horsepower gearmotor design challenge.