



APPLICATION NOTE

BUILDING MATERIALS MANUFACTURING & CONVERTING

How Tension Control Improves Quality and Reduces Scrap

If you manufacture building materials, you're not simply producing insulation, roofing, flooring, or wallcoverings. You're managing wide webs, heavy rolls, laminated structures, coated materials, nonwovens, films, papers, foams, and metals through winding, unwinding, laminating, coating, slitting, embossing, punching, and converting operations. That means many building-material manufacturing challenges are not just material problems. They are web handling problems.

One of the most common misconceptions in converting is assuming that if material is moving through the line, tension must be acceptable. In reality, a web can be running while still stretching, wrinkling, wandering, misaligning, or quietly accumulating defects that won't become apparent until installation or end use.

Proper web tension control prevents stretching, wrinkling, breaking, and registration errors while improving product consistency, roll quality, lamination performance, and downstream process reliability. For manufacturers of building products, this directly impacts scrap rates, production efficiency, customer satisfaction, and profitability.

Building materials often consist of multilayer constructions, foam-based products, coated substrates, fiberglass reinforcements, adhesive laminates, or metal webs. These materials frequently operate within a narrow tension window. Too little tension can result in wrinkles, tracking issues, or poor roll formation. Too much tension can cause stretching, deformation, delamination, tearing, or permanent product damage. In these applications, "close enough" is often not good enough.

BENEFITS OF A TENSION CONTROL SYSTEM

Insulation Materials

Fiberglass and foam insulation products rely on maintaining consistent thickness, density, and dimensional stability throughout the manufacturing process. Fiberglass insulation requires careful tension management to ensure uniform product formation and winding. Excessive tension can compress or distort the material, while insufficient



tension may create handling issues and inconsistent roll quality.

Foam insulation products present similar challenges. Maintaining proper tension helps preserve product integrity, ensuring the finished material delivers consistent thermal performance and remains dimensionally stable throughout installation and service life.

Roofing Materials

Roofing shingles, roofing felt, housewraps, and underlayment products are often manufactured at high speeds and in wide-web configurations. Tension instability during coating, laminating, or winding can create wrinkles, dimensional variations, and tracking problems that compromise both appearance and performance. Maintaining stable web tension helps ensure consistent product geometry, proper coating application, and uniform roll construction, reducing waste while improving long-term weather protection.

Flooring Products

Vinyl and laminate flooring products require exceptional dimensional control throughout production. In vinyl flooring operations, excessive tension can create stretching and distortion that becomes visible during installation. Insufficient tension can cause wrinkles, poor tracking, and registration problems.

Laminate flooring production often involves multiple layers that must remain properly aligned. Stable tension throughout the process helps preserve layer registration, maintain flatness, and achieve consistent finished product thickness.

Wallcoverings and Decorative Surfaces

Wallpaper and decorative wallcovering products depend heavily on appearance quality. Small tension variations can create stretching, skewing, registration errors, or print distortion that negatively impacts installation and final appearance. Maintaining uniform web tension ensures patterns remain aligned and products remain dimensionally stable from production through installation.

Gypsum Board Manufacturing

Drywall production relies on paper liners being applied consistently to the gypsum core. If liner tension fluctuates, wrinkles, tracking errors, and adhesion issues can develop. Proper tension control allows the paper facing to remain aligned and bonded correctly throughout the manufacturing process, helping reduce quality defects and improve overall board consistency.

Geotextiles

Geotextile fabrics used in stabilization, drainage, filtration, and erosion control applications must maintain consistent mechanical properties throughout production. Excessive tension can damage fibers, initiate tears, or contribute to layer separation. Insufficient tension can lead to wrinkles, foldovers, poor winding, and material handling problems. Accurate tension measurement and control help ensure geotextile products perform as intended once installed in demanding field applications.

Façade, Cladding, and Structural Materials

Many exterior construction products utilize aluminum, steel, coated metals, composite panels, and formed sheet materials. During roll forming, coating, laminating, or punching operations, tension inconsistencies can introduce deformation, waviness, or dimensional variation. These defects can affect both aesthetics and functionality.

Poorly controlled material may result in fitment issues, weather-sealing problems, leakage pathways, or reduced structural reliability. Maintaining proper tension helps ensure consistency throughout the manufacturing process and improves final assembly performance.

Window Components and Weather-Sealing Materials

Many window-related products begin as web-

based materials. Fiberglass screen materials require controlled tension during manufacturing to maintain consistent mesh geometry and strength characteristics. Variations in tension can affect product appearance, dimensional stability, and long-term durability.

Weatherstripping products also benefit from proper tension control. During coating, laminating, and winding operations, stable tension helps protect compressible materials from deformation while ensuring adhesive systems, liners, and substrates remain properly bonded and stable during storage.

Sealing and Bonding Materials

Construction tapes, flashing materials, membranes, wraps, and underlayments are often produced through coating and laminating processes. Consistent tension is critical for maintaining coating uniformity, adhesive performance, and layer alignment. Inadequate tension control can produce wrinkles, telescoping rolls, stretching, web breaks, and other defects that increase scrap and reduce customer satisfaction.

THE BOTTOM-LINE BENEFIT

Across virtually every building-material converting application, the goal remains the same: produce a consistent product while minimizing waste, downtime, and quality-related complaints. Whether processing fiberglass, foam, nonwovens, films, papers, adhesives, laminates, or metal webs, accurate tension measurement and automatic tension control provide manufacturers with the stability required to run faster, reduce scrap, build higher-quality rolls, and improve overall process performance.

Dover Flexo Electronics has spent decades helping manufacturers of building materials and supplies improve web handling performance through precise tension measurement and control. By reducing process variability and eliminating tension-related defects, DFE systems help converters improve product quality, increase throughput, and deliver a measurable return on investment.

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