

Slitter Re winders Converting Industry **OEM Machine Development**

RA OEM Team





Allen-Bradley • Rockwell Software



Slitter Rewinder -Machine Basics & Challenges

- Slitter rewinders slit the processed roll or Web in to multiple rolls with required Width and Diameter
- Tension control along the web path is the prime parameter
- When the roll is slit in to multiple rolls, maintaining uniform tension at multiple rolls is very important
- Diameter calculation and recovering the values during power interruption
- Edge/Line guiding of Web at Un winder
- Line speeds requirement from 50 600 Mts / Min. (depends on various factors like web type, slit width, etc.)
- Safe Off system compliance to Global standards (CE, ISO...)



Slitter Rewinder - Machine Layout



Common Slitter Variants

- Unwinder
 - Motorized, with Load Cell Feedback (will require Diameter calculation)
 - Particle Brake controls the Unwind Tension, with a Web Tension feedback (Loadcell)
- Rewinder
 - Locked-core winding Motorized, with Load Cell Feedback, runs on Torque / Velocity mode.
 - Differential winding Motorized, runs on slip mode. (Differential shaft can handle various torques between shaft and sliding ring providing uniform rewinding tension for each reel. Rewinding speed difference caused by material thickness variation can be compensated by the sliding motion that ensures consistent tension at all times.)
 - Buildup control can be based on a diameter feedback sensor (typically ultrasonic)

RA Control Architecture



Tools for Application Development

- Developing the standard function blocks for Un winder control
- Advance math functions for Diameter calculations used in Un Winder and Re winder control
- Advanced PID function based on External Load cell signals for auto tension control
- Smooth or Jerk less index movement with Soft CAM functions for Edge control guiding system [Generally, the Edge guide controller gives +/-10V command to Drive]
- Auto synchronization of all sections thru virtual master control, to be used during change in machine speeds [We have not yet tried Virtual master, though we have thought of it.... May not make a huge difference]

Value Propositions Safe Off feature with Architecture class Drives PF 7xx series



Safe Off Option, the first offering available within the Drive Guard series of safety solutions, prevents a drive from delivering rotational energy to motors by integrating a safety circuit with the drive`s power switching signals. This solution meets EN 954 – 1, Category 3.

Indicative performances with RA Solution

- Simple and common network to configure the complete automation system
- Standard algorithm modularized for ready to use based on Machine parameters such as Dia, Width, Slip factor...
- Modular Programming features enables to build the machines faster, reduces time to market the machine
- Re winder Drives to configure in multiple modes such as Velocity mode or to obtain "Locked core Winding" based on load cell signal
- DC Bus sharing of Power devices enable to position as energy efficient Machine
- Built in diagnostic features enables for fast recovery of fault and improves machine OEE.
- Same architecture platform allows to model the machines in scalable versions



Q & A Session

Thanking You

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