

BTU
TECH



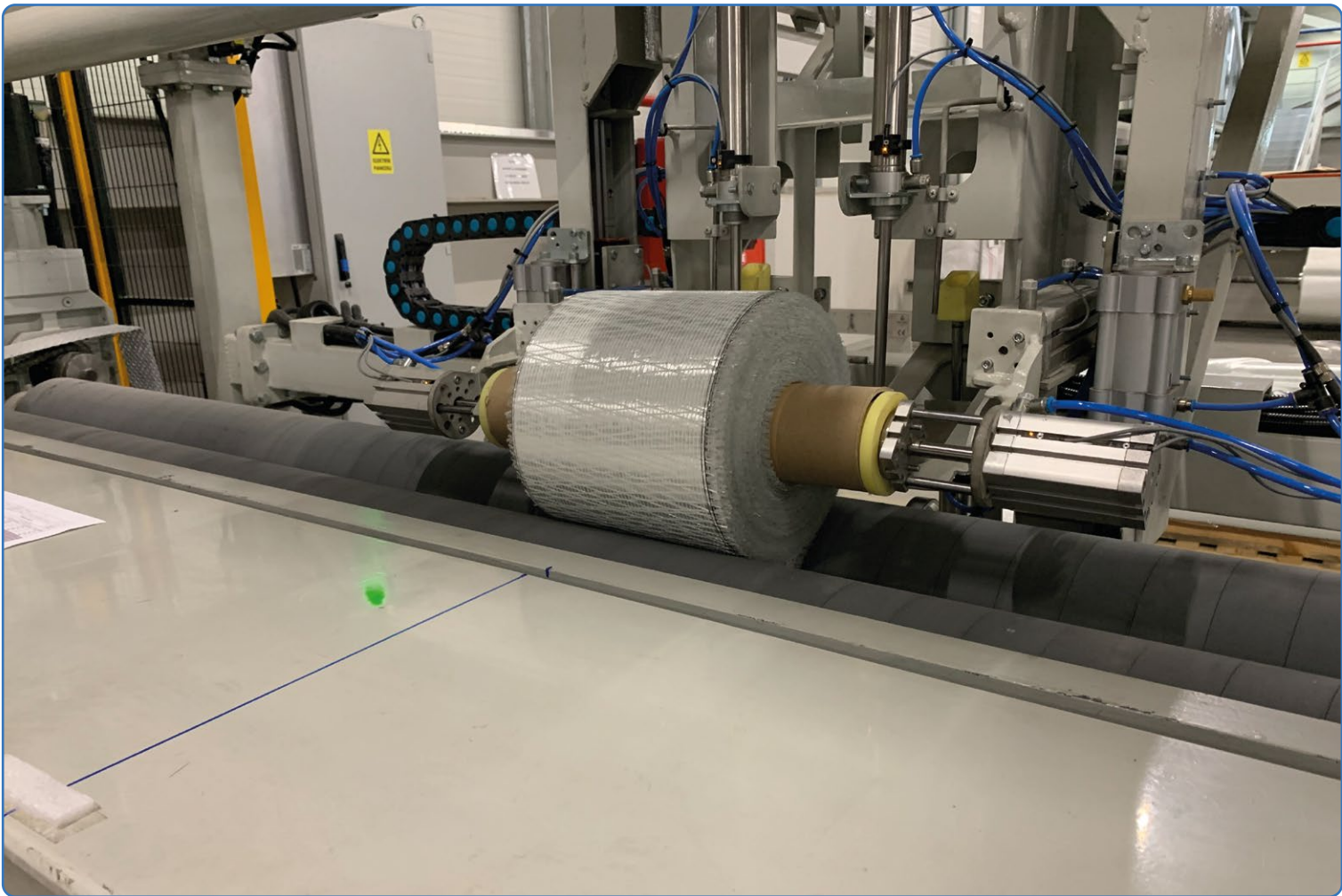
SHORT ROLL WINDER

DESCRIPTION

In operations where fabrics are used depending on the way they are processed, different lengths of fabric may be required. It is not feasible to cut the fabric on the site of the process from a jumbo roll. Thus, the jumbo rolls need to be splitted into smaller rolls with predefined lengths.

A rewinder machine with precise length measurement, fast unwinding-rewinding speed, roll tightness control, aligned roll edges and a clean shear cutter blade are critical assets for the operation in the industry.

BTU-TECH developed a fully automatic rewinding technology for this purpose.



Unwinder Tension Control: There are 3 different tension control mechanism for the unwinder.

- ▣ Loadcell
- ▣ Pneumatic Dancer
- ▣ Mechanical Dancer with Counterweights

Each controls either the speed or the torque of the unwinder servo motor. Depending on the fabric type, different tension mechanism can be selected. The loadcell tension control is good for low tension values from zero to tens of kilograms. For high fabric tension, pneumatic or counterweight dance can be used.

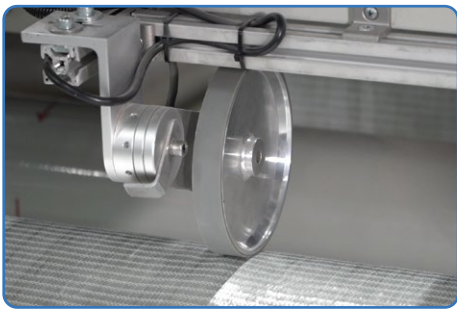
FEATURES

“Short Roll Winder” includes below features;



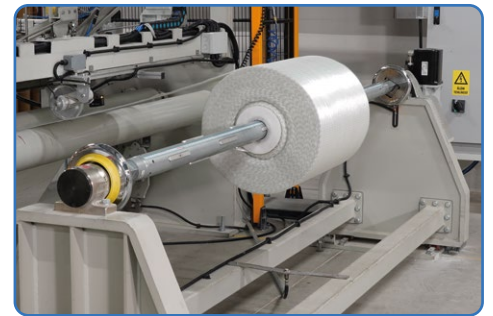
Jumbo Roll Auto Loader/Unloader: An auto loader is designed and developed for an efficient and non-stop operation. The rolls to be unwinded are placed into the auto loader and moved to the safety chuck position. Once the rolls are unwinded, the empty shaft is unloaded.

Fabric Edge Laser Tracking: A laser edge sensor monitors the fabric edge on the unwinder and a linear actuator makes sure that the winded roll edges are perfectly aligned at the rewind.



Encoder Wheel: For precise fabric length measurement, an encoder wheel is used. Feedback signals from the encoder drives the winder servo motors PID controller to make sure that even with extreme operating speeds, rewind stops at exactly right fabric length.

Ultrasonic Roll Diameter Measurement: The unwinder utilizes an ultrasonic diameter measurement for assisting tension control. The software is capable of detecting objects that interfere with ultrasonic sensor during operation and disregards sensor signals until interference is removed.

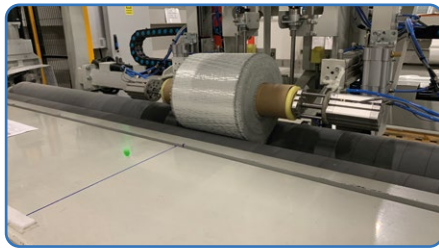
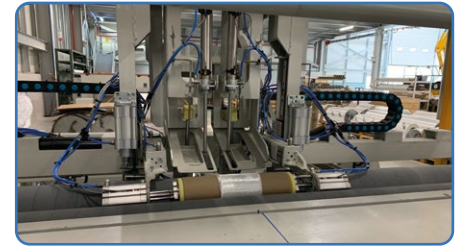


Automatic Roll Width Adjustment: The operator sets the fabric width from HMI and motorized fabric arms open or close to hold paper tube core.

Paper Tube Core Loading System: The machine has storage for paper tube core rolls. Before each rewind, an empty paper core is loaded from the the storage in between surface winders. The storage system has adjustable core diameter. So, either 3” or 6” paper tube cores can be used.



Pneumatic Heads for Fabric Centering: To hold paper core in place, fabric arms also have pneumatic heads which ensures that the paper tube core is always at the center and tightly held during rewinding operation.



Surface Winders: A servo controlled surface winder of which both rolls are driven, can rewind the rolls with very high speeds.

Pneumatic Lay-on Roller: For additional tension control, a pneumatic lay-on roller is used with adjustable pressure force.



Roll Doffing: Once the rewind roll is complete, the fabric arms automatically move forward and place the roll on the unloading tray for fabric cutting operation.

Rotary Blade: An automatic shear cut blade with speed control makes sure that the fabric edge is perfectly cut.



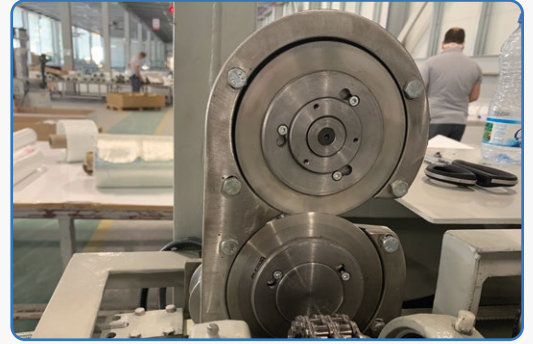
HMI: A touch panel with built in Excel tables for fabric lengths is embedded inside the software. The user can upload the excel tables with a memory card to the HMI panel.



SHORT ROLL WINDER SPECIFICATIONS

Safety Chucks	Boschert C-Chuck 40x40
Air Shaft	2983mm, 3" steel with 40x40 square ends, 55kg
Rewinder Speed	40m/min max.
Surface Winders Gap	20-60mm, 40mm exworks set
Motorized & Free Rotating Rolls	All surface treated & balanced
Loadcells Calibration	Yes (from HMI)
Rewinder Width	2540mm (100")
Unwinder Roll Diameter	650mm max.
Unwinder Roll Weight	450kg max.
Rewinder Roll Diameter	350mm max.
Rewinder Roll Width	300mm min.*
Edge Tracking Limits	±50mm
Edge Tracking Resolution	±0.5mm
System Pressure Min.	4bar
System Pressure Max.	10bar
Lay-On Roller Tension	0-400kg
Loadcell Tension	0-75kg
Mechanical Dancer Tension	20-250kg
Pneumatic Dancer Tension	20-250kg
Roll Doffing System	150mm travel
Power	20kW
Supply	50-60Hz, 380-480V, 3 Phase
Electric Panel AC Cooler	Yes
Electric Panel Protection Level	IP54
Motor Protection	IP54
HMI	7.5" Touchpanel with fabric recipe memory
Safety Barriers	Laser and mechanical barriers with ESTOP Triggered doors.
Total Weight	4500 kg
Dimensions (WxHxL)	3000mm x 2500mm x 5000mm
Certifications	CE

*The motorized fabric arms min. gap for tube core, fabric can be narrower on a 300mm core



MACHINE UPGRADE OPTIONS

- 6" Air Shaft
- IP65 Motors
- IP65 Carbon Safe Electric Panel
- Pneumatic Dancer
- Mechanical Dancer with Counterweights
- Auto Loader/Unloader
- Edge Tracking
- Paper Tube Core Loading System
- Roll Doffing



ABOUT BTU

BTU-TECH was founded in 2020 as a start-up company for engineering, design and manufacturing of machines and technologies for variety of industries, such as textile and composites.

As the main shareholder and CEO of the company, Burçin Pak received investment for the company. In addition to his 20+ years in microelectronics, communication and machinery which includes many patents and awards for the developed technologies, together with its investors, the company has a total of 60 years of experience, covering industries such as heavy duty machinery & transport equipments, robotics, microelectronics, IOT, industrial textiles.

The company has a talented core team for analysis, engineering, design, quick prototyping and serial production. The inhouse capabilities and skills are 3D modelling, FEA, programming and industrial automation.

Based in Istanbul, Turkey, BTU-TECH is aiming to serve customers globally both by direct contact and via technical partners.

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