

**BTU
TECH**



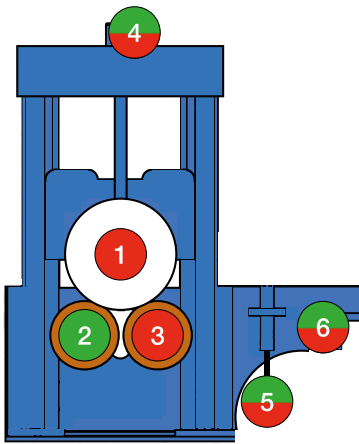
ALL-IN-ONE WINDER

FEATURES

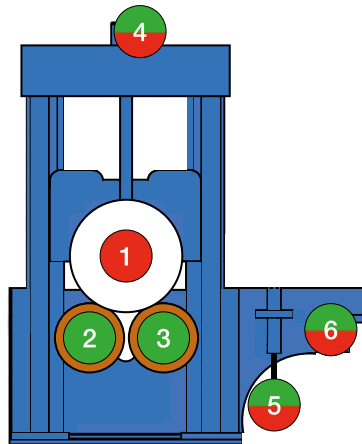
Analyzing the needs of the technical textile industry, BTU-TECH developed a basic and innovative winding technology for batching industrial size rolls on textile lines such as weaving, knitting and nonwoven.

The technology is accurate, modular and has a detailed control over all key parameters of winding with a user-friendly interface.

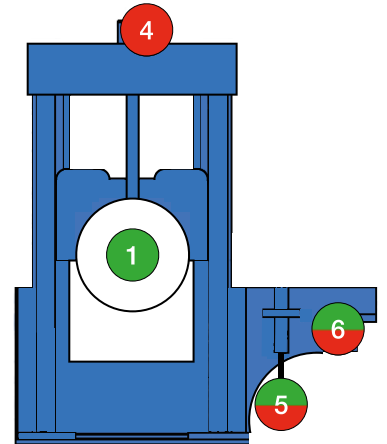
The fabric range is technical fabrics made from heavy duty fibers such as glass, carbon, aramid fibers. Fabric winders are categorized from simplest to most sophisticated as follows:



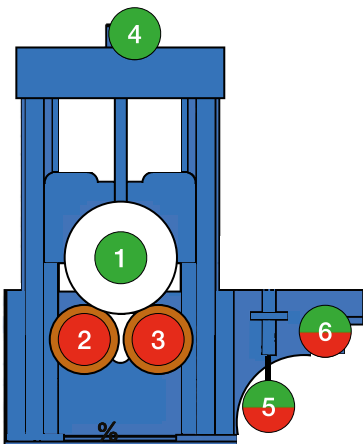
Single Surface Winder



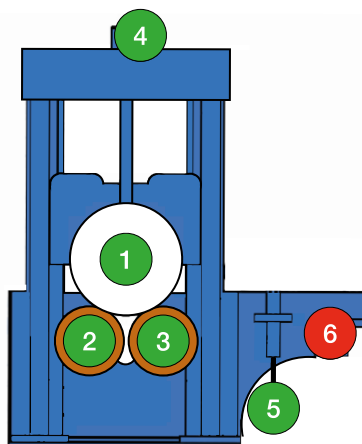
Twin Surface Winder



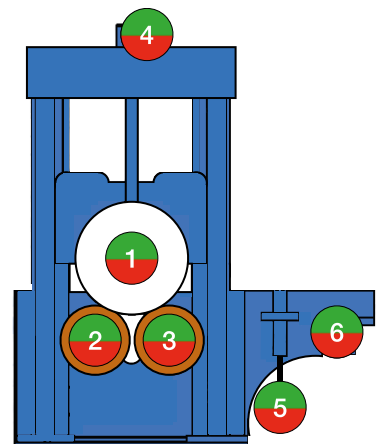
Center Winder



Center Winder with Lay-on Pressure



Center Surface (Combined) Winder



BTU-TECH "ALL-IN-ONE Winder"

- 1 Front Surface Roller
- 2 Lay-On Pressure Roller

- 3 Rear Surface Roller
- 4 Pneumatic Dancer Roller

- 5 Center Roller
- 6 Loadcell Tension Roller

- passive
- active
- optional

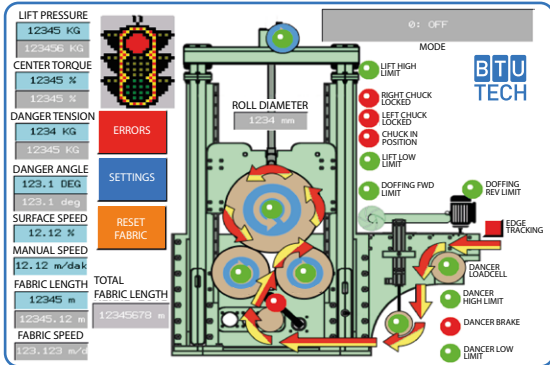
For all type of winders, the incoming fabric tension must be stable and fixed throughout entire roll winding operation. There are 2 options to control this tension:

- Pneumatic Dancer: Good for sensitive fabric especially during start-stop, not accurate in terms of tension.
- Loadcell: Bad response during start-stop, not good for sensitive fabric, very accurate in terms of tension.

The combination of all these possibilities creates a spectrum of almost 90 different types of winders making it difficult to select the right winder for the desired performance with acceptable cost. BTU-TECH "ALL-IN-ONE WINDER" can operate in any of the above combinations with the push of a button.

BTU-TECH DEVELOPED TECHNOLOGIES

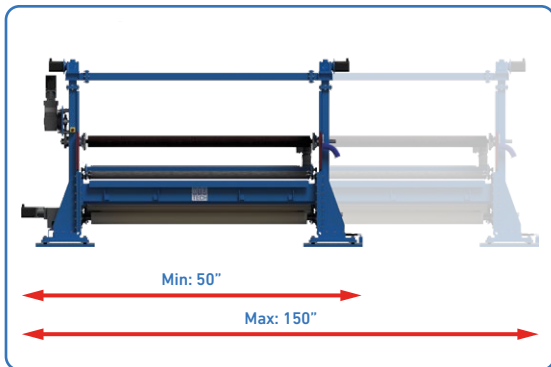
The “**ALL-IN-ONE WINDER**” development was supported by TUBITAK (The Scientific and Technological Research Council of Turkey), and awarded as the “**Best Industrial R&D Project of 2020**”



ALL-IN-ONE Winding: The following winding modes and related features can be selected from the touchpanel HMI;

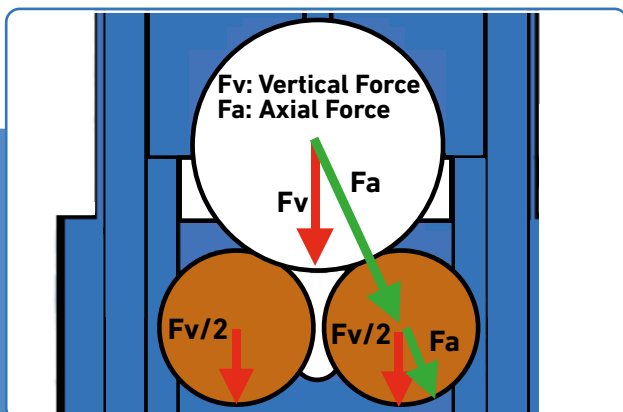
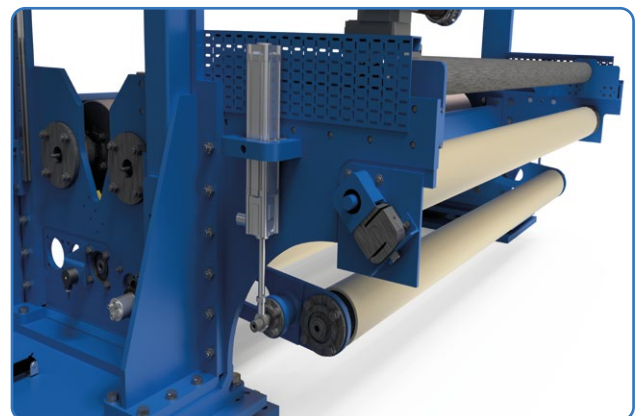
- **Winding Modes:** Surface, Center, Combined
- **Lay-on Roller:** Off, On, Vertical Pressure, Axial Pressure
- **Tension Controls:** Surface winders speed difference, Pneumatic Dancer, Loadcell, Dancer with PID Loadcell
- **Edge Tracking:** Off, On
- **Winding Directions:** Face-In, Face-Out

Machine Upgrade Options: BTU-TECH winder design allows to start investing in a surface-only winder, and then with optional center winder and lay-on roller add-ons, convert it to a center or a combined winder.

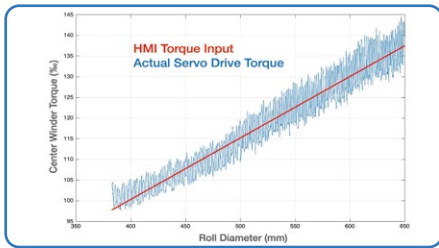


Variable Machine Width: Besides the winding mechanism, also the width of the winder is upgradable. The winder’s width can be changed to 50”, 100”, 130” or 150”.

Pneumatic Dancer with Loadcell: BTU-TECH implemented a PID Loadcell Feedback to adjust the dancer pressure to keep the force, thus the fabric tension constant. BTU-TECH dancer with loadcell can control force almost down to zero without modification from steel to aluminum.

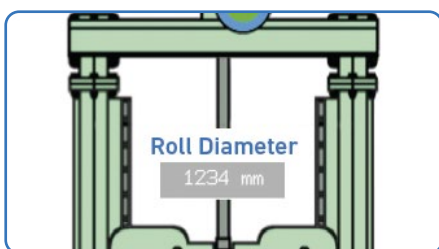
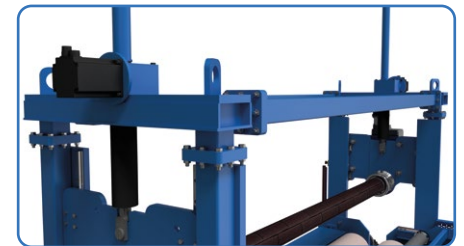


Axial Pressure Control: For best tension control, the fabric must be kept under the same axial pressure between the center winder and the surface winders. Regular loadcells can only measure vertical forces. There are 2 patented loadcells embedded inside the surface winders which can measure the axial lay-on roller force.



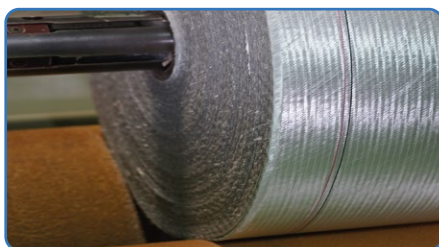
Torque & Pressure Curves: Normally, center winder torque and lay-on roller pressure values are linearly controlled with a starting and an ending point. BTU-TECH gives the option of entering any curve by defining X-Y values from HMI.

Master-Slave Lift Control: Lay-on roller horizontal alignment mismatch with the fabric roll results in telescopic effect. BTU-TECH uses a servo master-slave control for lay-on roller positioning with two servo motors which align their position continuously. Under extreme tests, the vertical position mismatch does not exceed 0.02mm.



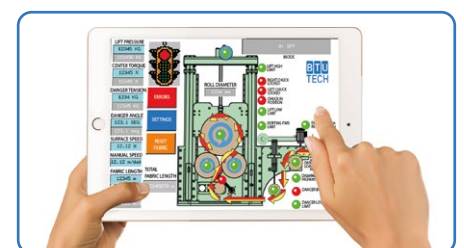
Roll Diameter Measurement: Center winders' torque depends on the roll diameter. BTU-TECH system is accurate in diameter measurement within micrometers, using lift servo motor absolute encoders.

Fabric Edge Tracking: The fabric edge is tracked with an edge sensor that can identify fabric edge and fringes. The tracking system resolution is below millimeter and can easily operate upto 600m/hr fabric speed.



Roll Weight Monitoring: Before removing the wound roll, BTU-TECH winder measures the total product weight and on demand can transfer the data via an industrial protocol.

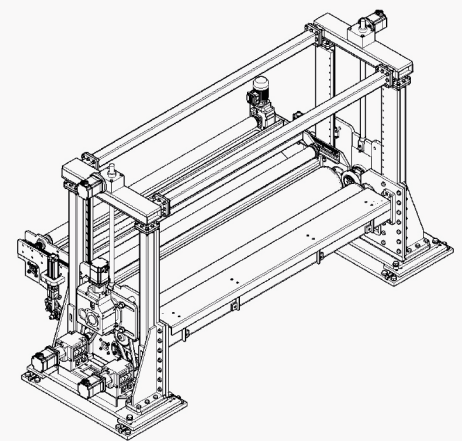
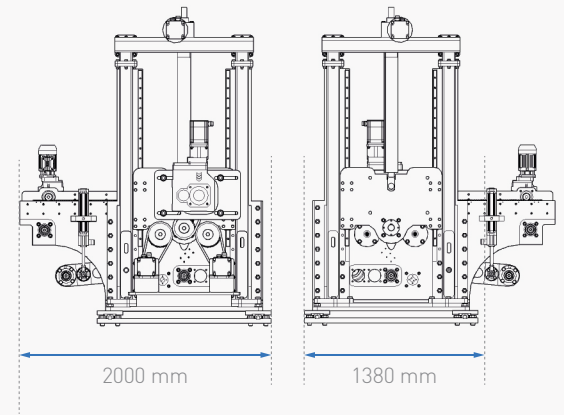
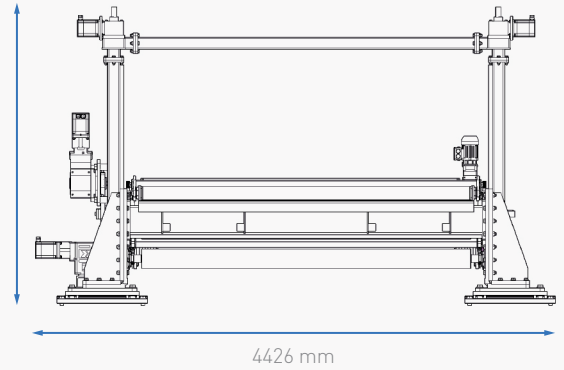
Wireless Control: In addition to the touchscreen control, the winder can be controlled wirelessly from a smartphone or tablet with the identical HMI interface.



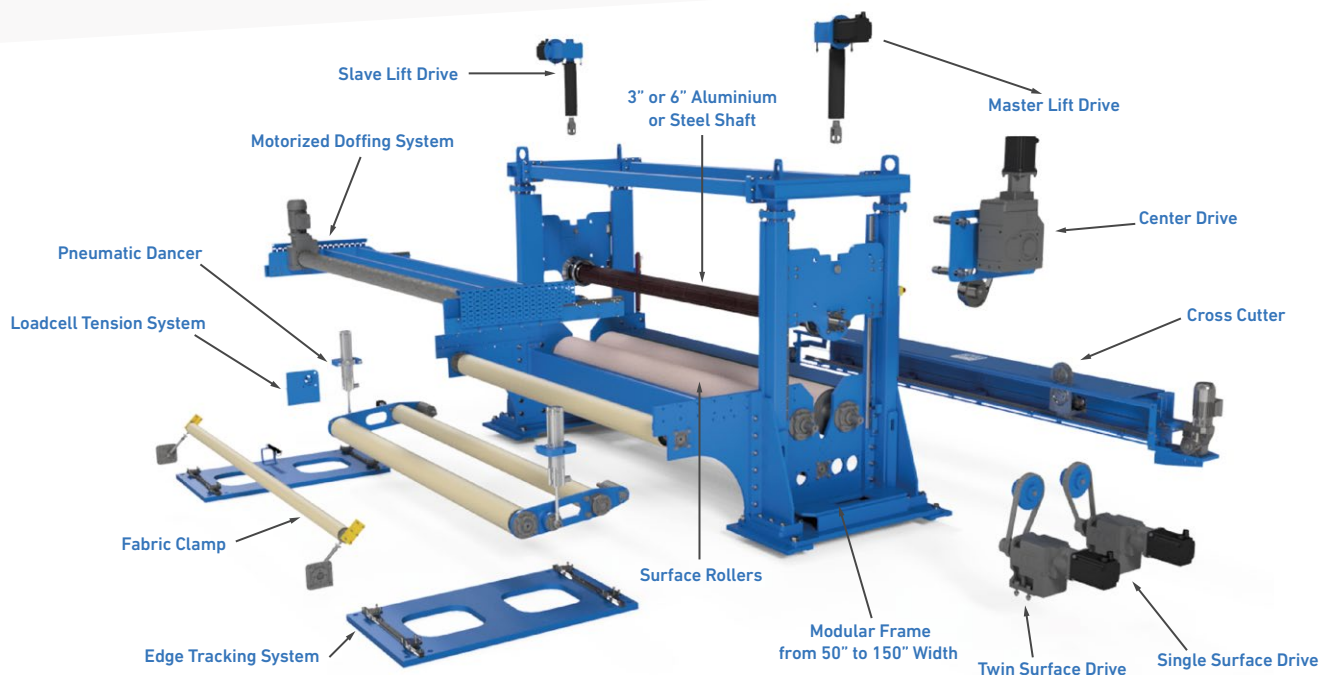
100" WINDER SPECIFICATIONS

Safety Chucks	Boschert C - Chuck 50x50 with Square Hole
Air Shaft	2983mm, 6" Aluminum (Option: 3" or 6" steel)
Surface Winders Speed Difference	± 5%
Surface Winders Covering	Cork, Grinded
Surface Winders Gap	20-60mm, 40mm Exworks Set
Roll Surfaces	All CNC Treated & Weight Balanced
Winding Direction	Face In & Face Out
Lay-on Roller Lift Speed	350mm/min
Lift Capacity	10000kg
Lift Synchronization	± 0.1mm
Lift Offset Calibration	Yes
Loadcell Calibration	Yes
Fabric Width Max.	2800mm (110")
Max. Roll Diameter	1200mm
Min. Roll Diameter	80mm with 3" Shaft, 150mm with 6" Shaft
Max. Roll Weight	6000kg
Max. Fabric Speed	10m/min (600m/hr)
Edge Tracking Limit	50mm
Edge Tracking Resolution	± 0.5mm
System Pressure Min.	4bar
System Pressure Max.	10bar
Programmable Dancer Pressure	50-335kg
Programmable Dancer Pressure With Loadcell	0-335kg
Loadcell Pressure	0-500kg
Fabric Clamp	Roller with Pneumatic Pistons
Motorized Roll Doffing System	Ø280mm to Ø1200mm
Power	20kW
Supply	50-60Hz, 380-480V, 3 Phase
Electric Panel AC Cooling	Yes
Electric Panel Protection Level	IP54 (Option: IP65)
Motor Protection	IP54 (Option: IP65)
HMI	7.5" Touchpanel with Winding Program Database
Speed Input	4-20mA, 0-10V, AB Pulse Incremental Encoder
Safety Barriers	Laser & Mechanical Barriers with ESTOP Triggered Doors
Total Weight	5000kg
Dimensions (WxHxL)	2000mm x 2600mm x 4600mm
Certifications	CE

max. 3470 mm
min. 2520 mm



MACHINE UPGRADE OPTIONS



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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www.btu-tech.com

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