

# BTU TECH



## UNWINDER

# DESCRIPTION

Unwinding is one of the major processes in roll handling operations. It is very critical to unwind with constant tension throughout entire roll diameter. Most of the operation after the unwinding must also be handled with constant tension. Then, finally in rewind zone, the fabric is wound with variable tension with respect to the changing roll diameter.



There are many variations of unwinders;

- ▣ Center / Surface Unwinding
- ▣ Speed / Torque Control
- ▣ Loadcell / Dancer Tension Control
- ▣ Encoder Wheel / Ultrasonic Sensor Diameter Control

BTU-TECH covers a wide range of products, utilizing all of the above options according to the customer requirements and field of application.

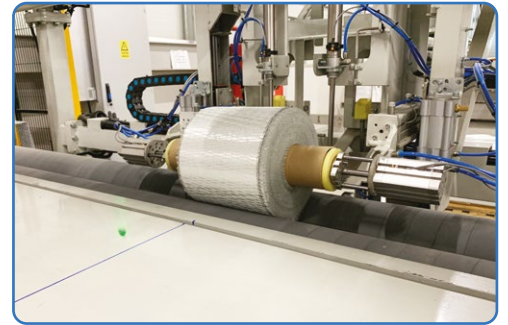
# FEATURES

BTU-TECH “Unwinders” offers following features;



**Center Unwinding:** The fabric roll is placed on to a shaft and mounted in a safety chuck. The roll is unwinded by rotating the shaft.

**Surface Unwinding:** The fabric roll is placed on to twin surface rollers, driven with a single or dual motor. As the roll weight is supported, the weight capacity of surface winder is much higher. In addition, surface unwinders ensure linear fabric speed with changing roll diameter without using a sensor.



**Ultrasonic Sensor:** The unwinders can implement an ultrasonic sensor for assisting tension control and diameter measurement. The ultrasonic sensor can measure diameter even with steady state conditions. However, they have a problem of interference. If an object or a signal interferes in between the sensor and the roll, then the diameter is mis-calculated. BTU-TECH software is capable of detecting objects that interfere with ultrasonic sensor during operation and disregards sensor signals until interference is removed.

**Torque Control:** By a feedback signal form a dancer or a loadcell, the fabric tension is kept constant. Unwinding speed is set by the handling operation line speed.

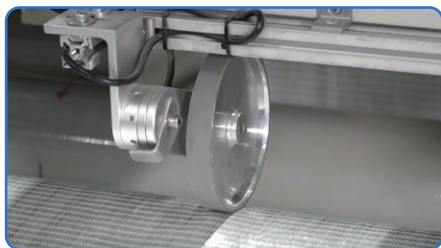


**Loadcell Tension Control:** For very low tension values, loadcell based systems are preferred. However, acceleration and deceleration are always a challenge for loadcell based systems.

**Dancer Tension Control:** For high tension values, dancer based tension systems are used. Pneumatic or counterweight dancers can be implemented. There are no issues for accelerations and decelerations. The weight of the dancer (inertia) is always an issue for dancers.



**Mixed Mode Tension Control:** To get the best of both worlds, BTU-TECH offers mixed mode tension control where a pneumatic dancer pressure is controlled from a loadcell feedback signal. This eliminates the inertia problems, and the acceleration issues of the loadcells.



**Encoder Wheel:** For precise fabric length measurement, speed and diameter control, an encoder wheel is used. However, encoder wheels do not have the capability of measuring fabric diameter in steady state conditions.

**Speed Control:** Using an encoder wheel or an ultrasonic sensor, the linear fabric speed is kept constant while the roll diameter is continuously changing.



**Edge Tracking:** A laser edge sensor is used to detect fabric edges and a linear actuator drives the unwinder sideways to correct edge variations.

**HMI:** A touch panel is supplied with the unwinder to adjust all the settings.



## UNWINDER SPECIFICATIONS

Safety Chucks	Boschert C-Chuck
Air Shaft	3" or 6" Steel or Aluminium with square ends matching C-CHUCK
Speed	40m/min (designed according to customer requirement)
Motorized & Free Rotating Rolls	All CNC Treated and Weight Balanced
Loadcells Calibration	Yes (from HMI)
Roll Width	Up to 150"
Roll Diameter	2000mm Max.
Roll Weight	2000kg Max.
Edge Tracking Limits	±50mm
Edge Tracking Resolution	±0.5mm
System Pressure Min.	4bar
System Pressure Max.	10bar
Loadcell Tension	0-250kg
Mechanical Dancer Tension	20-250kg
Pneumatic Dancer Tension	20-250kg
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 Database
Safety Barriers	Laser & Mechanical Barriers with ESTOP Triggered Doors.
Total Weight	1000 kg
Dimensions (WxHxL)	3000mm x 2500mm x 5000mm
Certifications	CE



## MACHINE UPGRADE OPTIONS

- 6" Air Shaft
- IP65 Motors
- IP65 Carbon Safe Electric Panel
- Pneumatic Dancer
- Mechanical Dancer with Counterweight
- Edge Tracking
- Electric Panel AC Cooling



# 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](http://www.btu-tech.com)

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