

BTU
TECH



SENSORS

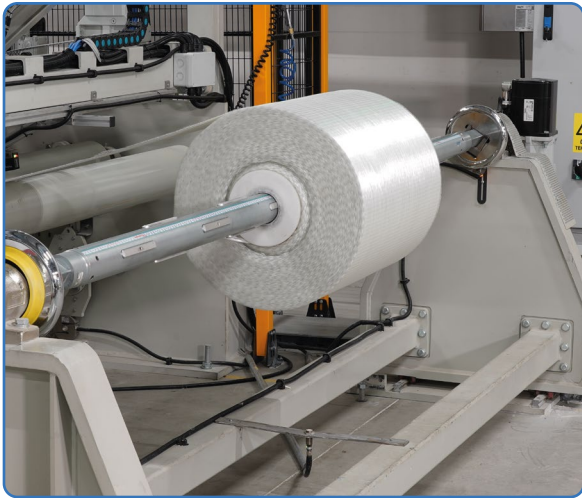
BTU-TECH DEVELOPED TECHNOLOGIES

Roll Diameter Sensor

Adjusting roll tension during winding and unwinding operations is critical. Either speed or torque control is used, which requires precise and continuous roll diameter measurement.

There are different techniques to measure roll diameter, but all have pros and cons.

BTU-TECH offers the best solution depending on the application.



Ultrasonic Sensor: Accurate in mm range. Capable of measuring with a standing still roll. Infinite life. Invisible target point. No touching to the fabric.

Laser Sensor: Accurate in mm range. Capable of measuring with a standing still roll. Long life. Visible target point. No touching to the fabric.

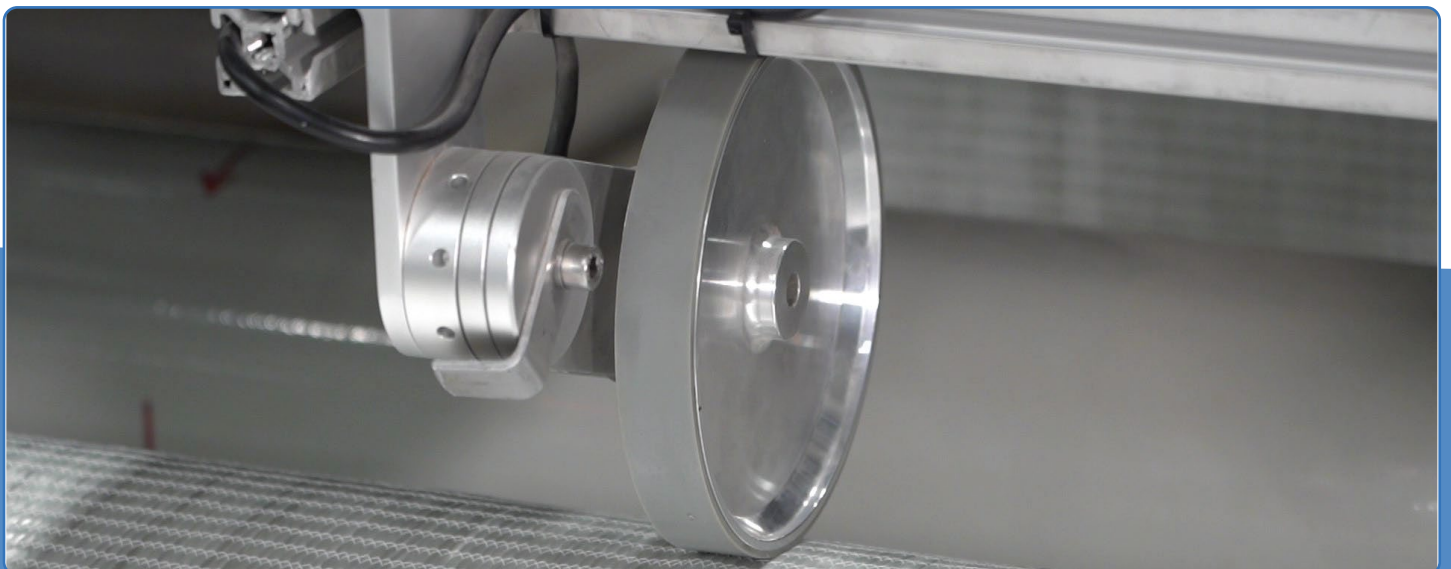
Encoder Wheel: Accurate in below mm range. Not capable of measuring with a standing still roll. Long life. Target point is not needed. Touches the fabric.

Roll Arm: Accurate in mm range. Capable of measuring with a standing still roll. Long life. Target point is not needed. Touches the fabric.

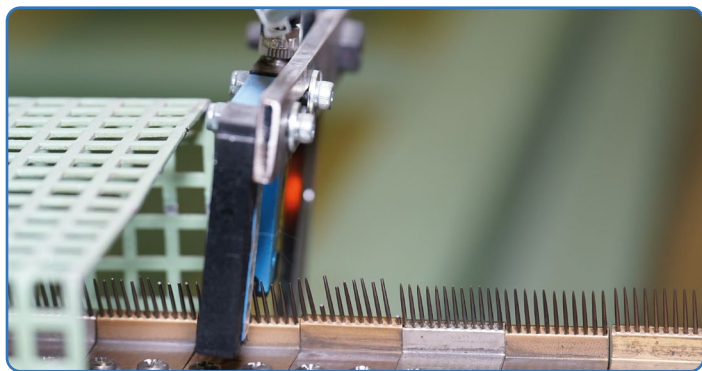
Fabric Length Sensor

During winding operations, precise metering of the fabric might be necessary. This cannot be achieved by the rotational encoders of the winders, where diameter changes all the time or fabric slippage may occur. Encoder wheel based length measurement is the most accurate method applied here.

BTU-TECH not only provides an encoder wheel based measurement system, but also the control mechanism which starts and stops the winding/driving motor at the exact fabric length. The PID feedback embedded inside the software offers the state of the art length control technology.



CONVEYOR PIN SENSOR



Conveyor pins are one of the most critical components of a warp knitting machine. The fiber yarns are looped around the pins with tension to stabilise the fabric form.

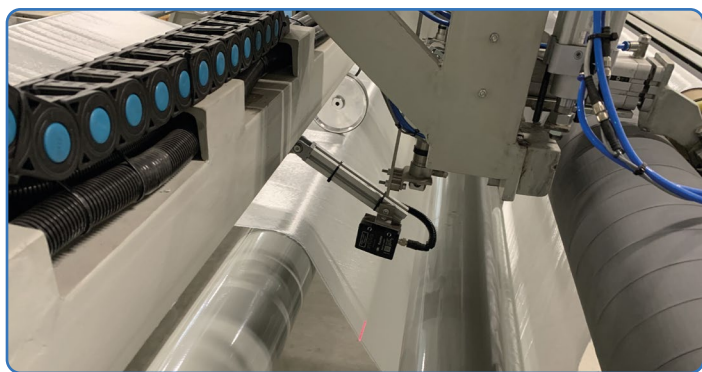
If a pin is missing or broken, then the fiber becomes loose and/or the fabric has gaps resulting in material loss. In addition, pin breaks may occur and if not detected, this leads to loss of time and spare part cost. Thus, it is of critical importance to detect broken pins on spot.

BTU-TECH «Conveyor Pin Sensor» is a highly sophisticated device for this purpose. They can detect a single or any number of consecutive pins breaks, independent of the conveyor speed or acceleration/deceleration ramps and the pin spacing.

A touch panel HMI allows the user to setup pin spacing and how many broken pins are needed before stopping the production.

The sensor also detect the yarns which are wrapped around the pins.

Fabric Edge Sensor & Tracking System



Fabric rolls may have different problems during winding operation, such as telescoping, expanding width, symmetrical width shrinkage, asymmetrical width increase/decrease, oscillating edge shift, etc. All these issues result in edge shift from one layer to another.

There are many operations in the textile industry where rolls are unwinded, processed and wound again. If the fabric edge is not straight, then the following processes and further winding will have problems.

BTU-TECH offers solutions for detecting the edge shift with below millimeter accuracy and for tracking the fabric edge with linear actuators by side shifting the unwinding/processing/winding stages.

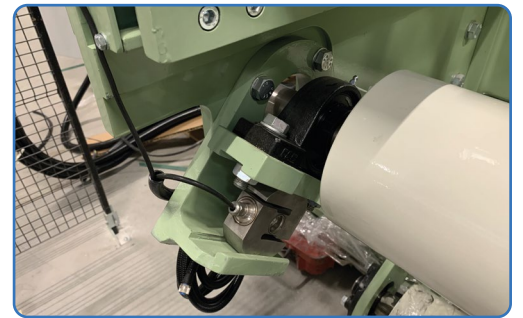
The edge detecting sensors can be either reflector or non-reflector type, depending on the application area. Both sensors can identify reflective bright glass fiber and absorbing dark color carbon fiber. The edge detection range can be up to 125mm in width.

Fabric Tension Sensor

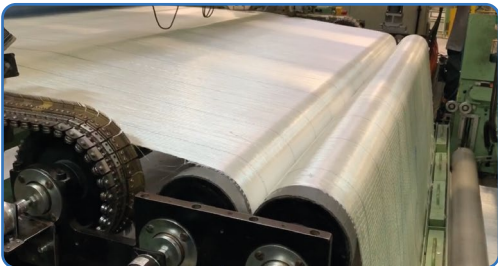


Fabric processing has 3 different tension zones: Unwinding, intermediate and winding. The Unwinding and the winding zones generally have varying tension to achieve the best roll tension possible. But the intermediate zone is for processing the fabric and the tension needs to be constant here. So, all 3 zones require different tension controls and tension sensors.

BTU-TECH provides loadcell based tension sensors ranging from grams to tons. Regular loadcells can only measure vertical loads, whereas BTU-TECH supplied patented loadcells can also measure vectorel loads in the direction of applied forces.



Fabric Speed Sensor



Measuring the traveling speed of the fabric during production is critical for the following winding or processing operations.

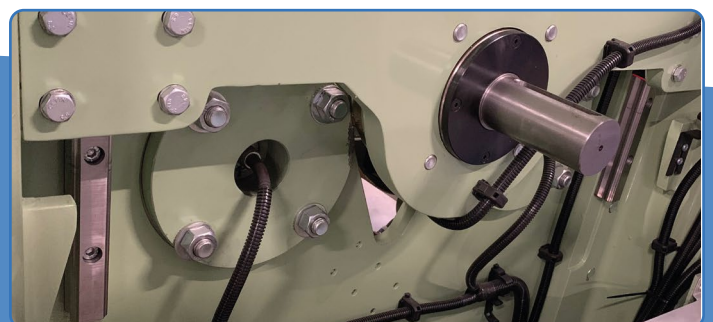
BTU-TECH offers encoder based speed measurement sensors that can output absolute position, speed, AB pulses, 0-20mA, 4-20mA, +/-10V or 0-10V outputs.

Roll Weight/Nip Pressure Monitoring Sensor

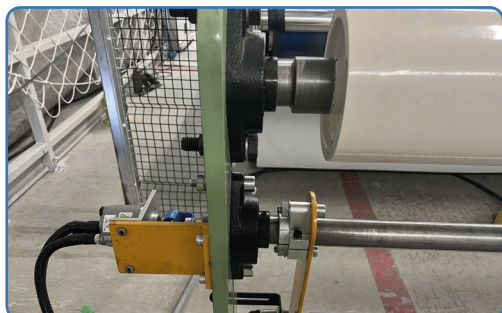


Programmable nip pressure is of high importance for tight roll winding. The applied pressure changes with roll length/weight. However, it a challenge to measure the nip pressure and use it to control the vertical pressure applied to the roll.

BTU-TECH provides patented loadcell based sensors capable of measuring with kilogram accuracy for a 6000kg roll. the system is not only capable of measuring the nip pressure but also the roll weight after the winding operation and send the data via ethernet to the labeling station.



Dancer Position Sensor



The dancer mechanism is the most general form of tension control system in the industry. For accurate tension control the dancer position needs to be an input to the PID control system.

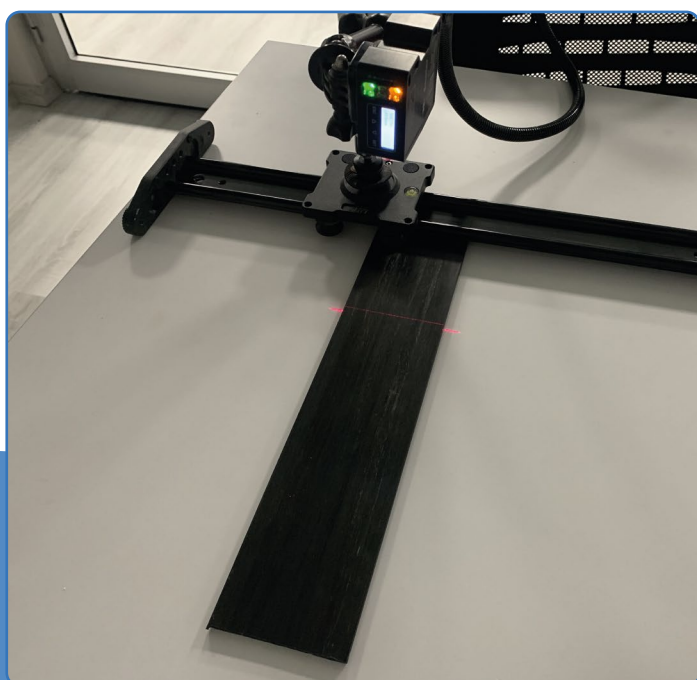
BTU-TECH offers absolute encoder based position sensors, instead of potentiometer based sensors. This does not only give great accuracy and stability but also infinite operating life.

SENSORS... Coming soon to a factory near you!

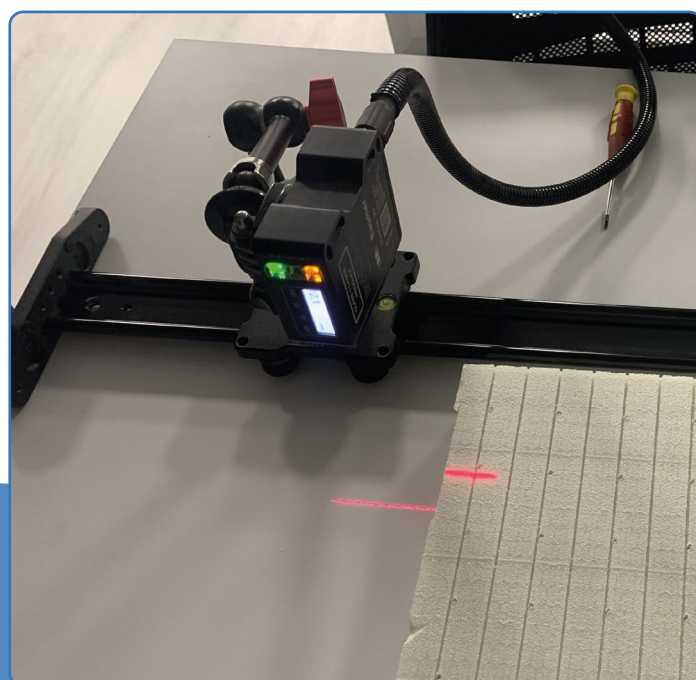
Yarn Break Sensors



Putrusion Profile Control Sensor



Resin Channel Width Sensor



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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