THE NONWOVENS INSTITUTE

STAPLE NONWOVENS PILOT CAPABILITIES

The Nonwovens Institute at North Carolina State University offers state-of-the-art technology and deep expertise in staple fiber-based nonwoven applications.

The Nonwovens Institute's many years of in-house knowledge in staple nonwovens are supported by the Staple Nonwovens Pilot Lab, which is equipped with Trützschler feeding equipment and extensive opening systems that allow for blending of various types of fibers and composite formations.

The facility is outfitted with two separate feeding systems from the opening equipment, which can be used independently to feed the card or a Scanfeed system for high-loft substrates.

This facility also includes a **1-meter wide Trützschler High-Speed Nonwoven EWK 413 Card**, which processes fibers from 0.9 to 20 denier with basis weights ranging from 20 to 100 g/m^2 direct lay.

"The Nonwovens Institute's many years of in-house knowledge in staple nonwovens are supported by the Staple Nonwovens Pilot Lab, which is equipped with **Trützschler feeding equipment** and extensive opening systems that allow for blending of various types of fibers and composite formations."

NC STATE UNIVERSITY

An **Andritz Profile 415-FD Crosslapper** provides automatic batt width adjustment, automatic overlap control and adjustment, and full control over the number of layers, with automatic computation of the necessary delivery speed on the floor apron. This equipment is capable of producing very heavy batts. The Profile technology, as the name implies, can shape the outgoing material to optimize weight distribution from center to side of the fabric.

The **Scanfeed** is situated behind the Crosslapper to allow for manufacturing of high-loft webs. The batt can be fed directly to the needle-punch equipment or used to form a layered composite with the lapped web from the card and the Crosslapper.

The facility includes two bonding technologies – needle-punch and through-air bonding. The pre-needler is a **Trützschler single-board needle loom ENL** followed by an **Andrtiz A.50-RL needle loom, DF-4 version** with 4-boards; two up, two down stroke. The needle loom has a highly flexible needle pattern and results are repeatable with industrial-scale machines. For through-air bonding, the lab is outfitted with a **Fleissner flat 4-zone impingement/ through-air oven**.

Additional bonding technologies such as calendering or hydroentangling are available in NWI's other pilot facilities.

Staple Nonwovens Lab – Equipment Specifications

Summary of Features - Trützschler Nonwovens EWK 413 Card			
No. of Beam	1	**Width (m)**	1
Line speed (m/min)	1 to 100 (Direct Lay)	**Fiber (Denier)**	0.9 to 20
Web Weight (g/m²)	20 to 100 direct lay random web	**Fiber Length (mm)**	20 to 76

Summary of Features - Trützschler Scanfeed			
Web Width (m)	1.0	**Fiber Denier**	0.5 to 20
Max Throughput (Kg/h/m)	400	**Fiber Length (mm)**	50-100
Web Weight (g/m²)	300 to 1500		

Summary of Features - Andritz Profile 415-FD Crosslapper (née Asselin)			
Delivery Width (m)	0.5 to 1.6	**No. of Folds**	2-50
Max Input speed (m/min)	100	**Stroke Freq (RPM)**	1200

Summary of Features - Trützschler Needle Loom ENL			
No. of Board	1	**Needles/m**	Up to 5,000
Line speed (m/min)	20	**Stroke Freq (RPM)**	1200

Summary of Features - Andritz A.50-RL Needle Loom (née Asselin)			
No. of Board	4 – configurations: 2 up or 2 down, 1 up and/or 1 down	**Needles/m**	7,000 10,000
Line speed (m/min)	30	**Stroke Freq (RPM)**	1200
Max Width (m)	1.4		

Summary of Features - Fleissner Oven			
Line speed (m/min)	1 to 15	**Max Temp (C)**	230
Max Width (m)	1.2		

Summary of Features - Parkinson Winder			
Line speed (m/min)	1 to 20		

Scan this QR code to ask questions and receive feedback from NWI's staple nonwovens experts.

To learn more about NWI, please email us at **nonwovens@ncsu.edu** or visit **www.TheNonwovensInstitute.com**