



TEXTILE FINISHING PROCESS

BENEFITS

- Lower energy consumption (50% reduction per unit weight of fabric) is projected
- Reduced emissions (55% reduction or over 1,400 tons of waste per unit saved annually)
- Higher production speeds resulting in greater productivity

APPLICATIONS

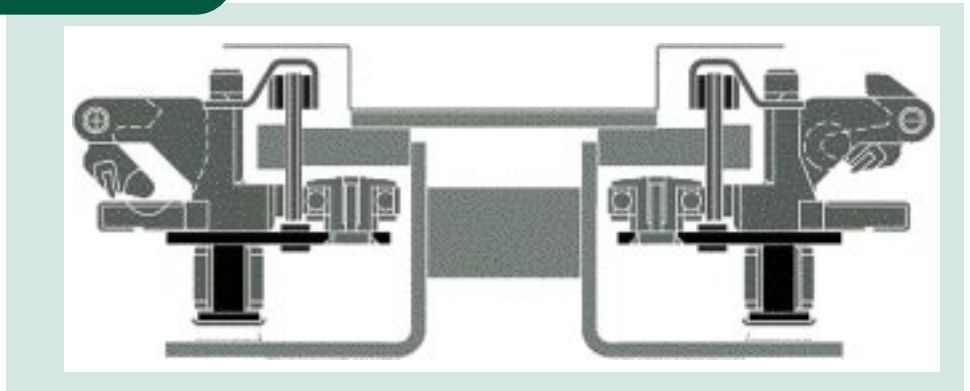
This new finishing process will apply to the extensive textile finishing industry in the United States and will help the industry improve its competitiveness in the global textile market.

REDUCING LIQUID AND INCREASING SPEED RESULTS IN ENERGY-EFFICIENT FABRIC FINISHING

Finishing fabric—improving shrinkage control, softness, stain resistance, and so on—requires immersion in chemical solutions followed by moisture removal and drying on a tenter frame. A tenter frame holds the fabric by its edges in a continuous chain and dries the fabric by passing it through a series of nozzles that apply air at elevated temperatures. Heating the fabric, evaporating the liquid, and powering motors consumes large quantities of energy. The finishing operation is slow, resulting in long hours of operation, higher labor costs, and increased waste.

In this project, the finishing chemicals will be applied with foam rather than liquid. By reducing the water usage by 60% and lowering the overall evaporative requirements, this technology decreases natural gas consumption and increases production speed. Other improvements increase the speed and energy efficiency of the drying process. Lower maintenance costs, material savings, and higher productivity are other expected benefits.

TENTER FRAMES



Working with the Marshall and Williams manufacturer of tenter frames for fabric drying, Brittany Dyeing and Printing Corp. is developing an energy-saving approach to fabric finishing.



Project Description

Goal: The goal of this project is to assemble equipment that can finish textiles with 75% less moisture than conventional finishing processes, with the added benefit of increasing textile finishing capacity.

Finishing chemicals applied in a foam allow reduction of water usage by up to 60%, significantly cutting the evaporative requirements. Secondly, a chain and rail redesign in the tenter frame will increase production from 120 to 275 yards per minute. The redesign employs a monorail to transport the chain, eliminating the need for constant lubrication and lowering horsepower requirements from 50 to 40 horsepower.

Progress and Milestones

- A contract was finalized between Brittany Dyeing and Printing Corp. and the state Office of Technical Resources in August 1997.
- Brittany Dyeing and Printing Corp. commenced work in September 1997.
- All capital equipment has been ordered and installed.
- Brittany continues to operate and optimize the system, with data collecting scheduled for 1st Quarter 1999.



NICE³—National Industrial Competitive-ness through Energy, Environment and Economics: An innovative, cost-sharing program to promote energy efficiency, clean production, and economic competitiveness in industry. This grant program provides funding to state and industry partnerships for projects that demonstrate advances in energy efficiency and clean production technologies. Total project cost for a single award must be cost-shared at a minimum of 50% by a combination of state and industrial partner dollars. The DOE share for each award shall not exceed \$400,000 to the industrial partner and up to \$25,000 to the sponsoring state agency for a maximum of \$425,000. Each award may cover a project period of up to three years.

PROJECT PARTNERS

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DOE/GO-10099-611
January 1999