



# Tissue and towel sustainability: how next-generation chemicals can enhance sustainable development

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Sustainability is often defined as a requirement of the current generation to manage resources effectively so that future generations can enjoy a similar quality of life. For tissue and towel manufacturers, the three most vital resources to manage are fibre, energy and water.

In recent years, the industry has been working diligently to refine or introduce technologies that enable mills to drive sustainable development along a number of fronts. Chemical suppliers in particular have taken great strides to be change agents in this effort. Working together, suppliers and mills are implementing innovative solutions that help papermakers responsibly manage fibre usage, save energy, conserve water, and meet safety and compliance requirements — all while increasing production levels and delivering higher-quality products.

## A focus on fibre

In certain areas of the world, tissue and towel production still relies on 100% virgin forest fibre, though progress is being made every day to increase use of recycled or alternate fibres. For most mills, responsible fibre management now forms the cornerstone of their sustainability programmes, and a number of new technologies are enabling greater diversity in fibre sourcing.

Recent innovations enable mills to:

- **Decrease consumption of virgin fibre.** Reduced basis weight papers require less virgin fibre, but they often suffer strength and softness deficits. Dry strength resins help overcome these challenges by delivering supreme flexibility in wet-end systems, enabling higher dry strength while maintaining excellent softness.
- **Introduce more plantation-sourced fibres.** The use of eucalyptus and acacia can help tissue makers diversify their pulp portfolio, but they introduce their own production challenges. Creping adhesives and release aids minimise dust when using such short fibres while they extend the life of Yankee cylinders and creping blades.

## Energy potential

Papermakers consume significant quantities of fuel and electricity, making energy efficiency one of the highest priorities for mills looking to achieve environmental targets, cost savings, and improved output. By working closely with their chemical supplier, a mill can implement a range of solutions that target the most energy-intensive aspects of the papermaking process. For example, mills can introduce solutions to:

- **Make water drainage more effective.** Increasing the effectiveness of water drainage yields lower dryer energy requirements. Advanced retention and drainage aids combine the drainage benefits of traditional microparticles with the fines and filler retention capabilities of micropolymer technologies for superior water drainage. Paper performance additives can also often reduce or eliminate the use of wet-end additives, allowing for more effective water drainage while improving dry strength.
- **Improve the efficiency of the Yankee dryer.** In any mill, the Yankee dryer represents a significant opportunity for energy savings. Creping adhesives and release aids are designed to provide the desired film rheology over a wide operating window of machine conditions and furnish variables.

## Water conservation

Tissue and towel producers, especially those in high water-risk areas which effectively plan ahead with aggressive risk mitigation programmes, will be well positioned for the future. As partners to papermakers, chemical suppliers have been equally focused on water conservation, both in their own manufacturing processes and in their expanded offerings to customers. As a result, a number of programmes have been developed to reduce freshwater consumption, enabling mills to:

- **Facilitate the operation of closed systems.** Closed water circuits can result in deposition problems, but a number of innovations can help papermakers address these issues. For example, pitch and stickies control



agents combine the benefits of detackifiers, stabilisers and fixatives to address multiple deposition parameters, and anti-scalant solutions help to control the formation of virtually any type of scale.

- **Reduce contaminants in wastewater.** Wastewater treating and discharge, as well as sludge-waste disposal, represent significant challenges for tissue and towel makers. Luckily, the R&D programmes of chemical suppliers have yielded advanced technologies to address solids removal and reduce COD/BOD in effluent streams. These advances include alkaline-effective biocides, flocculants and bio-augmentation which involves adding specialised bacteria, enzyme products, or other active biologics to a treatment system.

## Protecting People, Too

Sustainability initiatives must go beyond protecting natural resources — they must also enable mills to protect the health and safety of employees and the general public. Many chemical suppliers are introducing products that are simplifying storage and handling issues and making it easier to comply with local safety standards. For example, recently developed wet strength resins are low- and zero-VOC products, which helps reduce air pollution.

At the same time, these resins make it possible to produce safer, healthier products for consumers. The newest wet strength innovations are designed to meet recommendations issued by the German Federal Institute of Risk Assessment (Bundesinstitut für Risikobewertung, or BfR) and the US. FDA for safe food contact with paper products or components.

Taken together, all of these innovations provide today's tissue and towel manufacturer with an array of tools to target specific phases of the papermaking process or objectives of a sustainability programme. Either way, mills should turn to their chemical suppliers as true partners who can help solve problems, improve operations, and reduce their environmental footprints. ■