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Newsprint and Improved Quality

High-speed presses demand flat profiles and superior roll conditions

Newsprint maintains its position as the designated medium of choice for printed daily news. Competition from weekly periodicals and the instant updates available via the internet have encroached on this market. The newsprint industry has responded by increasing product quality while maintaining their position as the lower cost alternative.

The quality improvements achieved are a basic requirement to participate in this market. Today's modern high-speed printing presses must be fed a very uniform sheet. If this is not the case, they face unacceptable breaks and the resulting loss in production and efficiency.

The annual growth in newsprint tonnage is the lowest among the major paper grades. Against this backdrop, the cost of a completely new production line can hardly be justified in economic terms and may not generate the required return on assets.
This economic scenario has caused the papermaker to focus on improving the quality and efficiency on the existing installed base of newsprint machines. A number of newsprint producers are upgrading to improved newsprint. This product must meet higher surface finish specifications necessary for 4-color printing. The most common areas that must be addressed are dry edges, reel/roll building (wrinkles, ridges etc.) and winder runability. A flat moisture profile at the machine reel is the single process improvement that has the greatest impact on these variables. The increase in edge moisture will ensure the edge rolls are A-grade product and eliminate the poor reel conditions caused by the transition from a nominal average moisture level to an extremely dry edge.

Raising the edge moisture by 3 - 4% and the reel moisture by 1.5 - 2% reduces fiber cost, improves efficiency, calender control, dimensional stability and roll building on the winder. The leveling of the moisture profile allows removal of compensating process conditions such as press crown and loading, and an uneven fiber profile that are commonly used to improve the moisture profile and reel building.

The introduction of the VIB air-atomized VIB AirTech spraydampening system provides papermakers with a solution for improving their moisture profiles. The proprietary VIB Particle Size Management (PSM) technology optimizes the droplet size and allows for usage near the dry end of the process. PSM ensures uniformity in absorption and the ability to raise the moisture level by 3 - 4% in a single application.

Achieving this level of moisture increase upstream in the first few dry sections requires as much as 5 times the volume of water used at the dry end. This volume of water addition will often relax the web and result in dryer wrinkles. Additionally, with today's common usage of recycled fiber, this level of water addition will weaken the sheet, causing sheet breaks and runability problems.

The results achieved using VIB technology are quite dramatic. The profile variation (2-sigma) is typically reduced by 60 - 90% with an increase in the average moisture target at the reel. Once achieved, this performance must be maintained full time. The SprayTech system design has all electric/electronic components contained in a controlled environment enclosure located away from the harsh environment.

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There are no moving parts on the sprayboom. This creates a virtually fail-proof system that can be relied on to deliver performance on every ton of paper produced.

The new high-speed (5000 fpm) and high-capacity processes require an extremely uniform sheet. When producing a product at an annual rate of 400,000 tons, tight control of MD and CD variability is a must.

The modern generation of dilution (consistency profiling) headboxes provide a level base sheet entering the press section. The new high-performance presses are designed with a narrow zone, 50 mm, steamshower integrated into the press section. These provide good weight and moisture profiles entering the unirun section. The final dyer section contains a VIB AirTech spraydampening system with 25 mm (1 inch) zone spacing. This narrow spacing is required to achieve the profile variability necessary to run at world-class throughput rates.

The newsprint papermakers have enhanced this technology to achieve the required improvement in quality and efficiency necessary to compete in the news communication market place. The end user enjoys the portability and ease of use and current news they receive from a newspaper. However, the newspaper must maintain its cost competitiveness and performance to maintain and increase its market share. Today's advanced technology provides the tools necessary to accomplish this with the existing base of operating production lines.

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