

Breaking new ground in dewatering performance

Voith has employed advanced technology to improve tissue dewatering in the paper industry. Its latest innovation reduces heavy demands on the suction roll nips of tissue machines that are required to efficiently and consistently dewater on-spec tissue with the lowest cross-directional moisture profile deviation. All of this must, of course, be done utilising the least possible amount of energy.

It involves the application of a sealing strip system in the suction pressure roll, the installation of a polyurethane roll cover on suction and press roll shells and the use of latest generation press felts. Voith has combined these to present its HydroSeal, SolarSoft and Evolution trio.

HydroSeal, a sealing strip system for all suction roll types, has provided excellent results in the tissue sector, including an 87% reduction in water used for sealing strip lubrication, a 5°C rise in operating felt temperature, a 2% reduction in electrical drive power and the extension of running intervals.

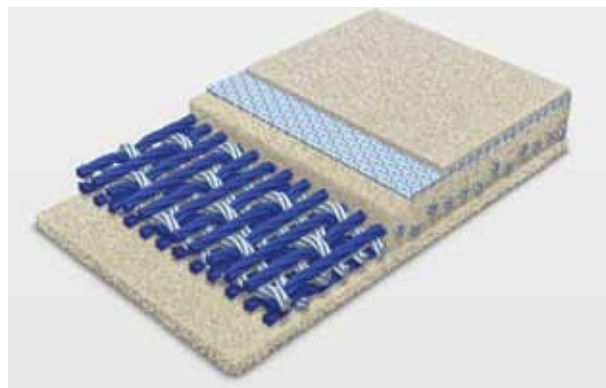
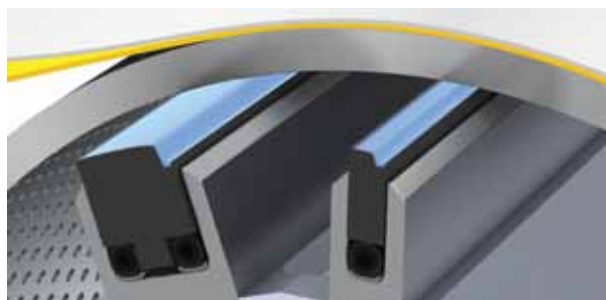
All of these have made for a notable return on investment. The investment itself is kept within reasonable limits as HydroSeal can be retrofitted to existing rolls in the scope of a regular roll service.

HOW IT WORKS

The product features integrated feeds for each seal to facilitate the uniform distribution of lubrication water over the entire width of the strip and a film is created between the sealing strip and on the inside of the roll shell, without causing back-splash. HydroSeal substantially reduces the amount of water traditionally used in conventional shower bar systems with spray nozzles prone to blockages. Less water in the nip also means over saturation is prevented to improve cross-directional moisture profiles.

Tissue manufacturers Hakle (Reisholz mill) and Wepa (Mainz mill) in Germany and Kimberly-Clark (Coleshill) in the UK reported savings of up to 30,000m³ a year.

The greatest contributor to the product's success, however, is its ability to improve productivity. Each reference installation achieved increases of machine speeds of up to 30m/min or a reduction of nett energy input per tonne through a combination of electrical, gas and steam consumption at existing machine speeds.



TOP: HydroSeal, the sealing strip system with integrated lubrication water feed. BOTTOM: Evolution press felts are thinner and lighter than industry-typical designs making it considerably easier to ply and install on the machine.

SolarSoft polyurethane roll covers are specially designed for pressure and suction pressure rolls. The stability of the functional layer allows for greater freedom in the choice of surface design and open area, while parallel grooves are deeper, increasing void volume to improve water-handling capacity. Hardness stability and hydrolysis resistance help to combat wear, while a combination of deeper grooves and improved wear resistance allow for longer grinding intervals. The successful application of a SolarSoft cover requires that a careful study be made of the nip condition through nip impressions, on-the-run Yankee diagnostics and crown adaptation know-how, all available from Voith. The reference list shows that SolarSoft sets new standards in high performance pressure roll covers.

Evolution press felts have a distinguishing feature in that the polymer film is integrated into selective positions of the felt sub-structure. The felt is thinner and lighter than industry-typical designs, making it easier to ply and install on the machine. It also reaches target operating density and maximum machine speed faster.

By shutting off a vacuum pump, a reduction in energy has been realised as the dewatering efficiency of the press fabric alleviates the need for higher vacuum. The biggest contributor to its success, though, is dewatering performance: the design targets nip dewatering. The dry content increases after the press, leading to higher machine speeds, or alternatively a lower nett energy input/tonne. The polymer layer also acts as a barrier against contamination of the base weave.

With HydroSeal, Solarsoft and Evolution, Voith reduces resource consumption, costs per tonne or alternatively increases machine output while improving sheet quality. ■