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EDGESAVER : AN INNOVATION TO SAVE FIBER

Abstract

The EdgeSaver edge cutting system returns valuable fibers to the production cycle and optimizes the quality of the web edges. Raw material costs can thus be substantially reduced.

In conventional systems, the edge cut on multilayer machines usually takes place after couching, so that the mixed cut remnants can only be returned into a lower-quality circuit. By contrast, EdgeSaver is directly attached to the Headbox. The fibers in the layer of higher quality can be collected before the jet impingement point and returned to the stock cycle. The separation of edge jet and main jet is done by means of a specially developed blade. Its flow-dynamic design prevents turbulence when cutting the fiber suspension. Furthermore, water-saving cleaning nozzles provide for a clean surface and prevent fiber deposits. In addition, a variably adjustable teflon side plate prevents wave formation at the web edges and creates a more uniform CD profile. Another feature is the adjustability in cross direction, which can be varied during ongoing production without any problem.

EdgeSaver can be quickly and easily mounted on both Headbox sides during a regular shutdown. Furthermore, for service purposes the entire unit can be pivoted upward so as to facilitate a comfortable fabric change, for example. EdgeSaver can be mounted on nearly all modern Headboxes.

Introduction

Voith's EdgeSaver, the innovative edge cutting technology was designed for multi-layer Fourdrinier paper machines. It optimizes pulp use, improves paper quality and ensures a clean wire edge.

The Voith EdgeSaver trims off the edge of the paper web directly at the Headbox. This innovative technology is especially attractive for multi-layer paper machines where the fibers in one of the layers are of a higher quality than those of the others. One of the first machines to use the technology was in a popular mill in Germany. The company produces Kraft Topliner, white top Testliner, laminated liner and HP fluting on the two-layer paper machine.

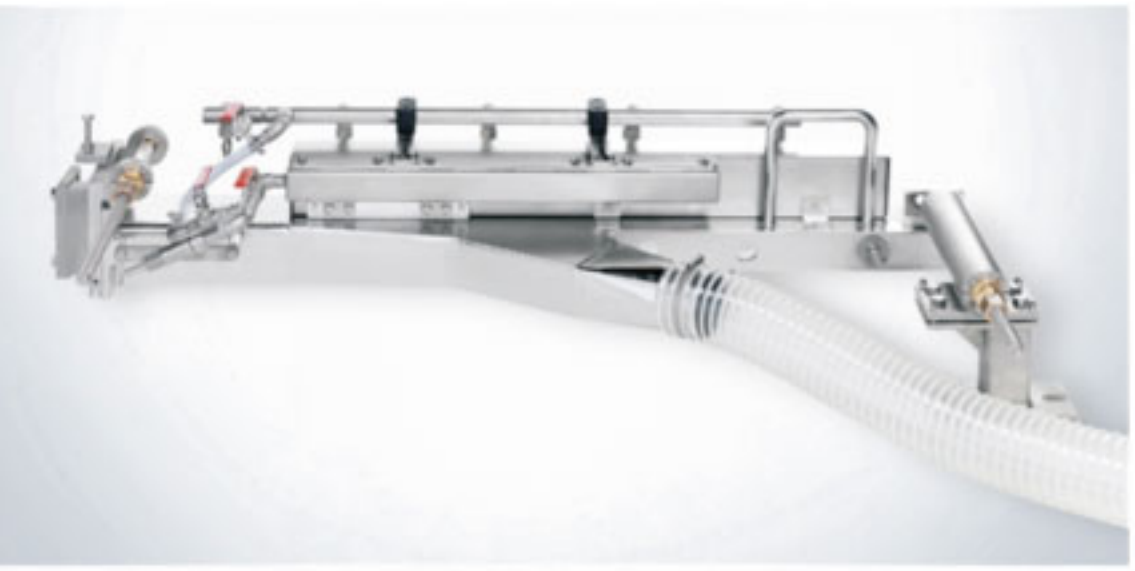

Fig : 1, EdgeSaver : Cutting edge technology for savings on multi-layer paper machines

On multi-layer machines, the edge cut usually takes place after couching of the individual layers. These mixed cut remnants can only be put back into a lower quality circuit. Especially in the case of board with a high-quality white top layer, valuable fibers are lost in the process. By contrast, EdgeSaver performs the edge cut of the higher-quality layer directly at the Headbox. These fibers are consequently put back into the stock circuit, which reduces raw material costs significantly.

This unprecedented cutting technique is based on its unique blade geometry that was specifically designed for turbulence- free cutting of the suspension jet. The blade's distinctive configuration combined with separate cleaning nozzles efficiently prevents fiber debris.

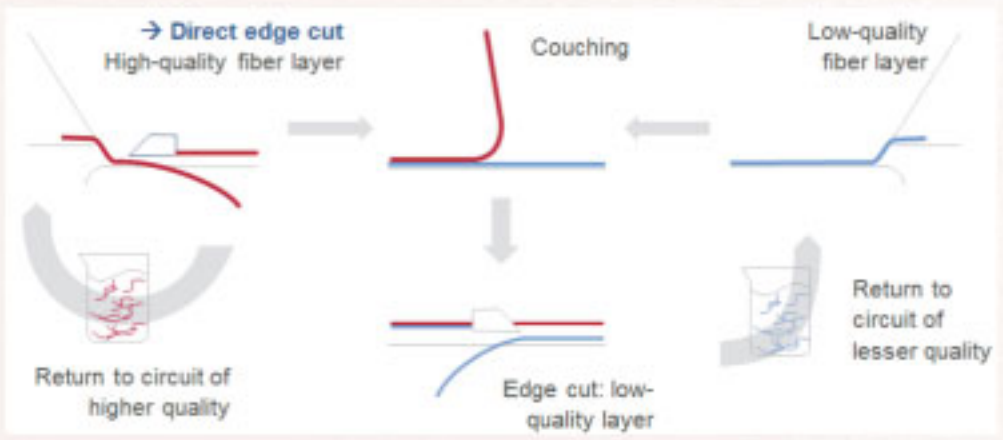

Fig: 2, EdgeSaver : Edge cut and Fiber Recovery

Product details and benefits

EdgeSaver is attached to the Headbox. It performs the edge cut directly at the Headbox, i.e. at a point where the fibers are still single-grade (unmixed). In conventional systems the edge cut of the web is not done until the individual layers have been couched. As a result, the separated edges consist of a mixture of different fiber qualities and can only be returned to the lower-quality fiber circuit. Through this process, a single paper machine will incur a high fiber loss of costly virgin fiber every day. However, if the edge of the premium layer is trimmed by the Voith EdgeSaver directly at the Headbox, a flow-optimized return duct conveys the high-quality fibers directly back into the system, thus making them available to the premium layer.

The edge cut can be done at the Headbox because EdgeSaver features a specially developed cutting technology allowing turbulence-free cutting of the stock jet. The combination of this special cutting technology with a separate cleaning system also prevents fiber deposits. The successful references of EdgeSaver show that the edge trimmings are being returned to white water system 1 after the installation of the EdgeSaver.

Fig: 3, Saving valuable fibers through direct edge cut

Variable adjustment of the edge width is a must for a modern edge-cutting system and allows the fiber savings to be calculated precisely. The EdgeSaver has a variable adjusting option of 0 – 120 mm on both sides of the Headbox. The theoretical savings range amounts to around 2.5% of the Headbox width. This value results from the outlet width of the Headbox and the intake width of the dryer section. Currently we are returning about 1.3% of the Headbox width to white water system 1 for the top layer in the installations we have, in a process that is both stable and efficient. The 1.3% adds up to a lot of metric tons every month.

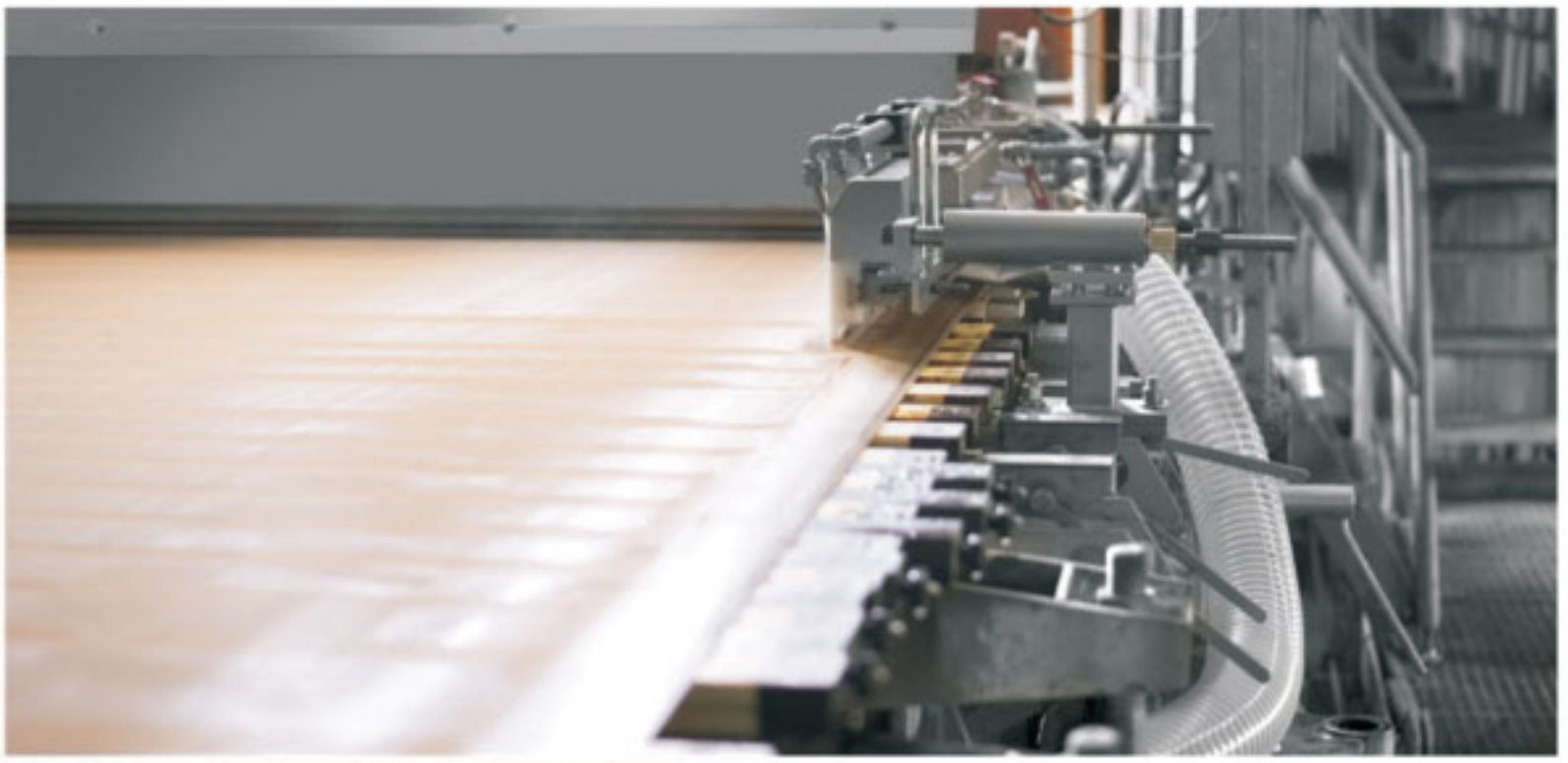

Fig: 4, EdgeSaver installed in a Paper Machine

A flexibly adjustable side plate provides for better paper quality in the edge area by preventing ridge formation at the web edges and helps produce a more uniform CD profile.

Another positive side effect, of course, is the reduced contamination of the fabric edges due to straight edge limiting and water-saving spray nozzles.

It's third significant benefit is the separate cleaning system that ensures efficient cleaning of all components and prevent deposits on the web that can cause web breaks.

EdgeSaver can be mounted on both sides of the web easily in just few hours during a shutdown. Changing the wire is also no obstacle: the swivel device makes it simple to replace the fabric.

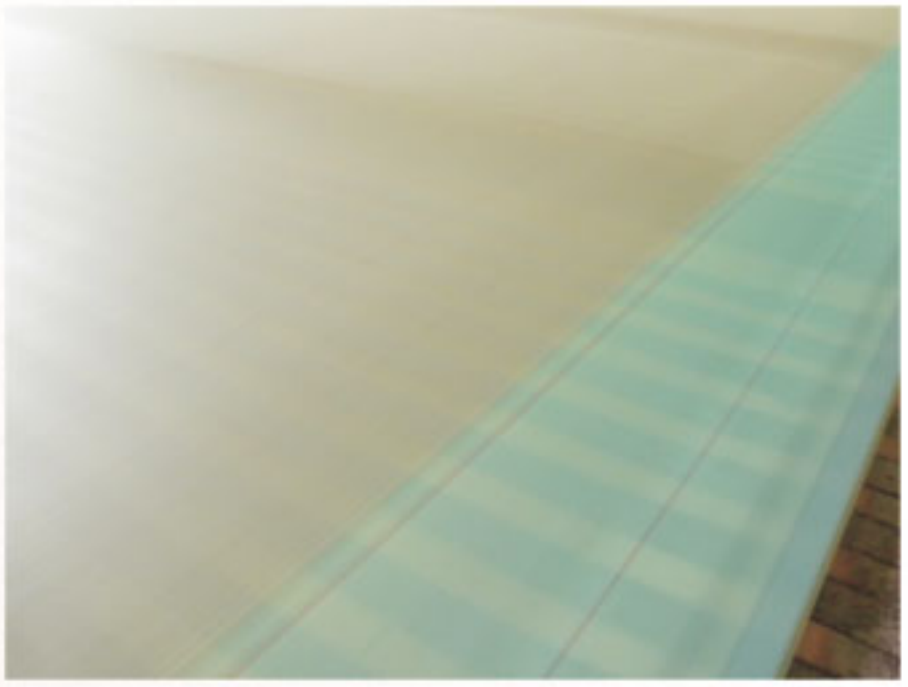

Fig: 5, Reduced contamination of the fabric edges.

Conclusion

Voith's EdgeSaver is a great example of innovation to save resources, reduce operation cost and help paper mills to gain competitiveness. The return on investment is extraordinary and is a perfect fit to Indian paper mills trying to optimise the use of costly fibers.

- Optimized use of fibers saves several metric tons of virgin fibers every day. As a result, consumption of additives, energy and water is also reduced.
- The investment pays for itself in just a few months.
- A teflon side shield prevents ridge formation on the paper edge and the CD profile is more uniform.
- A specially developed cleaning system prevents deposits on the components.
- The wire edges stay clean and as a result there is a substantial reduction in the number of breaks.

EdgeSaver is the best choice if you want to optimally use fibers with multilayer grades and lower operational costs. Developed in the true innovation spirit of Voith Paper, EdgeSaver offers unique solution to 21st century paper making process.