

Norske Skog Saugbrugs works with new Bagless Disc Filter sectors

A success for the environment and the purse

At Norske Skog Saugbrugs in Halden, Norway, the Wet End Process for PM 6 is running at full speed. Voith's upgrade of the Saveall Disc Filter helps keep up the high performance. White water recovery is now much more effective, saving 400 gpm (25 l/s) of fresh water, 90% of the fibers, and more than a million € a year in energy costs. It's hardly surprising that the project had a payback of less than six months.

Savings after rebuild:

Fresh water savings:	400 gpm (25 l/s)
Waste water reduction:	400 gpm (25 l/s)
Heat savings:	\$ 1.88 mio./year (1.3 mio. €/year)
Fiber savings:	134 t/year

Bagless sectors with fiber mat in operation.

A well-functioning Saveall system is increasingly important. High energy costs and tougher pollution restrictions have been eye openers lately for the importance of this part of the Wet End Process, connecting stock preparation and paper machine.

"In Saugbrugs, the super clear filtrate from the Disc Filter was not good enough to be used as shower water on the PM 6," Anders Hauge Johansen, Superintendent of PM 6 from Norske Skog Saugbrugs,

explains. Broken bags, leaks in gaskets, and cracking sector holders used to be the everyday situation of the Saveall Disc Filters at PM 6. This had severe consequences: The super clear filtrate was no longer suitable as shower water for the paper machine.

High amounts of fresh water

Therefore, fresh water had to be used, causing high costs for heating and increased load to the effluent treatment.

Freshwater for the mill comes directly from the river that crosses the mill site. But with a temperature varying from 40 °F to 60 °F (5 °C to 15 °C), this water had to be heated to 140 °F (60 °C) before it could be used on the paper machine. The high energy costs for heating this flow of 400 gpm (25 l/s) can easily be calculated. With a reduction of almost 6 megawatts, the savings are approximately \$1.88 million (1.3 million €) per year. Today the super clear filtrate already has the suitable temperature of 60 °C.

A worthwhile upgrade

Upgrading a Disc Filter from another supplier is often very challenging. But Voith Paper and Norske Skog Saugbrugs can look back on a long-lasting, successful relationship in this respect. As early as 1992, Voith Paper performed its first rebuild of a Disc Filter in Saugbrugs. In 2007, three Disc Filters for dewatering TMP (thermo-mechanical pulp) were upgraded. This project, which included 60 Bagless discs, proved to be a big success in both performance and installation.

Installed in 1993, PM 6 is the newest of three SC paper machines in Saugbrugs. After the latest modifications and investments in quality improvement, the paper it produces is

considered the best of its kind in Europe. The original setup at PM 6 consisted of two parallel Saveall Disc Filters, each providing space for 30 discs. Because one of the filters was always a stand-by unit, it was possible to do the upgrade during normal operation. In only five days, 600 Bagless sectors (30 discs with 20 sectors each) and a new Thune filtrate valve, type AVVV were installed.

The rapid installation was possible through the superb cooperation between the paper mill and Voith Paper. With supervision from Voith Paper, the mill's own mechanics could do the whole installation during day shifts only. Warranties for both capacity and quality were attained within the first day.

Less fiber loss, less water, less energy

The installation of the new Bagless discs had significant effects on fiber, water, and energy consumption. Each Bagless sector consists of two corrugated stainless steel plates with a fine perforation and 20 percent more filtering area than conventional filter bags. The upgrade of the Disc Filters eliminated leakages caused by broken bags and worn-out sectors. Accordingly, the upgrade reduced fiber content in the super clear filtrate by almost 90 percent. The fiber savings amount to more than 100 tons per year.

Because of the Bagless sectors, there will be no more shutdowns for replacing worn bags, thus saving both time

View of a Voith Thune Disc Filter.



Bagless sectors of the Saveall.





The new Thune AVVV filtrate valve secures a high and stable vacuum.

“The filtrate quality is better than guaranteed; we have had no problems and are very satisfied with the upgrade.”

Anders Hauge Johansen, Superintendent PM 6 from Norske Skog Saugbrugs

and money. At the same time, the upgrade avoids the risk of higher fiber content in the filtrate when bags are damaged.

The new Bagless discs and new AVVV filtrate valve improved the filtrate quality. This valve secures a high, stable vacuum, which increases Disc Filter capacity and improves flow distribution, too.

Because of the successful rebuild, the capacity of the Disc Filter has increased by 40 percent, and the super clear filtrate can safely be used as shower water on the paper machine.

“After a tuning of the vacuum in the valve, the average solid content in the super clear filtrate is 20 ppm. The fiber content in the filtrate is more

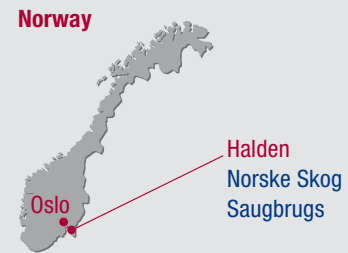
important for us than the ppm, and after the rebuild there is almost no fiber content,” says Anders Hauge Johansen from Norske Skog. “Since then, the Disc Filter has run excellently.”

Payback in less than six months

After the upgrade, the estimated \$1.88 million (1.3 million €) per year that it costs to heat this fresh water is now completely saved. Just by not having to heat the fresh water, the upgrade paid for itself in less than six months. If the reduced cost for fresh water, water treatment and the fibre savings had been considered, the payback time would be even shorter.

“The filtrate quality is better than guaranteed; we have had no

Location



Halden is situated in the south of Norway, right at the Swedish border. The picturesque town has more than 28,000 inhabitants and is widely known for its medieval fortress Fredriksten and the bridge across Svinesund, serving as border crossing over the Ringdals fjord/Iddefjord.

Thanks to the large international research institute ‘Institut for energiteknikk’, Halden often hosts scientists from all over the world.

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problems and are very satisfied with the upgrade,” sums up Anders Hauge Johansen of Norske Skog.