

A special challenge – the Fors rebuild

The 8 mm success factor

The Fors BM 2 machine rebuild presented the team from Voith Paper and Stora Enso with a daunting challenge. Working with millimeter accuracy was required and provided in masterly fashion.

Located in the heart of Sweden, Fors is a globally respected board mill, which produces coated FBB in a grammage range of 180-400 g/m². This is used as packaging for cigarettes, chocolate, confectionary, frozen food and luxury products.

As a leading supplier of premium boards, Stora Enso defined the success of the machine rebuild as depending upon three factors.

These consisted of increased product quality from their three-ply BM 2,

improved cost efficiency and greater production range flexibility.

To achieve these goals two old headboxes were updated with MasterJet II F/B and the approach flow received three new screens. Due to the very low basement height, two Voith Finckh screens had to be installed horizontally, which made the work considerably more difficult. The scope of delivery also encompassed the related pumps, a suction couch roll, a Hydromix mixing collecting pipe, detail engineering and installation.

Board of first-class quality has been produced within shortest time



Tight spots for tried and tested teams

When the BM 2 was originally conceived in the early sixties, the designers did not give much thought to future rebuilds. As in many other mills, both the basement and the machine hall are very low. Therefore, the question was how could one disassemble the old machinery and install new systems when simply no space was available?

The biggest obstacle was clearly posed by the back ply headbox. This was located in the very center of the wire section, underneath the middle ply with the white water tray and a machine beam. At the back



The installation of the back ply headbox was a real challenge



The new headbox under working conditions

was a concrete wall and the machine piping.

A tape measure is needed in every rebuild, but in the case of Fors BM 2 it was employed intensively. The crews were not only looking for every half-meter or centimeter. In fact, everything came down to just 8 millimeters.

These problematic circumstances presented the Voith Paper crew with some really spine-chilling moments. Helmut Eigner, the installation foreman, will certainly never forget this rebuild.

“It was a huge technical challenge. Whether above, below, left, or right, there was no free space anywhere. When we shifted the back ply headbox into the machine, we had exactly 8 mm of headroom. I couldn’t even squeeze my little finger into the gap.”

Helmut Eigner has been installing paper machines for 15 years, but Fors was his toughest task yet. As he explains with a smile, “It was a real

thriller! I think that some people did not really believe that we could fit the headbox until they saw it happen for themselves.” As far as his contact partners from the customer side are concerned, he has nothing but praise, “Both the project manager and his team were highly professional and cooperative.”

The Fors headboxes are not of special design, but are standard F/B units. Due to their compactness, the passage behind the headbox is now wider, which makes cleaning easier. A larger headbox would have caused enormous problems and demanded the removal of the middle ply white water tray. This would have prolonged the rebuild by three or four days. However, no adaptation work was needed and this is certainly one of the major benefits provided by Voith Paper.

Not only was there no room to spare for the back ply headbox, but also for the top ply headbox and the PD tanks. Nevertheless, in spite of every event, both expected and unexpect-

ed, the rebuild was completed during a 9-day shutdown. The BM 2 started up on January 2, 2007 and immediately provided saleable board quality.

Soft covers, hard facts

However, this did not mean that the rebuild was finished. The upgraded BM 2 needs a new winder that could be used at higher speeds. The Vari-Flex M two-drum winder has a maximum speed of 2,500 m/min and also offers top winding quality, and it was these characteristics that persuaded Stora Enso.

In general, coated board constitutes a considerable winding problem and in the past, the steel drums caused numerous headaches, among which markings, shiny spots and loss of bulk were the most frequent. Moreover, the limitation on the maximum winding diameter was no less important.

In particular, the shiny spots resulting from layer shifting during winding had to be avoided and reduced to a minimum in order to maintain top quality

production. To achieve this goal, the winding bed has to be soft enough to handle the paper rolls gently, while at the same time, possessing sufficient stability to cope with vibrations.

Moreover, the elastic drum covers have to be abrasion-resistant enough to exclude the formation of dust.

Due to the enormous leap forward made in roll covering technology in recent years, covers can now also be used for coated board. Moreover, the retrofitting of steel drums with new covers is also possible.

In the case of the Fors BM 2, the suitability of the elastomer-covered ElaCare drums was demonstrated during extensive tests at Voith's

Paper Technology Centre Finishing in Krefeld, Germany. The tests were subsequently confirmed by visits to reference installations.

Apart from the ElaCare covered drums, the VariFlex offers a full range of technical features, such as a slitter section composed of cutter units that can operate without a trailing cable installation. Cutting and surface dust extraction systems, as well as a newly developed system for automatic start and end gluing, are also of special note.

The icing on the cake is provided by a roll conveying system, which will be installed behind the new winder, and provides gentle roll transport.



A VariFlex winder, seen here during pre-assembly

Customer Comment



Bengt Andersson
Production Manager
of Board Production
Stora Enso,
Fors mill, Sweden

Bengt Andersson has been watching the results of the rebuild for roughly a year and sums up as follows.

“We have improved both formation and fiber orientation angle, which means that our targets have been accomplished. I should add, that I never doubted that the headboxes would fit!”

As often happens in the industry, the BM 2 was converted during a vacation period, which in this case was Christmas. Naturally, Bengt visited the rebuild site daily, but what did his family think about that?

“My family is used to it. After all, I have been working in the paper and board industry for more than 35 years and such things are part of the job.”

It would appear that this tradition is set to continue for some time in the Andersson family, as Fors has already ordered a DuoShake unit for the middle ply and the installation of a calender upstream of the coating section is also planned. “God Jul”, “Happy Christmas”, BM 2!

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