Curtain up for the DF Coat

First Curtain Coater in board production

Perfect coverage and outstanding print characteristics. No more and no less than this is required for the coat application. That’s why board producer Mayr-Melnhof relies on the Curtain Coater from Voith Paper.

At the Austrian location of Frohnleiten, an air knife had previously been used in the BM 3 for the middle coat. The unit led to some limitations. The maximum machine speed was 550 m/min and the maximum solids content was 42%. In addition, coverage of the board by the air knife was only moderate, and the running characteristics were impaired by breaks and frequent cleaning intervals.

In order to eliminate all these limitations, a Curtain Coater was installed with the aim of replacing the air knife over the medium term. The main delivery consisted of the DF Coat with precision nozzle, which is essential for uniform profiles in CD and MD direction. Also, a very effective air boundary layer remover was ordered along with a modification of the web guiding system, a climate hood and an optimization of the infrared drying to facilitate further speed increases and energy savings.

An important component was the complete working station including a high-power vacuum deaerator. With curtain coating, it is essential to remove even the very smallest air bubbles from the coating color – because where there is air, there cannot be any color.

Higher quality and speed

After the first few months in operation, the results achieved are quite impressive. First of all, the increase in quality is remarkable. Applying the middle coat with the DF Coat visibly improves coverage and cloudiness. This can be seen quite well, for example, with dyed samples of triple-coated board.

In addition to the enormous increase in visual characteristics, there is also an unchanged end roughness as compared to the air knife. Furthermore, the flatness of the board has improved, since less moisture gets into the board through the coating color.

As far as runability is concerned, the previous speed limitation due to the air knife no longer applies. An attempt is being made to increase the machine speed of the BM 3 to 1,000 m/min. The general performance is very good – there have been neither any breaks on the DF Coat nor have there been any plugging of the nozzle so far. Even threading through the coating unit worked very well.

Advantages for the customer and the environment

The DF Coat is operated in its total speed range with a coating color of approximately 60% solids content, which is a clear increase, leading to a substantial reduction in energy costs of over 40% for the middle coat line.

With the higher solids content in the coating color, the amount of latex used could be reduced by 2% in the first step. Further savings are possible
with changes in the pigment composition. In the area of raw material, input savings are also possible.

After only a short time in operation, the high expectations for the first installation of a DF Coat in a board machine were met and even exceeded. Thanks to further optimizations achieved by the customer together with Voith Paper, it is possible to increase the quality of the product while increasing the machine output at the same time. These advantages are supplemented by cost savings and an improvement of the global footprint.

“When the DF Coat runs, it runs.”

The fact that it should be Mayr-Melnhof in Frohnleiten to order the first DF Coat is no coincidence. The company’s innovative spirit has been well known for a long time – the first shoe press ever used in board production is running in the company’s BM 3.

“Nobody wants to be the first, but everybody wants to be the second, and that applies especially to curtain coating. The DF Coat in itself, however, is a simple piece of equipment. What makes it somewhat more elaborate is all around it. In particular, it needs a constant temperature, reduced air drafts and only a small amount of air in the color,” says Josef Gombocz, Director of Coating Technology at MM Karton, about the coater’s special features.

All these things are relatively easy to provide. The DF Coat has its own hood for creating the optimal climate. Therefore, the ambient temperature remains constant, and disturbing air drafts are a thing of the past. The air boundary layer remover eliminates the air that comes with the paper web, and the deaerator removes the air in...
the coating color. It has taken its place in the former forklift room alongside the BM 3.

“When the DF Coat runs, it runs: simply and without any adjustments. You don’t have to go into the hood at all. We installed two cameras for monitoring so that in the control room they always know what’s going on,” says Helmut Huss, Mill Manager in Frohnleiten. Maintenance of the DF Coat is utterly simple. Spare parts are rarely required, and during operation the maintenance effort is extremely minimal.

**The perfect color developed together**

It was a big challenge to develop a suitable coating color, since the ultra-thin curtain must not tear if there is a draft of air. Together with Voith Paper, Josef Gombocz developed the perfect color composition for this. The amount of color in circulation is much lower than that in a conventional coating unit. The difference can be seen in the smaller dimensions of the pumps, among other things.

Of course, there are also doubts when you tread new paths – in this case, especially regarding the amount of air in the coating color. In operation, it turned out that these concerns were unfounded. Josef Gombocz is impressed: “Even though all pipes were full of air after a shutdown, we still didn’t have any air in the color.”

The first results reinforced Mayr-Melnhof’s pioneering decision: using the unit is easy, threading at the DF Coat works fine, the end quality is excellent, and the energy savings are remarkable. “The whole team is delighted with the new unit,” says Huss. The Project Manager of MM Karton, Edmund Stadlhofer, summarizes the rebuild project briefly. “There is not much that is new in coating technology – with one exception.” He points to the DF Coat: “This is the future.”

**Due to higher solids content of the coating color, energy in the drying section can be saved.**

**Location**

**Austria**

Frohnleiten is located in the Austrian federal state of Styria, approximately 170 km south of Vienna. The small town is located on the Mur river, in a picturesque valley surrounded by mountains. Frohnleiten looks back on a 700-year history, and it has about 6,100 residents.

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