

Swedish cool: HOMAG Group develops new high-gloss front production technique for Spaljisten AB

Spaljisten AB based in Åseda in Sweden is a specialist in the production of foil wrapped furniture components. For years, this distinguished supplier to a large, internationally renowned furniture retailer has worked in association with the companies of the HOAMG Group. Spaljisten has now turned its attention to the topic of “high-gloss furniture fronts” with foil-wrapped surfaces. Using a new production technique conceived by HOMAG Group Engineering, the Swedish specialists are forging ahead with an innovative production line comprising machines from BARGSTEDT, HOLZMA, WEEKE, BÜTFERING, FRIZ and HOMAG.

High gloss – the furniture trend of the moment

The word on the street in the world of furniture is all about high-gloss furniture fronts. These cool shiny surfaces are in evidence everywhere, and not just in bathrooms and kitchens: All kinds of gloss finishes are springing up in living rooms and bedrooms too. Swedish foil wrapped furniture component specialist Spaljisten AB was quick to perceive this upcoming trend. In a bid to be fully prepared to satisfy future customer demand, the company took the decision to investigate the field of high-gloss furniture fronts with foil wrapped surfaces. Working in association with the HOMAG Group’s sales and servicing partner Thomas Frick AB, a search was launched for a solution. The terms of reference and importantly also the project-related risks were defined in mid 2008. Exhaustive testing, analysis and discussion finally culminated in a project launch in mid 2009.

The high price tag traditionally attached to achieving an exclusive cool and

high-gloss look in the past often posed a seemingly impassable barrier: The fronts were finished with a high-gloss paintwork surface or even with a painted glass panel, which drove up not only the manufacturing costs but also the weight to unacceptably high levels. The use of a lower-cost foil surface as a substitute for paint or glass surfaces helped to achieve a steady increase in popularity. Coating of furniture fronts with acrylic or PET surfaces were then carried out using a two-stage process: First the surface was coated and only then in a second stage, profiled longitudinal edges were edged or wrapped in a downstream postforming process.

Turning two processes into one

Spaljisten AB was looking to pursue a different agenda: The underlying condition imposed by the Swedish producer on the HOMAG Group was to develop a coating method which combined the complete process in a single stage, meaning that surface lamination and longitudinal edge wrapping would have to happen in a single work cycle. This would not only substantially reduce production costs, but also permit a jointless transition from the surface of the furniture front to the longitudinal edge in the profile area.

HOMAG Group: Specialists for every sector

This was a challenge relished by the experts in the HOMAG Group. The FRIZ Kaschieretechnik GmbH research centre set out to draw up a definition for the optimum process chain to manufacture these top-quality furniture elements. During the development process, not only was the process capability of the different foil types tested but also parameters such as the degree of gloss, scratch and temperature sensitivity were scrutinized. But it is not only the foil itself that determines the final surface quality. The glue type and make, the glue application method and of course the type of substrate materials and their preliminary treatment all exert a substantial influence over the final product.

The stipulation that chipboard panels be used as a substrate instead of the previously favoured MDF panel with its finer surface structure gave rise to another major challenge. Chipboard is lighter, cheaper and more dimensionally stable, but has a significantly coarser surface structure. The target: To produce a comparable surface quality despite these drawbacks.

BÜTFERING Schleiftechnik GmbH launched a series of exhaustive tests with a view to achieving excellent surface smoothness. The HOMAG Group's sanding specialist succeeded in achieving outstanding results – not only in terms of the unit configuration of the sanding machines, but also as regards the abrasive used and the varying grit sizes.

New to the woodworking industry: The Nordson roller bar nozzle technique

In a parallel development, the HOMAG Group also turned its attention to the aspect of glue application. Working in association with Nordson, the Nordson roller bar nozzle technique was devised. This provides the user with a perfected solution, not only in terms of the quality of the applied glue film, but also due to its simple, convenient and practical handling. Minimized glue input, a streak-free glue film and the roller bar nozzle as a closed system requiring minimal cleaning and rinsing work are just some of the benefits achieved by this glue application technique.

Chipboard panels open at the sides? The HOMAG Group has the solution

But what happens to the open narrow sides of the chipboard panel? The customer's product brief was quite clear on the subject: "Surface coating coupled with simultaneous inline coating of the two profiled longitudinal edges". This stipulation represented an absolute first for any manufacturer in this material combination.

The successfully deployed edge compaction technique using hot melt compound familiar from the **complete line** technique had yet to prove capable of providing adequate moisture resistance. Other systems generally available in the marketplace failed to provide the requisite degree of edge smoothness and continuous jointless transition from the radius to the surface. The L-profile chamfer with its dual glue joints in particular posed a major risk both to the quality of the appearance and primarily also the degree of moisture resistance.

The way forward was clear: The method already developed and patented by HOMAG would have to be modified and adjusted in line with the new requirement profile.

The following targets were defined:

1. Simple, continuous application without interruptions
2. Moisture resistance
3. Surface hardness coupled with a smooth surface finish
4. Transitionless profiles in the surface/edge area
5. Premium quality of the L profile joint
6. Cost benefit over a blind edging solution

The result: When the development work was complete, the HOMAG Group was able to submit a perfected solution. The decisive aspect of the final solution was a newly developed method using an innovative UV-curing melt compound developed by Henkel/Dorus and HOMAG. This new method has now been patented.

Process chain: The workpieces being treated travel through the production process in three separate lines linked by small buffer storage areas.

Line 1: Reverse side foiling

In the first line, the workpieces undergo three different work steps:

1. Infeed of the raw chipboard panel
2. Calibrating sanding of workpiece reverse side from above
3. Lamination from above with backing foil
4. Division of the continuous workpiece into individual workpieces by a diagonal saw
5. Workpiece diverging and buffer storage facility
6. 180° flipping station
7. Finish sanding machine
8. Sizing and profiling machine including longitudinal edge compaction
9. Stacking including inspection station

Line 2: Front side foiling

The workpieces complete the following work steps in the second line:

1. Infeed of the sized, profiled and reverse side coated chipboard panels
2. In-depth cleaning over several stages on both sides
3. Lamination using optionally thin or high-gloss thick foil
4. Wrapping of the profiled workpiece longitudinal edges
5. Finish processing of the longitudinal foil overhang
6. Division of the continuous workpiece into individual workpieces using a diagonal saw
7. Diverging station for ejection of trial parts etc.
8. Stacking including inspection station

The last of the three lines, the “cross line” was already in place. Even before installation of the reverse side foiling and high-gloss foiling lines, the cross line had cut continuous workpieces wrapped with PP foil into

individual lengths, and also performed transverse edging and hardware hole drilling processes.

Line 3: Cross line

In the third line, the workpieces complete the following work steps:

1. Infeed of the coated continuous fronts in books appr. 120 mm high
2. Cutting of the books into individual lengths, separation and infeed into a HOMAG cross line
3. Sizing and edging of transverse workpiece edges
4. Drilling of hardware holes in the throughfeed machines
5. Cleaning and stacking the finished furniture fronts

The produced furniture fronts are automatically separately packaged, stacked on pallets and placed ready for dispatch.

Spaljisten and the HOMAG Group – Partners of many years' standing

The ties between Spaljisten AB and the HOMAG Group were formed as long ago as the autumn of 2007. At that time, the foundation was laid for cooperative partnership between the two companies in what was still a newly emerging segment – that of foil-wrapped high-gloss furniture fronts. “HOMAG Engineering beside us as a project partner has guided us towards some truly impressive solutions achieved on the basis of an integral planning approach and sourced from a single reliable supplier”, explains Spaljisten AB’s Project Manager Sven Johansson. “We have the benefit of just one point of contact which takes complete responsibility for supplier coordination and planning. The high gloss furniture front production project has been hugely impressive. The line has been up and running with a very high level of availability since it was first commissioned. And with the HOMAG Group sales and servicing partner Thomas Frick AB, we have the benefit of an additional reliable and competent contact we can call on locally.”

Pictures courtesy of HOMAG Group AG, Spaljisten AB

Fig. 1:

Laminating line for backing foil (from above)

Fig. 2:

The continuous panel prior to narrow surface processing

Fig. 3:

Workpiece alignment section upstream from the cleaning and smoothing station

Fig. 4:

IR heating of the surface coating material overhang prior to subsequent forming onto the profiled longitudinal edges

Fig. 5:

Wrapping the longitudinal workpiece edges

Fig. 6:

Complete line, finish processing in the foreground

Fig. 7:

Outfeed of the HOMAG laminating line with 90° rotary plate

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