

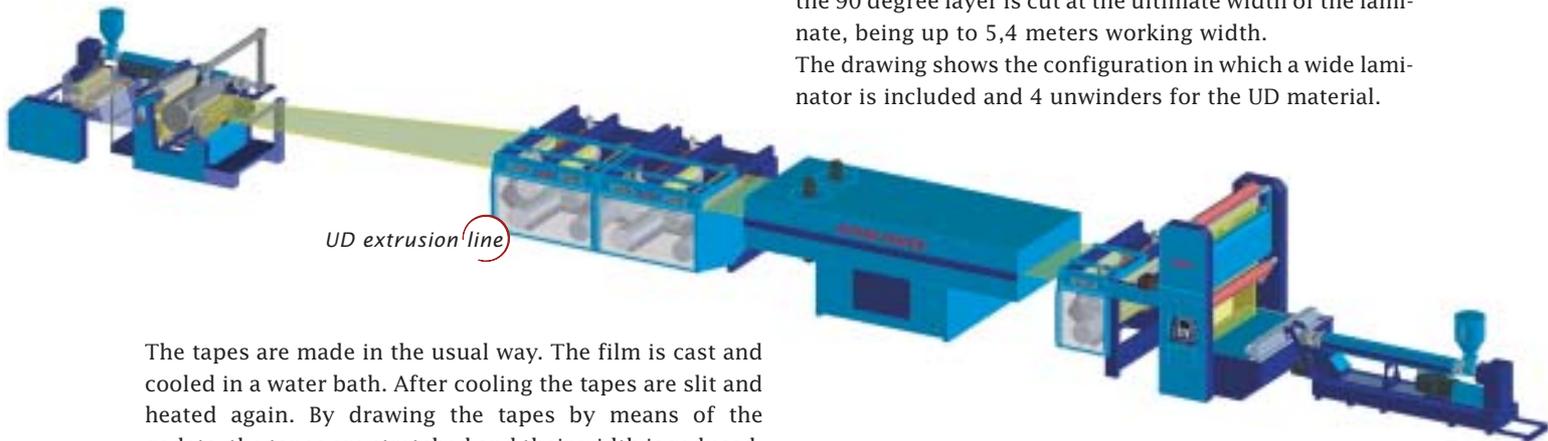
In this issue: Pictures speak...
...multiple application techniques.
If you think innovation is expensive...
Extrusion UD...

Van Wees is working closely together with Starlinger from Vienna, Austria on the development of a new process for the production of UD and Crossply laminates based on polyolefin tapes. Furthermore we are developing wider Crossply machines up to 5,4 meters.

Extrusion UD production and wider Crossply laminates

Starlinger is a leading manufacturer of extruders for the production of polyolefin tapes, circular woven products and extrusion laminators. Based on an idea from van Wees we have made a line concept. In the drawing you can see the process flow.

Van Wees is also working on wider machines for the production of geotextile materials. On the Crossply machine, we will feed two or three UD layers in the zero degree direction and add one layer of the same width as the UD layer at 90 degree. But in stead of cutting square pieces, the 90 degree layer is cut at the ultimate width of the laminate, being up to 5,4 meters working width. The drawing shows the configuration in which a wide laminator is included and 4 unwinders for the UD material.



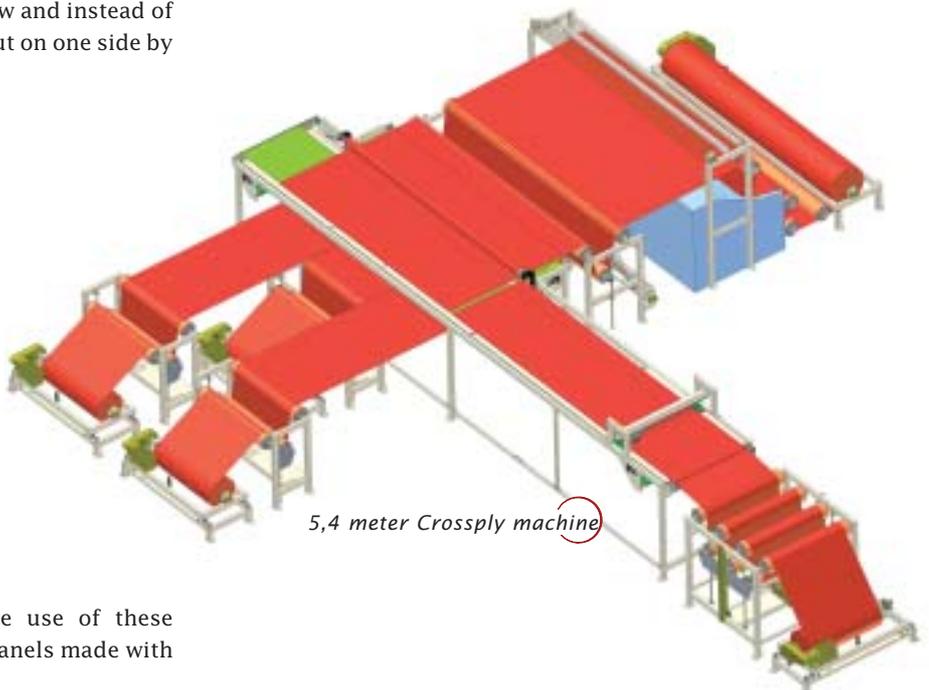
UD extrusion line

The tapes are made in the usual way. The film is cast and cooled in a water bath. After cooling the tapes are slit and heated again. By drawing the tapes by means of the godets, the tapes are stretched and their width is reduced. The tapes have their ultimate strength now and instead of being wound on spools, a carrier film is put on one side by means of a second extruder.

This process eliminates the spooling and unrolling operation that is normally used for the production of UD layers. Not only does this reduce production costs, the quality of the UD is also much better. Tapes on spools are often twisted on the edges and these edges mark themselves in the laminate.

The UD laminates are handled in the same manner as other UD tapes on the Crossply machine. After laminating the Crossply laminates can be coated in the same manner as flat woven or circular woven products. These products find applications in carpet backing and laminates for building and packaging.

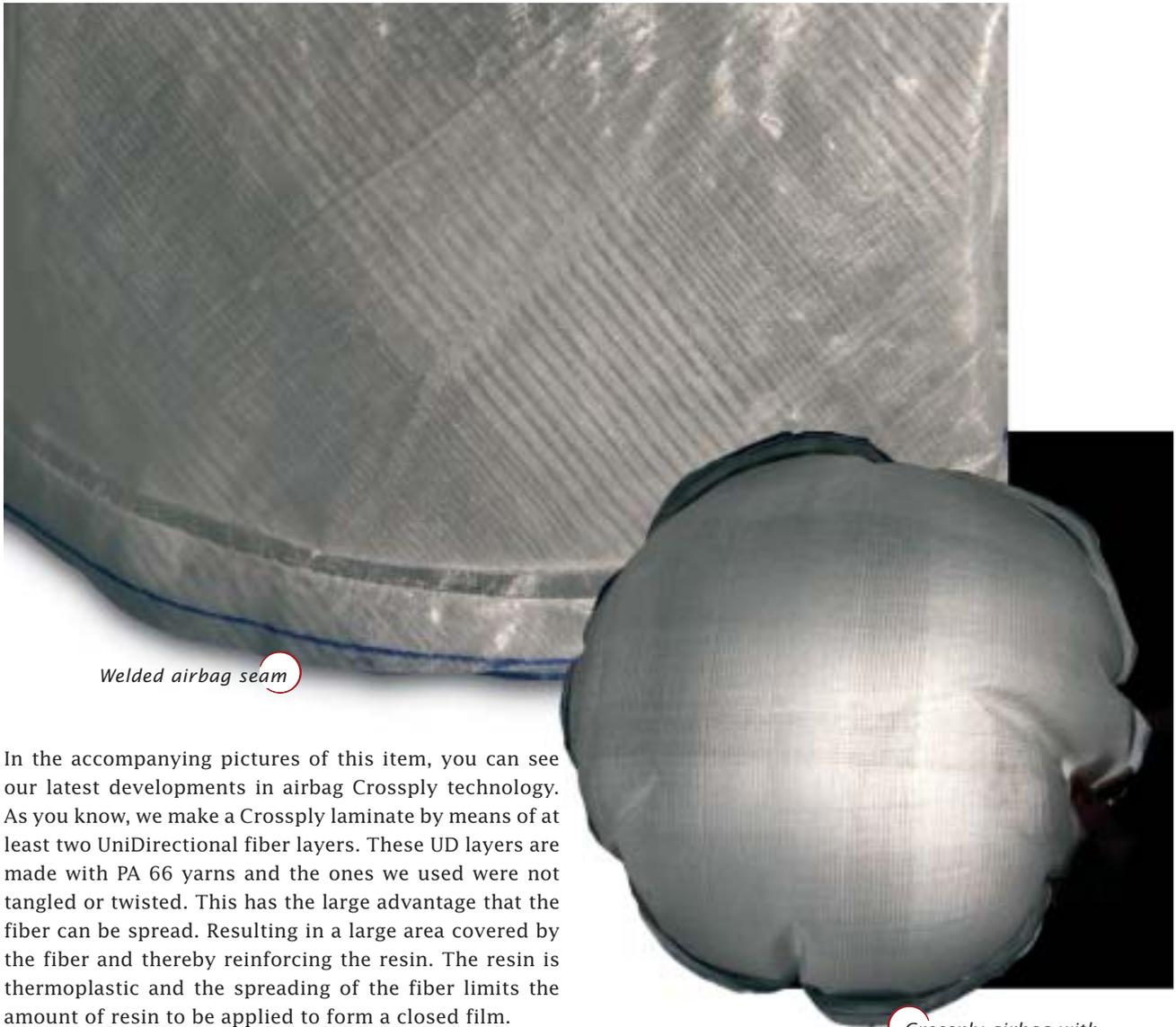
Another interesting development is the use of these Crossply laminates in thermo formable panels made with one-component polymers.



5,4 meter Crossply machine

Airbags are interesting products to be made, using the Crossply technique. The number of airbags in cars is expanding and applications in small trucks and other areas are being developed.

Pictures speak a thousand words



Welded airbag seam

Crossply airbag with alternating fiber densities

In the accompanying pictures of this item, you can see our latest developments in airbag Crossply technology. As you know, we make a Crossply laminate by means of at least two UniDirectional fiber layers. These UD layers are made with PA 66 yarns and the ones we used were not tangled or twisted. This has the large advantage that the fiber can be spread. Resulting in a large area covered by the fiber and thereby reinforcing the resin. The resin is thermoplastic and the spreading of the fiber limits the amount of resin to be applied to form a closed film.

But we have gone one step further. By alternating the fiber densities, in this case over a width of 40 millimetres, it is possible to make a very lightweight laminate. From the checkered appearance you may understand that there are areas with lower areal density and areas with higher aerial density. In fact, there are three different densities in this laminate.

The weight of this Crossply laminate is 125 gram per square meter. It may not come as a surprise to you that it is very soft and pliable.

Another very interesting item is the possibility to weld the laminate. In the detail picture you can see that the weld is nearly crystal-clear. This means that the resin has been in its liquid stage and has fully impregnated the fibers. The result is a very strong bond between the two layers.

These pictures show a round airbag. You can imagine that it is also possible to make the airbag rectangular or square. And even more interesting, making a side curtain

airbag with this technique. Side curtains differ from driver and passenger airbags in that they have to hold the air pressure inside the bags for several seconds. This requires a high level of seam strength and air tightness.

The present side curtain airbags are made by means of Jacquard weaving machines as a double fabric. This technique is very sophisticated but rather expensive. Due to the sizing of the yarns the bag has to be washed on large washing lines in order to be able to coat them for air tightness. Also the coating step is time consuming, relatively difficult and therefore expensive.

The Crossply technique is ones again able to combine several processes in far less steps as we have described above. We are testing these bags together with airbag manufacturers and the results are promising.

But let us make one thing clear, we hope you will never see a bag in operation in the car you are in.

We have five application techniques available on our UD machine in the pilot plant. This makes it a very versatile machine for UD production as well as for laminating textile substrates.

UD machine equipped with multiple application techniques

On the UD machine we can apply the resin on the fibers or substrates by means of a slot die, gravure roller, multi roller, kiss roll and as a film. The application width is 200 millimetres. In case of UD production, the yarns are fed from a creel and in case of laminating, the substrates are unwound from the lower unwind position.

After the application of the resin, the laminate can be heated again, on the three roller winding section, for better adhesion. If necessary, an extra force can be exerted by means of the nip rollers.

For the fifth application technique, film lamination, the film is heated on the rollers and impregnates the fibers or substrates when it is passing through the three roller main drive.



VAN WEES AND...

I recently read an expression from the aviation industry, "if you think safety is expensive, try an accident" and that led me to the expression below.

If you think innovation is expensive, try a bankruptcy

We know that investing in our UD, Crossply and Laminating technologies involves serious costs. However, we think that not investing in the latest technologies will lead to a stand still of your product portfolio, customers abandonment and ultimately you are out of business.

Van Wees has been in the textile business since 1945. Innovating continuously throughout its existence. Not revolutionary, but steadily. Focussing on long-term business.

In this Specs you have read about the possibilities we have at van Wees for product development and making sample materials in our pilot plant. The number of samples we have made since 2002, the year our Drumwinder was built, is more than 500. At this moment we have one engineer working full-time on new machine designs and

two operators in our pilot plant for product development and modifying the Drumwinder or UD machine. This has led to three patent applications on our machine designs and a tremendous gain of know-how for our company.

But we do not invest for the sake of investing; we want to share the technology with you, our customers.



*Rien van den Aker
Managing director van Wees*

Techtextil 2005: Focusing on Innovation



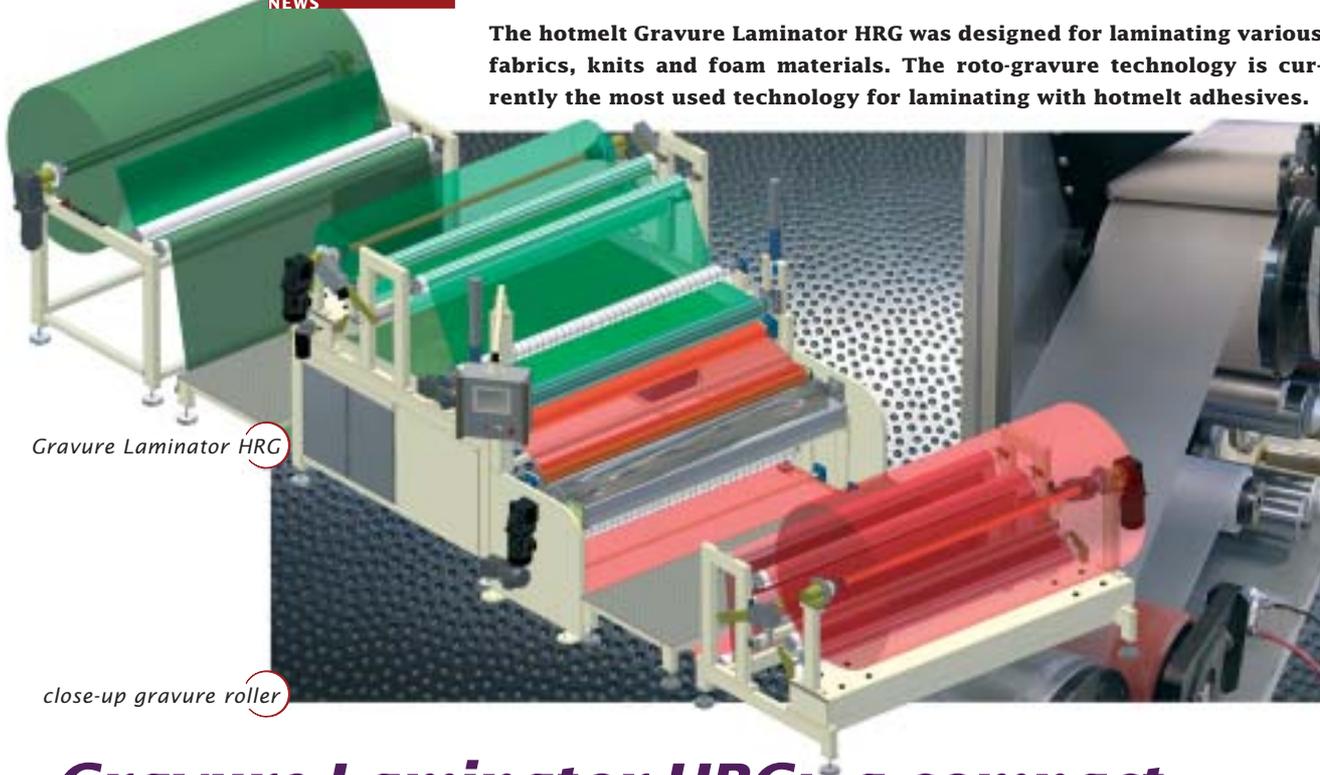
Specs 5 is dedicated to our participation at Techtextil Frankfurt 2005.

Techtextil is the leading international exhibition for technical textiles and composite materials. Van Wees will show the latest developments in UD, Crossply and Laminating technologies. **Hall 3.0, stand number H40**

We will also participate at the **Flanders Textile Valley** from 29.9 – 1.10.2005 and the **ITMA Asia** from 17.10 – 21.10.2005. Please visit our website for more information.



The hotmelt Gravure Laminator HRG was designed for laminating various fabrics, knits and foam materials. The roto-gravure technology is currently the most used technology for laminating with hotmelt adhesives.



Gravure Laminator HRG

close-up gravure roller

Gravure Laminator HRG: a compact design for high-tech applications

The hotmelt roto-gravure laminating technology guarantees the most accurate and well-defined application of adhesive dots on the surface of textile substrates and on breathable membranes or films.

After the adhesive dots have been applied, the two substrates are gently laminated together with minimum pressure. It is a very clean operation and the hotmelt adhesive guarantees very high bonding strength and excellent heat and UV resistance. The latter prevents yellowing during subsequent processes, where high temperatures are required (e.g. molding process for bra cups). Furthermore, the hotmelt engraved roll technique allows much higher production speeds than conventional spray laminating machines; up to 50 m/min. can be achieved!!!

In addition to the available hotmelt laminating machines in the industry, Van Wees has developed a new hotmelt

laminating machine. The Gravure Laminator HRG is a compact laminating machine with easy access from all sides for the operators. The machine was designed for roll-to-roll applications and is extremely suitable for small to mid-sized companies, requiring high flexibility.

The new compact design of the hotmelt Gravure Laminator HRG will offer new opportunities to the textile and the nonwoven industry. The possibilities are unlimited with respect to substrates (fabrics, knit, nonwoven, breathable membranes, films and foams) and markets (apparel, intimate apparel, military and medical garments, automotive textiles and industrial textiles.)

The focus of van Wees is on new product development for its customers. Each custom-made hotmelt laminating machine is designed in close cooperation with customers, who have an important input in the final concept of the machine that they are going to buy.

COLOFON

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On our websites www.vanwees.nl or www.crossply.com you will find more information about our company. Especially for the latest news, we invite you to visit us on a regular basis. You will stay informed about our fair participations and you can ask for information, brochures and lectures.

