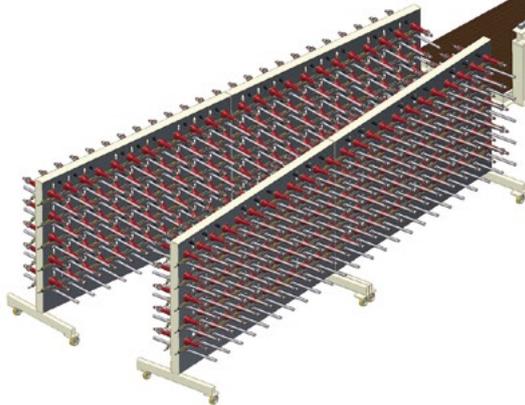


**Making UD materials in the best possible ways guarantees a good Crossply product. It forms the basis of the successful products in ballistics, sails, airbags and all other area's we are working in**

## ***UD600 machine, the heart of Crossply technology***

After the sale of the UD machine from our Pilot Plant, we had to build a machine that would fully support future developments. Because we were working on many products we decided to build a UD machine with even more possibilities than the previous version. This new machine has a working width of 600 millimeters.

The spreader units, roller coater unit, kiss roller unit, unwinders and winder are made as separate units. By alternating the position of the units within the machine we can impregnate or coat the yarns in several ways.



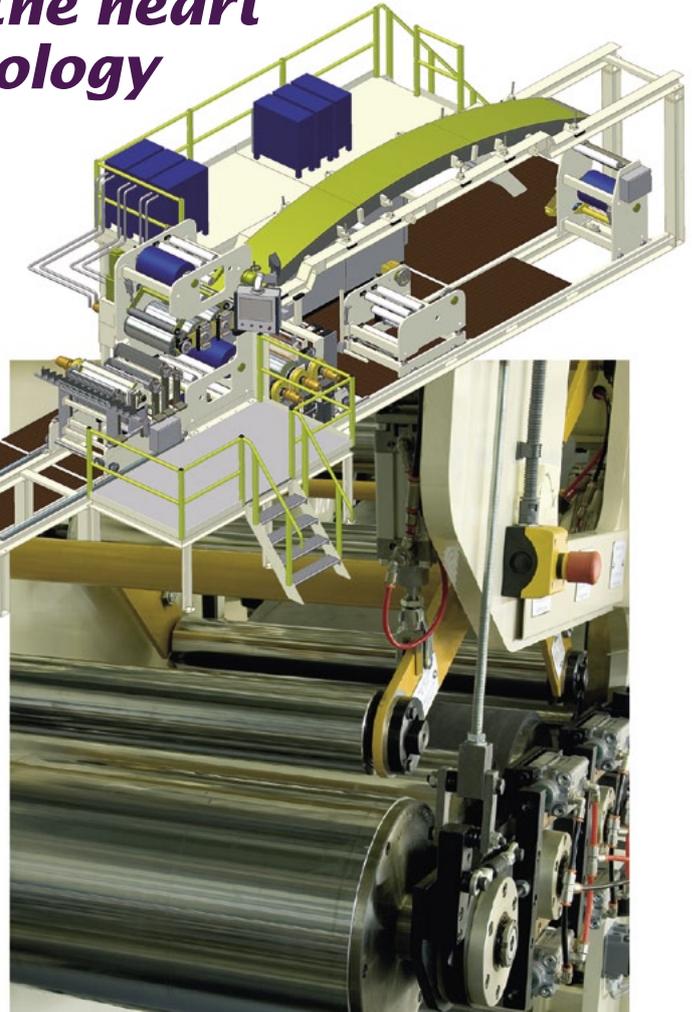
The resin can be applied at room temperature and at elevated temperatures up till 300 degrees Celsius. For thermoplastic resins we have the possibility to add an extruder with a slot die.

The heart of the machine is our patented main drive system. In the UD600 machine we have mounted three rollers which are individually driven by means of servomotors. In this manner we can compensate for the elongation of the yarns before they are joined with a carrier film or silicone coated paper.

Exchanging the rollers is easy and we have a number of rollers with different surface qualities such as chromium plating, fluor polymer coating and rubber coating.

The rollers of the main drive system are also heated. This opens up the possibility to bond or impregnate the yarns by means of films or powders.

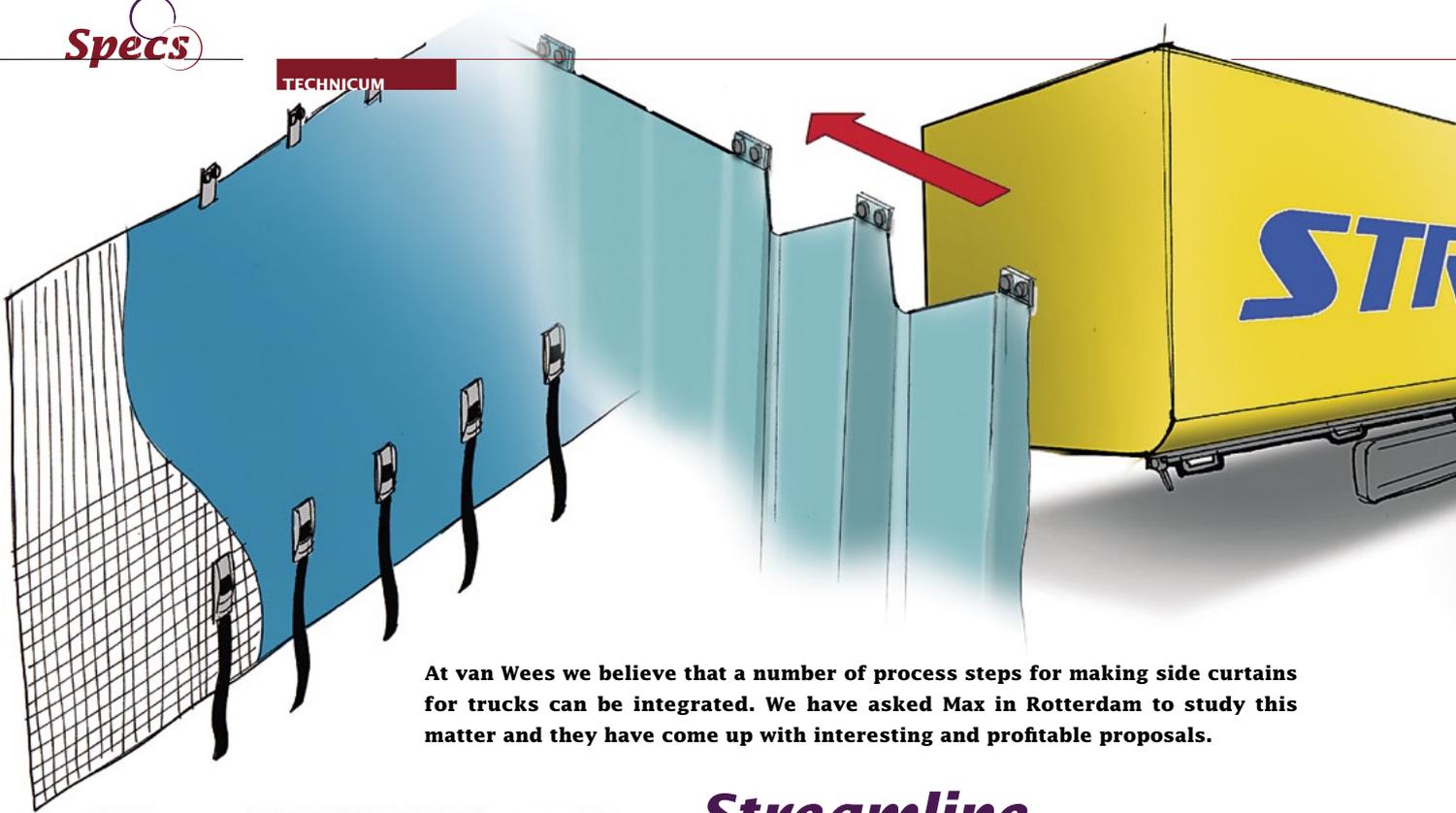
For drying, cross linking or B-staging of the UD laminate, we have three heated sections. Each section is equipped with a hot water unit and therefore the temperature profile can be chosen according to the resin's quality.



The creel from which the yarns run into the process is equipped with 500 positions. The spool holders are injection molded according to our own design and based on our experience with earlier built creels. The spool holders can take cardboard tubes from 75 till 94 millimeters. The brake force is generated from a central point and adjustable.

For unwinding carbon and other wide products we install special rollers that keep the yarns as wide as possible during their travel to the UD600 machine.

The UD600 machine is available for our customers and prospects for product as well as process development. The machine offers the possibility to make Unidirectional prepregs for composite products as well as the base material for Crossply products.



At van Wees we believe that a number of process steps for making side curtains for trucks can be integrated. We have asked Max in Rotterdam to study this matter and they have come up with interesting and profitable proposals.

## Streamline

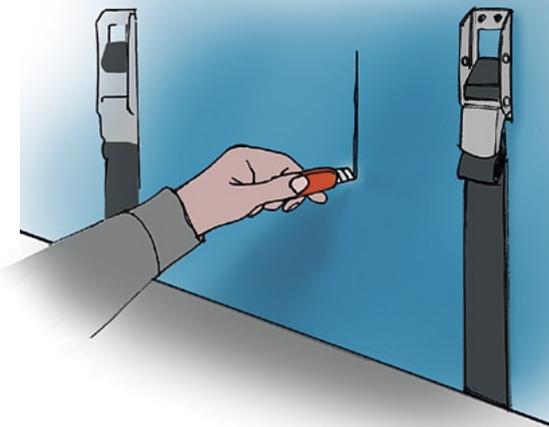
The present method of making a curtainsider for a truck or trailer is time consuming. The tarpaulin material is reinforced with a number of strength members. This welding procedure is done by hand and takes up a lot of space in the production plant. Due to the labor intensity, it becomes difficult to gain profit from this operation in highly industrialized Western countries.

Also, present curtainsiders on trailers are often damaged by criminals cutting into the sides for inspection of its contents. If the content is of interest, the driver is intoxicated and the truck is stolen. A high risk for both drivers and transport companies as well as their customers.

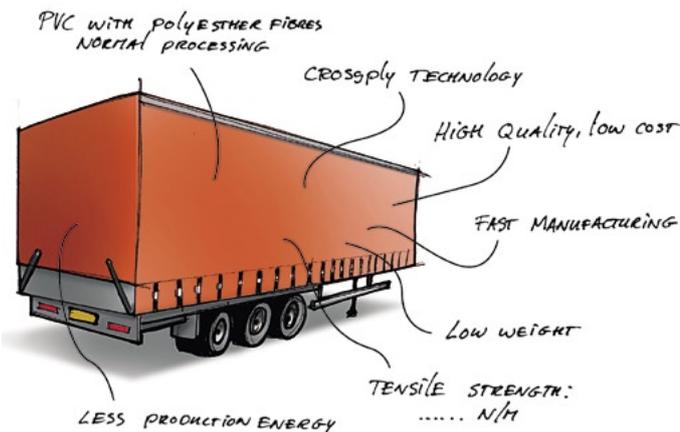
Van Wees and Max have studied these matters and have come up with a number of solutions and proposals through the use of UD and Crossply technology.

As you know, the UD and Crossply process is different from the present method for making technical textiles. In stead of coating a woven or knitted fabric, we laminate two or three UniDirectional fiber layers. A UD layer is composed of yarns that lay completely stretched in the carrier material. On the Crossply machine, a second layer is added in the 90 degree direction relative to the 0 degree orientation and the layers are laminated together. For tarpaulin materials, the yarns are Polyester and the resin is PVC. We have made a number of samples and have an interesting case for the present materials. But there is more!!

It is possible to add the strength members in the Crossply process. The extra yarns will bond very well with the coated UD layers. It is to be determined whether these extra yarns should be added in the UD or in the Crossply step. The laminating step at the end of the Crossply production will bond the material in its final form.



VAN WEES Crossply FOR TRAILERS





In stead of copying the present tapes of 50 millimeters width, the strengthening yarns can be laid over a larger area. At the thinner sections of the tarpaulin, the material will bend more easily. Thus generating a regular folding pattern for the side curtain. The rollers for the top rail system can be mounted in these reinforced sections.

Van Wees is working closely together with Bekaert in Belgium to come up with a solution for the cutting of the curtainsider. The third interesting proposal is therefore that we can add steel yarns in the Crossply process. The steel yarns can be positioned at specifically those areas that are within the criminal's reach. Because of the conductivity of the yarns, it is easy to install an alarm, detecting whether someone is trying to cut the side curtain.

Furthermore we expect that the steel yarns can contribute to replacement of the strength members described above. The result of the implementation of the UD and Crossply technology will be a trailer with "streamline" surfaces.

**VAN WEES AND...**

**In the Specs section you have read about the new UD600 machine we have built for the development of UD materials.**

## Large investments at van Wees

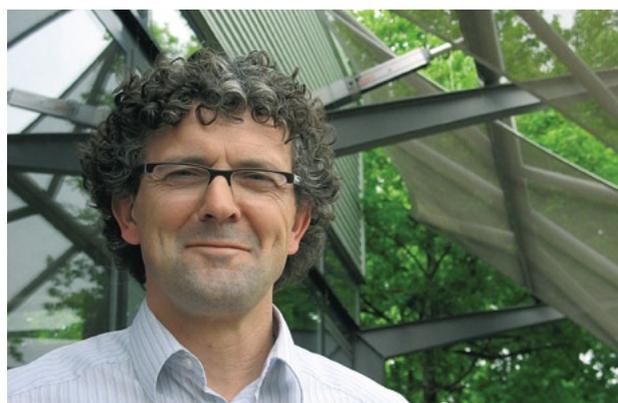
Next step is the building of a Crossply machine with multi axial placement possibilities. The working width of this machine is still to be decided and dependent on feed-back from discussions with our customers and prospects.

Our Pilot Plant is approaching a full production plant. Starting from a spooling machine for making determined length spools till a test bench for tensile and tear strength measurements. New product development is still being done on our Drumwinder and the first trials on our UD600 machine are very promising.

I am very happy with our new colleague, Marc Busio, who holds a degree in chemical technology. He is working as a product development engineer with myself on a number

of projects. After the start of Marc in December 2006, we have made large progress in for example airbags and tarpaulin developments.

Because of lack of expansion possibilities at our current location, Van Wees will move to a new building in 2008. We will keep you informed about this new building, where we will utilise technical textiles at dedicated positions.



### techtexsil

International Trade Fair for Technical Textiles and Nonwovens



Focusing on Innovation

12 - 14 June 2007

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**VAN WEES ACTIVE**

## Techttextil 2007: Focusing on Innovation

Specs 6 is dedicated to our participation at Techttextil Frankfurt 2007. Techttextil 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 **ITMA'07 in Munich** from 13- 20.9.2007. Please visit our website for more information.

**In the previous Specs, number 5, we have described the status of the airbag developments. At that moment we were investigating the possibilities and we can now say that we have an interesting proposal for the market.**



## **Airbag development, design for high-tech applications**

We have made a number of bags and the bags can withstand a high static pressure. We are still working on the production method and the resin and yarn developments.

A major advantage of our process is the possibility to make light weight laminates from heavy tow yarns. Lighter materials are less costly of course which is an important item in the automotive industry.

The resin we have used is thermoplastic, making it possible to weld the laminate. In the example of the side curtain

bag, we have placed a divider. This I-shaped beam is holding the layers at a certain distance but the gas inside the bag can still flow freely between the chambers in the bag. It may not come as a surprise that this divider is also a Crossply product.

The next step is to make Unidirectional laminates with 700 and 940 dtex polyamide yarns on our UD600 machine. This material will be used for making Crossply material on a prototype scale. In this manner we can deliver larger quantities of material to our interested customers.

My wish is however still valid, to never see a bag in operation in the car you are in.

### COLOFON

Specs is issued by Van Wees.  
Design and lay-out: Spoetnix, Tilburg  
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On our websites [www.vanwees.nl](http://www.vanwees.nl) or [www.crossply.com](http://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.