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OutDry's Breatkthrough Technology

An exclusive interview with VP of R&D Matteo Morlacchi on the innovative new process

NEXTEC HEADQUARTERS

BY RAIMONDO FORLIN

First implemented in 2005, OutDry, owned by Nextec Srl, is a relatively young technology that has quickly garnered the attention of the outdoor market and others for a number of good reasons: the edginess of its solution, international awards (Volvo Ecodesign Award at ISPO 2008) and significant investments. Additionally, the company has recently received capital investment from André Bruère, a partner of the investment company Referencia International. OutDry has already started several partnerships with established shoe and glove manufacturers, and, as we discovered in this exclusive interview with co-founder Matteo Morlacchi, is also developing innovative solutions for the apparel market. With an engineering degree in Industrial Process and several years of experience as Director of Sport Fabrics at Loro Piana, Morlacchi, 43, has served as VP of R&D for OutDry since 2004.

When did Nextec Srl start?

Nextec Srl started in 1998 when my brother Luca and I—coming from different backgrounds (shoe, fabrics, chemistry and industrial processes)—decided to combine professionalism and expertise with the aim of developing advanced technology for the sportswear and protective categories.

Nextec Srl got started in a Technological Park, the PSTL Busto Arsizio, connected with the University of Insubria and its scientific facilities and laboratories. In the early years, the company did R&D almost exclusively. During this phase, patents, principles and processes underlying the OutDry technology were developed.

How is OutDry structured?

In 2004, we launched the industrial development of the company and we moved to a new 10,000 sq ft location. On the ground floor there are areas for the receipt and control of membrane coming from Japan, as well as their transformation into set models for customers' applications. Here we have two laminating lines for prototypes, small batch manufacturing and testing of new technical solutions. Finally, there is an R&D workshop with various testing equipment for tests. Upstairs there is a large open space where the administrative and management offices are located. Besides the Italian branch, we also have a structure of approximately 18,000 square feet in Guangzhou, China. An important part of the activity of R&D is carried out in this subsidiary, especially for customization and including the testing of customers' new ideas and technical solutions.

How about management?

The company has an organizational structure that may seem quite strange, but it becomes clear when one considers that our core business is the research and development and the technologies derived from it.

We try to be as flexible and responsive as possible to respond quickly to the variety of requests we receive from the market. Luca Morlacchi is CEO and is responsible for Business Development, I'm responsible for R&D and Marketing and Maurizio Ostani is specifically responsible of the sales of the 'glove' division.

MATTEO MORLACCHI, VP OF R&D, RECEIVES ISPO ECO DESIGN AWARD

Just recently there has been a significant new entry, right?

Yes. André Bruere, partner of Referencia International, an investment company that manages funds dedicated to the development of early-stage high-growth potential companies. He will serve as chairman of the board. André has strong skills in managing brands and above all a network of international relationships in the sports shoe market (he was president of Reebok Italy and Mexico). In addition to filling the role of President, Bruère will actively participate in the performance of the company, with the objective of increasing penetration of the OutDry technology among the most qualified international brands. Particular attention will be paid to the U.S., where we are in the process to establish a branch (OutDry Americas) which will be located in the Boston area.

What exactly are your duties in Nextec?

I'm responsible for all OutDry R&D programs including raw materials sourcing, components, process and machineries development. In these areas, the relationship we have with our industrial Japanese partner Komatsu Seiren (Mitsubishi Group), with whom we developed the membrane that we use for the OutDry technology, is very important. As such, I often visit their facilities and laboratories in Japan and China. In relation to that, I develop all the technical literature describing the processes to follow for a correct implementation of the OutDry technology and the QA processes.


LUCA MORLACCHI, CEO NEXTEC


ANDRÉ BRUERE, PRESIDENT, NEXTEC


"OUTDRY IS THE FUTURE" - UELI STECK

I also take care of OutDry's IP (namely patents): with 10 PCT international applications and more than 50 domestic in progress, this is one of the most sensitive areas for the future success of the company.

Additionally, I oversee all marketing programs as the primary objective of our business communication is to explain to our customers the technological innovations that we offer. We thought that keeping the R&D and Marketing functions together would increase the overall effectiveness.

Besides the outdoor market where has the technology been implemented?

Wherever there's a need for comfort and water insulation, the OutDry technology can be successfully used. Some of the areas where we've been successful are: shoes, sailing, golf, hunting and fishing, military and safety. Wherever in the past a membrane solution has been adopted, we can compete with our unique approach. And, thanks to the innovation brought forward by OutDry and in particular the thickness of its membrane, we've been able to find applications where previous market solutions were not a viable possibility. For example, in soccer shoes (Umbro), golf gloves or leather apparel. Wherever there's a need for tactile sensibility and softness, the OutDry solution becomes ideal.

We know that some processes are derived from aerospace technology.

Indeed. The lamination process machine was developed taking inspiration from one of my engineering classes where I had studied the 'diaphragm forming' technology. This technology is used to build airplanes wings and helicopter blades made of composite stratified materials.

How is the OutDry process implemented?

We developed the process in a way so that shoe manufacturers can add it as a step to their manufacturing process. It wouldn't make any economic sense to move semi-finished shoes from one plant to another. After a preliminary test phase on prototypes and samples at our facility, where we adjust the technology to the specific need of the client and we train some of its key employees, we sign a technology licensing and lease agreement to install

MEMBRANE PIECES ARE CUT AND JOINED INTO SETS


MEMBRANE SETS READY FOR APPLICATION PROCESS

MEMBRANE SETS ARE BONDED IN THE PATENTED PRESS

ALL PRODUCTS ARE TESTED TO HIGH QUALITY STANDARDS

our laminating equipment at the customer facility. We've done installations in China, Vietnam, Indonesia, Japan, Romania, Poland, Croatia, Spain, Italy and Sri Lanka and pretty soon in India and Cambodia as well.

In 2008 OutDry won the Ecodesign for the Outdoors from ISPO and Volvo. Describe the contest and how you got this award.

This is considered a very important award because it's sponsored by independent and authoritative organizations, such as the German Environment Ministry, and the jury is composed of well know leaders in the sport industry. The motivation behind giving the award to OutDry was the jury's recognition of OutDry's ability to combine higher performance than traditional systems while improving the environmental impact of the solution. In particular, the jury appreciated our choice not to use PTFE base membranes. The manufacturing process of these membranes is currently under investigation from American and European environmental agencies because during the manufacturing process, the PFOA agent is used. This substance is considered to be cancer and gene mutant prone.

Do you conduct any field tests on the OutDry based solutions?

This is an extremely important step in our R&D process. Alpinists such as Silvio Mondinelli, Mario Merelli and others have been the first to recognize that the OutDry solution prevented the development of ice between the upper and the waterproof membrane in boots with the common manufacturing approach. At the same time, our client-sponsored athletes often provide us with very important feedback. Last summer we were pleased to read that Uli Steck, who without even knowing our company, tested OutDry gloves and said: "In my opinion, OutDry is the future. I had never used gloves as waterproof and comfortable as this before."

Who are your partners among outdoor companies?

Our partners in the outdoor footwear market are, in chronological order: GRONELL, Lizard, Mont-Bell (Japan), Kamik (Canada) Lafuma (France) , Trezeta (Italy) and Wenger (Switzerland). Since last winter, Mountain Hardwear introduced the OutDry technology in over 12 top-of-the-line models of their climbing gloves. This year, Mont-Bell and Mizuno have also launched gloves featuring OutDry.

OutDry© WATER NOT INCLUDED™

Where do you focus your marketing investment?

More than just branding, it is very important to us to explain how the technology works. The ideal place for this activity is certainly the point of sale. With this objective, we have created specific materials and are organizing a campaign of "clinics." At the same time, we are stepping up our presence at major trade shows. In 2010 we exhibited for the first time at Outdoor Retailer in Salt Lake City. We then presented as usual ISPO in February and Outdoor in July.

Do you plan to work with other brands?

We have ongoing testing and development with many brands in various industries, but for now we cannot reveal the names...

Are there also brands that use your technology unofficially?

Sure. This is because the market for waterproof and breathable membranes is not really open to competition. We ask those brands that use our technology without making it official to display our patent number on the finished product; this helps us in making possible more effective legal protection in case of infringement.

Let's talk about competition. First, what is your technical opinion on Gore?

Gore is an extremely successful organization that created and still dominates the waterproof, breathable footwear market. But we are talking about a 25-year old technology that has been well imitated (at considerably lower prices) in recent years. If we imagine the outdoor market as a pyramid, we see that Gore-Tex is having a lot of success in the central part of it, thanks also to significant investments in communication. But at the top of the pyramid consumers, professionals, athletes and mountain guides are less susceptible to the sirens of marketing. OutDry is having some significant successes with these users, leading to the gradual diffusion of the technology and boosting its image and credibility. If an idea has value, it will establish itself naturally in the marketplace. It 's just a matter of time.

The other major competitor is Event. What do you think about their absence from the major trade shows and their latest moves, which could indicate a desire to decrease investments in the outdoor sector?

Probably the strength of Event's innovation (or users' perception of it) has not been sufficient. So the chance to compete with the market leader and to bridge the brand awareness gap has been reduced to a matter of communication investments, which can be very high even for a large public company (Event's parent is General Electric). However, rather than the decision to significantly reduce investment in marketing and communications, I was amazed at their decision to introduce eVent hydrophilic (not microporous) membranes, which is precisely what they were considering "inferior" in the comparative communication campaigns they were running.

Can the OutDry technology be further improved or find new applications?

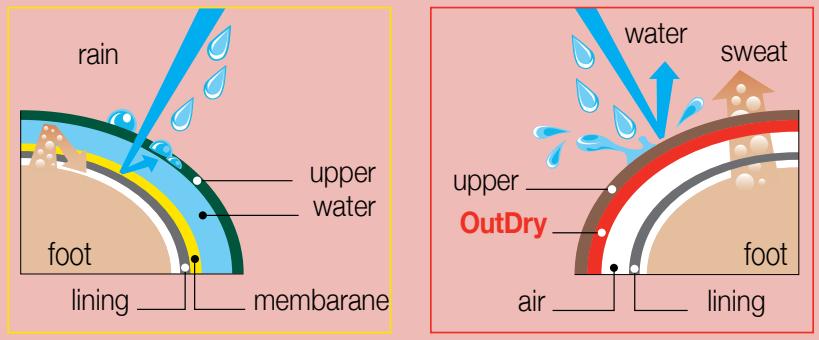
I believe that a product or process is improved only when something is removed, making it easier and more effective. The OutDry technology was born with this philosophy, having for example, eliminated the need to use tape sealing, leaving designers free to use linings more suited to each type of footwear. We try every day to improve in the simplification direction.

What are you working on right now?

We're looking at how to transfer the OutDry approach in clothing and we have just filed a patent. There are still several technical issues to tackle, but we believe that the result could be truly revolutionary.

• • • About OutDry • • •

How Does the Technology Work?



WHY - OutDry stems from the creators' desire to improve some of the limitations of existing membrane technologies. The bonding of the membrane to the external shell rather than to the lining has already been achieved on outdoor garments such as jackets and trousers. On these items it is possible to bond the membrane to the fabric, then cut and seam the jacket or trousers with, as a final step, the seams being sealed by tape. This process could not be used on footwear and gloves, as there are too many curved and narrow seams for taping machines to cope with. If used, the tape would cover a large part of the upper surface, dramatically reducing breathability. As such, the "bootie" technology is used where a three-dimensional membrane waterproof material is sewed between the outer layer and the lining of the boot/glove.

THE OUTDRY SOLUTION - The OutDry technology allows the patented membrane (with an integral hot-melt glue mesh) to be pressed directly onto the upper of the shoe, or the shell of the glove, already sewn and with its three-dimensional shape. The water is blocked by the outer material and cannot penetrate the lining (which no longer needs to be waterproof). By blocking water at the outer layer, OutDry prevents a boot from getting heavy when soaked and improves the dexterity of gloves.

BREATHABILITY AND COMFORT- OutDry provides very good waterproofness and breathability, as certified by an independent testing institute. Also, comfort is increased thanks to the complete absence of seam taped sealings, which can occupy around 20 percent of the working transpiration surface. Moreover, because the OutDry membrane technology remains clearly separated from the foot (or hand), it leaves around it a greater volume of dry air, thus promoting evacuation of excess water vapor.

FIRST APPLICATIONS - The OutDry Technology was implemented for the first time in 2005 in the footwear category with Gronell and Mont-Bell boots and during following years by other outdoor brands (see article). In the gloves category, OutDry will make its first appearance in Mountain Hardwear's Fall/Winter 2010 collection.

The OutDry Lamination Process

The lamination process is accomplished in one step with the OutDry 3D press (see image). This equipment, patented by Nextec in over 20 countries worldwide and developed in close collaboration with Sagitta (a leading manufacturer of machinery for the footwear industry), can develop a very high pressure, up to 10 tons, on a fully three-dimensional surface. Temperature is also raised to activate the adhesive mesh of the membrane required to bond to the inner surface of the upper. The already sewn upper with laces and hooks is placed on a hard rubber silicon mold and stretched to minimize creases. The OutDry membrane is then applied over the upper as a hood. The assembled upper is moved to the patented OutDry chamber where temperature and pressure is applied and the membrane is perfectly and permanently bonded with the upper. At the end of this step (which lasts about 30 seconds), the footwear is removed from the mold and continues its normal manufacturing process.

The process for gloves is conceptually similar, except that instead of using a silicon mold, a gas is injected into the glove in order to achieve the three-dimensional shape during membrane bonding.


HARD RUBBER SILICON MOLD


SHOE UPPER PLACED ON MOLD


MEMBRANE APPLIED TO UPPER


OUTDRY 3D PATENTED PRESS