

Steam engines in orange

Red stands for danger, green stands for environmentally friendly and it seems that it can now be said that orange stands for breathability. Orange is the corporate design colour of the waterproof, windproof and breathable membrane from eVent and as a relatively new kid on the block continues to overtake even the largest membrane market leaders. The irony of the situation: eVent is playing with the same cards as its competitors – well almost. It is precisely this tiny difference that appears to make eVent better than the others.

Small events came together in the summer of 2002 in Europe, more specifically put, they occurred during the 85th Giro d'Italia. The weather was not particularly good that summer and when it had already started raining as the race started, the cyclists put their rain jackets on, so as not to cool down or get a chill. Unfortunately, it was not a stage for sprinters, but for "mountain climbing". And it happened for the first time in the mountains – captured for million of viewers, predominantly in Europe, by the TV cameras. The rain crashed down, the climb seemed never-ending, bodies pumped, and heated up and one by one the riders took a hand off the handlebars to open their rain jackets as wide as they'd go so as to let as much heat and sweat as possible escape.

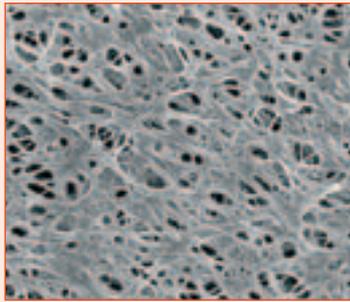
Did all of them do this? 'No'. Whilst all about them competitors struggled with their flapping, half-open jackets letting in cold air and rain, riders from the Fassa Bortolo team continued up the



Alessandro Petacchi in action for the Fassa Bortolo team at the Giro d'Italia.

Fassa Bortolo/Roberto Bettini

mountain with their jackets closed. No slowing down to open their jackets, and no slowing down at the top of the ascent to do them up again. The images were astounding – and it was the main topic of conversation in the team rooms that evening. Some complained, asking why they weren't better equipped. Nothing could be proved definitively, but as the saying goes, the cameras never lie. The subjective feeling among all cyclists is "the heat is on - jacket off!" The finest materials with the highest levels of performance are already on offer to professional riders, but it was only the boys from Fassa Bortolo who were wearing jackets with the eVent membrane that didn't suffer from overheating. But, what the heck is eVent? How does it work? And why is it so good?



eVent technology vents sweat vapor directly through the fabric via unimpeded microscopic openings.

 eVent Fabrics

From wet and dry systems

The manufacturer of this membrane is BHA Technologies, Kansas City, Missouri, which is involved in the medical sector, telecommunications and industrial filter systems – for which it is well-known. The eVent membrane is an expanded polytetrafluoroethylene membrane (ePTFE) – which is basically nothing new. But, in terms of its functionality, eVent sets itself apart from all of the other systems on the market in two ways: its 'Dry System Technology' and 'Direct Venting'.

The positive thing about ePTFE is that its very robust and durable, the negative is that body oils, sweat and even cream are absorbed by the membrane and cause channels in the ePTFE. Moisture can then pass through the membrane in these channels and let moisture into the jacket. In order to stop this, all existing ePTFE systems are treated with an extremely thin polyurethane (PU) coating to make them waterproof. Unfortunately, this PU coating affects breathability enormously. Whilst vapour can pass straight through the pores, thanks to the size of the molecules, the PU coating also needs to be overcome and as PU has the properties that it absorbs and initially holds the moisture, during physically strenuous activities the inside of the functional jacket can feel damp. Perspiration condenses on the PU coating, is then absorbed and is slowly forced to the outside of the jacket where it evaporates. To quote eVent terminology, this is a 'Wet System', where the moisture must alter its state from gas to liquid to pass through the membrane, this is a timely process and the moisture inside the jacket causes discomfort.

In contrast, the eVent system is a 'Dry System'. The polymer structure of the ePTFE membrane has been altered so that body oils, sweat and cosmetic creams do not perforate the membrane. As a result BHA Technologies does not need to use a PU coating with its eVent membrane – and this is where the advantage lies. With no PU coating, there are no problems with moisture leaving the jacket. Dry also means that – again thanks to the different molecule sizes – moisture is removed through the many open pores whilst water from the outside is unable to enter. And, according to BHA Technologies, the system is so effective that no moisture condenses on the inside of the jacket. What other companies have termed as breathability, BHA calls 'Direct Venting'. In this case, direct relates to:

1. It is a direct path, removing moisture without altering its state.
2. It is direct in terms of time, the breathability functions at an optimum level from the start, which reduces overheating and sweating.

New generation, new opportunities

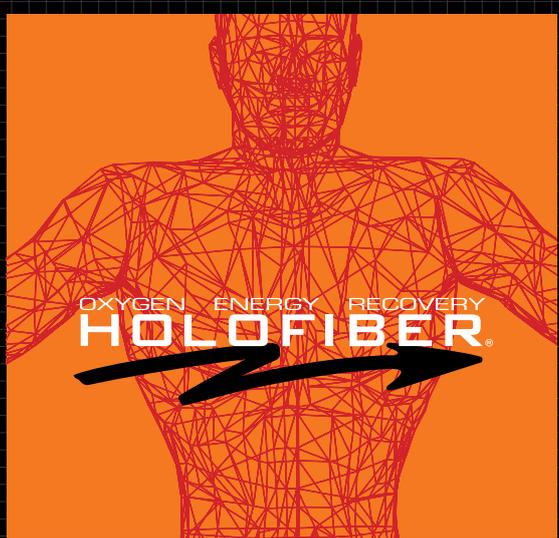
The technological removal of moisture and the experience of the professional cyclists speaks volumes about the product. What sets eVent apart from other challengers to Gore-Tex's crown is laboratory test results, in which, for the first time, it has fallen behind in its favourite area of functionality – breathability. In the RET ratings (a moisture transportation resistance test, in which

the lower the value the better) and in the MVTR test (moisture permeability test, in which the higher the rating the better) the eVent membrane, with a comparable membrane structure, came out on top with both two and even three layers. The RET test was carried out by the EMPA testing institute using the Hohenstein "Sweating Hotplate". The eVent membrane came out - with an average of RET rating of 2.7 (2 layers) and an RET rating of 4.5 (3 layers) – as the leading membrane.

BHA Technologies is particularly proud of this achievement, being the first manufacturer to beat the market leader in the RET test. It is also very proud of having developed a new improved alternative to the dominant 'wet system'. As proof of its achievements, BHA points to the results produced by eVent and Gore-Tex in the MVTR test, where significantly different ratings were produced, even taking into account discrepancies that can occur, such as the outer/membrane combination, or a temperature variation which can affect the results. When all is said and done, it seems that eVent has set a new standard in breathability that others will now seek to achieve.

Marketing as the deciding factor

Whether eVent is truly the new membrane star in outdoor heaven or whether it is a shooting star that will light up the sky briefly does not depend solely on the performance of the membrane. It would not be the first time that the performance of a membrane played a lesser role than the marketing campaign behind it. But as BHA has already secured powerful names in the outdoor sector including Helly Hansen and Vaude, as well as many smaller specialist brands, eVent could well be in the race for the long haul. 



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