

In Grand Prix sailing, the America's Cup racing is as different from round-the-world ocean racing as Formula One is from rallying in the world of motor sport. It follows that, just like the boats and equipment used by the competing teams, their clothing is purpose-designed too. In the run-up to the 2003 competition for the 'Auld Mug' Bob Greenwood looks at how some of the challengers are kitted out.

Kit for the Kiwi challenge

Grand Prix yacht racing, of which the America's Cup is arguably the highest-profile example, has been likened to standing under a cold shower tearing up high-denomination bank notes. Certainly, large amounts of money are poured into America's Cup campaigns. Figures around the £80 million mark have been mentioned in connection with some syndicates, with top sailors said to be earning 'Hollywood wages'. It follows that considerable care and attention is paid to the equipment these sailors use and, not least, their clothing.

The first consideration here is that America's Cup racing is quite unlike the big ocean races such as the Volvo Ocean Race (formerly the Whitbread Round the World Race) or the Vendée Globe. It's more akin to round-the-buoys dinghy racing, but on the grandest imaginable scale. For two to three hours pairs of highly-tuned, 25m carbon fibre open yachts with crews of 17 strive head-to-head around the 18.5-mile course in Hauraki Gulf to gain every advantage that wind, tide, currents and the rules allow.

"It's a different discipline from ocean racing," says Nigel Musto, managing director of Musto, the world's largest producer of yachting clothing. Races such as the BT Global Challenge and the Volvo Ocean have offshore legs that can last four weeks, he points out, when crews are likely to encounter hostile weather and heavy seas for many hours, if not days, on end. "There, maximum protection and comfort are prime concerns," he adds.

For America's Cup crews, on the other hand, the pattern is stop-go-stop. "The teams spend up to two hours being towed out to the race start, two or three hours being highly energetic

while racing, then two hours being towed back to shore again, "Musto explains. "Winch grinders, for example, have tremendous workloads and need to be top athletes. So they need to keep warm while they're idle and then they need maximum breathability and freedom of movement while they're racing. You need a different suit – not heavy duty foulweather gear."

This British marine clothing company has been involved as a sponsor and gear provider in every America's Cup competition since 1993, when it kitted out Team New Zealand. This time, Musto is the only yacht clothing brand to be in right at the finish as New Zealand clothing company Line 7, which is Musto's licensee in New Zealand, supplies defending champions, the current Team New Zealand. Statistically, there's also a good chance that Musto garments will be on the Louis Vuitton Cup-winning challengers since three of the nine contenders are also wearing them. They are the UK's GBR Challenge; Sweden's Victory; and the One World Challenge from the USA.

In conjunction with top woollen fabric producer Loro Piana, Team New Zealand will also be proving that wool has a positive advantage for its crew. *(see page XX for the full story).*

According to Nigel Musto, as far as top-level yachting clothing is concerned: "Fabric technology has changed massively over the past 10 years away from conventional, non-breathable fabrics to breathable ones." Musto's top range of sailing technical products are made from Gore-Tex Ocean Technology fabric, but for the GBR Challenge team the sailing gear company has had close technical collaboration with WL Gore & Associates to develop a new generation of fabric: Carbon HPX Gore-Tex.

This new fabric is designed to be lightweight, very strong, durably waterproof and highly breathable. Polymer dots (with an elemental carbon backbone) are applied to the Gore-Tex membrane to produce a fabric that, Musto claims, is at least 16 per cent more breathable than the original.

Equally important, the carbon polymer material is stretchable and light, which means that garments made from it can be cut closer to the body to reduce wind resistance and allow greater freedom of movement. With the America's Cup, says Nigel Musto, "the interest is in ease of movement, breathability and light weight, not so much in durability and staying dry for long periods." Weight savings of 20 per cent have been achieved, he adds, as the new fabric allows his company to dispense with the normal second layer of scrim.

In addition to fabric development, Musto has also given much thought to how the garments made from it are constructed. Here, the differing roles of the various crewmembers have been taken into account. "Each member of the crew has had their technical sailing clothing tailored to their individual needs," he says, "so our design team came up with a clothing design for the team that was able to be modified depending on personal preferences. The crew was then asked for their individual requirements. For example, the bowman requested a latex seal on his smock, the trimmers have had extra pockets for their notepads, while the grinders requested pockets on the back of their smocks rather than the front for ease of movement."

Just as it tailors its garments for the individual crew members of the GBR Challenge team, so it does for the other teams it is clothing. While the same fabric technology is available to all of the teams it supplies, "we develop garments as they wish, so each of the three teams has different gear. In that respect we're like the sailmakers who also supply competitors, but have to maintain strict discretion and not discuss what other teams are using."

Consultation with all of them is ongoing. Musto has a member of staff based in New Zealand who meets with the team every week to discuss various matters, while its associate Line 7 helps out with day-to-day issues. Nigel Musto adds: "There is nothing better than to work with a team of people such as Team GBR that actually 'field test' fabrics and designs. Musto takes all comments and feedback and incorporates these into any other ranges that would benefit from such input."

Improving the breed

Musto is by no means alone among marine activewear manufacturers to use the America's Cup to drive forward new fabric technologies. Racing, as they say, improves the breed, and that must be as true in yachting as in any other area of activity. One noticeable avenue of advance in activewear as used in the America's Cup is the widespread adoption this time around of fabrics that are both elastic and breathable. Alessandra Ghezzi, press officer for the Prada Challenge 2003 gives her team's view on this: "Clothing must prevent the body from getting wet from sea water, rain, or sweat. At the same time, clothes must fit properly enabling maximum freedom of movement. They mustn't be too loose or bulky, nor tight and restrictive, as can be observed in many other sports such as skiing, athletics, cycling and swimming. Clothes must be like a second skin, providing minimum aerodynamic resistance."

To do this, she says, they "need to be stretchy. Also, by stretching in unison with the body, clothes can provide support to muscular movements."

So, the assistance that elastane fibres can give to athletic performance is now also being realised in sailing. Italian fashion house Prada, which lost to Team New Zealand last time around in the finals of the 1999-2000 series, is clearly up to speed on this development. Although the clothing it has created for its team is based on what it provided for the previous campaign, this time it has introduced elastic shorts similar to those used in cycling.

Across the range of kit that Prada provides its sailors, it uses most of the latest synthetic fabrics,



The 'Auld Mug' was first fought over in the Solent in 1851, when the yacht America lifted it. The winners took it back to the New York Yacht Club, which was its near-permanent home until the mid-1980s when an Australian syndicate won. The US reclaimed it in the next round and the cup stayed Stateside until 1995. Team New Zealand sailed to victory in San Diego, winning the best-of-nine series in five straight races. The pattern was repeated in 2000 and so the America's Cup has remained at the Royal New Zealand Yacht Squadron in Auckland, New Zealand.

such as DuPont Coolmax and Tactel, but what Ghezzi believes is more important is that these materials have been combined to create garments that meet all of the America's Cup racing criteria. These are protection from cold, heat, wind, sea spray and, in a region affected by ozone depletion, ultraviolet radiation – all in addition to breathability, freedom of movement, low wind resistance and light weight.

North Sails, a company well known to yachting enthusiasts worldwide as a major maker of high performance racing and cruising sails, is also mindful of these criteria. It too has recently been building its product portfolio on the yachting attire side at the hi-tech end of the business. North Sails Sportswear has provided the clothing for the Alinghi Swiss Challenge, seen by many as well capable of taking the America's Cup home to Geneva. This challenger is skippered by New Zealander Russell Coutts, the man who led the two previous New Zealand teams to victory.

Swiss on watch

Along with most technical sailing wear producers these days North Sails believes that keeping sailors warm and dry is not just about providing an effective outer shell. Rather, it's a job best handled by an integrated system of clothing layers. If nothing else, such an approach makes good marketing sense: the Alinghi team alone has taken a staggering 23,000 items of North Sails apparel, says the company's Alessandra Bianchi.

The outer garments used by the team are made of Schoeller WB, a breathable elastic fabric that is at the same time thin but strong. Schoeller WB is the basis of North's Race Tech fabric which uses chemistry rather than physics to expel moisture. Unlike Gore-Tex, which has microscopic pores that allow water vapour out but are too small to let water droplets in, Schoeller WB is hydrophilic. Water vapour is drawn out by osmosis to the exterior of the garment, attracted by chemicals in the membrane that lines the fabric.

The design of the garments was a collaborative process in which the manufacturers and team members discussed every detail. This was a painstaking process as there were five categories of gear to be supplied: shore gear; tech gear (to be worn on board); formal gear (for ceremonies); active gear (for training); and shore crew (for those who worked in the boatyard). In each case, says Bianchi: "First, our designer produced drawings according to what the team wanted and to our suggestions. Once the drawings were approved, we produced prototypes that the team tested for both fabric performance and shape, and only after this did we start production."

She recalls: "The items that required the biggest effort were the technical ones, and these we divided into three layers. This allows the team to mix the garments in order to face the varying weather conditions and the different roles they have on board."

It was clear from the outset that minimal wind resistance would be paramount. Says Bianchi: "I will always remember what (team tactician) Brad Butterworth told us during the first meeting: 'anything that is not close to the body will cause seconds to be wasted during the regatta'."



North Sails have provided 23,000 items of apparel for the Alingi Swiss team.

Under the top layer, team members wear a mid layer of a fabric called Accoppiato and a base layer of DuPont Tactel clothing – all synthetics and designed to wick moisture away from the body quickly. Indeed, there's hardly a natural fibre in sight among the competing teams as these retain moisture, which not only creates weight, but in the often raw and unpredictable weather conditions off Auckland could lead to hypothermia.

As well as using the latest materials technology, North Sails has also used special garment construction techniques for the America's Cup. All sewn seams are taped to ensure that they are waterproof, but a new technique that bonds seams and eliminates sewing is also being tried out with the Swiss challenge.

Finally, a DuPont Teflon treatment technique, along with XP lamination, has been introduced to enhance water resistance and breathability still further.

North Sails is one of a growing number of activewear brands which Italian manufacturer CDA Wear Industries supplies as a subcontractor. Five years ago it started its own sportswear label Vuarnet, which already has a strong presence in the skiwear market as a technical brand with a fashion touch. For the past three years the company has been targeting the sailing market and is aiming to build its own presence there through its involvement in the America's Cup as the supplier of the Italian Mascalzone Latino Challenge.

CDA, which manufactures in Romania and has capacity there to produce more than 1.2 million 'technical' jackets a year, is a licensee of Gore-Tex for Coastal 3L fabric for casual sailors and Ocean Technology 3L fabrics for the full-on racing market. A new technology used for Mascalzone Challenge is the Gore-Tex Airvantage system. This has air chambers that the wearer can inflate to give additional insulation, or deflate when he/she starts to feel warm.

The impossible we do at once; miracles take a little longer.



Those were the words that sprang to mind in 1999 when we first received the news that the Italian house of Loro Piana had developed woollen fabrics for use by a team competing for the America's Cup, probably the world's most prestigious yacht race. And not just any team, but that of New Zealand - the defending nation.

The fabrics were, of course, Loro Piana Zelander merino wovens, given a special Storm System treatment, developed with Canterbury Clothing and subsequently made available to the wider market under the Defender brand.

Wool is not a fibre that immediately comes to mind when considering straightforward ocean sailing, let alone the cut and thrust of racing, but Loro Piana is there again for 2003, having moved everything up a notch and become the official technical fabric supplier to Team New Zealand. The 'notching up' includes the development of a new 70% merino wool and 30% nylon weave known as Zealander Light Frame, which is again coupled to the companyís own Storm System water and wind-proof membrane. A third layer is a 90-gsm nylon mesh.

The garments involved are a racing smock, 'bibbed' trousers, and a salopette, all produced by Line 7 to original Musto designs. (Line 7 is the Musto licensee in New Zealand.)



Crew comments

In a long-range contact with two members of Team New Zealand, Grant Loretz (Louie) and James Dagg (Daggy), we asked them for the criteria applied by the crew to their wet weather gear. We're not certain who answered what, but the following gives a clear indication of the reasons for their choice:

The qualities we must have are not only waterproofness and comfort - both in terms of moisture management and fit/mobility - but primarily light weight. In America's Cup racing we are focussed on eliminating every ounce of unnecessary weight from the boat and in our clothing programme we have achieved what we set out to do. The clothing we have developed alongside Line 7 and Loro Piana fulfils all the requirements we set down.

And the best features of those garments?
The fact that, thanks to the fabrics, the garments are lightweight and non-restricting. We chose woollen-based fabric because of its low weight and natural breathability.

What about any specific requirements in layering arising from the use of wool?
There doesn't seem to be any. We find that thermals on the coldest days are all we need.

Given the worst conditions you are likely to encounter, what will be the product features most likely to be of benefit?
Comfort (both freedom of movement and temperature) and staying dry.

Do you have any reservations regarding the longevity/wearability of woollen fabrics in sailing?
None whatsoever

For the team's outerwear CDA has used these fabrics in technical jackets. In consultation with the team, says Daniele Kazem-Bek, director of the Vuarnet business unit, different items of clothing have been developed for specific crew roles. The skipper and tactician, for example, use the Vuarnet blouson jacket in Gore-Tex Ocean Technology three-layer fabric. This has a detachable inner fleece. For the bowman, one of the wettest jobs on the boat, the company has developed its Dinghy Jacket, also in three-layer Ocean Technology Gore-Tex, but with neoprene inserts at the bottom, neck and wrists to create a water barrier.

For their intermediate layers Mascalzone team members wear wind-proof and breathable fleece jackets in Windstopper fabric. To ensure that they stay warm and dry, CDA uses Polartec stretch fabric, along with Zegna Baruffa knitwear, and Loro Piana fabric (70 per cent wool and 30 per cent nylon, which is both waterproof and breathable). Finally, next to the skin, the team wears Jersey Lomellina SpA's JL Intensive, a highly breathable first layer fabric in polyester that also dries very quickly. General garment features include taped zips to keep water out and seams that are glued rather than stitched.

Decades of experience

While CDA with its Vuarnet brand is a relative newcomer to the sailwear market and the America's Cup, UK manufacturer Henri-Lloyd has been closely involved with both for decades. Its first AC campaign was in 1980, but the Volvo



One of the most experienced manufacturers of yachting clothing Henri-Lloyd supply Oracle BMW Racing.

Ocean Race is also an important product development and promotional arena for the company. "Our experience in particular with the recent Volvo Ocean Race, where we equipped four of the eight boats, enabled us to further improve existing products which have already benefited the America's Cup teams," says Paul Strzelecki, joint chief executive.

In the present Louis Vuitton/America's Cup series Henri-Lloyd is kitting out one of the three US challengers, Oracle BMW Racing. For the past two years it has put together a programme of clothing for this challenger, some of it off-the-peg and some specially made to order.

In common with Musto and CDA it is one of the select group of five apparel companies to hold a licence to use Gore-Tex Ocean Technology fabric, although it also has its own proprietary TP, Breeze, and Pulse fabrics for the outer layers. For thermal mid and base layers the company uses combinations of Malden Polartec performance fleeces including Power Stretch.

A full range of clothing based on these fabrics is available to the Oracle BMW team because, says Paul Strzelecki, "The conditions during the America's Cup are quite varied, from the cooler and windier conditions being experienced now to hotter and less windy conditions in January/February."

The special demands of America's Cup racing, he adds, are for "streamlined, athletic fitting garments based on minimum weight and bulk, so the highly breathable TP has been widely used in the technical gear with the Breeze range offering ideal protection for fair weather racing when light waterproof protection is needed."

Several new lines have come out of the Oracle BMW campaign, including a Competition Jacket made from the company's TP fabric. This new addition to the Henri-Lloyd One Design range will be launched at the London International Boat Show in January 2003.

"As a result of our involvement at this high level of competition," says Strzelecki, "we now have a comprehensive range of clothing systems that are generally lighter, more durable, and more comfortable than ever before, using breathable and waterproof fabrics. This goes right from survival suits, foul weather gear, both for extreme and fair conditions, through to base and mid layers, which are the only effective way to transport moisture away from the body and thus keep the wearer drier than ever before."

In what is shaping up to be one of the most intense and wide open America's Cup competitions in many years, details such as the performance of the clothing worn by the teams could make all the difference to the outcome.