

Speedo's Innovative Swimsuit Makes Big Splash In Advance of 2008 Summer Olympics

Let the Games Begin, or Have They Already Begun?

By Kathryn Noll, Associate

At the *Summer Olympics*, the equipment that athletes use can sometimes garner as much public attention as the outcome of their competitions. This has never been more apparent than in the swimming arena this year. Some believe, however, that Speedo's new swimsuit is giving swimmers an unfair advantage before they even enter the pool.

The controversy surrounds Speedo's LZR Racer, a swimsuit introduced in February 2008, the culmination of three years of research. Speedo's R&D facility conducted, among other studies, surface-drag testing in wind tunnels to test the surface friction of numerous types of materials, and water-flume testing to test the passive drag in the water on the swimsuits and swimmers. Speedo consulted with experts from NASA and research institutes such as the Australian Institute of Sport (AIS) and the University of Otago in New Zealand in developing the new swimsuit.

Speedo also conducted 3-D body scans of more than 400 elite athletes in order to optimize the shape and construction of the new swimsuit. Speedo even used computer-modeling techniques to evaluate the friction, pressure, and fluid flow characteristics around the swimmers to determine where most of the drag occurs on the swimmer's body.

The resulting LZR Racer swimsuit sports a number of new design changes over previous Speedo models. Speedo obviously felt the changes were innovative enough to warrant patent protection and filed several utility patent applications in the U.S. and abroad. Speedo sought to protect its R&D investment and prevent others from copying its ideas. Some of the patent applications have only recently been published, but no substantive examination of the U.S. applications has yet occurred.

Whether the new swimsuit design is patentable remains to be seen, but its performance is reported to be eye-popping.

Speedo claims the new swimsuit provides 5-10% less passive drag than previous Speedo models, 5% better oxygen-intake efficiency for swimmers, enabling athletes to swim faster for longer, and 4% improvement in starts, sprints, and turns.

The U.S. national team head coach, Mark Schubert, says these gains result in a 2% advantage over other swimsuits, a truly game-changing margin in a sport where first and last place swimmers are separated by mere hundredths of a second.

What is the technological explanation for these advances? One key element is that the swimsuit has a "core stabiliser" or girdle that supports and helps the swimmer to maintain the correct body position in the water. The swimsuit also is made up of a lightweight, water-repellent, polyester elastane material that reduces muscle oscillation and skin vibration. This allows the suit to compress the swimmer's body, reducing its drag in the water. The fabric is reportedly half the weight of prior Speedo models, with three times its compression ability.

The swimsuit also features ultrasonically welded seams bonded together to reduce the suit's drag. The full body swimsuit includes just one zipper positioned down the back. Because of this construction, the swimsuit takes nearly twenty minutes just to put on. However, the most controversial part of the swimsuit is its polyurethane panels embedded at strategic points on the swimmer's body to further reduce its drag.

Other manufacturers have cried foul since the swimsuit's introduction and requested that FINA, the international governing body of swimming, ban the suit from the 2008 Olympics. The opposition claims that the swimsuit contains illegal materials that contribute to its buoyancy or flotation in the water. Italy's national team head coach,

Alberto Castagnetti, has gone so far as to equate the LZR Racer with “technological doping.” More sober observers, however, believe that the LZR Racer provides merely a psychological advantage to swimmers who believe they are wearing a faster suit.

Whether the suit in fact provides a technological or simply a mental edge, the results are astonishing. Speedo reported in early July that 44 out of the 48 world records broken so far this year were by swimmers wearing the LZR Racer. Many swimmers from the U.S. and other countries are breaking their sponsorship contracts with other swimsuit makers to use the Speedo suit, for fear of being caught at a disadvantage.

The publicity has brought economic success. The LZR Racer full-body suit costs \$550, and competitive swimmers need a new suit every six to twelve swims. The real value to Speedo, however, is the marketplace perception that their suit is the best of the best. Tyr Sport, Inc., a U.S. swimsuit manufacturer, believing that Speedo has abused its market power, filed a lawsuit in May accusing Speedo of a host of anticompetitive and unfair business practices. The litigation will not be decided for some time and will not slow Speedo’s momentum going into the Olympics.

The final blow to other swimsuit manufacturers came at the World Championships in Manchester, England in April. FINA clarified that polyurethane may indeed be incorporated into swimsuits. Speedo’s competitors are now racing to come up with new designs of their own before the start of the Olympics. Since Speedo’s patent applications are pending and not issued, Speedo cannot, right now, legally prevent competitors from copying its swimsuit design.

Speedo has already gained what may be an insurmountable three-year lead. More importantly, rival manufacturers are swimming in the outside lane of public opinion. In the minds of many swimmers, Speedo has already won the mental game, and that’s half the battle.

Speedo’s success teaches us that, where short product cycles or recurrent innovations are the rule, strong R&D is essential, not only for the patent protection that it may afford, but for the market lead that can be impossible for competitors to overcome. ✧