



ANSYS Software Critical to Developing Speedo's Fastskin Racing System

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PITTSBURGH, June 11, 2012 /PRNewswire/ -- Competitive swimmers this summer can streamline performance thanks to Speedo's® revolutionary Fastskin Racing System®, which was designed using engineering simulation software from [ANSYS](#) (NASDAQ: ANSS). When worn together as a complete system, a Fastskinsuit, cap and goggle can reduce full-body passive drag by up to 16.6 percent, improve oxygen economy by up to 11 percent (enabling the athlete to swim stronger for longer), and reduce active body drag by up to 5.2 percent.

(Logo: <http://photos.prnewswire.com/prnh/20110127/MM38081LOGO>)

"Engineering simulation has been absolutely critical in launching this world-first concept," said Tom Waller, head of Speedo's in-house global research and development facility, Aqualab®. "For the first time, competitive swimmers can use a cohesive, hydrodynamic solution that will help them cut through the water with maximum efficiency. In developing the Fastskin Racing System, ANSYS® software gave us the confidence that our designs would perform as expected in the real world — and saved us a huge amount of resources that we would otherwise have had to invest in physical testing."

In engineering the three components into a system, Aqualab used data from more than 1,200 separate simulations conducted with ANSYS multiphysics software. By replicating the dynamic pressures of competitive swimming in a risk-free virtual design environment, these simulations helped engineers to minimize the effects of turbulence and drag, mitigate the impact force generated by a dive, maximize the structural strength of the goggle assembly, and address other real-world design concerns.

Following the design work, Speedo conducted a number of pool tests of the new racing system, using professional athletes including Natalie Coughlin, Ryan Lochte and Michael Phelps of the United States.

While Speedo is a long-time ANSYS customer, development of the racing system relied on an expanded, multiphysics perspective that included both fluid dynamics and structural mechanics analyses. For the goggles, for example, ANSYS solutions offered insight about the structural forces that impact the equipment from all directions, which lightweight material would be able to withstand those forces, and how the shape generated turbulence that could negatively impact the swimmer's downstream performance. This broader approach matches the new, forward-looking portfolio of products that Speedo is developing to meet swimmers' full-body needs.

"ANSYS has a long history of working with leading organizations to produce winning products — whether it be a swimsuit that helps to shave fractions of a second off an elite athlete's performance or a hybrid vehicle battery that delivers optimal value in terms of cost, reliability, energy usage and safety. We are proud to partner with Speedo in engineering yet another groundbreaking product," said Jim Cashman, president and CEO of ANSYS.

The Fastskin Racing System comprises a choice of products, including caps, goggles and suits, allowing swimmers to select the best combination to meet their preferences and performance needs. Improvement to passive drag affects the swimmer during the submerged, glide phase of any stroke, which is particularly important after the start and at each turn. Oxygen economy relates to the swimmer's efficiency and his consumption of oxygen during the activity. Active drag (or surface drag) affects the swimmer at the surface during the active swimming phase of any stroke. It results from the waves that the swimmer creates, the swimmer's constantly changing shape and the force of the water passing over the body's surface.

Research outcome statistics were compiled based on a combination of Speedo's Fastskin3 cap, Super Elite goggle and Super Elite swimsuit racing system components:

- Full-body passive drag reduction of up to 16.6 percent when compared to a flat silicone cap, Speedo Aquasocket goggle and standard suit on a male athlete
- 11 percent improvement in the swimmer's oxygen economy and 5.2 percent reduction in body active drag when compared to a flat silicone cap, Speedo Aquasocket goggle and standard suit

Related images are available for download by media at www.ansys.com/newsimages.

About Speedo

The world's leading swimwear brand, Speedo® is passionate about life in and around the water, creating revolutionary new technologies, designs and innovations and supporting swimming from grass-roots through to elite level, including the phenomenal Michael Phelps. In the 1920s Speedo® made history with the Racerback: the world's first non-wool suit. In 2008 Speedo® redefined swimwear again with Fastskin® LZR RACER® - the fastest and most technologically advanced swimsuit ever created. 2011 saw Speedo® unveil another world first with the FASTSKIN Racing System® – a collection of 19 products, comprising caps, goggles and suits, designed to work together as one. Speedo® is owned by Speedo Holdings B.V and distributed in over 170 countries around the world; to find out more visit: www.speedo.com.

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About ANSYS, Inc.

ANSYS brings clarity and insight to customers' most complex design challenges through fast, accurate and reliable engineering simulation. Our technology enables organizations — no matter their industry — to predict with confidence that their products will thrive in the real world. Customers

trust our software to help ensure product integrity and drive business success through innovation. Founded in 1970, ANSYS employs more than 2,200 professionals, many of them experts in engineering fields such as finite element analysis, computational fluid dynamics, electronics and electromagnetics, and design optimization. Headquartered south of Pittsburgh, U.S.A., ANSYS has more than 65 strategic sales locations throughout the world with a network of channel partners in 40+ countries. Visit www.ansys.com for more information.

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