New helmet design to give a pro cycling edge

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University of Adelaide Sports Engineers have designed a new bike helmet for top professional cyclists, with significantly reduced drag. The helmet has been designed in collaboration with Scott Sports, a Switzerland-based sporting goods company and sponsor of the Australian professional road racing team Orica GreenEDGE. The helmet saw its first public appearance at the recent Milan-San Remo road race in Italy.

Led by Associate Professor Richard Kelso in the University's School of Mechanical Engineering, the project involved investigating the

aerodynamics of cycling helmets in action and the design of a smooth outer helmet skin to minimise drag in all racing conditions, from cruising through to flat-out sprinting.

"We had to understand the air flow around the helmet at all the various positions and head angles a rider takes while racing," says Associate Professor Kelso.

"Cyclists will be cruising with their heads up in the peloton, then the head will drop when they are out in front pushing hard, and the position will change again when they are sprinting for the finish.

"During each of these stages, there will be a different head angle and different flow pattern. We needed to shape the helmet so that it had curves in all the right places for each stage. And, of course, we still needed to maintain the helmet's protective foam structure. Collaboration with designers at Scott was an important part of this process."

The result was a helmet with the drag reduced by about 30% overall, with the best improvement in the sprint position when low drag is needed the most.

Around 40 designs were tested in the University's wind tunnels, analysing drag force, side force, ventilation and surface flow patterns.

"We believe the new helmet is the best of its type and a clear leader in the World Tour," says Associate Professor Kelso.

The Scott Sports helmet has been called the Vanish Aero, complementing the standard road version called the Vanish Evo.

Provided by University of Adelaide