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AMD Processor-Based Systems Drive Design Of Lance Armstrong's Trek Bikes Fast And Steady Wins The Race



"From advanced bicycle design to testing to overall communication, AMD technology plays a major role as an integral part of this team. The quest is to go faster and AMD technology is instrumental in making us lighter, faster and more efficient."

-Lance Armstrong

When Lance Armstrong faced grueling climbs and breathtaking descents through the mountain stages of the 2004 Tour de France, he relied as ever on a steadiness born of the strength and determination that have made him the world's first six-time Tour de France winner.

As he streaked past the Arc de Triomphe and along the Champs-Élysées to an unprecedented sixth straight yellow jersey, his speed and power advanced from endless training, sacrifice and commitment.

And unlike the fable of the tortoise and the hare -- where slow and steady wins the race -- the maillot jaune goes to the fast and steady.

That's precisely why Lance and his teammates on the Discovery Channel Pro Cycling Team rely on Trek bicycles, developed to demanding specifications by a team of talented designers and engineers who depend on powerful AMD Opteron™ and AMD Athlon™ processor-based computers.

The AMD/Trek/Armstrong tale began when Trek designer Michael Sagan – along with Trek's carbon fiber expert Jim Colegrove and lead frame engineer Doug Cusack –

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developed a time trial bike for Lance's triumphant 2000 Tour de France bid.

"Lance was on a Litespeed titanium time trial bike for the 1999 Tour de France," Sagan recalls. "We knew we could make a faster, lighter, better bike using Trek's patented OCLV process."

With the dedication that makes champions and a reliance on AMD processor-based systems, the designers at Trek pushed the bike to completion in half the normal time. "We had been using older, slower systems that were super expensive. I thought that was crazy," said Sagan.

When slow systems and fast deadlines conspired to stretch Sagan's work hours, he built a system to use at home that he "was comfortable working with and had plenty of horsepower." Two weeks later, Sagan had built from scratch a new workstation "with a 750 MHz AMD Athlon processor and 512K of RAM," he recalls, laughing as he wistfully recites yesteryear's state-of-the-art specs. "That seems like a decade ago."

"I didn't sacrifice performance," Sagan says. "I gained performance. There were occasions that I got a lot more done with the AMD Athlon. I had fewer system lock-ups. It was really stable, and I could do rendering and modeling. In the course of getting my job done, nobody's asking me how much time I spend, just whether I got the job done. But with AMD, I spent less time."

Five years later, Sagan still uses his trusty homemade system and has introduced AMD processor-powered computing to Trek's Industrial Design and Advanced Concept groups.

The engineers and designers work "from concept all the way to tooling," Sagan says. "We don't pass pieces off to anyone else. We can do end-to-end design, working with tolerances to within a ten-thousandth of a millimeter."

The Trek crew's latest achievements: The Madone SSL, a new bike for Lance -- now used by USPS teammate and defending Olympic gold medalist Viatcheslav Ekimov -- for the uphill Alpe D'Huez time trial; the Madone SL; and the Madone 5.9, the official bike of the Discovery Channel Cycling Team. Using AMD Opteron processor-based systems, Sagan and his squad re-shaped the bike, narrowing it from front to back.

The improvements reduced drag coefficient by one-tenth of a pound, in addition to the three-tenths of a pound reduction Trek achieved in the three years prior. According to Sagan, given variations in rider height, weight and riding style, this year's drag coefficient reduction alone can shave five seconds from a 50-kilometer time trial.

That may not sound like much, but consider for a moment that Lance won the 3,400-kilometer 2003 Tour de France by just 61 seconds. Sagan also proudly proclaims Trek's new designs reduced the frame's weight by 50 grams. With so little separating the winner from the rest of the pack, every

advantage is critical. The 50-gram reduction equates to a five-second time savings up Alpe D'Huez.

"Competing in a race such as the Tour de France demands using every resource to remain ahead of the competition, and AMD's superior technology has enabled Trek to design standard road, climbing and time trial bicycles that are truly cutting-edge," says Lance Armstrong. "By enabling sophisticated solutions that have advanced bike design, testing and overall communication, AMD has provided the team with a distinct competitive advantage."

As in any enterprise – creative, industrial, technological or otherwise – the Discovery Channel Pro Cycling Team relies not just on talent, teamwork and character, but also on a sturdy infrastructure. For these record-setting champions, Trek bikes are a chief component of their infrastructure, and AMD provides the best-available tools for designing this foundation.

The 15 members of Trek's Industrial Design and Advanced Concepts groups increasingly rely on AMD processor-based computing.

"We're able to source the best equipment, and since I had so much confidence in AMD, it just made sense to use it more," Sagan says. "The reliability is great and the performance and the value are super high. I don't have to worry about the blue screen."

That way, we can all focus on the yellow jersey.

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