



THE DEMOCRATISATION OF CYCLING

Bike-fitting innovator Smartfit is on a mission to democratise cycling, by giving riders a way to find their perfect bike size, and in doing so making cycling a joy for everybody

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SMARTFIT

Smartfit is arguably the most important cycle brand you've never heard of. Bought a Merida online? You've used Smartfit. A Scott? You've used Smartfit. We could go on. The German-based company is leading a bike-fitting revolution around the world. And you didn't even know. Well, now you will as we reveal all about the team and products looking to make comfort, enjoyment and peak performance available to all.

"We're based in Freiburg in the southwest of Germany," says Smartfit founder and bike-fitting pioneer Dr Björn Stapelfeldt. "It's the Rhine area that buttresses up to France and Switzerland. It's a wonderful place to ride your bike as we have flat, hilly and mountainous terrain that reaches around 1,500m. We also have two of the greatest downhill mountain-biking trails in the country, and enjoy the finest weather in Germany. It's a really great place to explore."

Freiburg is home to one of 20 Olympic centres in Germany, which are mainly funded by the federal and state governments. These Olympic centres provide cutting-edge facilities and expertise for world-class athletes, from nutritional support to fitness testing, with Freiburg the performance home to several sports, including cycling. Which is where the seeds of Smartfit's bike-fitting omnipresence were sown and nurtured.

"I was a student at the Institute of Sport and Sport Science at the University of Freiburg," says Stapelfeldt. "I studied a degree in the 1990s and then did my biomechanics doctorate. The university really wanted to dial down on the science and ergonomics of cycling. In many ways, it was ahead of its time."

Stapelfeldt spent hours in the lab working with, and analysing the biomechanics of, elite subjects, including the German Olympic squad and T-Mobile team. Then they took additional data sets from subjects who

were predominantly students. For Stapelfeldt, the huge database which is the foundation for Smartfit's bike-fitting revolution was laid by both his work with amateurs and the planet's finest cyclists.

"We often had Jan Ullrich in our lab as we fitted the T-Mobile team," says Stapelfeldt. "We worked a lot on their biomechanics. I remember [Alexander] Vinokourov pedalling away on the ergometer. He looked effortless at 520 watts. No problem at all."

"I must also add for *Rouleur* readers, who are knowledgeable about the history of the sport, that it was of course the T-Mobile doping scandal that set German cycling back. Honestly, I was never aware of any rider who took drugs. Never aware. But it didn't cast the university in a wonderful light as the doctors involved were from the Freiburg Medical University."

Creation of Radlabor

At this stage in the 2000s, Stapelfeldt's biomechanical work sat beneath the umbrella of the university. Funding applications,

funding victories, science, testing... It was a neat, safe model. But Stapelfeldt had a freelance bike-fitting itch he needed to scratch. "So, we founded our own company, Radlabor, in 2007, independent of the university. We would live or die by our technology, but thankfully it proved a success with many dealers around the world buying our patented bike-fitting systems. We soon spread from Germany to Europe and beyond."

Radlabor continues to this day and is an innovative triangular system that comprises next-level fitting thanks to Smartfit's Q5 system, plus performance testing and training planning. It's available in Freiburg and at Smartfit's two satellite fitting labs in Frankfurt and Munich, plus there are many Smartfit dealers around the world. Which is great, but arguably this is aimed at the narrow peak of performance, which for years has been the demographic of bike-fitting customers.

"Technological bike-fitting really started with US outfit Retül," explains Stapelfeldt.



“This is a dynamic bike fitting where you’d sit on an ergometer, or upon your bike clamped to a turbo trainer, and then pedal away with a camera system recording your every movement. Arguably, that’s the origin of where we are today.”

Which is where? “Today, thanks to the technological revolution, there are many different approaches to bike fitting,” says Stapelfeldt. “Now, it can be made much simpler, which is changing the culture of bike-fitting. Historically, it has an image of being the sole preserve of highly committed road cyclists, who’ve just spent a lot of money on a new carbon road bike. But if you’ve bought a more affordable bike, you still want to ride pain free. You still want to enjoy your riding. But you might not want to spend too much money or time on a fit. That’s where our sizing widget as well as our Smartfit Q2 product come in. The widget can be integrated into any online website via easy

html code, while our Q2 device is shipped world wide.”

Online customisation

“How tall are you?” “189cm.” “Long, normal or short legs?” “Long.” I know this from a previous dynamic bike fit. “Arm length?” “Long.” “And riding style?” “Out of ‘sportive’, ‘neutral’ and ‘comfortable’, I’d go sportive.” “Okay, through our Smartfit online system, we recommend the Scott Addict 20 in large.” “Yes, please...”

Stapelfeldt has just guided me through the process online users enjoy. It’s incredibly simple. But behind this simplicity lays complexity. “We have an extensive data team who are constantly adding new bikes, new geometries; in fact, we have the largest bike database in the world,” he says. “It’s our treasure and the base of all that you see online. Our team is always refining the algorithms to match body data, bike geometry data. We’ve

built this over 25 years and can say with confidence, this is the bike for you.”

With Smartfit, real bike geometry is matched with individual body data. There is no standard sizing across the framebuilding industry, and it’s impossible for salespeople to hold all that information in their minds, so Smartfit provides a system that empowers the rider to buy the perfect option, in the perfect size, for them.

This system is further refined by artificial intelligence. Your shape, your riding style: it’s a winning formula. “On a warm spring day – let’s say Easter Monday – we’ll have over 100,000 people around the world who are using our online bike sizing,” he says. “We have around 20 million hits a year.”

These hits are via manufacturers’ websites or those of retailers, both of which are vast. Scott, Merida, BMC, Giant and Colnago are a snapshot of the biking behemoths who’ve integrated Smartfit’s online sizing into their systems. As for retailers, the list is even longer and includes Bike24, Bike Exchange, Bike World...

“The online sizing is something we introduced just before Covid,” says Stapelfeldt. “Covid then closed most shops. This tied in with spring 2020 where the weather was stunning. Boom! We had to add servers to cope with the requests. It’s a cool story because this front-end service all began with that bike-fitting research at Freiburg University.”

The importance of choosing the bike was highlighted by a 2022 study in the *International Journal of Environmental Research and Public Health* that examined the long-term effects of a professional bike-fitting on a rider’s pain, comfort and fatigue. Eighty subjects – 54 men, 26 women – were analysed with the keenest riders racking up more than 800km each month. That’s a lot of pedal strokes, repeated creaking over the bars and

constant wrestling with the bikes. Aches are common, as we’re all aware, that can soon morph into injury and time off the saddle. But not with the well-fitted 80, who reported significantly less pain 120 days after their professional bike fit.

This Smartfit online system is open to all. Then there’s the all-singing, all-dancing Radlabor offering which was the foundation of everything. In between, Smartfit has grown into three business units that operate globally. International bike retailers and brand shops benefit from 4 different types of devices for their sales floors, while any online shop or manufacturer can integrate the sizing widget via simple html code on their webpages and in addition the German based Radlabor bike fitting labs that are open to the public. All the accumulated knowledge means that Radlabor can continue to work at the cutting edge of bike fitting, while Smartfit works with the industry to make perfect sizing available to everybody. It’s democratisation in action.

“Of course, we started with the physical bike-fitting service for customers based on my work in Freiburg,” says Stapelfeldt. “And we still do this at our three bike-fitting departments in Freiburg, Munich and Frankfurt. It costs around €200-250 and is a system developed by us.

“We call it Q4 and it’s a laser-based system that measures both the rider and the bike. Things like seat height, setback and so on. We then dig deep into the database to nail the specific model and frame size. It’s seamless for the customer and the shop assistant. They’ll take it out for a test ride and we can tweak further if needed.”

A seven-minute job

Tech is evolving to be deeper, faster and smaller. Cue Stapelfeldt and the team developing the Smartfit Q2

system. “This is a smaller machine that features artificial intelligence. We use a computer with our software and a high-resolution camera. A laser points at the floor where we measure the person only – not the bike – and we show you that in a live demo.” The automatic AI-based tracking technology in the Smartfit software recognises all relevant measurement points in seconds, creating a live avatar of the rider. The determination of body lengths, which are crucial for bike sizing, are detected with an accuracy of plus or minus one millimetre.

“It’s a seven-minute job,” Stapelfeldt says. “We can scan them, choose the bike, set up the saddle and have them test riding within seven minutes. That’s a big difference between the dynamic systems. The simplicity and speed for customer and shop assistant is appreciated.”

In essence, it’s employing detection technology commonly used by the likes of Apple to unlock your phone. Which begs the question: could this photo-led fitting soon be rolled out to their online sizing offering? “We have many ideas and plans but the technology’s not there yet,” says Stapelfeldt. “We know there are examples in the apparel industry of companies trying it, which isn’t surprising as some manufacturers have up to 50 per cent returns through incorrect sizing. Sadly, the accuracy just isn’t there for body mapping via your phone, plus the user must ensure so many variables are spot on, like angle of camera and distance from camera. Maybe in five years, but not at the moment.”

The advancement of the bike-fitting industry is, according to Stapelfeldt, about democratisation. It’s reflective of a sport that is arguably the most democratic of all, from participation – it just needs you and a bike – to the World-Tour, where you can cheer on the elite at the roadside gratis.



“We need to welcome new people into cycling and this starts with sizing,” says Stapelfeldt. “We are active in 45 countries and have collected more than 10 million data sets. It guarantees riders of all levels and experience buy the right bike. Despite the current market uncertainty, certainly in the UK, cycling and activating urban mobility is the future. Ensuring you remain injury free and enjoy pedalling, whether you’ve bought a €500 or 10-grand road bike, is integral to this needed shift.” ●

Find out more about Smartfit at smartfit.online.

SMART SIZING WITH WOLFI

Wolfgang Hohmann, aka Wolfi, set up his first bike shop in the UAE in 2002, and he now runs four in the region. Wolfi has been working with Radlabor and Smartfit since 2015

“As an independent retailer with several locations and many salespeople, it’s a challenge to help the rider select the right bike. The Smartfit system is impressive, as you can easily take measurements of the rider, see what bikes we have in store that would work with those measurements and find the perfect match.

“This can be a complex area with so many options, so to have someone from a sport-science background looking over our shoulders while we are adding the details into the system was the answer to my biomechanical prayers.”

Wolfi loves racking up the sunny miles and the appliance of cycling technology. To that end, he opened the first gebioMized fitting centre outside Germany and utilises LEOMO’s analytical tools.

“Also, we have a high performance centre at Wolfi’s in Abu Dhabi where we use a range of fitness tools for measuring lactate and gaseous exchange,” he says. “We work with coaches from Science to Sport, who also work with UAE Emirates and the likes of Tadej Pogačar. But whatever level of rider, it starts with fitting them correctly.”