

MEET THE MAKER

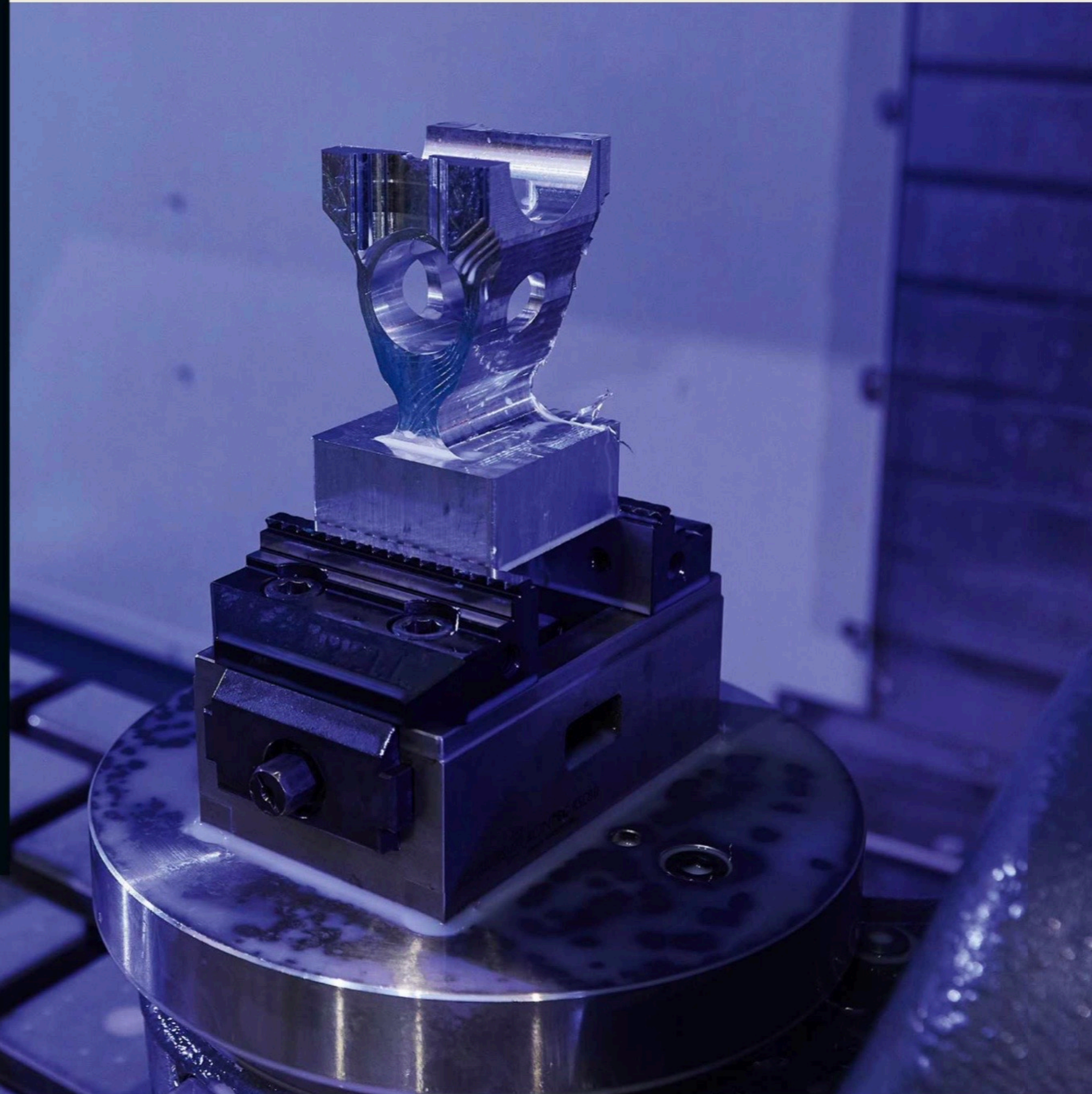


PEMBREE

On a mission to make sustainable, thrash-proof MTB products in the UK

PROFILE

Year founded: 2019
Key personnel: Phil, Finlay, Aaron, Archie and Ellie
Location: Heathfield, East Sussex
First product: R1V pedals
Current range: VFS stem, R1V and D2A pedals, DBN seatpost clamp



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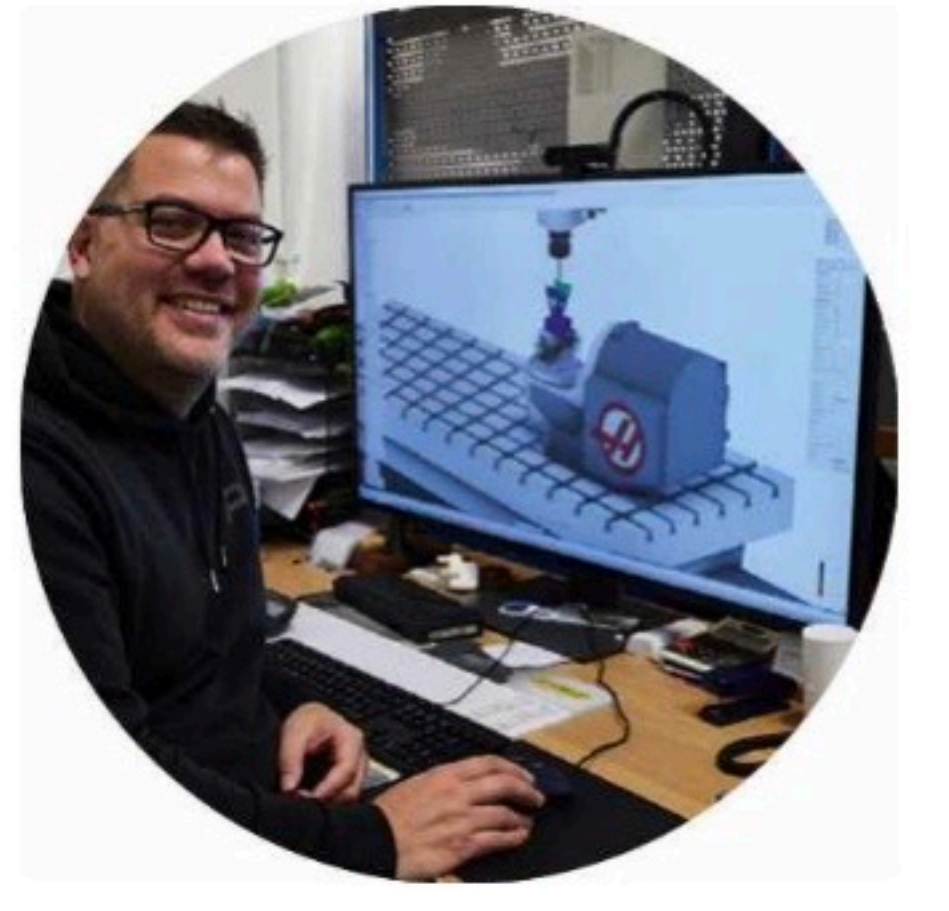
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OUT FRONT MEET THE MAKER

FROM IDEA TO REALITY



1. Phil likes to sketch out all his product ideas on graph paper, as he says this helps him keep the purpose of the component in mind. He then uses Autodesk's Fusion 360 CAD software to model the product on his computer.



2. Aluminium billet is fed into a fully-automated seven-axis Haas CNC machine. This uses the data from Autodesk 360 to carve the metal into raw components.



3. After machining, the parts are put in a rumbler to smooth the rough edges, then anodised, laser-etched with the PEMBREE logo, assembled and packaged up ready to be shipped out to customers.



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PHIL'S PHILOSOPHY: "I DON'T WANT TO JUST SELL AS MANY PRODUCTS AS POSSIBLE, I WANT TO MAKE PRODUCTS THAT LAST. ALL THE PARTS ARE AVAILABLE INDIVIDUALLY FOR SERVICING OR REPLACEMENT, AND HAVE THE MINIMUM IMPACT ON THE PLANET."

Phil Law has a background in engineering and a passion for mountain biking. In the early 2000s, he founded Assault Racing and released the MX-100 pedals. Then all went quiet on the MTB front until recently, when he met a fellow rider who got through three pairs of high-end plastic pedals per year, and thought, 'there must be a better way!' This led to his invention of the first PEMBREE product, the D2A flat pedals. These are all-metal and run on sealed (outer) ball bearings and (inner) needle-roller bearings, unlike most pedals, which use a plastic bushing. Trust us, they're some smooth spinners! The critical areas of the body are removable and replaceable individually, and can be anodised in a colour of your choice. As with all of PEMBREE's kit, they're produced sustainably and built to last, but how?

Rolling up to their East Sussex HQ, you can hear the CNC machines hard at work. The largest has a conveyor belt system so it can be run day and night, while staff view it remotely. At the back of the workshop, PEMBREE's original machine is now programmed for their newest creation, the VFS (Very First Stem). As Phil takes us through the design process for the VFS, the level of detail and consideration is fascinating. The faceplate is clamped tight at the top and then squeezes the bar from the bottom, and is keyed so it can't be fitted upside-down, while the top two bolts have a shoulder that corresponds with a short, unthreaded portion of each hole. All this adds up to a stem that's precisely sized for the handlebar

and clamps it uniformly. The machining tolerances are incredibly tight and are checked regularly with a CNC calibration robot. Rotary cutters are used instead of drill bits. These fine boring heads are also used to create threads, instead of cutting them with a tap, for ultimate precision. The stem is now ready for production, after rigorous testing at EFBE Prüftechnik in Germany and passing their TRI-TEST, where it was subjected to forces appropriate for gravity riding.

Phil's drive for sustainability influences the whole production process. The aluminium billet used is 75 per cent recycled, with no drop in quality. It comes from Derby and the steel parts come from northern France, because they're the closest sources to PEMBREE's production facility, minimising the carbon footprint of transportation. The factory itself, meanwhile, runs on electricity from renewable sources. All these things come at a premium price compared to the alternatives, but Phil is devoted to his manifesto of making carbon-neutral MTB components.

Brand ambassador Rob Warner is invested in PEMBREE's vision, too, and dropped by while we were there to press the green button and begin the production process on the first VFS stem destined for a customer. What's the future for PEMBREE? A direct-mount stem is in the pipeline, along with clipless pedals using Look cleats. Whatever comes next, you can be sure it'll be made to a high standard and with the lowest possible environmental impact. ⚙️

1 PEMBREE's new VFS stem being machined in their seven-axis machine

2 Phil is passionate about his products and the environment

3 Chunks of 75 per cent recycled aluminium waiting patiently to become D2A pedals

4 D2A pedal bodies before anodising and assembly

5 "What does this button do?!" Rob Warner is a PEMBREE brand ambassador

6 The company's range is small but growing, with more parts in the pipeline