

RaceWare

Custom Cycle Components



Facts

Challenge

Speedy design and manufacturing of customized cycling equipment made of plastic and metal.

Solution

Profitable production of durable bicycle accessories in small and very small series with EOS systems.

Results

- High quality and robust: mounts pass hardness test
- Economical: no upfront costs thanks to tool-less production
- Speedy: quicker product development and delivery
- Cost effective: outsourcing of manufacturing keeps investment costs low



Customized bike equipment: The mounts for the navigation systems are made of the EOS plastic material PA 2200 and are available in different colours (Source: RaceWare Direct).

Sporty Business Start-up Exploits Additive Manufacturing



e-Manufacturing Solutions

Customized Equipment For Racing Bikes – Speedy Production With Low Investment Costs

Short profile

RaceWare Direct specializes in the manufacture of equipment for racing bikes made of metal and plastic by using Additive Manufacturing. The company is located in Newbury (UK) and was founded by Martyn Harris.

3T RPD Ltd was established in 1999 and has become a leading Additive Manufacturer throughout the UK and Europe.

Further information

www.racewaredirect.co.uk
www.3trpd.co.uk

Martyn Harris has been a keen cyclist since he was 14 and represented Team GB in 2011, when he won the Track Cycling Masters World Championship in the scratch race in the age category 35 to 39. In career terms he is an expert in Additive Manufacturing having been employed at 3T RPD in Newbury since 2000. 3T has EOS machines which are used to build prototypes and fully functional components from plastic and metal powders, directly from CAD models. But even in his professional life Harris' love of cycling is never far away. In order to combine this passion with his technical knowledge, he founded his company RaceWare Direct in 2012. The company's product range now includes customized plastic brackets for mounting instruments onto racing bikes and titanium components like chain catchers and handlebar stems.

Challenge

The creative impetus for the company came from Harris' futile attempt to buy a mount to secure a computerized power meter safely and neatly to his racing bike handle bars. Harris remembers, „All I could find was a horrible adaptor kit, which included cable ties to lash up the instrument to the bars, so I thought I would make my own mount using the EOS Additive Manufacturing machines at work. Ian Halliday, the CEO at 3T RPD, was very supportive of my venture and still is.“

Via the internet, Harris quickly discovered that a lot of other people were looking for ways to mount power meters, global positioning systems (GPS), cameras and other instruments to their bikes, without using the manufacturers' clunky bracketry. The interest came not just from the Time Trials racing community, but also from road cyclists as well as leisure cyclists.

Solution

One of Harris' contacts was cycling enthusiast Jason Swann, who sent Harris a CAD file

of his ideal mount for a Garmin Edge GPS. Based on this data, Harris built his first mount. It took just four months to progress from the the initial design idea to the wide range of products that RaceWare Direct now sells online for mounting Garmin and other hardware onto road drop handlebars and aero extensions. The company caters for every possible bar size and stem width combination to allow perfect central positioning of the GPS devices. The mounts are vibro finished and then, if the end user doesn't want the raw white of EOS PA2200 nylon material, the parts can be applied with one of the eight standard colours or four neon colours.

Martyn rides for the Banjo Cycles Racing Team, which undertook a six-hour mountain bike endurance challenge using the Garmin mounts to test them under



A Garmin GPS computer attached to a road drop bar using a RaceWare Direct mount: The stiff nylon mount is made in EOS machines and subsequently painted (Source: RaceWare Direct).

extreme conditions. They were found to be extremely stable, with minimal vibration and movement throughout the challenge.

Results

The variety of Garmin mounts manufactured means that batch sizes are small, from 10-off to the low thousands. It would not be cost-effective to produce them by means of injection moulding, as the tooling would be prohibitively expensive. These investments are not required if parts are manufactured layer-by-layer directly out of nylon powder with the help of the EOS technology. It furthermore speeds up the progress from the drawing stage, through refining the design in CAD and 3D printing prototypes, to production of the finished articles.

„People find it difficult to understand how we produce new mounts so rapidly. They ask about lead-time and I reply ‚two to three weeks‘, whereas they are used to hearing six months to a year,“ explains Harris. „The EOS technology allows us to respond very quickly. For example, in a matter of days, I produced two bespoke Garmin 500 mounts with lettering down the side saying ‚Reading GP 2013‘ – one each for

the winner of the men's and ladies' races at a meeting in July.“ Although RaceWare Direct has been in existence for just 18 months, nearly 6,000 products have already been produced in EOS systems at 3T RPD. The leading Additive Manufacturer throughout the UK and Europe, 3T runs six machines for plastic and seven for metal. Martyn Harris said that he likes their reliable and consistent performance, which allows high quality parts to be produced. This is important for RaceWare Direct, as in addition to selling its products in almost every country, it supplies numerous elite UK and international cycling teams, all of which demand top quality products. Many of the most famous cyclists in the world, including those competing in this year's Tour de France, have RaceWare Direct products on their bikes.

Stuart Jackson, Regional Manager at EOS Ltd, the UK & Eire subsidiary based in Warwick, commented, „This is an outstanding example of how Additive Manufacturing can be the ideal enabling technology for starting a new business. Martyn subcontracts his manufacturing to a subcontracting manufacturer, meaning that

investment costs in EOS machines can be saved.“ The fact that there are no up-front tooling costs and the ability to refine designs along the way, supports a low cost, innovative culture that means that products get to the market very quickly. The business model is perfect for a high technology company start-up, as it can leverage an entrepreneur's specialist knowledge, expertise and passion with minimal financial risk.

„I appreciate the reliable high and reproducible quality of the parts produced by EOS systems. With them I can satisfy my customers from all over the world as well as well-known athletes. Due to the fact that no tools are needed, no additional costs for the production of customized parts occur.“

Martyn Harris, Founder of RaceWare Direct

„RaceWare Direct represents a fascinating development for 3T and EOS. The company and its products utilize a broad range of Additive Manufacturing's benefits – iterative design, series production, rapid turnaround, etc. RaceWare Direct demonstrates an exciting business model which has tremendous scope for future development and success.“

Ian Halliday, CEO at 3T RPD

EOS GmbH
Electro Optical Systems
Corporate Headquarters
Robert-Stirling-Ring 1
82152 Krailling/Munich
Germany
Phone +49 89 893 36-0
Fax +49 89 893 36-285

Further EOS Offices

EOS France
Phone +33 437 49 76 76

EOS India
Phone +91 44 28 15 87 94

EOS Italy
Phone +39 02 33 40 16 59

EOS Korea
Phone +82 32 552 82 31

EOS Nordic & Baltic
Phone +46 31 760 46 40

EOS of North America
Phone +1 248 306 01 43

EOS Singapore
Phone +65 6430 05 50

EOS Greater China
Phone +86 21 602307 00

EOS UK
Phone +44 1926 62 31 07

www.eos.info • info@eos.info

Think the impossible. You can get it.



e-Manufacturing Solutions