

# Getting More Performance onto the Track

## Printing the Power to Perform – with AM



### Project Breakdown

<b>Industry</b>	Automotive
<b>Product</b>	Dashboard Spacer   Junction Box Housing
<b>Why Forward AM?</b>	End-to-end solution from design to production
<b>Forward AM Materials used</b>	Ultrafuse® ABS Fusion+
<b>The result</b>	Shorter production and development cycles plus increased design flexibility

## Motorsports: Staying Ahead of the Curve is Decisive

Motorsports pros take this statement literally.

To gain that crucial competitive edge, pro racers constantly strive to optimize their bikes' parts to shave a hundredth of a second off lap times. Searching for a way to produce superbike parts faster and more flexibly, Dutch superbike team Ten Kate Racing chose to partner with Forward AM. The goal was a material that meets the extreme demands of top-flight motorcycle racing and is super-simple to use on a desktop 3D printer.

**“Outstanding material performance is vital for us. 3D printed parts on our race bikes have to be absolutely reliable.”**

**– Bastiaan Huisjes,  
Development Manager,  
R&D at Ten Kate Racing.**

Until recently, Ten Kate had used traditional milling to manufacture their parts – a very time and money-intensive machining process. A constant feature in the Superbike World Championship since 1995, the racing team faces challenges such as rapid and brutal changes in temperature, mechanical loads and vibrations. This means racing parts have to be redesigned and adjusted very frequently, then produced very quickly. Using Additive Manufacturing enables the Ten Kate team to manufacture reliable parts that excel under the toughest racetrack conditions.

Further performance criteria for these Flying Dutchmen? “Ease of use”, Bastiaan replies without hesitation: “We’re a racing team, not full-time 3D printing operators”.



3D printed parts, ready for the track: Dashboard spacer and junction box housing, printed in contrasting colors for clear distinction.

## Ultrafuse® ABS Fusion+ – easy to use, hard to beat

The perfect match for the challenge was Forward AM's Ultrafuse® ABS Fusion+. This advanced filament is outstandingly easy to use, enabling a highly efficient printing process that gives the 3D operator maximum time to exploit the full production potential without the need for continual readjustment.

Together with Ten Kate Racing, Forward AM started by 3D printing the bikes' dashboard spacer and junction box housing. Previously, designing and milling these parts took at least three weeks: By going additive with Forward AM, Ten Kate Racing successfully shortened the lead time to just seven days. "With Ultrafuse® ABS Fusion+ we're 3D printing more and more racing components – even complex shapes like retainer brackets", Bastian confirms.

## Material Properties Ultrasint® PA6 FR

<b>Tensile Strength (MPa)</b>	17.9 (ZX), 29.5 (XY)
<b>Young's Modulus (MPa)</b>	878 (ZX), 1,133 (XZ), 1,406 (XY)
<b>Elongation at Break (%)</b>	2.1% (ZX), 10.9% (XY)
<b>Impact Strength Izod notched (kJ/m<sup>2</sup>)</b>	2.2 (ZX), 38.4 (XZ), 26.4 (XY)
<b>Impact Strength Izod unnotched (kJ/m<sup>2</sup>)</b>	6.6 (ZX), 131.1 (XZ), 73.1 (XY)
<b>HDT @ 0.45 MPa</b>	91°C

## Result: High speed in the workshop – top speed on the track

Harnessing the phenomenal potential of Additive Manufacturing, Ten Kate Racing was able to speed up the development and production cycle of their bike parts, giving the team an undeniable advantage on race day. Ultrafuse® ABS Fusion+ gives Ten Kate the component printing simplicity, reliability, and design flexibility to keep the team a development step ahead of the competition.

Have we sparked your interest? Find out more about this project here.

**We're ready to support  
your project with Additive  
Manufacturing.**

**Simply get in touch!**

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