

# Composite Braiding

To decrease emissions and reduce the spread of viruses, including COVID-19, this Innovate UK-supported business has created lightweight, anti-microbial poles for public transport.

Steel poles used by commuters on public transport are heavy. This weight can increase petrol and diesel vehicles' emissions and limit the payload and range of electric vehicles.

Such poles can be unhygienic – a situation exacerbated by the COVID-19 pandemic. Coatings such as antimicrobial paint can be applied, but this increases the weight and cost, and the antimicrobial effect can rapidly wear off.

Award-winning composite materials manufacturing company Composite Braiding has developed a lightweight, permanently [antimicrobial grab pole](#) for use in public transport. The company manufactures antimicrobial grab poles (AMICABLE) using braided composite materials.

Composite Braiding's founder and Managing Director, Steve Barbour, said: "When tested against the ISO standard 22196 (which measures antibacterial activity), our grab poles killed 99.9% of bacteria found on the surface. This means they will help protect the people who use them from dangerous bacterial infections such as E. coli and MRSA.

"The grab poles are 70% lighter than mild [low-carbon] steel poles yet offer the same mechanical performance. This will increase the payload/range of electric vehicles or reduce emissions in petrol/diesel vehicles."

Derby-based Composite Braiding began in 2016 when Steve Barbour saw that as pressure to reduce carbon emissions in the automotive industry increased, the demand for affordable, lightweight components would

increase. Yet the composite manufacturing industry wasn't set up for producing high volume, low-cost parts due to the labour-intensive processes involved.

Steve Barbour said: "With AMICABLE, we've demonstrated a manufacturing technology that produces the grab poles quickly and cheaply. Through our new automated technology, we've reduced the processing time from a few hours to a few minutes. We used 99% less energy in the automated manufacturing process and 97% less waste than traditional composite manufacturing."

**"Our grab poles kill 99.9% of bacteria found on the surface. They are 70% lighter than mild steel poles yet offer the same mechanical performance."**

Steve Barbour, founder and Managing Director, Composite Braiding

The AMICABLE technology is scalable and affordable – Composite Braiding can produce poles at high volume (more than 100,000 per year) at costs comparable to steel poles. The composite poles can also be reshaped and reused at the end of their life.

In November 2020, as the lead partner of a consortium, Composite Braiding won £95,294 of Innovate UK funding for the AMICABLE project. This was part of a broader £369,778 grant awarded to AMICABLE project partners, including vital links with the Health and Safety Executive (H&SE) and the University of Warwick.

Steve Barbour said: "The H&SE were very valuable in providing guidance with aspects such as compliance with the appropriate biocidal regulations."

Jodi Brookes of the H&SE said: "We agreed to assist in the AMICABLE research in an advisory capacity. We identified the type of standards required and assisted in interpreting the data produced from these tests."

Composite Braiding is collaborating with partners to commercialise the AMICABLE technology in 2022. It is also researching and designing other award-winning products. The technology developed through Innovate UK funding has contributed to the company's expansion, creating new jobs.



Steve Barbour