

## Customer story

# Brompton: “Nothing compares” to Raspberry Pi for data capture at iconic British bike manufacturer

Raspberry Pi solution

Raspberry Pi 4

Size of business

Large enterprise

Industry

Bicycle manufacture

Brompton folding bicycles are a British urban icon. Invented, designed, and manufactured in London, their popularity has grown at pace, and in recent years annual sales have topped £100 million as Brompton has become the go-to solution for commuters seeking a smooth and swift end-to-end trip. “We’ve tried to make people aware that there’s a product that might make their life a bit happier, give them a bit more freedom,” says CEO Will Butler-Adams. Brompton’s factory systems have evolved to support the demands of increasing volume and an expanded product range, and Butler-Adams describes their Raspberry Pi-powered factory setup as slicker than any other he has seen.

## The challenge

Brompton first introduced Raspberry Pi in 2013 on what was then a line of nine production stations. The computers – the original Raspberry Pi 1 Model B – were used to track which models were built at which station and when. The following year Brompton expanded capacity to 16 stations in order to meet rising demand, but this still wasn’t enough: they needed to up production further, while continuing to track units at every station and introducing further monitoring to help meet increasingly demanding targets. “The only way to do that,” concluded Senior Software Engineer Kane Tracey, “was Raspberry Pi.”



“Raspberry Pi plays a crucial role in Brompton’s assembly processes”

## The solution

Tracey says that there are over 100 Raspberry Pi computers inside Brompton's factory, deployed in solutions ranging from pre-assembly-line and production-line monitoring to air quality control and more. A number of models are in use, including Raspberry Pi 4 and earlier boards.

Raspberry Pis on production stations scan the serial number of each bicycle, tracking it as it progresses through the assembly process. The computers use the scan data to monitor and support production in multiple ways: for example, staff are provided with unit-specific instructions via connected displays, a laser-etching machine automatically produces the correct plate design for the type of bike under assembly, and LED indicators help staff to meet time targets. In addition to scan data, production-line Raspberry Pis capture data from torque controllers, from user input, and more. KPIs are shown on display screens for ease of monitoring.

"We have this philosophy here at Brompton now that if we need to capture data anywhere on the factory floor, we throw a Pi at it," says Kane Tracey.

**"I've never seen a system as slick as the system we've created ourselves with the humble Raspberry Pi"**



## Why Raspberry Pi?

Brompton has investigated other single-board computers, aiming to identify the most cost-effective platform that could offer the power and flexibility they needed for low-friction deployment into a broad range of applications. They concluded that Raspberry Pi offered both superior performance and better value than other boards on the market. "We've done a lot of research," reflects Tracey. "There are plenty of other small credit-card sized PCs that come out, and they don't match the Raspberry Pi. We've tested them and there's nothing on the market that compares. Not just for performance, but also for value."

As production volume has increased at Brompton, strict time targets have become ever more important to their operations, Tracey emphasises. "The Raspberry Pi now is critical in our manufacturing. We have to stick to the takt time, we have to stick to how many bikes we get out. And this is what the Raspberry Pi does for us: it helps us reach those targets."

## The results

Each Brompton bicycle is a masterpiece of perfection in design and technology, reflecting the pride Brompton assembly operators take in ensuring that every machine is constructed to the very highest possible standards of quality.

Raspberry Pi plays a crucial role in Brompton's assembly processes, ensuring critical elements such as the application and capture of the correct torque – essential for the safety of the rider – as well as capturing every other aspect of the build process through each station of the assembly line.

Butler-Adams is clear about the impact of Raspberry Pi at Brompton. "It gives us insight, allows us to adjust, it gives us traceability, it helps training. And I have visited a lot of factories: I've never seen a system as slick as the system we've created ourselves with the humble Raspberry Pi."

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