

**CASE STUDY**

# A CHAIN REACTION FOR CHANGE

**Brompton Bicycle.**

How RS Industria has enabled Brompton Bicycle to ignite operational transformation.



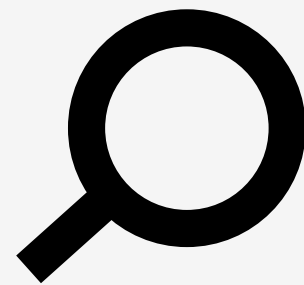
## CUSTOMER OVERVIEW

As the UK's largest bicycle manufacturer, Brompton Bicycle and its iconic fold-up bike is really going places. Global in fact.

Since the company was first founded in London in 1975, more than one million Bromptons have been sold worldwide, with the bike the ultimate sustainable transport solution for commuters.

Today, the company operates 15 'Brompton Junction' stores across Europe, Asia, Australia, and North America and employs an 800-strong global workforce. The heart of the business and its manufacturing remains at its West London base of Greenford and a welding site in Sheffield, where Brompton manufactures around 100,000 bikes a year.

# BENEFITS SUMMARY



### ENABLES ASSET TRANSPARENCY

A critical asset is continuously monitored, delivering valuable insight.



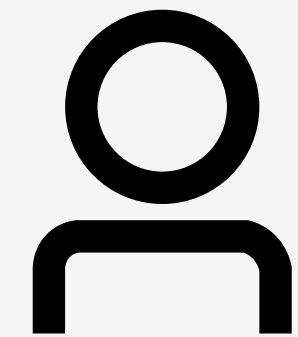
### EARLY WARNINGS MITIGATE FAILURES

Alerts trigger immediate investigation before serious damage occurs.



### CONNECTED ASSETS FOR BETTER PRODUCTIVITY

Insight reduces downtime, saving time and money.



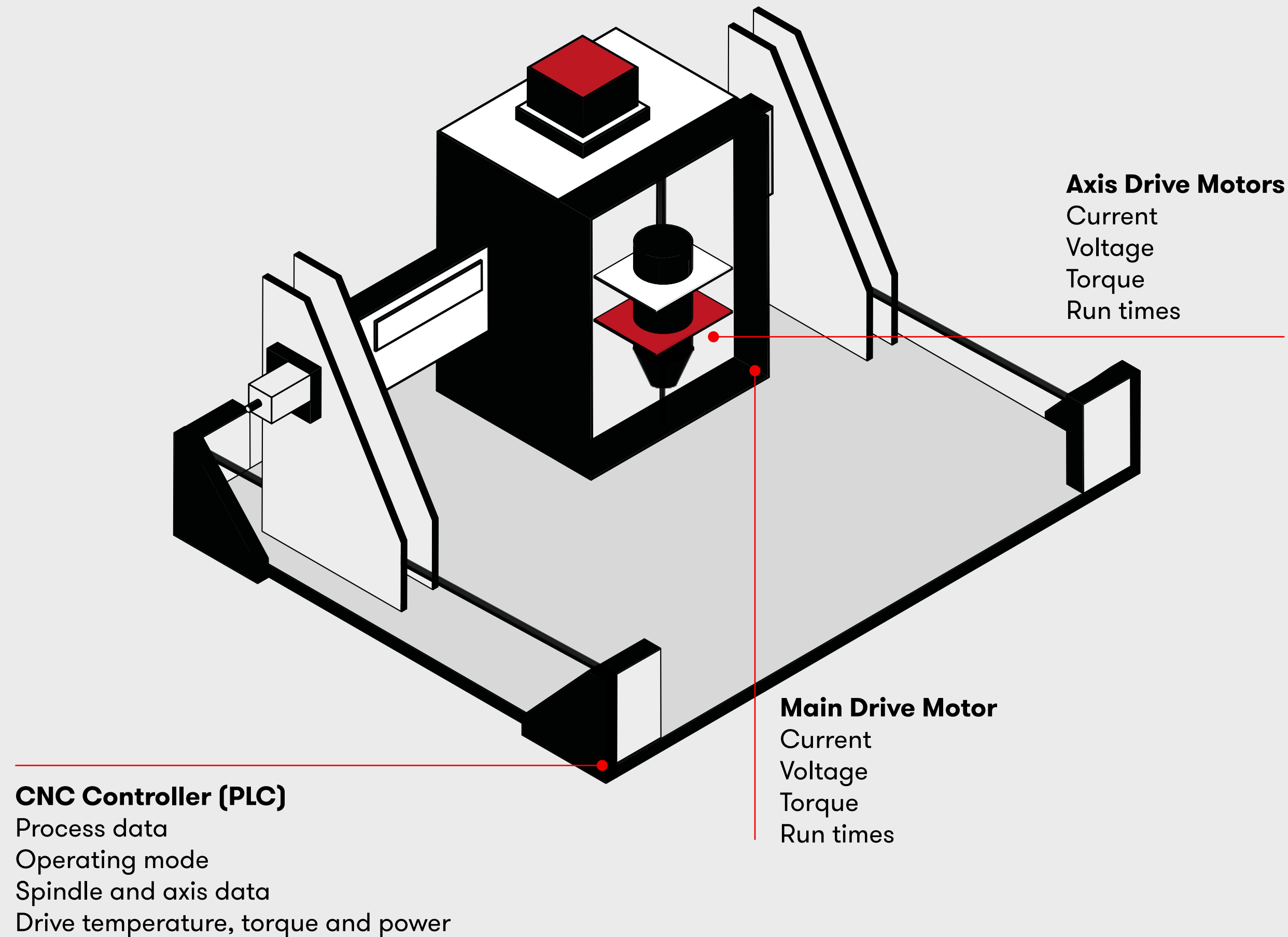
### USER-FRIENDLY SYSTEM

Straightforward and easy-to-use solution, with ongoing support from RS.

**REDUCED DOWNTIME OF A KEY ASSET BY 33%**  
**SAVING £40,000+ OF ADDITIONAL COSTS IN PARTS AND LABOUR**



# WHAT WE MONITOR



# THE PROBLEM

At the heart of every Brompton is a simple 3-part fold, which transforms the bike into a small package in under 20 seconds.

To create the foldable frame, Brompton combines traditional techniques like brazing with modern machine technology.

As the plant's only CNC machine to be used in the production process, its custom-built machine is key to the manufacture of the bike frame and the quality of the end product. Underperformance of the asset costs time and money, with unexpected issues leading to lengthy downtime.

When an unseen issue with a belt led to the machine crashing and the best part of a day to get to the bottom of, Brompton's engineers were able to leverage data from the RS Industria solution already in use on motors within the asset. Using this insight, engineers were able to put in place measures that would mitigate the impact of future belt failure.



## THE SOLUTION

RS Industria had already proved its worth elsewhere on the CNC machine, with engineer Malcolm Millar using it to develop tooling speeds/feeds and increasing cycle time.

The solution was in use to monitor the torque from the servo motors, triggering an alarm to stop the machine should the torque exceed 18Nm. However, as each of the machine's six spindles is connected to the AC motors via belts, the spindles could continue to operate should the belt fray or snap, which could affect their alignment and cause potential damage.

This was reflected recently during one incident, with unseen belt deterioration leading to the machine's tooling getting crushed into the part. When the machine subsequently broke down, engineers spent 18 hours trying to determine and fix the root cause.

Now, using historical RS data gathered from the motors, engineers have been able to set up torque limits for each servo motor so that if a belt does fail in the future, the CNC machine will automatically stop if the torque exceeds 11Nm. Though this will not reduce the likelihood of belt failure, it can prevent major outages of the machine and help with fault finding, diagnostics and resolution, reducing the overall length of downtime by a third.

## THE OUTCOME

Using the RS Industria data dashboard, engineers have continuous visibility of potential anomalies in production. The insight enables them to put in place limits and an action plan to reduce the impact of problems, while giving them confidence they can get to the bottom of issues quickly.

Though continuous monitoring can't prevent general wear and tear of belts, it can reduce the total downtime if the incident were to happen again.

**“HAVING ACCESS TO DATA ENABLES US TO RESOLVE ISSUES AND PUT IN PLACE ACTIONS THAT CAN REDUCE THE IMPACT OF FUTURE DOWNTIME AND COSTLY SECONDARY DAMAGE.”**

**MALCOLM MILLAR | MANUFACTURING ENGINEER**

## THE LESSONS

Utilising RS Industria on a range of components within key assets provides greater insight and the data needed to identify indicators of failure before they unexpectedly halt production.

## NEXT STEPS

As RS Industria is a modular platform, Brompton can roll out its use to monitor more of the site's critical assets. This will enable engineers to improve the performance and reliability of key areas, including its paint line, and inform future maintenance planning.

**“RS INDUSTRIA IS A MANUFACTURING-FOCUSED SOLUTION THAT HAS HELPED US TO IMPROVE RELIABILITY. IT IS A REALLY HANDY PLATFORM TO HAVE AND IS WORKING INCREDIBLY WELL FOR US.”**

**MALCOLM MILLAR | MANUFACTURING ENGINEER**



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