BULLERS™ Pyrometric Rings

Case Study

Why **Emma Bridgewater Ltd** uses **Bullers Rings** as an essential part of its Quality Assurance programme.

Emma Bridgewater®

An Overview of Emma Bridgewater Limited

Formed in 1985 and employing some 180 people, **Emma Bridgewater Ltd** prides itself in its "quintessentially English" design of pottery.

Emma Bridgewater's distinctive and highly collectable pottery is made from an earthenware mix that is a variant on Josiah Wedgwood's 18th century recipe for creamware. The company's individual designs range from Spring Flower patterns to Polka Dot Hearts and Union Jacks to Kitchen Gardens.

Emma Bridgewater Pottery is still produced today in a large Victorian pottery factory alongside the Cauldon Canal in Stoke-on-Trent, England, where the use of **Bullers Rings** is considered an invaluable and essential part of its Quality Assurance programme.

What are Bullers Rings?

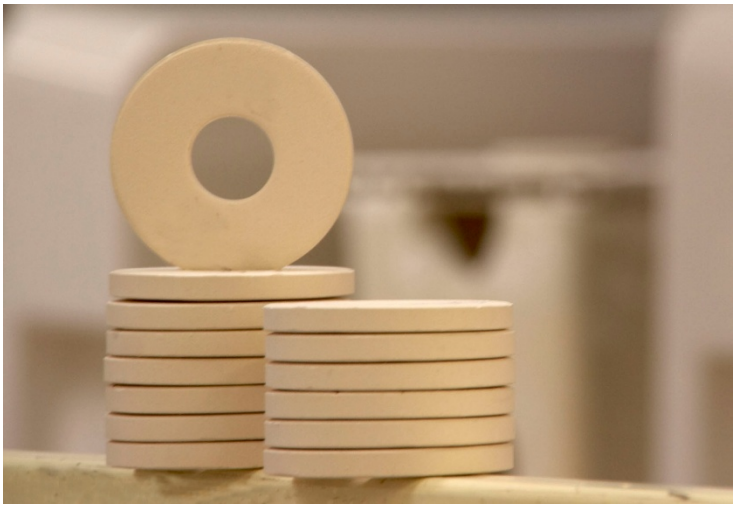
Bullers Rings are **Pyrometric Devices** for accurately measuring the effects of **'Heat Work'** within a kiln firing environment.

UK based **Mantec Technical Ceramics Ltd** specialises in the manufacture of the 'World Famous' **Bullers Rings**, which are utilised by many of the world's leading **Tableware**, **Sanitaryware**, **Brick**, **Refractory** and **Technical Ceramics Manufacturers** to measure and monitor the amount of Heat Work that has taken place within the kiln. **Bullers Rings** provide an independent, accurate, reliable and essential indication that the firing of the product is correct and unaffected by any variations in temperature and kiln loading.

Heat Work

Heat work is the action and effect of temperature over time on a ceramic product. It is often called '**heat energy'**. Simply put, '**heat work'** is a defined measurement of how you have 'cooked' or 'processed' your product.

Too much or little time at the correct thermocouple temperature and the product may not have been fired correctly—It will be **under** or **over** fired. Therefore the measurement of heat work should be an essential QA parameter for all ceramic manufacturing facilities.



Mantec Technical Ceramics

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Note: Information contained herein is correct at the date of issue. February 2009.

Why does Emma Bridgewater Ltd use Bullers Rings?

Emma Bridgewater Ltd has utilised **Bullers Rings** for more than 20 years. Prior to using the rings, the company had experienced significant problems with unevenness of firing, which led to inconsistent products and rejection of ware by the Quality department.

This problem of unevenness was reported to the kiln manufacturer, who promptly recommended the deployment of **Bullers Rings** so that the areas of under / over-firing could be readily identified. **Bullers Rings** have been used as an essential quality check ever since!

Over the years, **Emma Bridgewater Ltd** has perfected the balance of body / glaze maturity within the firing—a crucial characteristic to ensure that the decorative colours remain stable. To the kiln manager, **Bullers Rings** data is the first point of reference if there has been a problem with the firing, so that corrective action can be taken without delay or excessive cost.

How does Emma Bridgewater Ltd use Bullers Rings?

A series of Intermittent Gas Kilns are used to fire **Emma Bridgewater** ware. **Bullers Rings** are placed evenly on the kiln cars in quantities of 30 rings (15 per side) on the smaller kilns and 36 rings (18 per side) on the larger kilns.

The **Bullers Rings** readings are 'mapped' onto a chart which represents the position of each ring and a tolerance of +/- 3 ring readings is considered to be a normal 'heat work' spread. If any readings are recorded outside of this, then further checks are made as to the quality of the ware and the kiln integrity itself, further justifying the consistent use of **Bullers Rings**.

The Benefits

Emma Bridgewater's kiln manager considers the use of **Bullers Rings** an "essential quality tool", without which, the company would be left with a higher number of rejects and the need to carry out re-work on ware.

The use of **Bullers Rings** leads to ***maximum yields*** and thus ***profits***, which come from consistent and reliable production. The consistent use of **Bullers Rings** ensure profitable firings time after time.

Footnote: MTCL would like to thank Alan Goldsmith of Emma Bridgewater Ltd for his assistance in compiling this Case Study.

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