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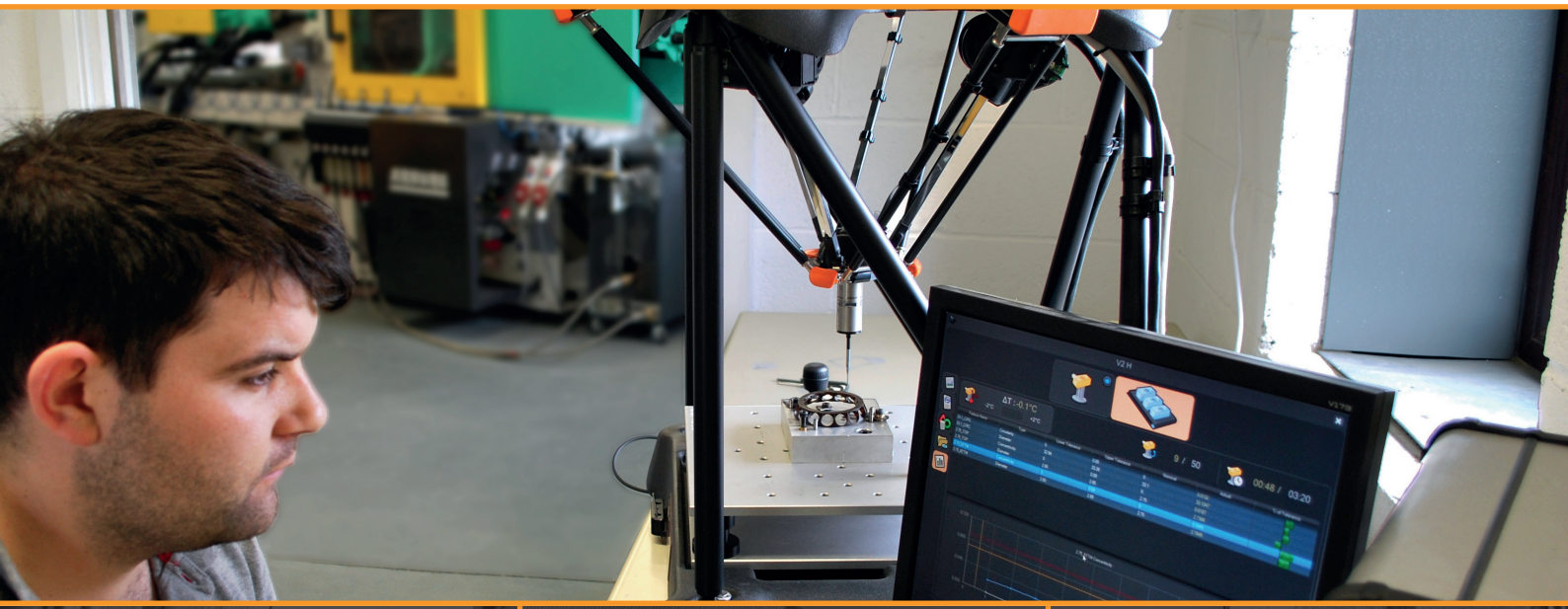
Equator™ gauge: “As Quality Manager, it has quickly become the best investment we’ve made.”



Customer:
Euromoulds

Industry:
Mould and Die

Challenge:
Increase inspection capacity and portability whilst reducing inspection time in a high temperature environment.

Solution:
A thermally insensitive, portable and automated gauging system.

David Powell, Quality Manager at UK-based Euromould Ltd, has been using Renishaw’s Equator flexible gauge to increase inspection capacity and portability, achieving an 85% reduction in the inspection time of injection moulded parts.

Have you ever watched a rugby match and seen a conversion scored using a kicking tee, or used an ice scraper to remove the ice from your windscreen on a cold winter’s morning? If so, there is a good chance you will be familiar with just a couple of the products made by Euromoulds, a specialist injection moulding company based in Chesham, Buckinghamshire, UK.

The Euromoulds shop floor often experiences high levels of heat, with injection moulding machines situated over two floors. This may seem like a less-than-ideal situation when integrating a quick and repeatable way of measuring parts, however they have done just that, using a Renishaw Equator gauge.

Euromoulds have been able to benefit from the Equator’s thermal insensitivity and portability, since it can be positioned next to any of their machines and comfortably handle shifts in temperature. Added to that, the speed of the gauge has resulted in cycle time reductions of up to 21 minutes, helping Euromoulds to increase inspection capacity and reduce bottle necks on their co-ordinate measuring machine (CMM).

Increasing capacity

Euromoulds, a pioneer of two-shot moulding in the UK, are a prime example of a company whose success challenged them to find ways of increasing their capacity. To start with, more injection moulding machines had to be specified and purchased, leading to the requirement for more space to house them, plus the need for additional quality control capacity.

David Powell, Quality Manager at Euromoulds explains, “Our CMM was at full stretch, with our production quantities increasing from 15,000 parts a week to around 80,000 parts. This required a measurement capacity that we didn’t have.”

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>
> **Euromould Ltd (United Kingdom)**

Injection moulded parts

While working on various projects with Trac Measurement (a company who specialise in implementing quality control in custom manufacturing applications), Mr Powell had explained his need to find a way of increasing their measurement capacity. In response Trac suggested the Renishaw Equator as an option. Mr Powell says, “Trac introduced us to Renishaw. After speaking about our needs and about the Equator it seemed like it would work for us and the price seemed very reasonable. An Equator was new territory for us and before we would go for it, it needed to prove itself.”

Renishaw therefore carried out a benchmark test with one of Euromoulds’ parts, with Mr Powell deciding to purchase soon after; the deciding factor being Equator’s speed and repeatability. “It’s the best investment we’ve made,” he comments. “Many of our customers require a high level of accuracy and a quick turnaround on orders. On one of the complex moulded parts we have reduced the measurement cycle time from 25 minutes down to just 4 minutes using the Equator. On another part we have cut the cycle time from 8 minutes down to 1 minute. We are no longer worried about our measuring capacity.”

Process Monitor

Recently Euromoulds have been looking at the new Equator Process Monitor software feature which prompts operators when re-mastering of the system is required, according to criteria set by the user. The limits for re-mastering can be set on the basis of temperature drift, time until next re-mastering, or by the number of parts measured. Users can use the knowledge of their process trends to set the values for each of these limits, or use Process Monitor to help identify trends and then tailor their mastering values to provide the best re-mastering results.

All data collected can be exported as a .csv file or as an image to enable easy sharing of results. “It looks good,” says Mr Powell. “We already know a lot about the trends in the parts we measure as I have been hand writing the results and spotting a lot of the patterns. The engineers working with Equator will benefit from knowing when to re-master before we have problems. It also means re-mastering will be consistent no matter who is using the Equator.”

Handling temperature variation

Temperatures within the Euromoulds factory are subject to significant fluctuation. The heat produced by the injection moulding machines means that the temperature is usually high, however the thermal cycles of machines can also be enough to cause fluctuations of several degrees. In addition, seasonal variations can see temperatures rise to 28 °C (82.4 °F) in the summer and fall to 20 °C (68 °F) in the winter. Even with such variations Equator has been working well for Euromoulds, using its ability to work efficiently over a wide temperature range, complemented by the new Process Monitor software to ensure that diligence in re-mastering is maintained.

Portability

Before the purchase of an Equator, all measuring took place on a single CMM confined to a temperature controlled room. As Euromoulds has grown in size, so too has the distance between the injection moulding machines and the CMM. This led to instances where an engineer walked as much as 3 minutes to deliver parts to the CMM, thereby impacting part measurement cycle times and productivity.

Currently positioned upstairs in Euromoulds’ factory, the Equator gauge is situated within 30 seconds of two V-2 two-shot injection moulding machines, each of these machines producing parts which would previously have been taken downstairs to be measured on the CMM. Equator’s portability means it can also be repositioned around the factory to where it is most needed and can even be transported to Euromoulds’ second site if required with a minimum of fuss and set-up time.

Used to measure precision moulding from two presses

Euromoulds are currently using the gauge to measure complex moulded parts manufactured on two presses with Equator used to measure the concentricity of the top and bottom of a central bore to the outside diameter. The bore itself is dependent on a pin which is inserted into the mould during the moulding process and then removed. It is possible for the pin to wander during moulding, although this is quite rare due to the high level of consistency in the process. Using Equator ensures that, if it does happen, the problem would be picked up quickly and rectified.

“We measure parts every hour,” says Mr Powell. “In cases where the results are less consistent, we increase the frequency to suit.” He continues, “I tend to use the Equator more than the CMM since it is so quick in comparison. We have another job we will be adding soon, which will be similar to the other Equator jobs but with different concentricity measurements top and bottom.” “The interchangeable plates is also a big benefit during production, they allow me to switch between different projects (product to product) with very limited set up time. Simply swap and go.”

The Equator can use custom made M6, M8 or 1/4” fixture plates. These are common sizes for many CMM plates and allow for fixtures designed for CMMs to be easily transferred onto the Equator gauge. “We already had fixtures from the CMM for our parts and being able to use them on Equator saved us money and the trouble of having to get more fixtures made. I do intend to improve some of the fixtures with lever clamps though,” adds Mr Powell.

Customer support

Renishaw provided Euromoulds with a complete turnkey service, with Renishaw engineers writing programs for each of the parts to be measured on Equator and carrying out correlation with Euromoulds’ CMM to ensure each program ran correctly. “The support has been great right from the start. Having all the programs written by Renishaw has made it very easy, especially as the programming came as part of the system,” says Mr Powell.

About Euromould Ltd

Established in 1986, Euromould Ltd is a professional family based company employing a medium sized highly skilled and experienced workforce. The company prides itself on being able to offer both single-shot and two-shot tooling making capabilities. Euromoulds have over 25 years of tool making experience developing and supplying various from automotive and medical to sports apparel. The company works closely with its customers and their product developers to make sure the best design is made possible, and it also prides itself on developing its own concepts and products, including a highly successful ice scraper sold through retailer Car-Plan, and a rugby kicking tee which has been sold to leading sports brands Gilbert and Canterbury.

In 2010, Euromoulds purchased a single shot Arburg press for tool trialling and production moulding. Now, as part of the company’s expansion, Euromoulds is home to 9 injection mould presses, varying from 50 to 100 tonnes. At Euromoulds’ sister site “2shot Moulding” there are also five 2-shot mould presses.

It is from these presses that Euromoulds will call on the Equator to carry out production measurement analysis.

Euromoulds always remain keen to develop its own products, as well as work with customers to develop theirs.

Euromoulds is ISO9001 accredited, and has a fully operating quality team.

EUROMOULDS
mould design and manufacture

For more information visit, **www.renishaw.com/euromould**

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