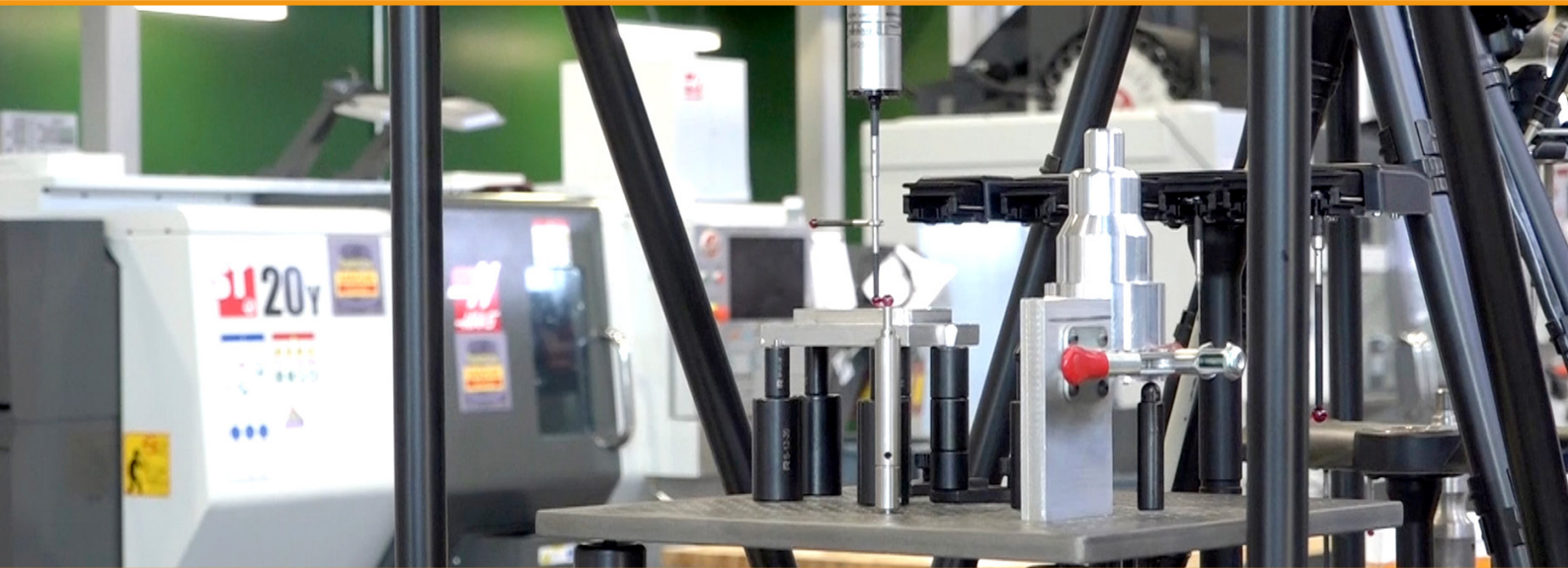


Equator™ gauging system reduces inspection time of NIMS metalworking training parts by 85%


Customer:

National Institute of Metalworking Skills (USA)

Industry:

Precision manufacturing

Challenge:

To overcome part inspection bottlenecks, whilst introducing NIMS students to the precision measurement process

Solution:

A complete Equator gauging system package that provides repeatability and reduces inspection times by 85%

To uphold student skill levels to current manufacturing industry standards, many trade schools in the USA have aligned their training with certification from the National Institute of Metalworking Skills (NIMS). Tailored directly to this initiative, global engineering technologies company, Renishaw, has developed an Equator™ gauging system package which significantly improves the inspection of NIMS parts. Renishaw ensures that the system is easy to use and that users are well supported every step of the way.

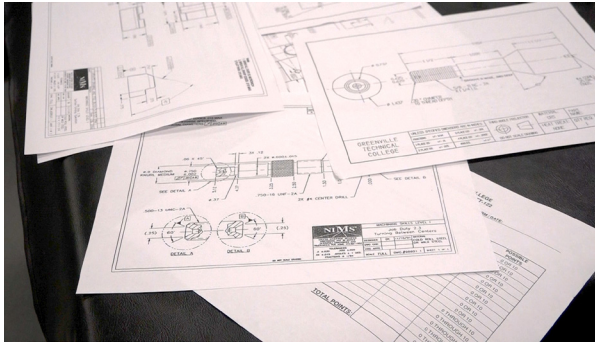


Renishaw's complete Equator gauging system package for NIMS

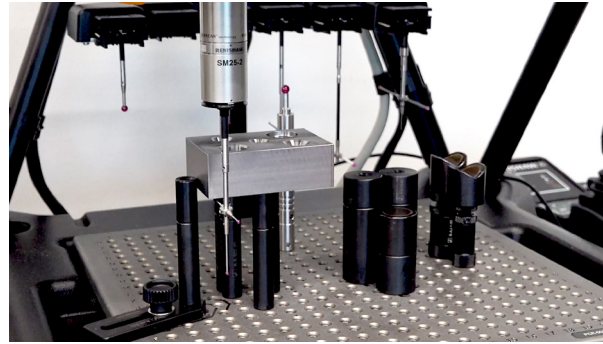
// Using the Equator gauge to measure NIMS parts has been hugely beneficial. Previously, if a student brought me a part to check it might take me 20 minutes to inspect in-house if there are no interruptions. Now, by using the Equator, I can check a part in three minutes – a massive 85% inspection time decrease per part.

Renishaw has offered outstanding support. We once had a problem with the system that I couldn't resolve, so I phoned the Renishaw team for help. The engineers made sure we were back up and running as quickly as possible.

// **Enoree Career Center (South Carolina, USA)**



Technical drawings for NIMS parts



Renishaw's Equator gauging system inspecting a NIMS machined part

Challenge

To validate the students' machined NIMS parts, all features are measured, including geometric dimensioning and tolerancing (GD&T), as well as plus or minus tolerances. When each measurement meets specification, the part passes inspection. Once they pass both inspection and a technical test from an instructor with a NIMS Inspector credential, the student will receive their certification.

However, conventional inspection typically creates a bottleneck in the certification process, with teachers having many parts to inspect and inspectors taking up to two weeks to return the parts. This can cause frustrations for the students, who often wait long periods to see if their hard work paid off.

"On the courses I've run at NIMS schools, you can have around 30 students who, during their ten-month course, can gain six or seven credentials — that's a lot of parts to measure," explained Clint Smith, a former NIMS teacher, now with Mastercam. "When it was time to measure the parts, we sent them to a local metrologist or machine shop that could use its CMM to measure and report on quality. This often took a couple of weeks because, understandably, the business prioritised client work. The wait can be frustrating for students."

Solution

To remove this bottleneck, NIMS partnered with Renishaw to develop the NIMS educational package, which features the Renishaw Equator gauging system, along with fixtures, styli, and prewritten programs.

The Equator gauge is a flexible system that provides speed, repeatability, and ease of use for manual or automated measurement in machine shop environments. Its integral re-mastering process also means that the Equator system does not require annual machine calibration.

The prewritten programs include proven gauging programs for each part required for NIMS certification. The package also includes styli, two metrology fixturing plates, and fixtures that can fit all 13 parts, providing everything needed to inspect the parts. The system also features a user-friendly operator interface, allowing easy program selection and execution, and a clear display of results.

Renishaw has now provided multiple packaged systems to USA high schools and technical colleges that offer NIMS certification, as well as in-house industry apprenticeships.



The Equator gauging package for NIMS includes prewritten programmes, styli, two metrology fixturing plates, and fixturing that fits all 13 parts

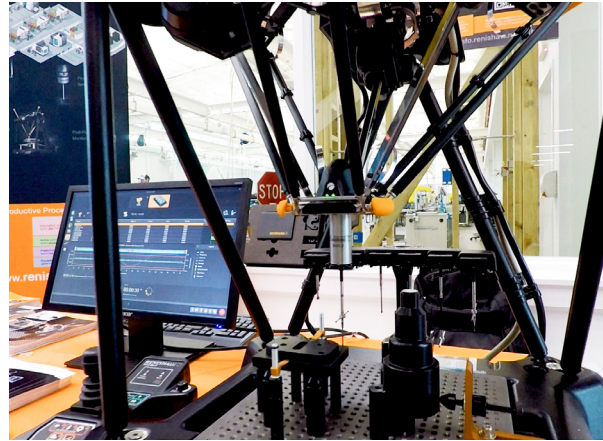
Results

Measurement results are almost immediate when using the Equator system, giving students rapid feedback about their parts and an opportunity to witness the measurement process at the same time. By introducing this system, students will gain a clearer understanding of quality assurance and GD&T requirements in the current manufacturing environment, better preparing them for the workforce.

“Creating the NIMS package and introducing teacher training has enabled colleges to improve their programs,” explained Scotty Nicholson, Technical Training Manager at Renishaw Inc. “By adding metrology into the machine tool certification, students can better validate the parts to an industry standard, as well as benefit from immediate feedback. Over time, this means we’ll have highly engaged students who are more employable in the future. Introducing the package also brings recognition to the program as we can provide evidence that the training reflects current manufacturing practices.”

Spencer Black, Instructor at the Enoree Career Center, Greenville, South Carolina, explained, “The NIMS certification is integral for students that want to get into the manufacturing industry — it’s the only machining certification I know of. It’s important but can also be stressful because if a student misses one small detail, the part is scrap, meaning they have to start over. This left the students feeling deflated after working on it for weeks.”

“Now, by using the Equator gauge, I can check a part in three minutes, and we can improve their part quickly while also helping them understand the measurement process — which in my experience is a side of machining that people don’t often think about,” added Black.



Demonstrating the Equator gauging package for NIMS at the annual Haas Tech (HTEC) Conference

// The NIMS inspector credential has been hugely beneficial as it has enabled schools to inspect machined parts in-house. However, it can also be difficult to check in-volume parts consistently and in a time effective manner. The Renishaw Equator package has enabled students to inspect their own parts and know within 3 minutes if their part has passed or failed, teaching them where they have made any mistakes and immediately how to resolve them. //

Pickens Country Career & Tech Center (South Carolina, USA)





Scotty Nicholson, Technical Training Manager at Renishaw Inc.



Renishaw proudly sponsors the HTEC conference

Support

Renishaw provides a package of technical support to NIMS schools that includes training staff on how to set up and use the Equator system. Additionally, the Renishaw team can help troubleshoot and maintain the system.

“Renishaw has offered outstanding support. We once had a problem with the system that I couldn’t resolve, so I phoned the Renishaw team for help. The engineers made sure we were back up and running as quickly as possible,” explained Black.

“At Renishaw, we understand the importance of providing students with the right training for their future careers,” explained Nicholson. “The introduction of this new metrology package means that when a student is NIMS qualified, they have followed best working practices and are capable of machining features on a part that they can show is in-tolerance. This is great news for the industry as it brings students to a standard that reflects the realities of machining beyond school and university.”

About NIMS

NIMS is a non-profit organisation that has worked to develop and maintain a globally competitive American workforce since 1995. Its mission is to help organisations improve overall performance by empowering educational institutions to validate training with practical experiences that reflect what individuals will face once they enter the metalworking industry.

From the variety of NIMS credentials available, each credential represents a collection of skills and knowledge, and a person that has earned one has demonstrated competency in that occupational area. To gain each NIMS credential, students at participating schools must manufacture thirteen parts. These parts then endure quality checks, either in-house by the teacher or outsourced to local metrologists.

“A NIMS credential demonstrates that the candidate met the industry benchmark for competency,” explained Joanna Eyer, Operations Manager at NIMS. “The certification gives the individual a competitive edge in the job market, as it demonstrates skills that could lead to raises and promotions in the future.”

For more information and to watch the video visit, www.renishaw.com/nims

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