Millbrook uses nCode GlyphWorks to deliver unrivalled vehicle test service

About Millbrook

Millbrook in Bedfordshire, UK, is an independent, world leading engineering test and development facility that provides confidential, proven test results for applications in a variety of sectors, from automotive and public transport, right through to testing front line military vehicles to the highest standards.

Facilities for vehicle testing at Millbrook include unique test tracks, such as a demanding circuit that features a 3.2km (2 mile) banked high-speed circuit, which is used regularly for tests over 240 kph (150 mph). There is also a purpose built hill route with a range of extended gradients of 7, 11, 14, 17, 21 and 26 percent. Millbrook has a comprehensive array of surfaces, including an area comprising sinusoidal and random waveforms with coarse blacktop, "cats eyes" and other eye-watering, suspension-jarring features.

Development of testing ground’s capabilities

Testing is an extremely important yet time-consuming and demanding task in the development of new vehicles. Test centers like Millbrook are continuously investigating new strategies and approaches that improve the quality of results.

Featuring:

nCode GlyphWorks®

• GPS Processing
• Optimized Testing

Solution Requirements:

• Improve the quality of results delivered to the customer
• Reduce program costs and time scales
• Extend services of vehicle test center

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delivered to the customer while reducing program costs and timescales. “We are constantly developing new approaches and creating a forward thinking ethos in testing,” said Chris Polmear, Millbrook’s Senior Engineer, Vehicle Measurement Group. As part of their research, Millbrook engineers attended a free seminar on Large-scale Customer Vehicle Usage Monitoring hosted by HBM-nCode. The seminar included a number of presentations on how vehicle testing could be improved, such as “Vehicle Usage Profiling and Proving Ground Optimisation” and “Bringing the Proving Ground into the Laboratory and on to the Desktop” by Dr. Andrew Halfpenny, Chief Technologist of nCode products. Demonstrations shown at this seminar ultimately led Millbrook to select nCode GlyphWorks to support the development of new testing approaches for determining brake usage and braking energy.

**Proving ground correlation**

Chris Game, Millbrook’s Principal Engineer for Special Projects, comments, “GlyphWorks provides us with an intuitive platform for enhancing our process for correlating for events”. Millbrook engineers use built-in functions provided in GlyphWorks to easily calculate time history plots for many of the required vehicle parameters such as effective engine power, braking power and tractive power. Specifically, the GPS Processing glyph is used to automate the calculation of these vehicle quantities from low sample rate GPS signals. By calculating these parameters, engineers can gain insight into the performance and power requirements of a vehicle by simply analysing GPS and basic CAN bus data. By correlating events with location and GPS information, it enabled the mathematics to be approached scientifically giving greater accuracy in the analysis.”
Exceeding customer’s expectations

Millbrook has extended the use of nCode GlyphWorks for a number of other measurement and analysis tasks on the testing ground. One application is the development and sizing of regenerative braking and energy recovery systems by using GPS data analysis. Proving ground correlation is another application which combines brake testing with the estimation of the energy of each braking event to optimize the usage of the proving ground. This capability, called Optimized Testing in GlyphWorks, is used by Millbrook to assess the distribution of braking energy events across all of the test track surfaces and optimize a duty cycle to match the required real world usage.

Millbrook now incorporates Optimized Testing into vehicle development projects, enabling customers to reduce the need for public road driving tests. Polmear remarks, "Using nCode GlyphWorks has enabled Millbrook to provide its customers with a service unmatched by any other vehicle test center."

GlyphWorks enables Millbrook to optimize a duty cycle to match the required real world usage

nCode GlyphWorks is used to optimize the most appropriate test track surfaces to represent the desired target - quantifying engineering decisions, and saving time and money

Millbrook has a comprehensive array of surfaces, including an area comprising sinusoidal and random waveforms with coarse blacktop, "cats eyes" and other eye-watering, suspension-jarring features.
“GlyphWorks ensures that tests can be safely run on a test circuit. Tests that had once taken two to three weeks can now be completed in one-third of the time with greater repeatability, security, safety and accuracy.”

-Chris Polmear,
Millbrook’s Senior Engineer, Vehicle Measurement Group

About us

nCode products are provided by HBM, a world-wide technology and market leader, offering products and services across the entire measurement spectrum, from virtual to physical. Since 1982, nCode is the leading brand for durability and data analysis solutions. Its technologies help customers understand product performance, accelerated product development, and improve design. The power and ease of use of HBM technologies is a direct result of its world-class development process, expertise, and in-depth experience of a broad range of industries. nCode product development is ISO9001 certified. Product support is available through HBM-nCode offices in Europe, North America, and Asia.

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