King of the Road in the Diesel Aftermarket

Delphi Diesel Systems, an international division of Delphi Automotive Systems, boasts a 70-year history of innovative leadership in diesel technology. Formed in January 2000 when Delphi acquired Lucas Diesel, the division is solidly built on the strong history and technology of leading companies including CAV, Simms, RotoDiesel and Condiesel.

It provides diesel engine components to customers in more than 100 countries via its channel of 3000-plus distributors. And its products help thousands of businesses that rely on the automotive and trucking industry, making Delphi the king of the road when it comes to high-quality diesel engine products.

Industry: Automotive
Using the MISRA C compliance module from PRQA, Delphi Diesel is achieving:

• Higher software quality – from day one
• Outstanding final product quality
• Engineering staff excellence and consistency
• Extremely high marks in customer satisfaction
• A distinctive reputation as the global diesel quality leader
Today’s diesel engines represent a new breed—incorporating the latest advances in software technology to become highly refined and tuned machines, designed to deliver high performance over longer lifetimes. Achieving such performance is no small task and demands that products be reengineered from the ground up. In an industry where high tech and electronics play an increasingly significant role in product quality, Delphi Diesel leads the pack in adopting cutting-edge technology for the advancement of automotive performance and reliability.

Following its early adoption of the Motor Industry Software Reliability Association (MISRA) standards for product quality, Delphi Diesel found itself challenged to intensify its focus on quality assurance of the software that was becoming an increasingly significant element in its products’ performance. Historically, the company had relied upon a combination of manual code review and a variety of software testing tools in the code development process.

Stuart Jobbins, head of software development for Delphi Diesel, knew it was critical to the company’s continued success that all software incorporated into its products be of the highest possible reliability. As a veteran with years of experience in improving software quality, Stuart realized that one type of methodology was the most efficient and effective: deep static code checking.

“Delphi Diesel was looking for something better than Lint-type syntax checking tools—we needed a high-functionality automated code checking solution.”

– Stuart Jobbins, Delphi Diesel

A New Solution for a New Set of Standards

Stuart tackled the challenge with his characteristic passion for improving quality and soon reencountered Programming Research (PRQA), a company he was familiar with from previous defense industry work. As he looked further into PRQA’s capabilities for improving the software development process, he soon discovered that PRQA’s work was not only leading the software quality industry as a whole, but formed the very foundation of the MISRA standards that Delphi Diesel had chosen to adopt.

PRQA’s solution for enforcing MISRA standards in the Windows® environment consists of a MISRA-specialized module of its QA·C product, which was quickly put to the test in Delphi’s labs. Stuart soon realized the clear gains in software quality that PRQA’s MISRA Compliance Module (MCM) would yield, and he swiftly moved to obtain initial licenses to begin using MCM at Delphi’s primary software development facility in Gillingham, UK. After a rapid and smooth initial implementation at this site, he extended licensing and mandated the use of MCM at all of Delphi’s European software development facilities.

“Since we began using the QA·C MISRA Compliance Module, the quality and consistency of our first generation code has skyrocketed, and our final products have been virtually error-free.”

– Stuart Jobbins, Delphi Diesel
QA·C–MISRA Keeps Delphi Diesel Humming

True to his expectations, Stuart soon began seeing dramatic improvements in “first-draft” software quality. One of the key benefits he observed was the ability of PRQA’s product to obtain uniform output quality from all software development engineers – regardless of their individual experience level. By automating the review process according to select standards, every engineer’s code quality was measured to the same standard, so that a veteran of 25 years or a recently minted software developer was able to achieve the targeted quality levels rapidly.

Although Delphi Diesel does experiment with other code-testing products on occasion, it is firmly committed to MCM for daily use in its product software development. Stuart has noted clear and significant benefits for Delphi Diesel. One of the most important results is that Delphi Diesel has absolutely no software quality issues or complaints about its products, in contrast to some of the competition. Stuart credits PRQA with playing a key role in developing this level of product integrity.

In a market environment in which reputations depend so greatly on product reliability, Delphi Diesel has set itself apart and increased its global market share and leadership.

“In terms of software code-testing, I don’t believe there’s a better tool than QA·C out there.”

– Stuart Jobbins, Delphi Diesel

Quality Software Begins with Quality Partnerships

Looking back on the process of finding, testing and implementing MCM, Stuart notes that PRQA was able to provide the information, support and solutions Delphi Diesel needed in a comprehensive and effective manner. From initial demonstrations of the product, to implementation, to ongoing support, PRQA has been highly available and ready with the answers Delphi has sought.

In fact, Delphi has come to rely on PRQA for even higher levels of support. The company now sends every software engineer that works on products to PRQA to attend its “High Integrity C” training course, which over 36 Delphi engineers have completed to date. Delphi also uses PRQA as a sounding board to discuss its needs for future product releases.

In PRQA, Delphi has found a reliable and flexible partner across the board, from licensing arrangements to new product development directions. Obtaining rapid technical support from product experts at PRQA has also been a great asset to Delphi in its ongoing and increasing use of MCM.
When considering the measurable returns from using PRQA’s solution, Stuart holds out Delphi’s stellar reputation among diesel components providers as a key value benefit. At a time when other providers in the industry have received negative press for product quality issues related to software, Delphi Diesel has been untouched by such damaging reports. In fact, Stuart emphasizes that he has no significant software issues with any of his customers, a valuable competitive distinction that will serve to solidify his customers’ loyalty.

In providing products for which reliability is a critical requirement, Delphi has always been viewed as a world leader. Now, by using MCM, Delphi is poised to remain king of the road – with PRQA riding shotgun all the way.

PRQA provides Delphi Diesel with the tools it needs – to be the world’s leading provider of highly reliable diesel engine components.

A High Horsepower Solution, Generating High Value

Contact Us
For further information regarding QA·C, QA·C++ and QA·Verify and compliance module add-ons, please contact QA Systems at info@qa-systems.com where appropriate QA Systems will re-direct you to Programming Research Ltd.

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QA·C, QA·C++ and QA·Verify, offer the closest possible examination of C and C++ code. All contain powerful, proprietary parsing engines combined with deep accurate dataflow which deliver high fidelity language analysis and comprehension. They identify problems caused by language usage that is dangerous, overly complex, non-portable or difficult to maintain. Plus, they provide a mechanism for coding standard enforcement.