



DESKTOP ENGINE SIMULATOR

THE CHALLENGES

The development process for any engine or machine manufacturer requires multiple iterations of software to be designed and tested in a range of lab and real use situations. While working with a large construction equipment manufacturer on validation of their TierIV system LTTS Engineers discovered an issue with flashing development software onto an engine control module. The normal progression of development software involves activating an increased number of fault detection routines. Upon installing a newly released version of software it was discovered recently activated fault detection routines set performance limiting fault codes that could not be cleared from an engine control module until it was connected to an engine and highly regulated overrides could be entered to clear the performance limiting codes. This was a potentially costly issue that could delay software development.

THE SOLUTION

LTTS Field Follow Engineers determined a device was needed to imitate an engine so fault codes would not be activated during software flashing. The device would need to be small enough that it could be placed on a desktop and be transported in a suitcase. LTTS engineers researched potential installations of the ECM and developed a desktop engine simulation box that could mimic all the sensors and dashboard inputs this version of engine control module would encounter when installing in a machine. The desktop engine allowed engineers to both install software onto engine control modules without activating faults but also validate dashboard control inputs.

BENEFITS DELIVERED

The ability to install software on engine control modules without the need to have them connected to engines increases validation time and reduces costs. LTTS worked with this machine customer to develop an easily transportable device that would allow ECM to be flashed without activating any power limiting codes. The desktop engine simulation box was used hundreds of times at multiple locations without issue and continues in use today.

ABOUT TRUCKS & OFF-HIGHWAY VEHICLES

L&T Technology Services has progressively engineered solutions for a wide spectrum of truck & offhighway manufacturers, including agriculture, commercial & utility vehicles, polymers, and construction, mining, and material handling equipment. We deliver efficiency, productivity, and safety in vehicular engineering options for the drivetrain products in the domain of modeling and simulation, embedded software and sub-systems' design service, component engineering, reliability evaluation, value engineering, reverse engineering, testing, and verification & validation services in addition to the product sustenance support.

FIELD FOLLOW ENGINEERING

Global Reach

- Engineers and Technicians are available with international field engineering experience

Validation Services

- Verification of software functionality and sustainability
- Verification of hardware fit, function, and durability
- Resolution of software issues found in field durability activities
- Resolution of hardware failures found in field durability activities
- Logging data from engines and machines in field
- Services to support issue identification and resolution

Data Acquisition Experience

- Vector CAN case
- HBM SoMat eDAQ
- National Instruments
- Gantner Instruments

Test & Validation Services

- **Full Field Support Data Center**
 - Electronic Request for support
 - Full machine and customer history
 - Direct link to machine DAQ systems and data
 - Complete report of every service provided
- **Hardware Supplied**
 - Complete set of hand tools to support hardware validation
 - Vector CAN cases for software validation Multi-meters for validation and troubleshooting electrical systems
 - Cameras for documenting issues
 - Cell phones for ease of communication
- **Software Supplied**
 - Vector CAN ape
 - Complete office suite
 - Issue tracking database
- **Travel Support**
 - Internal systems allowing for complete travel support with discounted costs for major airlines, hotels and rental car companies
 - Internal system for acquisition of work visas required to support validation activities in multiple countries

