Electrical Systems Configuration and Test

Features include:

- Visual inspections
- Current measurements
- Vehicle link communications
- Barcode/part number comparisons
- Current/link combinations
- Client/server architecture
- Wireless (802.11b) current measurement device
- Vehicle communication interface support for J1850 and CAN protocols
- Hand-held operator interface terminal
- Web-based interface for test authoring and configuration
- Fully redundant server architecture with real-time mirroring
- Multilingual support
- Comprehensive QA reporting

Dynetics’ systems provide comprehensive and flexible methods for ensuring quality electrical content on a vehicle. To accommodate the need for near real-time software changes, manufacturers can flash program modules on the assembly plant floor as well as easily verify and validate the performance of the electrical content on their vehicles. Test methods include current-based test (CBT) and vehicle module (link-based) diagnostics. These tests permit the detection of electrical problems before vehicles are shipped to consumers, reducing warranty costs and improving quality metrics. The web-based reporting system accommodates easy management of the test results.

These systems are designed to integrate into customers’ existing wireless (WLAN) and wired (LAN) networks. By interfacing with various plant systems to obtain vehicle build content information, the test system can determine each vehicle’s options, thereby ensuring tests will be executed as specified by a customer’s test standards only for those options present. Each test is programmed into a centralized test database using a web-based authoring and configuration tool. Tests are arranged into a test sequence and then transmitted wirelessly to the Portable Test Unit (PTU), eliminating the need for operators to have to memorize test sequences and assuring that each vehicle option will be tested.

Using Dynetics’ electrical test systems, manufacturers have been able to significantly reduce the number of vehicles shipped with warranty-related electrical problems. Manufacturers have reported as many as 10 to 20 electrical warranty reductions per thousand. The effectiveness, ease of use, and adaptability to plant
needs are the features that make Dynetics’ electrical test and configuration systems such a valuable asset to vehicle manufacturers.

**Link-based testing and configuration**

Dynetics’ electrical test system is designed to configure and test vehicle electronic control units (ECUs). Utilizing either the PTU platform or the Operator Hand Terminal with Link-Based Trim Station, the system communicates directly with on-board ECUs through the vehicle’s OBD II connector to perform a variety of functions.

Features of the system include:

- Memory block configuration
- Flash programming
- I/O reads (PID, DPID, DMR, etc.)
- Custom tests (emissions or other subsystems)
- Code check
- Part number check
- Self-tests

Link-based tests are set up and configured through a centralized, web-based configuration management system. The system can also provide for automated module specification data uploads into the central database, which makes system setup and maintenance straightforward and uncomplicated.

**Current-based testing (CBT)**

The Dynetics CBT system allows users to define the characteristics of vehicle electrical circuits and objectively measure the performance of those circuits against their predefined characteristics. The testing activities are controlled by a hand-held terminal that prompts the operator through a series of electrical circuit activations. In real time, the operator terminal coordinates the measurement of those circuits with the Wireless Battery Interface Unit (BIU) and makes pass/fail determinations on the performance of the circuit.

**Web-based reporting system**

Dynetics’ web-based reporting system makes process tracking and improvement a quick and painless process. A variety of filters and reports with drill-down analysis have been developed to make data mining effortless. Many reports are capable of auto updating and can drive quality-focused displays. Data can be stored in a variety of databases that meet customer requirements. The flexible architecture of the system makes adding new customer reports a simple process.

**Just-in-Time module flash programming**

The Dynetics Flash Station provides 100 percent error-proofed ECU software downloads with minimal operator input. The station can be used in conjunction with a server to automatically sequence ECU flashing to assembly line order and provide performance results to plant quality systems. It may also be used in a stand-alone operating mode to give the user the choice of software to flash. The flash station enables just-in-time delivery of the latest ECU software to the plant floor at the point of module installation. Suppliers can provide modules with a single generic software configuration. Plant stock is reduced to a minimum and engineering changes get implemented in real time, eliminating scrap and rework.

The station consists of off-the-shelf, industrial-rated components, UPS, PC, and touch-screen display. It provides quick-look status lights, as well as a detailed graphical user interface showing ECU information and flash progress. It contains six independent CAN channels to allow for parallel flashing of multiple modules. It is also equipped with a Zebra label printer for printing updated ECU labels, as well as barcode scanners for label verification.