BLOOMY®

Automated test solutions for the entire product lifecycle

Vehicle Management System Test Platform

Real-time HIL test of Vehicle Management Systems for novel and traditional aircraft types

The Vehicle Management System Test Platform provides a hardware in-the-loop (HIL) closed-loop test environment for dynamic test of VMSs for electric, fueled, commercial, military, rotary, fixed-wing, piloted and unpiloted types of aircraft. The system provides a real-time environment to simulate all aspects of a vehicle under control of a VMS, including navigation, stores, environment, weapons, flight surfaces, fuel, propulsion, and brakes. In combination with our battery cell simulator instruments, this capability is extended to battery management and power systems control as well.

By leveraging commercial, off-the-shelf components in combination with a new mechanism for system design and construction, the Vehicle Management System Test Platform delivers repeatable, cost-effective testing in a fraction of the time needed for delivery of typical in-house simulation test systems.

The Vehicle Management System Test Platform is based upon the BLOOMY® Simulation Reference System which reduces overall lifecycle costs and creates a common test platform for closed-loop test systems in System Integration Laboratories (SILs).

APPLICATIONS

- Vehicle Management Systems verification and validation
- System Integration Labs (SILs)
- Development, production, or maintenance testing
- “Fly the Box” test of customer return material
- Development of control laws prior to airframe test
- Environmental Stress Screening (ESS)/ Highly Accelerated Life Testing (HALT)

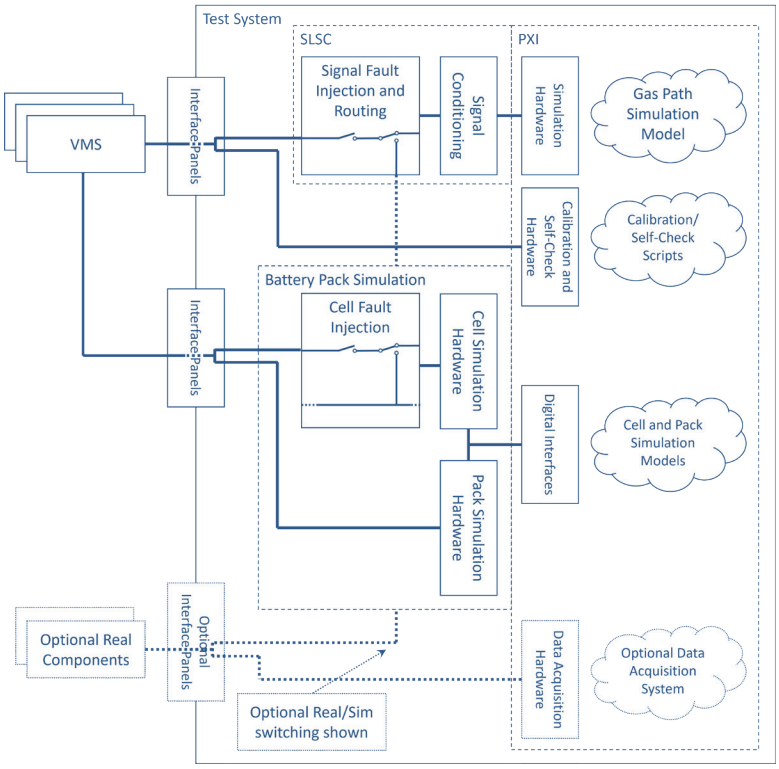
FEATURES

- Simulation environment for comprehensive VMS testing
- Pack and cell-level simulation for complete energy storage subsystem testing
- Analog I/O including thermistor, RTDs
- Actuator loads including inductive solenoids, torque motors, and indicator loads
- Discrete switch signals including open/ ground, open/Vcc, open/closed
- Available digital communications including ARINC-429, MIL-STD-1553B, serial
- Simulation-controlled variable DC power supplies; optional 1Ø/3Ø AC supplies
- ThroughPoint™ Interface Panels with integrated breakout box functionality

SPECIFICATIONS

SIGNAL CONDITIONING AND COMMUNICATION I/O	
Interface Type	**Channels**
VDT/Resolver simulation (4W, 5W, 6W)*	8
Thermocouple simulation*	8
RTD simulation*	8
Thermistor simulation	8
Loads (torque motors, solenoid, lamp, etc.)*	16 (8x <5W, 8x >5W)
Discretes (one-wire and two-wire)	32
Differential analog outputs to UUT	8
Potentiometer/variable resistor simulation	8
RS-422	2
ARINC-429	8
MIL-STD-1553B	Optional
IRIG B	1
Ethernet Test Bus	Optional
DC Power	2
AC Power	Optional
BATTERY SUBSYSTEM	
Up to 800V pack voltage simulation	
Individual cell sink/source of 500mA	
Bulk power via DC supply	
FAULT INSERTION	
*Open circuit fault included.	
Other fault conditions (short to ground, pin to pin short, etc.) optional for all signal types	

SYSTEM BLOCK DIAGRAM



COMPUTING RESOURCES	
Real-Time Simulation Host	PXIe-based, RTOS, up to 8-Core Xeon
Instrumentation and System Management	PXIe-based, Windows, up to 8-Core Xeon
SOFTWARE ENVIRONMENTS	
Real-time Framework	NI VeriStand
Test Executive	NI TestStand
Data Acquisition and Programming	NI LabVIEW, C/C++
Data Management and Analysis	NI DIAdem
Supported Software Models	C/C++, Simulink, FMU, LabVIEW
SYSTEM DIMENSIONS AND POWER	
System Chassis	1- or 2-bay 40U equipment racks
1-bay:	approx. 78”H (w/locking castors) x 23”W x 36”D
2-bay:	approx. 78”H (w/locking castors) x 46”W x 36”D
Weight	Configuration dependent
Power Requirements	Power requirements vary with selected AC and DC power supply options
Emergency Power Off	Standard
Uninterruptible Power Source	Standard for all computing resources
WARRANTY	
1-year warranty on all hardware components, optional extended available	

Call 860-298-9925 or visit
www.bloomy.com

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