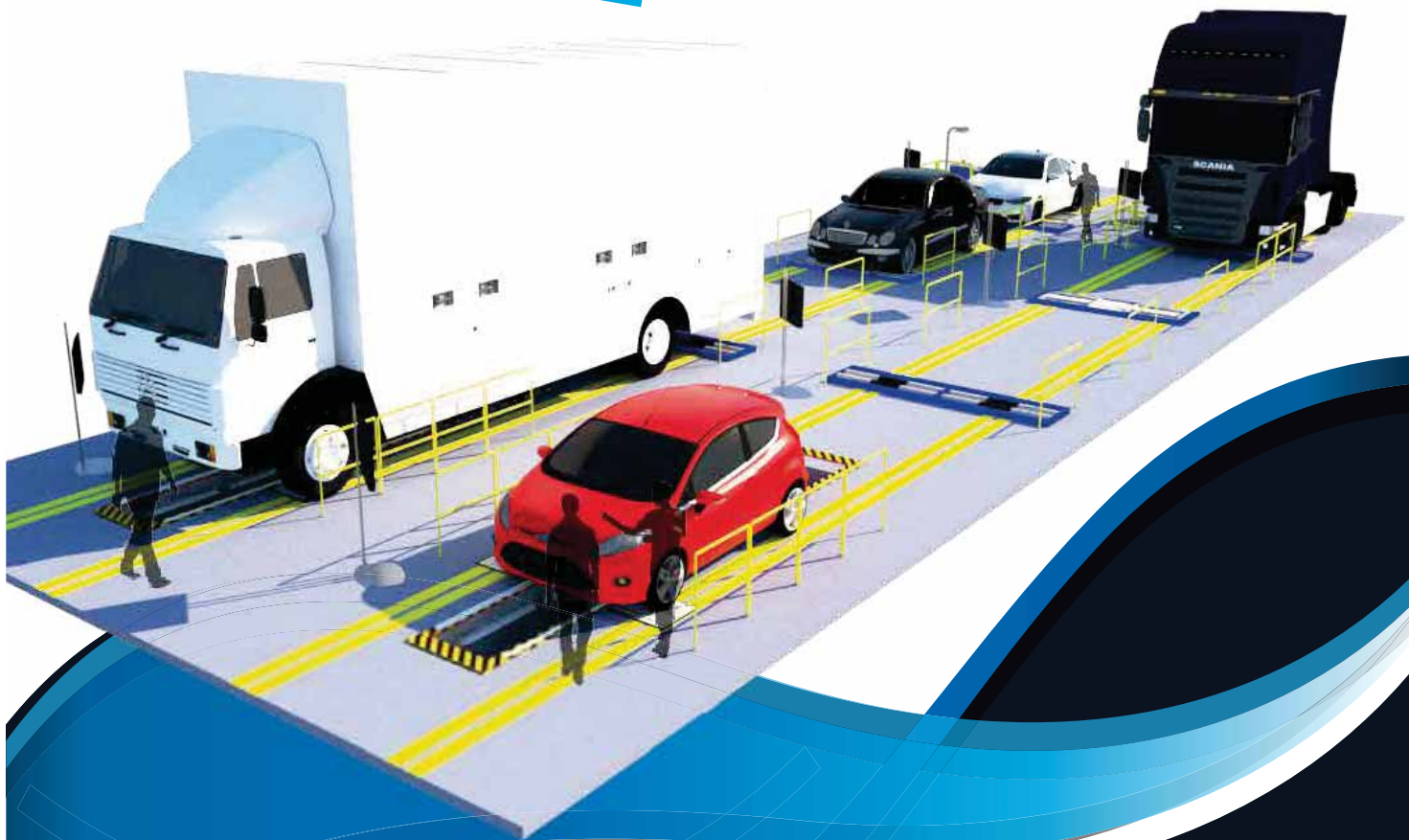


# VEHICLE INSPECTION SYSTEM



**MUSTANG  
ADVANCED ENGINEERING**

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# VEHICLE INSPECTION TECHNOLOGY

## MUSTANG VEHICLE INSPECTION SYSTEM



### OVERVIEW

Mustang's (MAE) experience has positioned it as the world leader in design and manufacturing of rugged hardware and software from Vehicle Inspection System and Testing industry. MAE has centralized testing lanes installed from hot to cold and wet to dry. At the turn of the century, it was estimated that nearly 500 million vehicles had been tested on Mustang's supplied equipment.

Mustang is certified to ISO 9001-2015.

Automated inspection equipment keeps customer wait times to a minimum and also removes opportunities for fraud by reducing the subjectivity in the inspection process.

### FEATURES

Continuous improvement leads to innovative solutions based on the knowledge of design, service, maintenance, ergonomics and overall functional capabilities. Mustang's Centralized Inspection equipment is designed for our customer testing demands:

- ✓ Flexible, Accurate
- ✓ Long lasting, Durable & Reliable
- ✓ Low maintenance, modular design and intuitive
- ✓ Automated Calibration routines
- ✓ Efficient Vehicle Processing



### ELECTRONIC HEADLIGHT TESTER

The MD-HLT-AU headlamp aimer is fully automated system that provides factory precise analysis to the automotive after markets.

Standard, auxiliary, fog, rectangular, round, or aerodynamic headlights can be precision aimed on low or high beams, regardless of size.

The measurements are automated with data passed to the system computer for pass/ fail analysis.

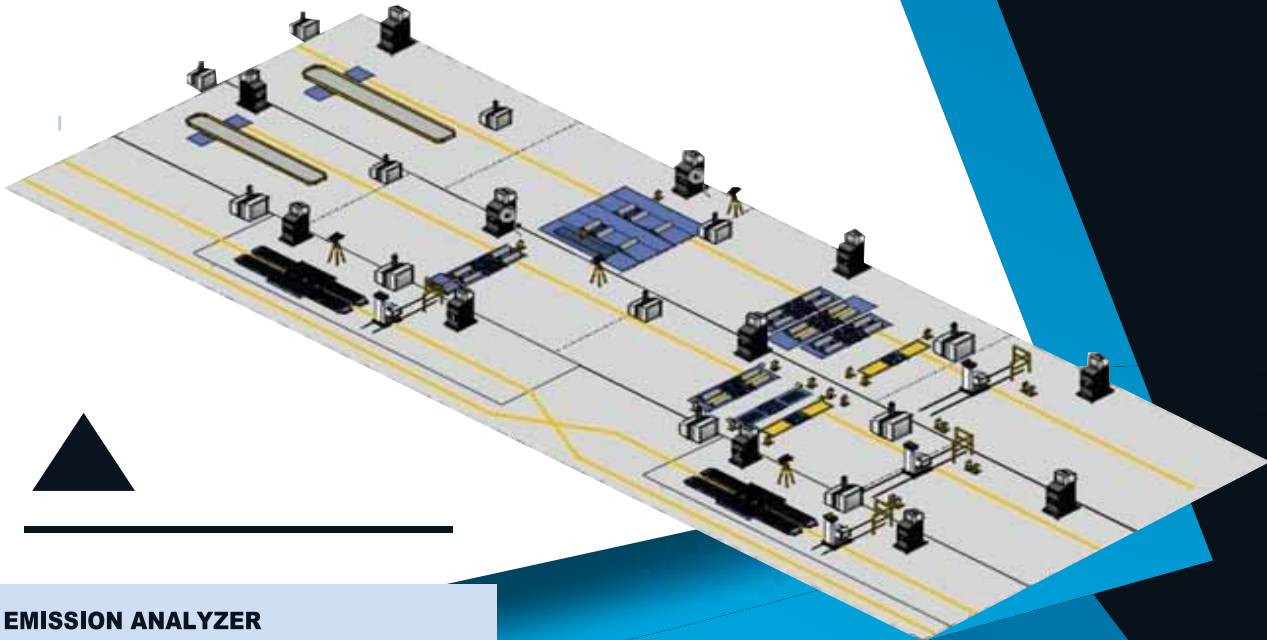


### UNIVERSAL (LD/HD) BRAKE TESTER

The MD-13K-BT brake tester is designed to measure the braking force of the individual sides of the heavy duty vehicles.

Measurements are fully automated and test results are passed to the system computer for pass / fail analysis.

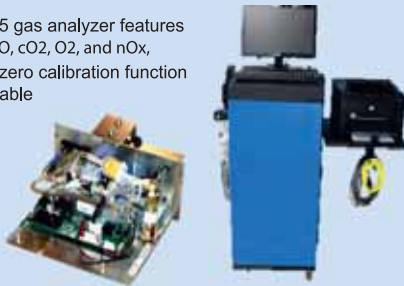
The integrated pop-up safety bars, or wheel locks, will not allow activation while rolls are in motion and as a safety precaution, will shutdown the brake test if a vehicle rides out of the brake tester.



### EMISSION ANALYZER (GASOLINE VEHICLES)

The Mustang 5 Gas Analyzer is BAR97 and is compliant with the updated EPA ASM specifications including accuracy test procedures, response times, and self-audit functions.

- > The 5 gas analyzer features Hc, cO, cO2, O2, and nOx,
- > Self zero calibration function available



### EMISSION ANALYZER (DIESEL VEHICLES)

Mustang's Diesel Opacity Smoke analyzer is designed to measure particle content of a diesel engine exhaust. It is interfaced to the computer via cable allowing automated testing and accurate smoke opacity analysis.

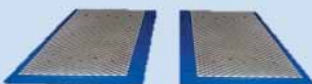
The diesel opacity meter is designed as a reliable and portable meter for light and heavy-duty diesel vehicles.



### AXLE PLAY DETECTOR

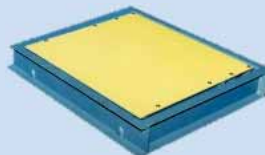
The MD-13K-JP heavy duty joint play tester is designed for visual inspections of the mechanical condition of axle components on heavy duty vehicles. The stub axles, steering pivot points, suspension, hinge points and bearings all can be inspected while hydraulic rams induce 45° movements.

- Hand held pendant with flashlight and built in controls
- High friction wheel surface
- Hydraulic rams induce transverse and longitudinal movements



### SIDE SLIP TEST

The MD-13K-AT1 heavy duty alignment tester is designed to measure a vehicle's front wheel alignment. As a vehicle's front wheel passes across the plate, fully automated measurements are taken and then passed to the system computer for pass/fail analysis.



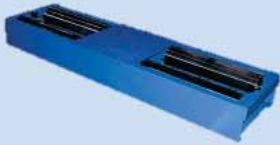
### SUSPENSION TESTER

The MD-03K-SH light duty suspension tester uses a vehicle's suspension system. The equipment weight to measuring the percentage adherence as well as coefficient of damping of a vehicle's utilizes an innovative model analysis method and features consistent repeatability and ease of operation. The plates are covered with special rubber mats to prevent infiltration of water and debris.



### SPEEDOMETER TESTER

The MD-13K-ST Heavy Duty Speedometer designed to test the accuracy of a vehicles speedometer. The integrated lift/ lock device has safeguards which will not allow activation while rolls are spinning. Software will provide speedometer in 5mph increments from 25 to 125mph. Computer prints test results. In addition, daily and weekly summary reports can be generated.



### SOUND LEVEL TESTER

The MD-SLM-01 portable sound level meter is designed to accurately measure ambient noise conditions, particularly vehicle exhaust noise. The meter is designed to meet IEC 651 type 1, DIN 45633, JIS 1502, ANSI S1.4 type 2 and conforms to A or C decibel weighting scales.

#### Features:

- Portable metering
- Digital display
- Integrated analog output
- Internal oscillation system calibration
- Positioning stand



### MVS DATA ENTRY PLATFORM

MIVS Data Entry Platform to recall existing data or create new database. It comes with 32" Monitor with a keyboard an wireless mouse set.

Portable Trolley set is available as optional item.



### LARGE OVERHEAD MONITORS 32"



Each test stage has number of large overhead monitors for display instruction for driver, real-time measurement data and test results

### MUSTANG VEHICLE INSPECTION SYSTEM (MVIS) SOFTWARE FEATURES & CAPABILITIES

1. MIVS Software is real-time monitoring / data access and allow manual key-in (input) during inspection system.
2. Source Code / Software Architecture complete with Bloc Diagram will be given to allow client access for enhancement and future improvement.
3. Software (Universal) able to communicate, compatible and configure with 3rd party equipment without major modifications.
4. Upgradable to server center system to centralize and optimize inspection database.
5. Software is user-friendly, simple and upgradable

### MVIS TESTING SEQUENCE

- |                |                                                                                                                                                                                      |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Stage 1</b> | MIVS Data Entry Platform to recall existing data or create new database                                                                                                              |
| <b>Stage 2</b> | Emission Test for Gasoline Vehicles (5 Gas Analyzer System)<br><br>Emission Test for Diesel Vehicle (Opacity Meter)<br><br>Automatic HeadLight Beam Tester<br><br>Sound Level Tester |
| <b>Stage 3</b> | Side Slip Tester (Alignment Tester)<br><br>Brake Tester<br><br>Suspension Tester                                                                                                     |
| <b>Stage 4</b> | Speedometer Tester                                                                                                                                                                   |
| <b>Stage 5</b> | Inspection Pit<br><br>Axle Play Detector                                                                                                                                             |
| <b>Stage 6</b> | Test Report Printing                                                                                                                                                                 |

## CAPABILITIES

The hardware and software comprising the Mustang MVIS is the product of Mustang Dynamometer. The systems employ state-of-the-art technology, are extremely modular, and yet are designed to withstand the punishment of a centralized vehicle inspection program. The software package supplied will perform safety and emission inspections. The system software is very flexible, being developed in a modular fashion under the latest operating system. The software package can easily be changed to support additional equipment and changes to testing protocols.

The description of the MVIS may reference a Vehicle Information Database (VID), which would be a centralized database networked to various quantities of testing facilities/lanes. This database typically contains registration information, owner information, and previous test results of vehicles that have been tested. The VID also ensures that all facilities/lanes operating in a test program are performing inspections in the same manner by housing all inspection criteria, pass/ fail cut- points, calibration data, and the other settings on the central database.

The VID is capable of remotely configuring any or all MVIS lanes connected to the network. The tests and inspections to be performed on tested vehicles, as well as the requirements for passing each test, can be set by the VID during communications sessions with MVIS testing lanes.

The Open Software Architecture of both hardware and software allows integration of 3rd party test equipment and an future test system. In order to guarantee the validity of the measured data and to save the information, all the equipment which measures a value is connected to the system control computer.

All data collected, whether automatic or manual, is associated with the inspector's ID and stored together with all the results of tests performed on the vehicle. This info. is stored in the system control computer. The Pass Fail criteria of a test is automatic and not editable by the inspector.



The following equipment items are available in Mustang's MVIS lane

- 5 Gas Emission Analyzer for Gasoline Vehicles
- Smoke Tester (Opacity) for Diesel Vehicles
- Sound Level Tester
- Fully Automated Headlight Beam Tester
- Side Slip Tester
- Brake Tester (LD/HD)
- Suspension Tester
- Speedometer Tester
- Axle Play Detector Tester (Joint Play Detector)
- Visual Inspection Data Equipment
- Test Result Monitor, Printer
- Centralized Vehicle Data System
- Calibration Equipments for Tester
- Virtual Reality (VR)

## ADVANCED ENGINEERED TESTING SOLUTIONS



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