

Supplier Scouting Opportunity

Item to be scouted: small-engine test cell hardware and software upgrades

Days: 30

Item description: Engine test cell hardware, software, and services to include:

- Test automation system (hardware/software to automate engine tests including dyno operation, data acquisition/processing, and report generation)
- Dilute exhaust emissions analyzer bench capable of measuring criteria pollutants (CO, HC, CH4, NOx, N2O) in compliance with CFR requirements
- Constant volume sampling system with automatic selection of flow rates
- Dynamometer controllers for operation of eddy current dynamometers ranging from 5-30 horsepower
- Services to include delivery, installation, integration with existing test cell systems, commissioning, user training, and project management

NAICS code: 423120

Technical Information

Supplier Information

Type of supplier being sought: Manufacturer/installer/project manager

Reason for scouting submission: Seeking products made in USA

Summary of technical specifications and performance requirements

Describe the manufacturing processes (elaborate to provide as much detail as possible): Electrical and Mechanical assembly. Seeking upgrades for a small-engine test cell, including:

- A test automation system (hardware/software to automate dynamometer operation, data acquisition/analysis, and test report generation)
- A constant-volume emissions sampling system
- A dilute exhaust emissions analyzer bench
- Controllers for eddy-current dynamometers -Training on the operation of all provided hardware/software

Provide dimensions / size / tolerances / performance specifications for the item:

Test Automation System Basic Requirements

- Perform tests compliant with 40CFR§1065 and 40CFR§1054
- Test cycles:

- Standard 6 mode test for non-handheld engines
 - Standard 2 mode test for handheld engines
 - Ramped Modal testing – number of modes definable by EPA
 - Steady state testing
 - Continuous logging
- Automate tasks such as pre- and post-test analyzer calibration, leak checks, and ambient bag sampling
- Contractor will be responsible for integrating the Test Automation System with 4 existing dynamometers, a new CVS system, and a new exhaust analyzer bench
 - Existing Dynamometers
 - Dyno 13: DyneSystems MW-66-1: 30hp, eddy-current absorber, vertical shaft, DynLoc IV controller and serial communication equipped with DyneSystems DTC-1 Dyno Throttle Controller
 - Dyno 14: DyneSystems MW-66-1: 30hp, eddy-current absorber, horizontal shaft, DynLoc IV controller and serial communication equipped with DyneSystems DTC-1 Dyno Throttle Controller
 - Dyno 15: DyneSystems MW-46: 10hp, eddy-current absorber, horizontal shaft, DynLoc V controller and LAN communication
 - Dyno 16: DyneSystems MW-3HS: 5hp, eddy-current absorber, horizontal shaft, DynLoc V controller and LAN communication
- Data acquisition
 - New DAQ hardware for 4 dynamometers
 - Only one dynamometer will be running at any given time
- Each set of DAQ hardware must include (at minimum):
 - Thermocouples: 4 K-type, 4 J-type
 - Relays to automate grounding of ignition coil/fuel system for engine shutdown
 - Analog/Digital Input/Output capability
 - Voltage
 - Current
 - Counts
 - 12V/5V source
 - Basic Safety String capability
 - Dyno cooling loop pressure switch relay
 - Dyno cooling temperature
 - Vibration Switch relay
- Test Data Import/Output
 - The system must import engine specific data from an *.xlsx document on the facility's laboratory network
- The system must process test reports
 - Allow EPA staff to assign weights to each mode of non-standard testing
- Electrical
 - Clean power is available within the control room for computer equipment
 - 120/208V is available in the control room and at the test cell dyno stands
 - 480V 3Ø available in the mezzanine above the test cell

- CVS system Basic Requirements
 - Contractor must integrate CVS with the Test Automation System
 - Must fill a bag with an ambient sample for post-test analysis, transfer method to the dilute exhaust analyzer bench must be included
 - System to provide automated flow rate selection of a minimum of three flow rates:
 - Approximately 100 CFM
 - Approximately 350 CFM
 - Approximately 700 CFM
 - The existing Spencer blower (15hp blower) in the mezzanine is to be retained unless an upgrade is necessary to achieve the requested flow rates. The mezzanine flooring is not structural, a new blower would require a support structure. The existing CVS duct network is to be retained

- Dilute exhaust emissions analyzer bench basic requirements
 - Must be capable of measuring background concentrations during automated testing, consistent with CFR§1065 requirements
 - Must measure exhaust gas pollutant concentrations in the following ranges:
 - CO: 0-500 PPM, 0-1%
 - CO2: 0-1%
 - THC: 0-100 ppm, 0-500 ppm
 - CH4: 0-100 ppm
 - NOx: 0-25 ppm, 0-100 ppm
 - N2O: 10 ppm
 - Must include an external bag read port on front panel
 - Must be capable of automatic range selection
 - Must include option to purchase gas divider for linearization
 - Window to exercise option: no more than 30 days after contract award

- Dynamometer controller(s) basic requirements
 - Provide/install controller(s) and associated hardware as necessary to operate all four eddy current dynamometers (only one dyno in use at any given time).
 - Must be capable of speed-control and torque-control modes
 - Integrate with new Test Automation System
 - Window to exercise option: no more than 30 days after contract award

- Training
 - Contractor must provide training for a small group of users to cover the operation of all new equipment

List required materials needed to make the product, including materials of product components:

Various electrical and mechanical components.

Are there applicable certification requirements?: Operation, measurements, and calibration of this equipment must comply with CFR§1065 requirements

Are there applicable regulations?: No

Are there any other standards, requirements, etc.?: No

Additional Comments: N/A

Business Information

Volume and pricing

Estimated potential business volume:

- 1 Test automation system
- 1 Constant volume sampling system
- 1 Dilute exhaust emissions analyzer bench
- 4 dynamometer controllers

Estimated target price / unit cost information (if unavailable explain): Estimated total: \$1M

Delivery requirements

When is it needed by?: Spring 2024

Describe packaging requirements: None

Where will this item be shipped?: Ann Arbor, Michigan (USA)