

## EMAS II – QA Specifications

To help our customers improve productivity and quality in the area of catalyst aging Dynamic Control is considering developing additional software and hardware to upgrade the EMAS II to meet or exceed any requirements the OEMs will demand. Please read over and provide any feedback.

### QA Package:

#### Data Acquisition:

Although the EMAS II currently performs data acquisition, additional channels are going to be required to meet upcoming requirements. The lists of the channels currently specified are:

#### Channels:

- 2 - Inlet Temp L, R
- 2 - Mid Temp L,R
- 1 - Engine speed
- 1 - Vac
- 1 - Mass air
- 2 - AFR L R
- 4 - EGOs (UEGOs)
- 1 - Torque
- 1 - inlet water temp
- 1 - Fuel rail pressure
- 2 - Back Pressure L, R
- 4 - Underbody temps Inlet Mid L and R
- 1 - mode number
- 1 - TP
- 1 - Battery
- 12 - IPW
- 12- Spark angles

These channels are going to be recorded in FLASH ROM at 10Hz. They can be downloaded in various frequencies after the test is completed.

In addition, a common data format encoded in binary will be used for the final data set, however summary trend graphs, histograms, etc... will be downloaded and stored on the PC hard drive in a more conventional format.

#### Modal Analysis:

The improvements to the modal analysis are going to allow the trend to be displayed in real time, in addition the AFR traces, temp traces, and TDF are going to be displayed in real time to allow a user to observe trends. An engineer or super tech will monitor these graphs from all cells on a special PC to help assure quality.

#### On demand histogram display:

These graphs will be improved to allow for additional channels, real time display, and on the fly re-scaling helping quantify any anomalies.

#### User definable screen / graphs:

In addition to the existing fixed screens, new fixed screens will be added for modal graphs, detailed temp and AFR, and TDF display. Also, user definable screens will be added to allow users to plot various signals against each other to help identify trends during debugging or analysis of special tests.

#### Strip chart display:

Strip charts are going to be eliminated. However, to guarantee the tests results are being collected, FLASH ROM will be added to the EMAS II system to log the data. This will assure error free, secure, detailed, and efficient data collection. The data can then be sent down to the PC at the end of a test or in small packets during the test. The ability to save the data in ROM will allow for the rapid display of a required data in strip chart form during the running of a test without compromising the test. The strip chart can also be scaled in amplitude and time to allow for trend identification.

Finally, a dual time base for the strip chart will be added on one of the fixed displays to allow for detail examination of the waveforms and trend identification.

#### High Speed Internet Connection:

Internet link for file transfer, technical assistance, upgrades, remote test monitoring will be required.

The first line of service will be the internet, service will be requested via internet, our technicians will utilize this tool first before making a service call to save time and money. (Net Meeting)

In addition, all real time trend data will be available so engineers can monitor progress.

Furthermore, final data and reports will be submitted via the Internet link.

#### EMAS II function without an EEC:

To help assure the customer is protected against changing engine technology, a common engine control package will be produced which will allow the EMAS II QA to run an engine (properly outfitted) without an EEC. This will take some time to complete, but we feel the capability must be present to maximize the investment in the EMAS II QA.

#### Odds and ends:

Upload / download to flash for test continuation  
Individual histograms for each step 1,2,3,4  
Flash Capacity: 50 channels at 10Hz for 300 hours  
Injector PW summations for left and right side.  
Ideal wave overlays (may not be in the final QA package)  
Emission bench interface (IP Ethernet Based)

