Rolling Road Data-Logger

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APPLICATION NOTE

KEY WORDS AND TOPICS

- New engine test and development
- Engine Tuning and Vehicle Preparation
- Performance road car development
- Rolling Road Modernisation

REQUIREMENT

During 2005 Stack were approached by Lynx AE, a vehicle preparation and tuning company in the UK, who were in the process of updating their rolling road system. Lynx AE had researched the market for a suitable upgrade to their rolling road diagnostic equipment. After receiving quotations for a number of products they decided to investigate the possibility of a cheaper alternative . The owner of the business was already familiar with Stack equipment and contacted us to enquire whether we might be able to offer a more cost effective, alternative and comparable system.

- A more cost effective solution than other rolling road diagnistic systems on the market.
- Rolling Road Operator display solution, which can be located inside the vehicle cockpit during rolling road testing.
- Rolling Road Operator display solution, able to display and feedback on engine speed (RPM), rolling road speed, engine temperature and pressure.
- Real-time display and logging of 0-5Volts output from the client's Sun Rolling Road for BHP and Torque measurements.
- Real-time display, logging and visual warning capability for other, user configurable vehicle parameters.

PROPOSED SOLUTION

To meet these requirements, we proposed the following system solution:

- A Stack ST8802S, Dash-Logger system - Dash Display System with on-board data recording (512Mb), and with a 0-6-13000 RPM spec. dial face option.

The ST8802S Dash-Logger system is a 9 channel, user-configurable Dash Display and Data-Logging Solution in one simple to install and use package. The unit supplied to the client benefits from the following features and specifications:

Displayed Parameters:- Engine speed (RPM), oil pressure, water temperature, wheel speed, battery voltage, BHP, torque. This still leaves two configurable channels still available.

Display Features:- Analogue RPM, Backlit LCD displaying all other parameters, Intelligent Alarm System on all parameters, Integrated Shift and Alarm Lights.

System Specifications:- Memory = 512Kb, total recording channels = 8, Max. sampling rate = 20Hz.

Configurable Input Parameters:- Engine speed (RPM), oil pressure, water temperature, wheel speed, battery voltage, BHP, torque.

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THE APPLICATION

After the connection of the ST8802 Dash-Logger to the client's rolling road, the display unit was mounted to a mobile beam. This allowed the operator to simply hang the display inside the cockpit of each vehicle to allow real-time monitoring of the displayed parameters during the test phase. The rolling road gives a 0-5 Volts output for BHP and Torque and these parameters are also displayed on the dash in real-time and logged. The Stack system has only been in operation at Lynx AE for a short amount of time, but already the client has seen significant benefits of the display and alarm monitoring capability of the Stack system. Notably, the client has been able to use the Stack to solve three specific problems, which he feels may not have been possible to solve with his previous rolling road diagnostic solution:

- A customer brought their Turbo Charged Mini to Lynx AE's Stack equipped rolling road facility to have the engine tuned. The car was equipped with non-Stack instruments, which the customer had fitted to the car. The same engine had been seriously damaged on a previous rolling road session when it was run to an extreme temperature and turned a bearing. Within the first power run on the Stack equipped rolling road, and with the Stack Dash providing real-time accurate feedback on the vehicles parameters, it was very quickly identified that the cars water temperature gauge was reading almost 30 degrees too low. The test was immediately stopped. The client felt that without the real-time information and alarm monitoring from the Stack dislay, they would certainly have missed the problem and potentially damaged the engine.

- Another customer, whose car was suffering from a restricted power output, brought their car to Lynx AE. The Stack data-logger yet again proved invaluable in identifying that the problem was due to an innacurate non-Stack temperature gauge and an overheating engine, which in turn was causing the vehicles ECU to restrict the power output.

- Lynx AE were approached by POLEstar Management Systems, who had taken on the difficult task of developing an A-series, Siamese Head, fuel injection system. The unique setup of the Stack equipped rolling road provided for a far easier solution to assist in the development of the fuel injection system than with other rolling road diagnostic solutions. The owner of POLEstar Management Systems provided the following statement to Lynx AE:

  "*I just wanted to say thank you for all your help in getting my development POLEstar A-series fuel injection system working so successfully last week. Your help and the use of your excellent dyno facilities made it possible!*

  I must say how impressed I was with the data logging facility on the dyno. The ability to run a test and then retire to the office and examine the results is excellent. The fact that the data log was recording the fuel mixture as well as engine power (amongst other things) made it invaluable for developing and calibrating a fuel injection system.

  I will certainly recommend you to all my customers.

  Best Regards,
  Neil Turner"