

Technologies for the future

www.focusappliedtechnologies.com

**GETTING YOU THE DATA
YOU NEED**



FOCUS APPLIED TECHNOLOGIES SDN. BHD.

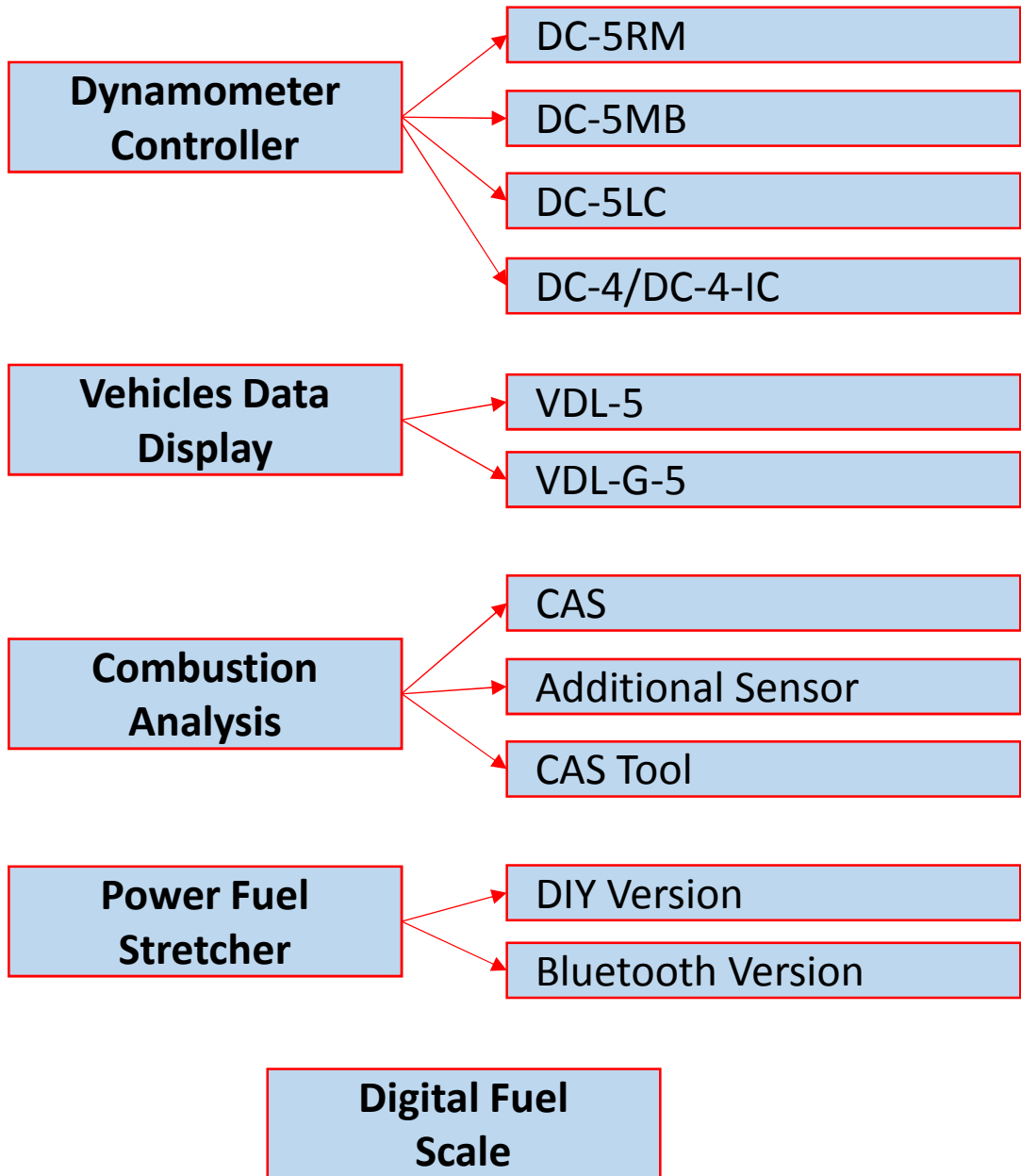
Lot 463 Jalan Relau K143, Sungai Kechil Iiir

Nibong Tebal 14300 Penang, M'sia

Tel : +60 11-16322699

RV5-2020

INSTRUMENT EQUIPMENT



DYNAMOMETER CONTROLLERS

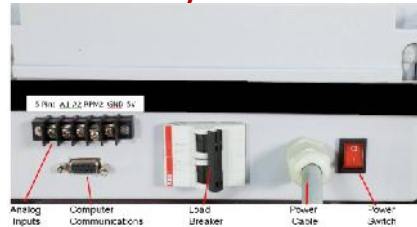
DC5-RM



DC5-MB



DC4/DC4-I

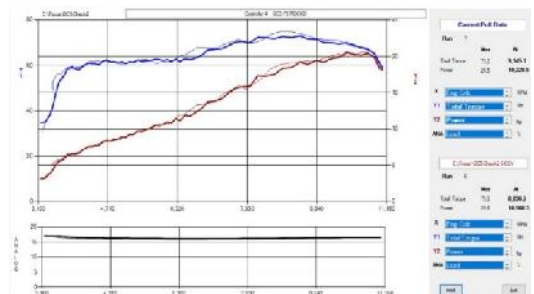


Along with our extensive line of dynamometers Focus also produces Dynamometer Controllers for use in other manufacturers dynamometers, or for upgrading older systems. Dyno Controller 5 come in a Rack mount (DC5-R) and a bench top (DC5-M) black anodized case with front panel controls and display for Research and Development or Educational systems. The lower cost systems use the same controller embedded (DC4) in the frame of the dynamometer, operating in Computer Control mode. Both controllers can use the same software, and DC4 systems can be upgraded to DC5 controllers at any time. For inertia only dynamometers, we also offer the DC4-I without the retarder power supply.

FEATURES

- Loading: 200V, 15A output
- Inertial and Frictional Compensation
- Universal: Can be used on any dyno
- Suitable for motorcycle from 50 to 1500 cc
- Speeds over 200kph at wheel
- Throttle Command for Automated Testing
- Includes Analog Input Channels for Logging
- Free computer software for Graphic Display
- 1 Year Warranty Included

Our systems are 100% Made in Malaysia
We have local technical support, straight from the factory



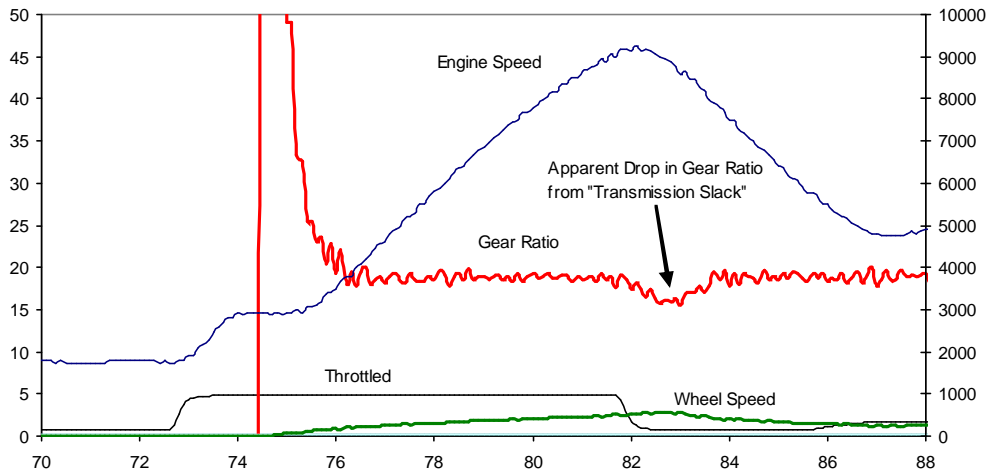
FOCUS APPLIED TECHNOLOGIES SDN. BHD.

Lot 463 Jalan Relau K134 Sungai Kecil Iir

Nibong Tebal 14300 Penang

Tel : +60 116322699

VEHICLE DATA LOGGER



This Vehicle Data Logger has been specially designed for research and development on small vehicles. It is compact, and consumes very little current, while allowing logging on 10 separate analog input channels including: 2x speed channels (from engine and wheel speed pickups), Spark Signal, Voltage, Current, MAP, Temperatures and many more. Input channels can be scaled before display/logging. Several display options are available, and all data is logged to an SD card, which can then be read by any computer directly. Data display and analysis software is provided

FEATURES

- 12V DC operation
- Low power consumption (<100ma)
- Simple SD card storage
- Over 100 hours of continuous logging
- Data sampling up to 10Hz
- 10 Input channels
- Two dedicated speed inputs
- Non-Contact Spark Pickup input
- Hall Effect Current (max 50A) channel
- Free computer software for Graphic Display
- 1 Year Warranty Included



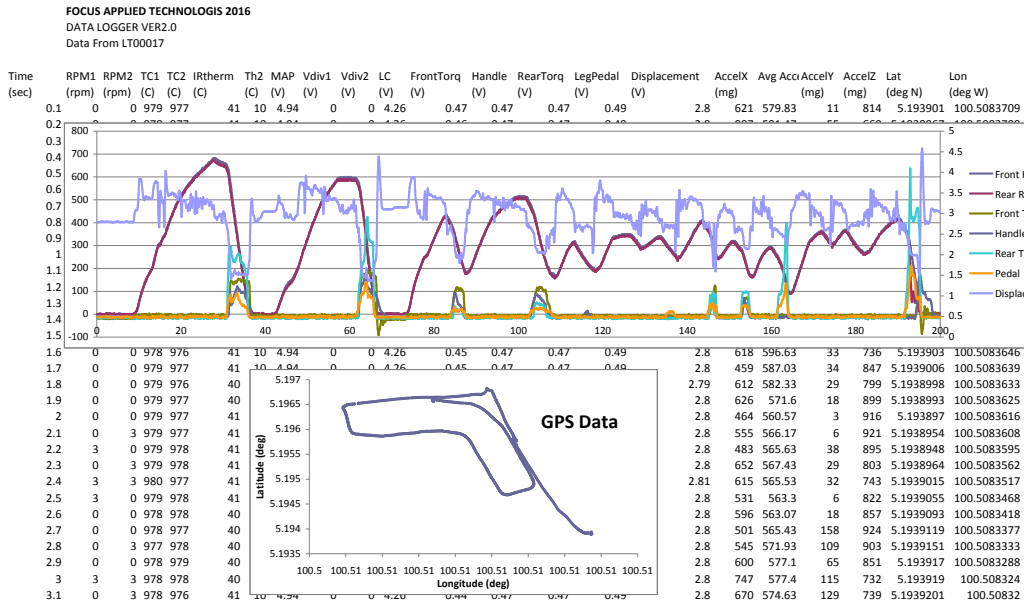
FOCUS APPLIED TECHNOLOGIES SDN. BHD.

Lot 463 Jalan Relau K134 Sungai Kechil Iiir

Nibong Tebal 14300 Penang

Tel : +60 116322699

VEHICLE DATA LOGGER WITH GPS



Our compact Vehicle Data Logger now features optional 3-axis internal Accelerometers as well as 10Hz GPS data. This allows tracking and plotting of vehicle location throughout any testing so that accelerations, speeds, and emissions can be correlated to actual map location. Other common parameters include: Fuel Consumption, Exhaust Emissions, Break Torque, Suspension Displacement, Break Temperature, Engine Speed, Wheel Speed, Throttle Position, Engine Temperature, Exhaust Gas Temperature and analog voltages.



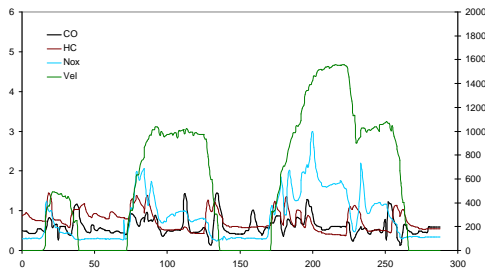
FOCUS APPLIED TECHNOLOGIES SDN. BHD.

Lot 463 Jalan Relau K134 Sungai Kechil Iiir

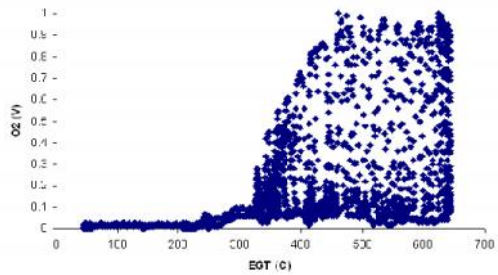
Nibong Tebal 14300 Penang

Tel : +60 116322699

VEHICLE DATA LOGGER WITH GPS



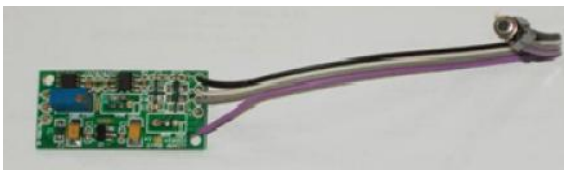
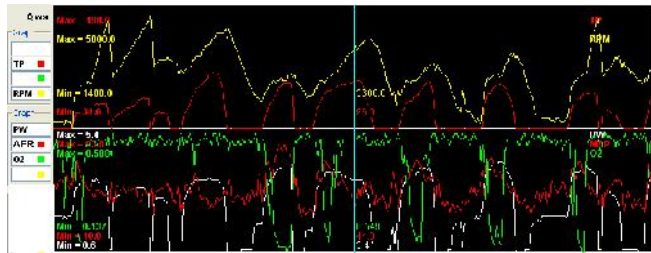
Sample Emissions Data



O2 Sensor Response Curve

FEATURES

- 2 x Speed Signal (RPM)
- 2 x Thermocouple
- 2 x Thermistor
- 2 x DC Voltage (>5V)
- Throttle Position Signal
- Load Cell
- Manifold Air Pressure
- 5 Extra Analog Input (0-5V) e.g. O2 & Air Fuel Ratio
- 12V Nominal Power Input
- Max 10Hz GPS update rate



Optical Temperature Sensor



GPS Antenna/SD Card Slot



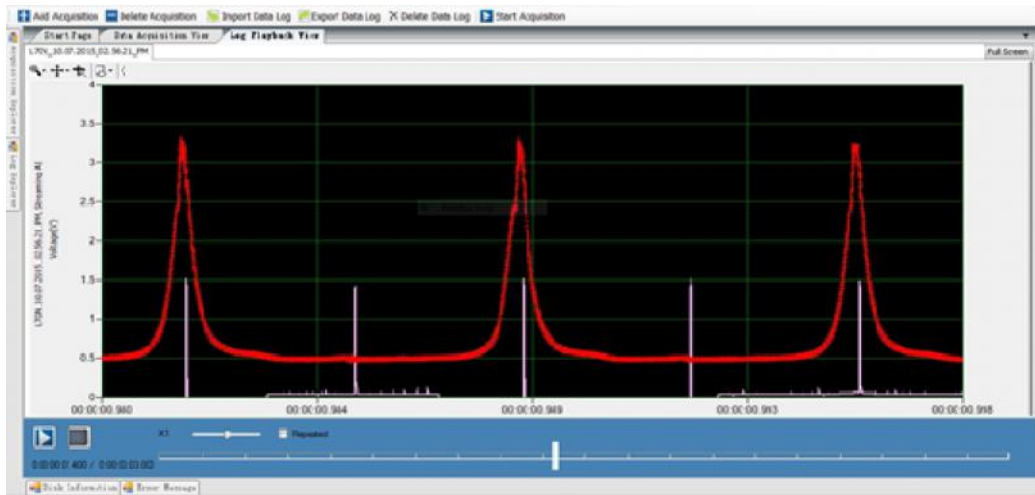
FOCUS APPLIED TECHNOLOGIES SDN. BHD.

Lot 463 Jalan Relau K134 Sungai Kechil Iiir

Nibong Tebal 14300 Penang

Tel : +60 116322699

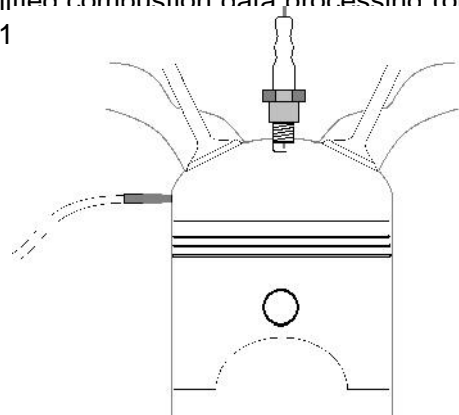
COMBUSTION ANALYSIS



This combustion analysis system consists of an in-cylinder pressure transducer and amplifier, crank angle encoder with TDC trigger and data acquisition unit (DAQ) to capture the combustion pressure. The pressure transducer is an optical type sensor (at right) measuring diaphragm deflection to calculate cylinder pressure. This type of sensor gives very stable and consistent signal, unlike the piezo-electric sensor which will drift over time. The DAQ is clocked by the encoder crank angle signal, where each pressure data point corresponds to a particular crank angle. This allows much easier data processing than the time based DAQ.

FEATURES

- Optics diaphragm deflection detection give stable and consistent pressure signal
- Crank angle based data acquisition greatly simplified combustion data processing (only 360 data points for each engine revolution, using 1
- Small M5 Sensor
- Free computer software to capture data
- 1 Year Warranty Included



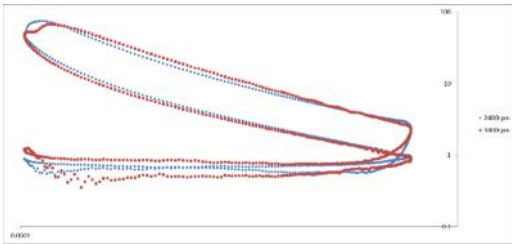
FOCUS APPLIED TECHNOLOGIES SDN. BHD.

Lot 463 Jalan Relau K134 Sungai Kechil Iiir

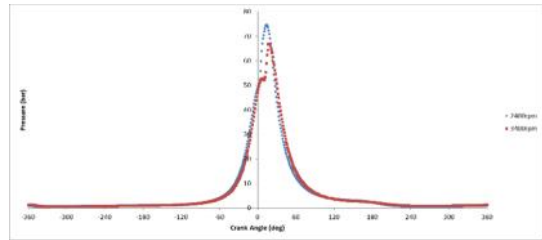
Nibong Tebal 14300 Penang

Tel : +60 116322699

COMBUSTION ANALYSIS



PV diagrams



Cylinder pressure vs crank angle

SPECIFICATIONS

MAINS POWER

Voltage: 120/240VAC
 Frequency: 50/60Hz
 Current Draw: 1A max

PRESSURE TRANSDUCER

Pressure: 0 to 400 bar (optional up to 2000 bar)
 Signal: 0 to 4.5V DC

ENCODER

Pulse per revolution: 360 (optional up to 720)

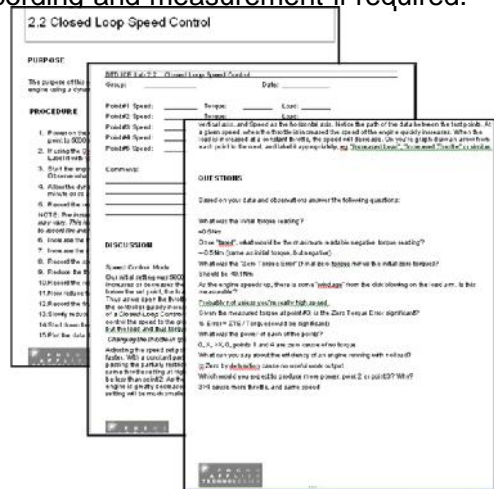
DATA ACQUISITION UNIT

Sampling rate: 200,000 sample per second

ENVIRONMENTAL

Temp: 10 to 40° C Operational
 0 to 50° C Non-Operational
 Humidity: 5 to 90% Non-condensing
 Shock/Vibe: <10g

The combustion analysis system is widely used by student laboratories in Universities and Polytechnics and for Research and Development on alternative fuels, fuel blending, HCCI and etc. Laboratory exercises are available, including sample data, physical explanations and quiz questions and answers. The DAQ system provides separate Pressure output and Indexer signals for separate recording and measurement if required.



OPTIONS

- 10kW Bench Dynamometer
- Internal Combustion Engine (gasoline or diesel)
- Digital Fuel Scale for ICE
- Electronic controlled fuel injection system
- Extensive seminars on Combustion Analysis are also available



FOCUS APPLIED TECHNOLOGIES SDN. BHD.

Lot 463 Jalan Relau K134 Sungai Kechil Iir

Nibong Tebal 14300 Penang

Tel : +60 116322699

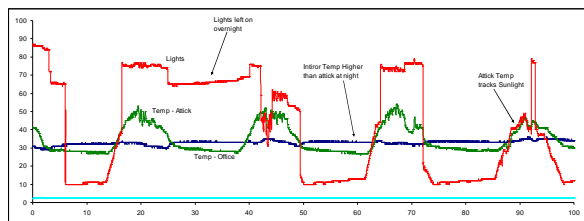
DATA ACQUISITION UNIT (DAQ)



This Data Acquisition unit is designed for data acquisition from a wide range of mechanical power applications, including AC and DC motors as well as Internal Combustion Engines. It has several application specific input channels ready to use, including 2 separate speed channels, 2 thermo couple channels, a Load Cell input, Thermistor inputs and “Peak” and “Valley” averaging inputs for special applications. The inclusion of the use-specific amplifiers allows simple connection directly to the thermocouples or load cells with out additional power or amplifiers. Output is streamed via USB com port, and can be viewed/logged with a wide range of software, including our own DAQ viewing software. This is an ideal unit for intermediate Data Acquisition applications requiring up to 16 channels

FEATURES

- 16 channels total
- 10Hz, 10 Bit logging
- 2 Speed channels
- 2 Thermocouple inputs
- Load cell input (4-wire)
- 2 Thermistor Input Channels
- Simple Serial Port setup
- 12V DC, 13 x 11 x 3.5 cm
- Max and Min peak averaging input channels
- Free computer software for Graphic Display
- 1 Year Warranty Included



FOCUS APPLIED TECHNOLOGIES SDN. BHD.

Lot 463 Jalan Relau K134 Sungai Kechil Iiir

Nibong Tebal 14300 Penang

Tel : +60 116322699

DIGITAL FUEL SCALE



This digital gravimetric fuel scale weight fuel as it is consumed by the engine under test. The data is fed to the computer via serial (RS-232) communications link, allowing seamless integration with our dynamometer and DAQ systems.

The weight of fuel is measured as a function of time allowing direct measurements of fuel consumption, and calculation of Break Specific Fuel Consumption (BSFC), and Fuel Mass Flow rate, for calculation of actual Air Fuel Ration (AFR) when combined with an air flow sensor.

Features

- 0.1 to 0.1 precision available
- 3.0 to 6.0 kg maximum fuel weight
- RS 232 Serial Communications
- Compatible with Focus Dyno Monitor
- Compatible with all types of fuel



The Dyno Monitor program can communicate with several devices via serial port (RS-232) connections. We use this to report speed, torque, power and Throttle settings from the Dynamometer Controller, and we get fuel weight readings from the Fuel Scale this way as well. Fuel consumption is calculated by the change in the fuel tank mass divided by the amount of time lapsed. This is done in 2 ways: (1) an engine is run in a steady condition for say 1 minute and the change in fuel mass during this 1 minute test is the fuel consumption in grams/minute as that condition. Alternatively a test sequence is run, for example the ECE-R40 test pattern, and the total fuel consumed is calculated. The total fuel consumed over the test can then be expressed in terms of distance travelled (about 1km for the ECE-R40 test) divided by the volume of fuel consumed, eg. km/liter.



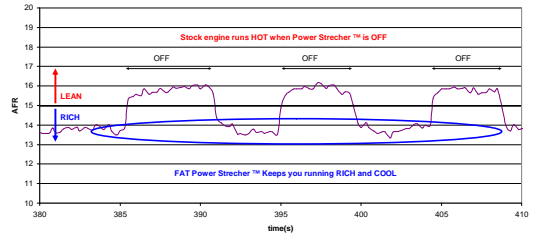
FOCUS APPLIED TECHNOLOGIES SDN. BHD.

Lot 463 Jalan Relau K134 Sungai Kechil Iiir

Nibong Tebal 14300 Penang

Tel : +60 116322699

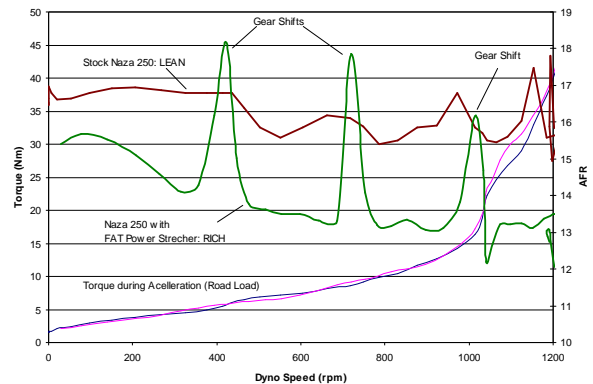
POWER STRETCHER



This Electronic Fuel Injection “piggyback” controller reads the injection signal, and the Throttle Position (TPS). The Injector signal is then “stretched” by a programmable amount, depending on the TPS. A “Synthetic” oxygen signal (O2) is generated to keep the stock Electronic Control Unit (ECU) from over-correcting, or going into a limited power “safe” mode. This allows any fuel injection bike to be modified, and still use the stock ECU for operation, but with greatly improved performance, taking advantage of the additional air, and supplying the right amount of fuel.

Features

- Easy Installation
- Instant Results
- Engine runs cooler
- More Power!
- Smoother Operation
- Synthetic O2 Signal keeps ECU happy
- Simple setup via Serial Port
- Allows performance upgrades to Fuel Injection vehicles
- 12V DC, 70 x 50 x 20mm
- Available for 2,4 cylinder



Most Fuel Injection systems don’t allow the vehicle to be heavily modified. The FAT Power Stretcher™ solves this by easily plugging into your vehicle’s fuel injection system, taking over control of the fuel injector, and O2 signal. The Injector signal is then “stretched” as required by the throttle signal (TPS) in order to maintain the appropriate Air/Fuel Ratio, delivering the maximum power, drivability, and longevity, keeping your engine cool.



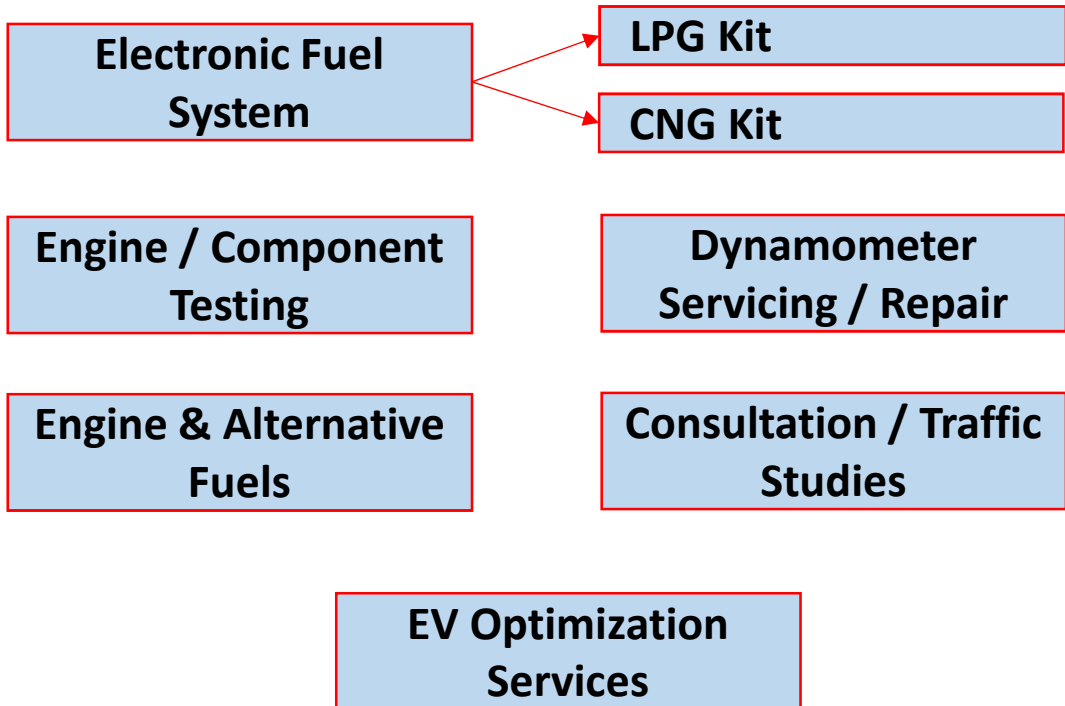
FOCUS APPLIED TECHNOLOGIES SDN. BHD.

Lot 463 Jalan Relau K134 Sungai Kechil Iiir

Nibong Tebal 14300 Penang

Tel : +60 116322699

SERVICES DIVISION



ELECTRONIC FUEL SYSTEM

LPG / CNG



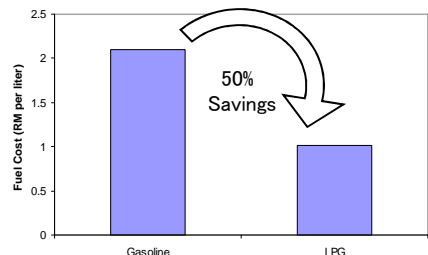
2-Stroke Direct Injection of LPG (Manila)

Our 4-stroke LPG Bi-fuel EFI kit is available as a “DIY” for interested individuals. For fleet owners, or distributors please contact us directly for full installation and tuning support. It can be installed by any competent mechanic or clever individual who can handle things such as soldering wires, and turning a wrench. The kit consists of the following major components:

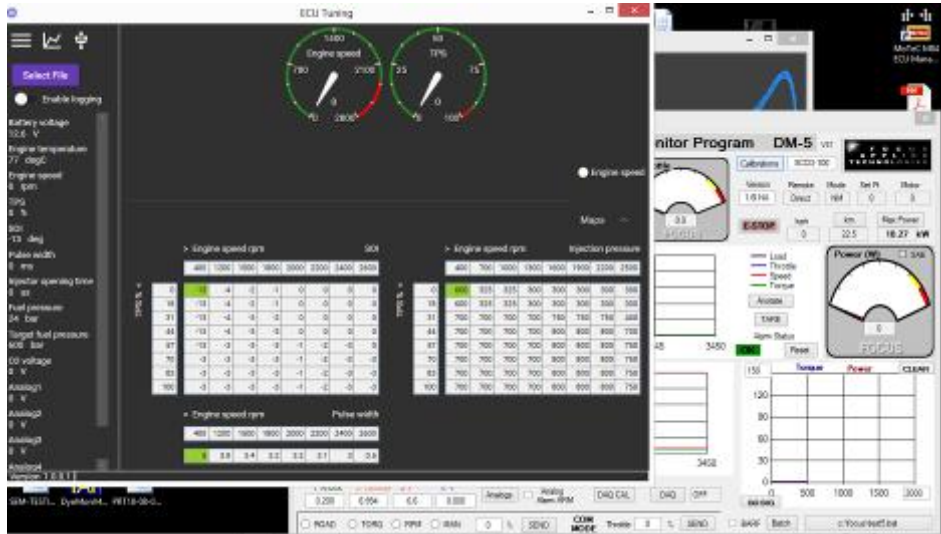
- *Electronic Control Unit*
- *Wiring Harness*
- *LPG Fuel Injector*
- *Bi-Fuel Carburetor*
- *LPG Pressure Regulator*
- *Cylinder Head Temperature Sensor*
- *Fuel Filter*



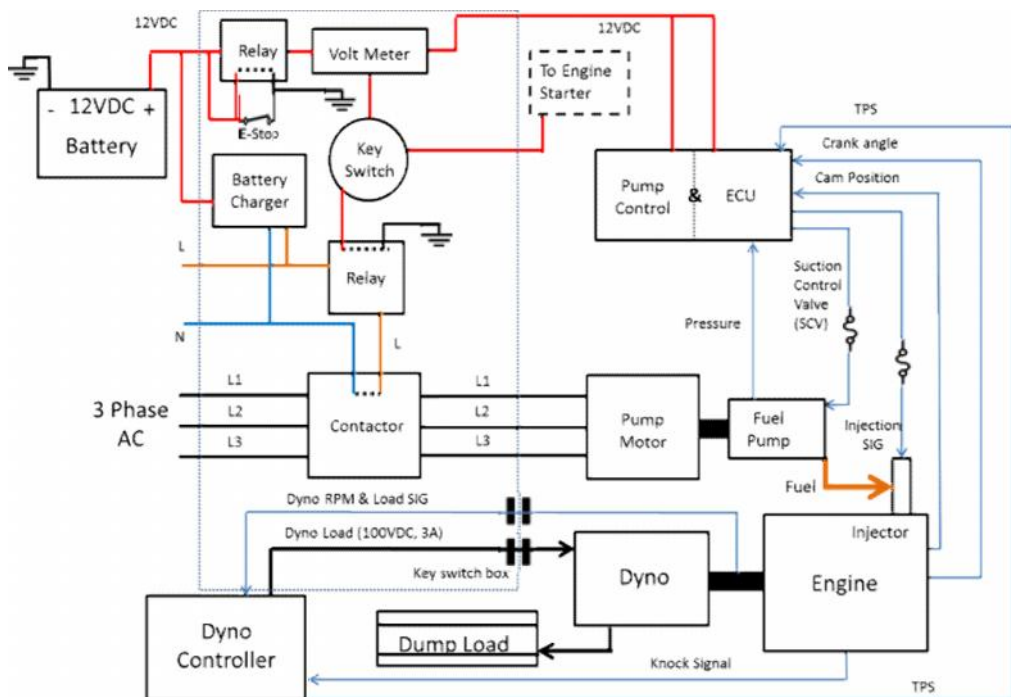
This system comes as a kit which is simple to install on both upright cylinder engines (eg. Honda CB/CG series) and “under bone” engines (eg. Honda Cub/EX5). We have pre-programmed Electronic Control Units (ECUs) for most makes and models allowing installation in just a couple of hours. 50% Savings In most markets LPG (often available as common cooking gas) is less expensive than gasoline. In Malaysia, for example, cooking gas can be obtained for 21.50RM per 12kg (wholesale price), which is about 1RM per liter, compared to 2.10RM/liter for gasoline. Fuel consumption per liter is approximately the same for LPG and gasoline, thus operators can expect to see a saving of about 1RM per liter. For vehicles operating 50km per day on the highway, this results in a savings of about 1RM per day, while delivery vehicles traveling 50km per day may save as much as 2RM per day. Vehicles traveling further, or consuming more fuel will obviously save more.



Diesel Electronic Direct Injection Conversion System



This Diesel Fuel Injection system allows fully electronic control over the Direct Fuel Injector. Fuel Pressure, Start Of Injection, and Injection Duration are all separately controlled for maximum flexibility in tuning for various operating conditions and fuels. Injection timing, pressure and injection duration are all adjustable “on the fly”, storable to the computer, and can be burned to the Electronic Control Unit (ECU) during engine operation.



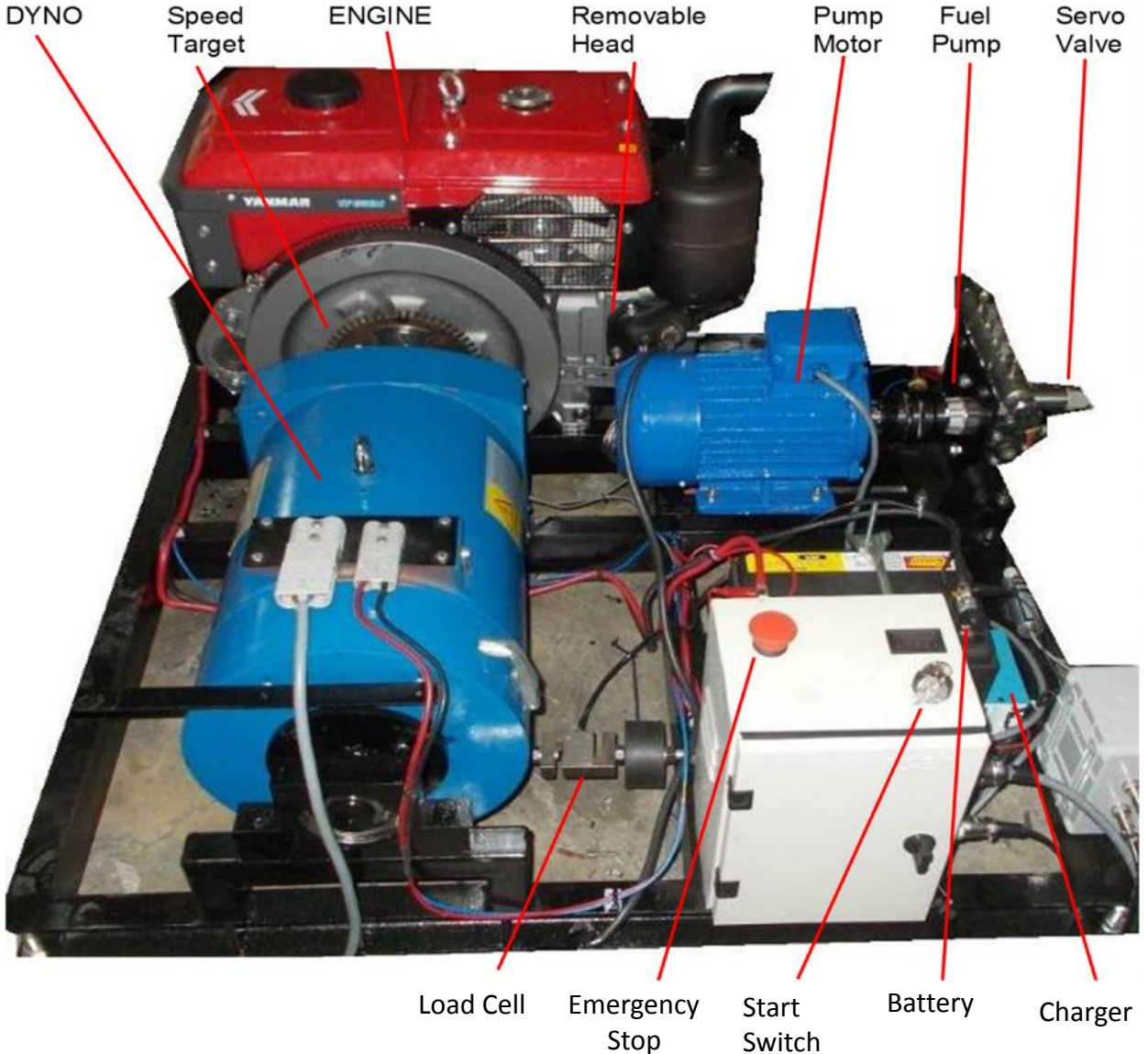
FOCUS APPLIED TECHNOLOGIES SDN. BHD.

Lot 463 Jalan Relau K143, Sungai Kechil Iir
 Nibong Tebal 14300 Penang, M'sia
 Tel : +60 11-16322699

sales@focusappliedtechnologies.com
www.focusappliedtechnologies.com

Diesel Electronic Direct Injection Conversion System

COMPONENTS LAYOUT



FOCUS APPLIED TECHNOLOGIES SDN. BHD.

Lot 463 Jalan Relau K143, Sungai Kechil Iir
Nibong Tebal 14300 Penang, M'sia
Tel : +60 11-16322699

sales@focusappliedtechnologies.com
www.focusappliedtechnologies.com

DYNAMOMETER SERVICING & REPAIR



Focus has a long history of designing and servicing dynamometers of various brands. Our controllers were originally designed as upgrades to older dynamometer systems of various brands. In response to requests from customers we now offer servicing for all makes and models of dynamometers, both chassis and engine dynos.

The most common scenario is that the customer has an old dyno system that has either been idle for a long time, has an out of date PC based controller, or doesn't function properly for an unspecified reason. We generally do a site visit to assess the equipment and determine exactly what is required to get it running again, then provide a quote detailing all the work to be done. We guarantee our work, and can even provide various warranties.

Models we've serviced to date include:

- API
- SuperFlow
- Mustang
- DynoJet
- DynoMite
- Clayton
- Dayton
- Digilog
- SAJ
- Froude Hofmann
- Cussons
- Precision Engineering



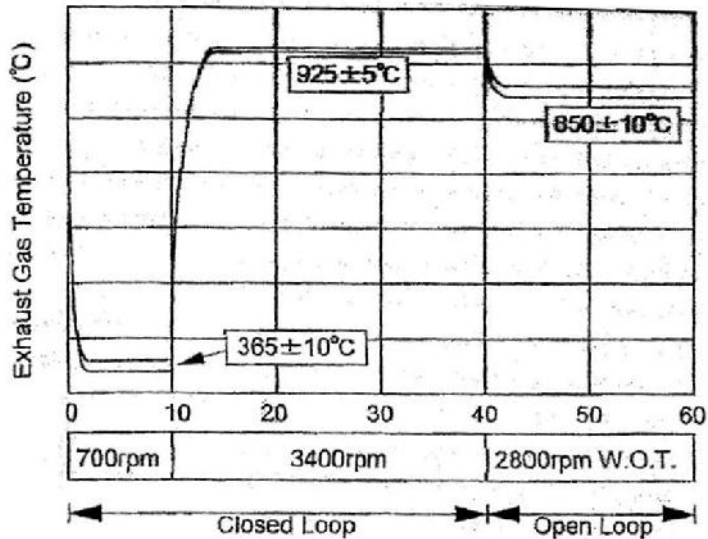
FOCUS APPLIED TECHNOLOGIES SDN. BHD.

Lot 463 Jalan Relau K134 Sungai Kechil Iiir

Nibong Tebal 14300 Penang

Tel : +60 116322699

ENGINE / COMPONENT TESTING SERVICES



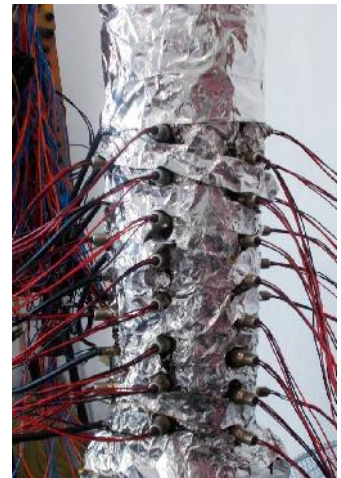
In conjunction with our dynamometers we offer various motor vehicle and subsystem/component testing services, alternative fuel and fuel additive testing. Testing can be performed as one-time or on an ongoing basis. Individual reports, periodic reports and continually updated database access can be given for instant access to crucial results.

Fuel consumption and emissions analysis can be done to any desired drive cycle, for hundreds of sensors simultaneously. Longer term testing includes engine despite formation and/or wear, or component reliability testing, and can last up to several years, or many *thousands* of hours of engine operation. Some of this testing requires operation on specific engines (eg. Truck 2.5 liter turbo diesel engine), or under precise conditions (eg. 3400rpm engine speed, with EGT of 925C). We can also analyze component failures, and suggest design improvements.

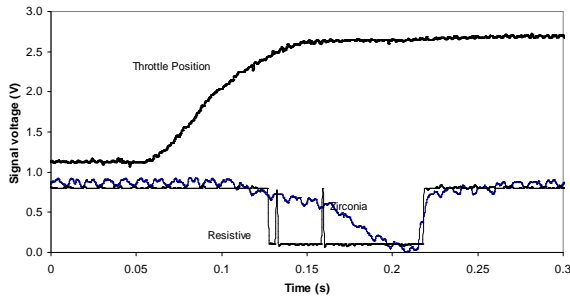
When allowed we frequently publish testing results in peer-reviewed scientific journals to help raise awareness of new technologies.

Examples of our testing services

- Diesel Combustion Chamber Deposit as effected by Fuel Additive
- Low Sox Diesel Emissions Testing
- Evaluation of NOx Reducing Fuel Additive
- Evaluation of various "Fuel Saving" Devices
- Gasoline Fuel Additive Testing
- Long Term (1000hour) Oxygen Sensor Reliability Testing
- Component Failure Analysis



ENGINE / COMPONENT TESTING SERVICES



Transient AFR testing of various Exhaust Sensors



Inconel Exhaust Gas Test Section

SPECIFICATIONS

A wide range of testing is available. We can also develop custom test equipment for specific customer needs.

FUELS

Diesel, Gasoline, CNG, LPG, Ethanol, Blended Fuels, etc.

ENGINE

2 - Stroke, 4 - Stroke, Turbo, NA, Fuel Injection, Carbureted, 20cc to multi liter displacement

CONTROLLED PARAMETERS

Speed
Torque
Power
Exhaust Gas Temp
Coolant Temp
Transient / Steady State

MEASUREMENTS

Electrical Component Analysis
Materials Analysis
Mechanical Analysis
Friction, Wear, Weight, Resistance, Voltage, Current, Torque, Force, Speed, Strain, Temperature, Flow Rate, etc.

Via our close connection with the University Science Malaysia we have access to a wide range of materials analysis tools including Fourier Transform Infrared Spectroscopy, Gas Chromatography, Scanning Electron Microscope – Xray Diffraction, and etc.



FOCUS APPLIED TECHNOLOGIES SDN. BHD.

Lot 463 Jalan Relau K134 Sungai Kechil Iiir

Nibong Tebal 14300 Penang

Tel : +60 116322699

CONTACT INFORMATION

FOCUS APPLIED TECHNOLOGIES SDN BHD

Lot 463 Jalan Relau K134, Sungai Kechil Iiir
Nibong Tebal 14300, Penang, Malaysia

Tel: +60 11-1632 2699

Email : sales@focusappliedtechnologies.com

Website : www.focusappliedtechnologies.com

PRODUCT ENQUIRY

- DR. HORIZON GITANO BRIGGS

Tel : +6016 484 6524

Email : horizon@focusappliedtechnologies.com

- TANG CHEE MENG (ALESI)

Tel : +6018 472 0499

Email : tang.c.m@focusappliedtechnologies.com



FOCUS APPLIED TECHNOLOGIES SDN. BHD.

Lot 463 Jalan Relau K134 Sungai Kechil Iiir

Nibong Tebal 14300 Penang

Tel : +60 116322699