

World leader in
engine emission analysis



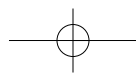
R&D Engine Development

Raw and Dilute Sampling Systems

Gasoline, Diesel & alternative fuels

Extensive range of heated sampling components

Multipoint and EGR Modules





Emissions analysers and systems for engine, vehicle test and certification applications.

Signal Automotive

Signal Automotive, a division of the Signal Group Ltd., is experienced in manufacturing bespoke turnkey emissions systems from small domestic engine, off-road diesel heavy duty SCR type applications right through to the latest in passenger car certification.

Working closely with Universities, research and development departments and engine and vehicle manufacturers around the world, Signal provide a complete range of solutions to meet the increasing demands of global emission measurement.

Typical applications include:

- Raw bench gasoline/diesel
- CVS (bag and continuous)
- Gas Turbine/Aero engine
- Catalyst efficiency
- CO₂ EGR
- NH₃ (Diesel urea injection)

Reference instrumentation

Signal has a long history of designing and manufacturing reference method analysers for the automotive industry and other combustion emissions research. With all equipment supplied by our laboratory in the UK, the analysers utilised in the MaxSys 900 systems are all optimised for fast speed of response, high accuracy and low interference levels.



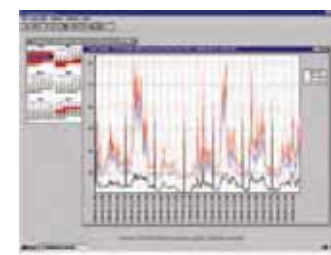
Bench control software

Signal's bench computer system is based on a state of the art PC with LCD display. With Windows NT based software it features all the logging and control facilities you would expect from a modern System.

- AK Protocol
- TCP/IP
- Dual LAN interface
- 5Hz logging

Supporting you all the way

Signal's reputation for product innovation is matched by a commitment to customer service and technical support. To help our customers maximise the benefits of purchasing a Signal product we offer an ongoing support and maintenance programme. This ensures optimum product lifetime performance.



Sample Handling and Test Equipment

The MaxSys 900 series offers a wide range of sample handling systems and accessories which are designed to minimise component losses whilst complying with global regulations for motor exhaust emissions. For further information please see our sample handling and test equipment brochure.

MaxSys 900 Emissions System

The Signal MaxSys 900 Series of automotive emissions systems are flexible and powerful enough to meet all international standards, including US EPA and European ECE for raw, dilute and specialist exhaust sampling.

MaxSys 900 Capabilities include:

- Pre catalyst (feedgas)
- Post catalyst (Tailpipe)
- Dual catalyst (Midbed)
- EGR (CO₂)
- Research and development
- Legislative certification



MaxSys 900 Applications include:

- Vehicles and motorcycles
- Truck and bus
- Aero engine combustion
- Diesel marine
- Locomotive
- Off road
- Small utility engines



Each system is configured to your order using our standard analysers and sample handling modules. This bespoke service allows us to offer cost effective solutions to unusual or non-standard applications.

With features such as fine bore tubing to ensure a fast speed of response, the and ultra-low concentration capability MaxSys 900 is designed for both performance and reliability.

The systems operate both as a stand alone system or integrated via high speed ethernet connection to most test cells

MaxSys 900 features include:

- Integrated system with single interface
- AK protocol compliant
- Dual LAN interface
- Dedicated raw, dilute and alternative fuels sample handling
- Modular design
- Heated sampling modules

MaxSys 900 Benefits include:

- Fully compliant with latest standards for light and heavy duty and off-road test procedures.
- Measures the standard legislative compounds CO, CO₂, O₂, THQ, CH₄ and NOx plus the unregulated compounds N₂O and NH₃.
- Hot, wet measurement of NH₃ - of particular interest in the field of additives and after treatments.



Existing customers include
Ford, Cherry Automotive, BMW
Renault, Deutz, Perkins and ARA

Sample Handling

Model 351/352 Heated Pre-Filter



An in-cell heavy duty heated pre-filter unit designed to be close to the sample probe. Fitted with a choice of either one or two filter streams, the units incorporate a heated head sample pump, cal gas inlet ports, back purge, forward purge and leak check facility. Fitted with a choice of either one or two filter streams, the units incorporate a heated head sample pump, cal gas inlet ports, back purge, forward purge and leak check facility. Fitted with a choice of either one or two filter streams, the units incorporate a heated head sample pump, cal gas inlet ports, back purge, forward purge and leak check facility.

Model 361/362 Heated Pump, Distribution and Pre-Filter Module



A low cost heated pre-filter unit designed for 19" rack installation system. Fitted with a choice of either one or two filter streams it is suitable for dual sample points, twin cells and pre/post cat research.

Model 345/356 Portable Heated Front End Filter



A portable heated heavy duty filter designed for use in the engine test cell close to the sample probe. The unit can be fitted with external or internal temperature control. The 345/346 also features a heated head filter and cal gas inlet ports.

Heated Sample Lines

Signal trace heated sample lines are designed to convey hot exhaust gases from sample points and probes to the analyser without compromising sample integrity.

Test Equipment

Model 821S 10 Step Gas Diluter

The Model 821S allows instrument operators and manufacturers to check the linearity of their instruments, by the use of only one calibration gas and diluent.

Eleven fixed steps from 0-100% concentration are provided, each step rising by 10%.

Repeatability of +/- 0.5% of point



NOXGEN III Efficiency Tester

The NOXGEN III allows instrument operators to check the converter efficiency of their chemiluminescent NOx analyser.

It provides known, accurate amounts of NO₂ for converter efficiency testing and fully meets US EPA standards.

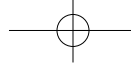
102 Host Software

The Model 102 host software is based on Windows NT and features advanced logging, alarm and control functions.



Signal 102 features include:

- Chart trace graphics
- Automatic linearisation audits
- Alarms
- Calculation of formulae for AFR and EGR
- Plug and play analyser installation configuration
- Multiple test cell capability
- Ethernet connection for total test schedule automation and test cell computer integration



Signal Group is the UK's most respected manufacturer of gas analysers, systems, test equipment and accessories for engine emissions analysis

Maxsys 970 CVS Systems

Signal are experienced in a variety of CVS certification equipment from small garden machinery engines to SULEV/EURO 4/5 multi-venturi systems. The installations are typically certified by VGA for product type approvals and conformity of production.



In addition to standard applications we specialise in bespoke designs for unusual applications such as diesel/gasoline combination unit with water heat exchange capable of measuring raw, continuous dilute and bag dilute, where standard "off the shelf" products would not be appropriate or cost-effective.

For complete test cell automation we supply software that runs all aspects of test cell work from driver's aid right through to post test reporting.

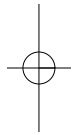
MaxSys 970 CVS System features include:

- 1 phase for motorcycles
- 3 or 4 phase for vehicles (6 or 8 bags)
- Multiple CFV option
- Compact, modular design
- Bag mini-diluter
- Ultra-low emissions measurement capability



Analyser specification:

Gas	Technique	Low range	High range	T ₉₀	Noise
THC, methane	Heated FID	0-4ppm	0-10%	1.5 seconds	1% FSD
NO, NOx	Chemiluminescence	0-1ppm	0-10,000ppm	1.5 seconds	1% FSD
NO ₂	Chemiluminescence	0-1ppm	0-1,000ppm	1.5 seconds	1% FSD
NH ₃	Chemiluminescence	0-10ppm	0-1,000ppm	1.5 seconds	1% FSD
CO	GFC NDIR	0-100ppm	0-5%	2 seconds	1% FSD
CO ₂	GFC NDIR	0-25ppm	0-25%	2 seconds	1% FSD
SO ₂	GFC NDIR	0-100ppm	0-1,000ppm	2 seconds	1% FSD
O ₂	Paramagnetic	0-5%	0-25%	2 seconds	1% FSD



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