

# DIESEL PARTICULATE MEASUREMENT

We have you covered!



**kenelec  
scientific**  
measuring up

# DIESEL PARTICULATE MEASUREMENT

Kenelec Scientific can offer solutions for research use, for exhaust emissions, for personal monitoring and even fixed workplace monitoring. What could be better? WE DO IT IN REAL-TIME!



## RESEARCH

### Engine Exhaust Particle Sizer Spectrometer TSI 3090

The EEPS spectrometer was developed for continuous measurement of entire test cycles. For example, you might use this instrument to observe filter loading or to reduce emissions below certain limits during engine calibration. With real-time data collection and display capabilities, users can visualize and study the dynamic behaviour of particle emissions that occur during transient test cycles. This includes particles produced as a result of changes in engine speed, torque, or load, or particle emissions that occur during the first few seconds of a cold start or during regeneration of a diesel particulate filter (DPF).

The Engine Exhaust Particle Sizer (EEPS) spectrometer is a fast-response, high-resolution instrument that measures very low particle number concentrations in diluted exhaust. It offers the fastest time resolution available—10 times per second—which makes it well-suited for dynamic and transient tests. It measures the size distribution and number concentration of engine exhaust particle emissions in the range from 5.6 to 560 nanometers, covering the entire range of interest.

## FIELD TESTING

### Nanoparticle Emission Tester Model TSI 3795

Interested in an instrument that can quickly and accurately measure the DPM particle concentration in diesel exhaust? Then the TSI Nanoparticle Emission Tester (NPET) Model 3795 is a great choice. The unit is designed for field or workshop use, is rugged, portable and very easy to use. As more and more diesel particulate filters (DPF's) are introduced into vehicles, there is an increasing need to verify that these DPF's are operating effectively. In field use, DPF's are subject to failures such as cracking, melting or separating from the can wall due to uncontrolled regeneration events or uneven filter loading and even vibrational and thermal shocks. The NPET will quickly identify these failures and consequently reduce worker exposure to harmful diesel particulates.

The TSI Model 3795 Nanoparticle Emission Tester (NPET) consists of a diluter, conditioning system, catalytic stripper, and condensation particle counter.



The NPET is capable of measuring from less than 1,000 to 5,000,000 particles per cubic centimetre, allowing for the measurement of solid particle number concentrations to determine the DPF effectiveness from a variety of engine configurations. This technology has been shown to accurately measure particle concentrations in engines with in-tact and failed diesel particulate filters and has been certified by the Swiss Federal Institute of Metrology (METAS) for official in-use testing (Swiss Regulation 941.242) of the after treatment systems of non-road mobile machinery.

# LYON, FRANCE June 12 2012

After a week-long meeting of international experts, the International Agency for Research on Cancer (IARC), which is part of the World Health Organization (WHO), today classified diesel engine exhaust as carcinogenic to humans (Group 1), based on sufficient evidence that exposure is associated with an increased risk for lung cancer. Source IARC Press Release No 213 12th June 2012

## PERSONAL MONITORING

Real-time data is of great benefit when using a personal monitor for DPM exposure. DPM overexposure can be detected quickly and preventive measures such as changing ventilation rates and addressing equipment issues can be taken immediately. This contrasts very favourably with the traditional NIOSH 5040 method involving sample pumps and post-event lab analysis.

For personal monitoring, Kenelec Scientific have a number of great solutions to offer you, including the FLIR Airtec monitor and the recently released TSI AM520 Personal Aerosol Monitor.

### FLIR Airtec Real-Time DPM Elemental Carbon Monitor

The FLIR Airtec monitor is a compact and highly portable real-time elemental carbon monitor that is designed to determine exposure of workers to DPM. Airtec uses a real-time particle capture and light transmission method to yield elemental carbon values which closely correlate with NIOSH 5040 test results to measure EC and TC levels in the industrial environment.

This monitor is designed to allow the operator and management to take immediate, remedial action to address a problem area. Levels can also be tracked over time to determine the possibility of long-term health hazards and help eliminate the risks associated with over-exposure.



### TSI AM520 Personal Aerosol Monitor

The SidePak™ AM520 Personal Aerosol Monitor is a small, portable, battery-operated, data-logging, light-scattering laser photometer that provides real-time mass concentration readings of aerosols, such as DPM, within a worker breathing zone. Newly designed inlet conditioners increase the mass concentration capability and provide size fraction cut points for PM10, Respirable (PM4), PM2.5, PM1 and 0.8µm Diesel Particulate Matter (DPM).

Air sampling for DPM is conducted using a size selective inlet conditioner with a 0.8 µm cut off point. Larger particles are excluded from the measurement and an indicative real-time value can be obtained for DPM. A photometric calibration factor for DPM can be developed and applied. Using this photometric calibration factor helps photometric measurements align closer to comparable gravimetric reference sample methods.

The AM520 includes a number of other key features that will assist greatly in the DPM field. It includes audible and visual alarms, warning the operator immediately when there is a high DPM level. It is also a highly robust unit, with a run time of up to 20 hours from the battery pack. A very good option to consider.

## WORKPLACE MONITORING

### DustTrak DRX Smart Alarm System

The DustTrak DRX Aerosol Monitor, coupled to a Smart Alarm system, provides a good option as a fixed monitor for industrial applications. The PM1.0 (1.0µm size) measurement channel is a useful indicator of DPM levels and a good correlation has been found to exist with the NIOSH 5040 reference method. By using the on-board gravimetric filter, a calibration factor can be worked out for the specific environment to improve the correlation even more.

The Smart Alarm option adds the capability of warning workers of a DPM issue using a user-configurable visual alarm. The alarm thresholds can be set to the operator desired level and modified as needed. Additionally the system includes circuitry to monitor the DustTrak error status and make sure the DustTrak is "Alive and Well". So the operator can rely on the DustTrak Smart Alarm system to keep him informed of any DPM concerns at all times.



# KENELEC SCIENTIFIC

Kenelec Scientific Pty Ltd was started in 1962. Over time Kenelec Scientific has established itself as a solution provider for scientific instrumentation in areas of Occupational Health and Safety, Water Monitoring, Environmental Monitoring, Heating Ventilation Air Conditioning, Indoor Air Quality, Pharmaceutical and Cleanroom Systems.

The core values we maintain here are based on our slogan "Measuring Up". We measure up to the excellence that exceeds customers' expectations from the first contact to after sales support. Our aim is to build long term relationships and ultimately be a valuable ally for our customers. We pride ourselves on providing solutions which are underpinned by a Quality Management System that complies fully with ISO 9001:2008.

The Kenelec Scientific Team is made up of a very special group of people united to deliver only the best for our customers. We listen and we partner with our customers to produce the best solution tailored to their specific needs and preferences.

Some of our major international suppliers have been trading with us for many years in instrumentation that is world renowned, reliable and of impeccable quality. These suppliers are constantly re-inventing and improving their technology so that you, our customer, can enjoy the benefits of the latest instrumentation, as you will see in our latest catalogue

We are also capable of installing tailored monitoring solutions which leading Pharmaceutical, Research and Medical institutions throughout Australia can attest to. Our skilled calibration engineers will assist in ensuring that you will enjoy continued reliability with minimum disruption to your businesses.

## FOR FURTHER INFORMATION PLEASE CONTACT:



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