Continuous Emission Monitoring Systems (CEMS)

Utilising Extractive Dilution Probe Technology

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ECOTECH’s Dilution Extractive Continuous Emission Monitoring System (CEMS) is the result of more than 40 years of experience in the field. It is designed to provide superior emissions monitoring data and to minimise time and money spent on maintenance and calibration.

ECOTECH has been designing, supplying and maintaining the highest quality emission monitoring systems for a variety of applications since the early 1980s. ECOTECH’s systems are used by smelting, power generation, refining, steel, chemical and minerals processing industries worldwide.

ECOTECH’s Dilution Extractive CEMS utilises extractive dilution probe technology, ensuring consistent reliability, repeatability and precise measurement. This method is widely used for continuous emissions monitoring of SO₂ and Nitrogen Oxides (NOₓ), CO, H₂S and NH₃. It can also be combined with a zirconium oxide sensor for the continuous measurement of O₂. The extractive dilution system can be configured as a mobile or fixed installation. ECOTECH combines the dilution extractive technology with its proven Serinus® ambient gas analyser range for accurate, real-time monitoring.

ECOTECH’s Dilution Extractive CEMS consistently provides real-time data to demonstrate compliance with standards set by emission regulators and pollution control authorities.

All analysers in the system are connected digitally to ECOTECH’s data acquisition system, enabling remote communications, diagnostics, troubleshooting and operation of the system. The software seamlessly integrates with the CEMS to manage data collection, perform correction calculations, calibrate analysers and generate reports.
WHAT IS THE ECOTECH CONTINUOUS EMISSION MONITORING SYSTEM (CEMS)?

ECOTECH’s Continuous Emission Monitoring System measures high concentrations of gas at the point of emission, namely from a stack. These gases include SO₂, NOₓ, CO, H₂S and NH₃, monitored using specially designed gas analysers.

Industries and environmental agencies use these measurements, often coupled with ambient and background measurements, to give them accurate information about emission levels and a better understanding of how emissions might affect the environment and local community.

HOW DOES THE ECOTECH CONTINUOUS EMISSION MONITORING SYSTEM (CEMS) WORK?

ECOTECH uses extractive dilution probe technology in its CEMS. The system extracts a small sample of gas from the stack, removes particulates and then dilutes the sample with clean dry zero air, reducing the dew point to prevent condensation of water vapour and acid mist.

The diluted sample is then sent down unheated umbilical lines to the base of the stack where it is analysed by ECOTECH’s high-precision Serinus® analysers. Due to the high sensitivity of these analysers, dilution doesn’t influence measurement accuracy negatively. In fact, accuracy is improved over other systems since water vapour and gases of interest cannot condense and impact on representative sample extraction.

WHAT ARE THE ADVANTAGES OF ECOTECH’S EXTRACTIVE DILUTION CEMS?

- Dilution probe technology requires no additional calculations for reporting on wet basis
- Calibration port in the dilution probe calibrates the entire system
- Dynamic gas calibration is easily achieved
- Reduces maintenance required when compared with non-dilution techniques (due to smaller sample volume which equates to less particulates and impurities to contend with)
- No heated sample lines or pumps are necessary, reducing operating costs
- Ability to accurately measure very soluble gases such NH₃, HCl and HF
- Uses US EPA reference method analysers
- Can be expanded to incorporate additional analysers
- Instruments can be installed up to 100 metres from the monitoring location using umbilical cables
- A wide variety of shelters are available to house the system, including compact units, weather proof stations, large containers and relocatable caravans.

WHAT MAKES ECOTECH’S CEMS SUPERIOR?

Each ECOTECH CEMS is custom designed and purpose-built to suit the individual needs of our customers and their specific applications. ECOTECH invests heavily in research and development and manufactures the majority of the components and analysers that make up the CEMS. This allows ECOTECH to offer an unparalleled level of product knowledge.

ECOTECH holds ISO 9001 certification together with NATA (National Association of Testing Authorities) ISO/IEC 17025 accreditation for the maintenance and operation of emissions monitoring stations. ECOTECH provides in-depth training designed to help operate, maintain and calibrate their CEMS with maximum efficiency.

The use of extractive dilution probe technology in the system makes maintenance easy. When it is time to change the filter cartridge, the probe is slipped out of the stack and then re-inserted into the same position, without the need to dismantle the fitting or flange.
ECOTECH SERINUS® GAS ANALYSER RANGE APPROVALS INCLUDE:

• US EPA approval (EQOA–0809–187)
• EN approval TÜV (936/21221977/C)
• EN approval MCERTS (MC100165/06)
• Australian Standard (AS 3580.6.1-2016)
• Russian approval (56053-13).

KEY FEATURES OF ECOTECH’S CONTINUOUS EMISSION MONITORING SYSTEM INCLUDE:

• Temperature controlled critical orifice dilution
• Lowering of sample dew point to less than 0° C negating the use of heated sample lines
• Calibration of complete system using probe dilution principles
• Adjustable probe length to ensure representative samples
• Linear dynamic measuring ranges from <1 ppm to >2000 ppm
• In-situ oxygen measurement (optional).

ABOUT ECOTECH: Problem solved
Problem solving is in our DNA. For over 40 years ECOTECH has pioneered innovative solutions in environmental monitoring for air, water, gas, blast, particulate and dust. Headquartered in Australia, we now operate in more than 80 countries, manage over 440 real-time environmental monitoring sites and are certified to internationally recognised quality standards. ECOTECH is part of the ACOEM Group.

ABOUT ACOEM: Reduce your environmental impact
In today’s fast-moving world, the environment is increasingly impacted. The ACOEM Group is committed to sustainable development and helping companies and public authorities limit their environmental impact. Across the world, ACOEM’s 670 employees innovate in the measurement, analysis and control of all environmental parameters through the 01dB, ECOTECH, ONEPROD, FIXTURLASER, MEAX and METRAVIB brands. For more information visit acoemgroup.com

ECOTECH Pty Ltd
(Global Head Office)
1492 Ferntree Gully Road
Knoxfield VIC 3180
Melbourne Australia

+61 3 9730 7800
email@ecotech.com
ecotech.com

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