



Hager Environmental & Atmospheric Technologies



LASER FOCUSED ON A CLEANER TOMORROW

THE REAL WORLD EMISSIONS SOLUTION: EDAR

EDAR'S BENEFITS:

A network of EDARs allows for **continuous monitoring** of **real world driving emissions** as part of Market Surveillance

Identify tampering such as vehicles with disconnected/disabled diesel particulate filter (DPF) & modified or removed selective catalytic reduction (SCR) systems

Identify high polluters on the road and direct them to a car test station for further evaluation

True assessment of complementary emissions reduction programs, such as retrofits for degradation over time

Allows for **valid and fair Low Emission Zones** based on **real world data** by identifying clean vehicles to enter the LEZ regardless of euro class

Incentivize positive behavioral changes of the motorist

.....Which results in cleaner air!

EDAR'S CAPABILITIES:

EDAR is an **unmanned, automated system** that sits on a pole 5m above the roadway, and can **detect the plume from both light duty and heavy-duty vehicles** regardless of the tailpipe location

Remotely monitors 24 hours a day, 7 days a week, 365 days a year unmanned on **multilane roadways** **without the need for calibration**

Highest accuracy measurement of CO, CO₂, NO, NO₂, Total HC and PM of all vehicles burning both diesel and gasoline in real world driving conditions

For **accurate detection** of polluting vehicles, EDAR is the **only remote sensing** device that can:

- **Image the Plume**
- **Detect the Exhaust Temperature**
- **Identify Interfering Plumes**

Proven valid hit rate of **90% to 98%**

EDAR is **not seasonally dependent** or affected by light rain/snow, fog, smog, dust, humidity or extreme temperatures

Easily adaptable to new or existing networks and structures



Our Box Thinks Outside the Box



HEAT, LLC was founded in 2009 by Dr. J. Stewart Hager to develop an advanced and unique technology aimed at revolutionizing the Vehicle Emission Testing industry. Based on the experience gained through his involvement with the development of the ASCENDS satellite for NASA Langley, and with the support of a set of well-qualified engineers with unique expertise, HEAT completed in 2013 the development of the EDAR system. Since then, EDAR (Emission Detection And Reporting) has been proven, tested, and utilized internationally. EDAR is a multi-patented eye safe laser-based technology capable of detecting and measuring remotely the infrared absorption of all gases being emitted from a moving vehicle.

Globally EDAR has been successfully deployed commercially. As a result, HEAT has become a preferred vendor of remote sensing services worldwide.

- Uses similar technology as active satellite remote sensing platforms.
- Measures and Quantifies: Carbon Dioxide, Carbon Monoxide, Nitric Oxide, Nitrogen Dioxide, Total Hydrocarbons including Methane, and Particulate Matter.
- Measures exhaust gas temperature
- Laser-based technology: Class 1 eye-safe lasers, FDA approved, and certified IEC 60825
- Existing geometry allows EDAR to see and image the entire plume and provides an increased sensitivity in some cases of over 2,000% along with a resolution of a million times more over existing technologies.
- Contains a fully-tested hardware assembly and a robust software engine set by a sequence of well-proven algorithms.
- Streamlined and convenient approach to emissions testing and monitoring.

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