












VL ENERGY

BRINGING EFFICIENCY AND SUSTAINABILITY TO THE WORLD



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Introduction



14+

Industries

10+

Use Application

23+

Supporting Partners

2

Patents Pending

Welcome to VL Energy! We are excited to share the ins and outs of our product and its capabilities to assist in your ESG and emission reduction goals. Our ES-PEMS product combines environmental sustainability and technological advancement utilizing AI and machine learning. All our contact information can be found on the last page to inquire for a free product demo from our professionals!



Ling Bai
VL Energy CEO

Company Overview



About Us

VL Energy LTD was founded in 2014, in Calgary Alberta, founded by Ling Bai, a entrepreneur with a strong background and education in environmental engineering, energy, and emission reduction.

Vision

At VL Energy, our vision is to pioneer the future of environmental compliance with our state-of-the-art ES-PEMS. As we commercialize this advanced system, we aim to be the cornerstone for companies striving to enhance workplace safety, minimize emissions, and streamline operations. Our enduring goal is to forge a path for industries to flourish sustainably, contributing to a world that is not only cleaner and greener but one that thrives for generations to come.

Mission

VL Energy is dedicated to empowering businesses with dynamic ESG solutions, harnessing the power of **digital technologies and machine learning**. Our Efficient and Secure Predictive Emission Monitoring System (ES-PEMS) is at the heart of our **commitment to innovation and client-focused service**. Through precise emissions monitoring, proactive prediction, and strategic reduction, we tackle the environmental challenges organizations face today, paving the way toward a viable net zero future.

Supporting Partners



The Challenge

Our clients often all face similar issues when it comes to their emissions reduction goals posing threats on increased costs and low optimization.

Lack of Benchmarking and Baseline Emissions



The absence of an accurate emission benchmark or baseline can impede the effective management of emissions, hindering the identification of opportunities for improvement, the tracking of progress toward emissions reduction goals, and the compliance with regulatory requirements

Lack of Data Accessibility



Emissions need to be continuously monitored and digitized. The current equipment used by our clients today are often CEMS, however, CEMS (Continuous Emissions Monitoring Systems) often take static readings and are not available in real-time.

Downsides to Current Technology



Not only does CEMS units take static readings but there are other downsides to the technology including being exposed to extreme weather conditions, expensive, regular maintenance requirements, 7-10 year lifespan, and can pose safety threats to employees/operators.



Technology Overview



➤ Solution

ES-PEMS - Efficient and Secure Predictive Emissions Monitoring System.

Digitized Continuous Emission Monitoring for Multi-Gas. ES-PEMS provides a digital alternative for multi-gas continuous monitoring, that is reliable with over 99.9% uptime, and easily maintained & safe. ES-PEMS can monitor a wide range of emissions including particular matter, methane, nitrogen oxides, sulfur dioxide, carbon monoxide, volatile organic compounds, hazardous air pollutants, and greenhouse gases. ES-PEMS can be used to monitor emissions from stationary and mobile sources, depending on the regulatory requirements that the application.

➤ Benefits

- Precise Real-Time Data
- No Equipment
- No Maintenance Costs
- Eliminating the need for replacement parts and CGA testing
- Reducing Operators exposure to working at heights and entering confined spaces
- 0 Downtime



Have access to clear data driven decision making by utilizing the forward facing dashboard that provides accurate emissions data in real-time.

Applications

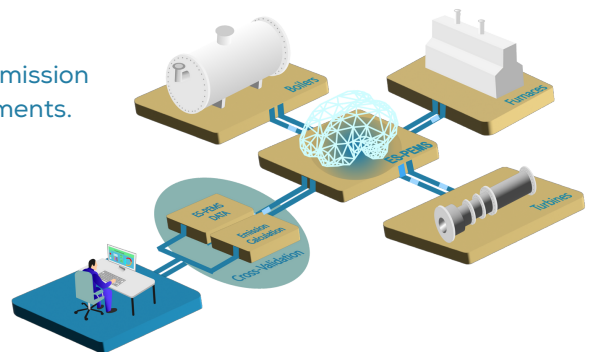
➤ Replacing CEMS with PEMS

Traditional Continuous Emissions Monitoring Systems (CEMS) come with high costs for construction, frequent maintenance, and replacement parts, alongside challenges like sensor degradation and the need for regular audits like CGA and RATA. Sensors are often exposed to harsh flue gases, leading to unplanned maintenance and difficulties in meeting performance specifications. Conversely, Predictive Emissions Monitoring Systems (PEMS) offer a cost-effective alternative. PEMS eliminate the need for replacement parts and minimize maintenance to only necessary RATA, with no analyzers involved. These systems ensure nearly 100% uptime due to their design that prevents sensor exposure to flue gases and includes soft sensor redundancy. Switching from CEMS to PEMS reduces operational costs and simplifies emissions monitoring, making it a preferred choice for modern compliance strategies.

➤ Cross-validation Emissions for Carbon Taxes

Cross validating data collected by ES-PEMS with emission calculations provide an increase in carbon tax measurements.

- Decreasing carbon tax liability
- Decreasing costs



➤ Power Management and Energy Efficiency Improvement

The data collected from the ES-PEMS is then analyzed to ensure the equipment is operating at maximum efficiency. The prediction ability of the technology can notify various needed equipment effectiveness preventing equipment trips and failures. **Energy Efficiency Increase:** ES-PEMS improves energy efficiency by utilizing accurate real-time data on emissions and energy use, enabling adjustments to increase energy efficiency. **Workforce Efficiency:** ES-PEMS will eliminate conventional analyzer maintenance such as replacing parts and CGA testing. It will reduce reporting tasks simply to verify and send for end-users. **Safety Improvements:** ES-PEMS improves safety by reducing operators' exposure to working at heights and entering confined spaces

Achievements

 **First Model of ES-PEMS**

2019 & 2020

 **First Regulatory Approval from AER & AEP**

April 2022

 **First Commercial Unit Sold**

August 2022

 **Tractions from 3 Major Oil and Gas Companies**

2022

 **Successful Oil and Gas Company Pilot Expansion to full scope of deployment in operational setting**

2022

 **Powerplant Generation - Turbine Optimization**







May 2023

 **Two Patent Provisional Filings**

2024

Client Onboarding



- 1 Initial Consultation**
 -  We schedule a meeting to discuss your goals, needs, and expectations.
- 2 Proposal Presentation**
 -  We present our tailored proposal, including pricing, project details, and how we are going to meet your set goals.
- 3 Project Kickoff**
 -  Once you approve the proposal, we initiate the project, assigning a dedicated team.
- 4 Regular Updates**
 -  We provide regular progress updates and milestones.
- 5 Project Completion**
 -  Upon project completion, we conduct thorough testing and hand over all deliverables.
- 6 Ongoing Support**
 -  We provide comprehensive data availability through the user dashboard and on-going reporting.



Contact Us



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