

AI and Machine Learning for Predictive Emissions Monitoring

COURSE OVERVIEW

This course provides a comprehensive introduction to the application of Artificial Intelligence (AI) and Machine Learning (ML) in Predictive Emissions Monitoring Systems (PEMS). Participants will explore how advanced algorithms and data-driven approaches can be leveraged to model, predict, and optimize emissions in industrial processes, reducing reliance on traditional continuous emissions monitoring systems (CEMS). Through a blend of theoretical foundations and real-world case studies, participants will gain insights into emissions modeling, data preprocessing, model training, validation, and deployment for compliance, operational efficiency, and sustainability goals.

WHO SHOULD ATTEND?

This course is designed for environmental engineers, data scientists, process engineers, compliance managers, and professionals working in industries such as power generation, oil & gas, chemical manufacturing, and heavy industries. It is also suitable for researchers, technology enthusiasts and other individuals who are keen to understand how AI and ML can be applied to environmental monitoring and regulatory compliance.

COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Understand the principles of predictive emissions monitoring and its advantages over traditional methods.
- Learn key AI and ML techniques for emissions modeling and forecasting.
- Acquire skills in handling industrial emissions data, including cleaning, preprocessing, and feature engineering.
- Develop, evaluate, and validate predictive models for real-world applications.
- Explore case studies of successful PEMS implementations and emerging trends in regulatory compliance.

KEY COURSE HIGHLIGHTS

At the end of the course, you will understand;

- Hands-on training with AI/ML tools and emissions datasets.
- Practical demonstrations of model development and deployment.
- Integration of domain knowledge with data science best practices.
- Case studies from energy, manufacturing, and environmental sectors.
- Focus on compliance with international environmental regulations and sustainability initiatives.

All our courses are dual-certificate courses. At the end of the training, the delegates will receive two certificates.

1. A GTC end-of-course certificate
2. Continuing Professional Development (CPD) Certificate of completion with earned credits awarded