



Case Study

Modernising emissions factors for solid fuels

A DEFRA-sponsored collaboration between Kiwa Energy, Ricardo Energy & Environment, Leeds & Manchester Universities and ECL to develop emission factors for the combustion of wood at different moisture contents and other solid fuels in a range of stoves that can be commonly found in domestic residences in the UK.

The Challenge

The UK is legally obliged to report on pollutant emissions from domestic combustion of solid fuels. Emissions factors used for reporting emissions haven't reflected changes to types of domestic fuels being burnt and changing stove technologies. Stove technology has improved, and there is now a better understanding of the difference in pollution performance between fuels.

This project was designed to create new more accurate emissions factor(s) for stoves and fuels, and to better understand the sources of emissions into the UK atmosphere.

The Solution

Kiwa, alongside the project partners has developed new test procedures and methods which allow for 'real world' pollutant performance for wood, house coal, anthracite, manufactured solid fuels (MSFs), coffee logs. Kiwa's expertise as a test lab has also enabled reductions in uncertainty in emissions factors through limiting natural test variations which occur due to variations in fuels and operation of stoves during testing.

The test cycle considered emissions during ignition, steady operation including refuels, and shutdown. The test cycle was representative of typical UK operating practise in terms of burn duration, number of refuels, fuel load, draught setting and wood species. The appliance range selected represents those used in UK and based on the installation data.

The Outcome

The published reports ([Phase 1 Report](#)) ([Phase 2 Report](#)) ([Phase 3 Report](#)) provide insight into performance of modern wood and solid fuel burning stoves compared to older appliances.

- Quantitative data about the performance and emissions of fuels
- Conclusive data regarding UK emissions sources impacting the atmosphere
- Development of a comprehensive range of representative emission factors

Contracting Client:
DEFRA

Location:
Various, UK

Sector:
Energy

Key Elements:

- ✓ Precise, customised test equipment & execution
- ✓ Extensive data processing
- ✓ Technical expertise



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Part of the global Kiwa organisation, Kiwa Energy is an established low carbon consultancy driving the transition a to net zero future using its expertise in renewables.