



HERITAGE COAL USE

Crofton Pumping Station

Recently across the UK there have been a few small-scale trials of e-coal in heritage engines, including Crofton Pumping Station in Wilshire, Coldharbour Mill in Devon and Queen Street Mill Textile Museum in Lancashire.

the highest point of the Kennet & Avon Canal which links London and Bristol.

The team is working hard to trial different methods, and partnering with a range of academic and industrial experts, to better understand the conditions to make e-coal a viable and lower emission way of operating these vital heritage assets in the future.



Crofton is one of the most significant industrial heritage sites in the UK, which started pumping in 1809 to supply water to

Key Statistics

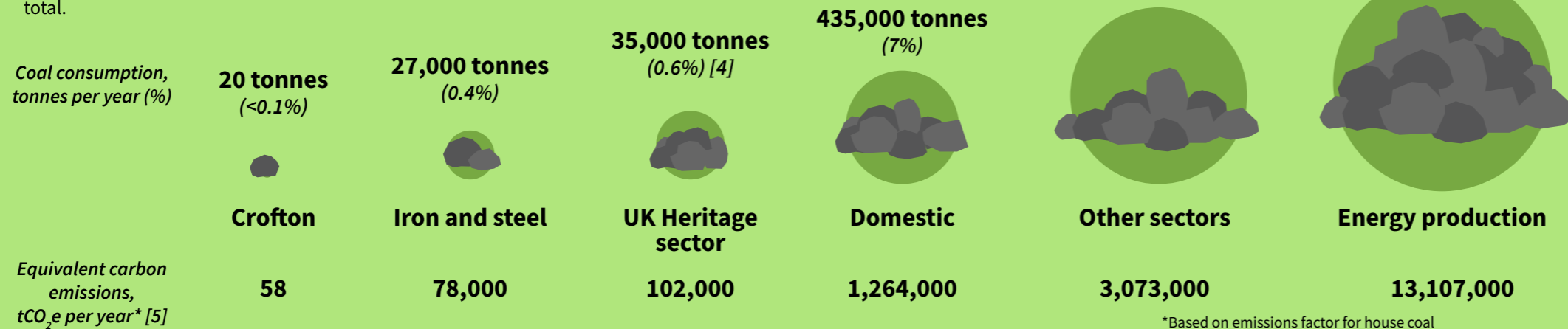
20,000
Visitors a year
[1]

7 'steaming weekends' a year
[2]

18 tonnes of coal burned per year [2]

UK Heritage coal use

During open steaming days at Crofton, a typical weekend steaming might use around 2.5 tonnes of coal, equivalent to just 20 tonnes of coal over the course of a year when also factoring in trial use [2]. As shown below, this accounts for a very small proportion of coal use in the UK. The below diagram represents the magnitude of coal consumption for different sectors in the UK [3]. This includes the heritage sector which currently uses around 35,000 tonnes per year [4], accounting for approximately just 0.6% of the national total.



Trials of E-Coal at Crofton

Crofton has been leading the way by undertaking an innovative trial of e-coal in their engines starting in July 2022 [6], using a blend of approximately 50% coal and 50% ground olive stones.

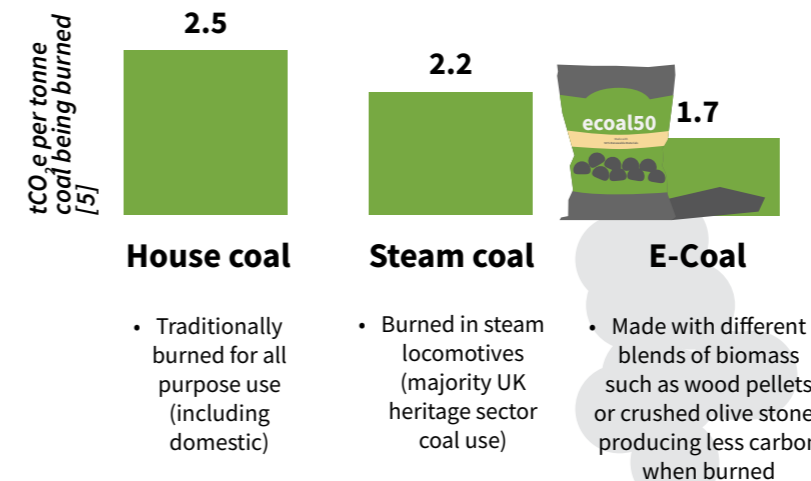
Pros

- New sprinkling technique has been developed to help burn cleaner.
- Less smoke produced.
- Less ash produced.
- Up to **40% lower carbon emissions** per tonne of coal (**1.7 vs 2.9 tCO₂e / tonne**). [5]
- Rate of consumption similar to that of house coal.

Cons

- Less reliability as it sometimes fails to generate enough to raise steam.
- Process control harder due to unknown precise manufacturer compositions.
- Cost per tonne around **25% more expensive (~£600 vs £480 / tonne)** [2]
- Can result in higher transport emissions due to need to segregate deliveries.

Not all coal is made the same



References

1. Crofton Beam Engines. 'Crofton Launches "Women Into Heritage Engineering" Project'. Available at: <https://www.croftonbeamengines.org/crofton-launches-women-into-heritage-engineering-project/> (Accessed: 1-15 March 2024).
2. Nix, K. (Crofton Beam Engines) Microsoft Teams Conversation with 3ADAPT, 19 March 2024.
3. Department for Energy Security & Net Zero (DESNZ). (2023) 'Digest of UK Energy Statistics (DUKES), Coal commodity balance'. Available at: <https://www.gov.uk/government/statistics/solid-fuels-and-derived-gases-chapter-2-digest-of-united-kingdom-energy-statistics-dukes> (Accessed: 1-15 March 2024).
4. Heritage Railway Association. (2024) 'Coal!'. Available at: <https://www.hra.uk.com/resources/coal> (Accessed: 1-15 March 2024).
5. Department for Energy Security & Net Zero (DESNZ), Department for Environment Food & Rural Affairs (DEFRA). (2023) 'UK Government GHG Conversion Factors for Company Reporting'. Available at <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023> (Accessed: 1-15 March 2024).
6. Crofton Beam Engines. (2022) 'ECoal Trial Steaming - Update, The Results so far'. Available at: <https://www.croftonbeamengines.org/ecoal-trial-steaming-update/> (Accessed: 1-15 March 2024).