



MURPHY X ULTIMATE CELL

A CARBON SAVING TRIAL





BACKGROUND

Lynch is supporting Murphy on critical Network Rail infrastructure works at Great Brington and Long Buckby Bridge.

The primary focus at Long Buckby involves embankment regrading and bridge strengthening to enhance long-term stability and performance. The works span from Area A to F along the northern edge of the track, with key activities including crest drainage installation between Areas B and E and regrading the embankment to reduce slope angles and improve structural integrity. Plant operations have been concentrated in Area F, located at the eastern end of the site.

SUSTAINABILITY

Sustainability at Heart is one of Lynch's core strategic pillars. We champion eco-friendly practices, social impact, fairness and integrity throughout everything we do. A key part of our sustainability commitment is our goal to achieve net-zero carbon emissions by 2040 (Scopes 1 & 2).

We are supporting our valued customer Murphy with '**A Greener Murphy**', the ambitious Climate Action Plan to have net zero direct emissions by 2030.

As part of this commitment, Lynch has partnered with Murphy on a focused plant efficiency trial to reduce fuel use and carbon output on site. We supplied a 30-tonne Bell ADT, fitted with six Ultimate Cells, to capture accurate telematics data over a six-week period.

The aim was to assess real-world performance improvements and quantify the environmental benefits. This collaborative approach is one of many ways we are working together to drive sustainable innovation in construction.

THE TECHNOLOGY

Ultimate Cell Truck Engine V3.0

This smart retrofit fuel cell technology optimises combustion engines by producing hydrogen on demand. It introduces small quantities of hydrogen into the engine air intake via electrolysis, in response to driver throttle commands. The technology is straightforward, requiring no hydrogen storage tanks in vehicles or on-site.

The unit can be scaled up to three or six cells, depending on the equipment needed. This patented device is designed to work with all types of fuels, including diesel, petrol, LPG, and ethanol, meeting both US and European standards.

THE TRIAL

Lynch supplied Murphy with a 30-tonne Bell Articulated Dump Truck (ADT), fitted with six Ultimate Cell units, to capture detailed telematics data over a six-week period.

Throughout the trial, weekly review meetings were held between Murphy's Environmental team and Lynch's Data and Sustainability team to track progress, review findings, and ensure consistency.

The performance of the trial machine was benchmarked in three key ways:

- Against a sister machine carrying out the same task on a similar project
- Using historic fuel and performance data from similar operations
- In comparison with an independent ADT that Murphy were operating on the same site

This multi-point comparison provided an accurate assessment of the trial machine's efficiency and environmental impact.

THE RESULTS

During the trial, the test machine operated at a fuel burn rate of 9.4 litres per hour, compared to the control machines running at 12.9 litres per hour, a 31.3% improvement in efficiency.

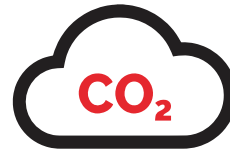
The test machine consumed 1,179.7 litres of diesel and produced 3,102.6 kg of CO₂, whereas the control machines used 1,619.0 litres and generated 4,258.0 kg of CO₂.

Over 125.5 operating hours, this equated to a saving of:



FUEL SAVING OF:

439.3L



CO² EMISSIONS:

1,155.4KG



COST SAVINGS BY:

£513.98

Based on a standard working year of 260 days at 9 hours per day (2,340 total hours), we can project significant efficiency gains.

At the historic fuel consumption rate of 12.9 litres per hour, annual diesel use could reach 30,186 litres, producing 79,389 kg of CO₂ and costing approximately £35,317.

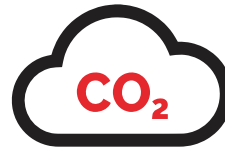
By reducing consumption to 9.4 litres per hour, annual usage drops to 21,996 litres, generating 57,848 kg of CO₂ at a cost of £25,935.

This results in a potential annual saving of: 8,190 litres of diesel, 21,541 kg of CO₂, and £9,382 per machine.



FUEL SAVING OF:

8,190L



CO² EMISSIONS:

FROM 21,541KG



COST SAVINGS BY:

£9,382

OUR PILLARS

Our strategic pillars govern everything we do,
Helping Our Customers Build Britain's Infrastructure.

This project aligns to:



SUSTAINABILITY AT HEART

We champion
**eco-friendly
practices, social
impact, fairness &
integrity** throughout
everything we do.

**HELPING OUR
CUSTOMERS BUILD
BRITAIN'S INFRASTRUCTURE.**

