Using rapeseed residues to run rail freight

The aim of the project is to test the substitution of non-road diesel (NRD) by Agrofuel Oleo100, a fuel derived from French rapeseed residues on Europorte freight locomotives (GETLINK group. This would reduce greenhouse gas emissions on the routes concerned by around 60%. This test is carried out without modification of existing locomotives.

Starting date of the project	6th July 2021
Project Localisation Places of implementation of the project at this stage and targeted geography if replicable.	Set up in Montceau-les-Mines (Saône et Loire) then experiment on the routes Nogent-sur-Seine (10) / Dunkerque (59) and Nogent-sur-Seine / Sotteville-lès-Rouen (76). If successful, extension to other rail routes in France.
Project objectives Type of climate innovation of the project with a description of the problem/issue addressed	The project must confirm the technical feasibility of replacing Non-Road Diesel (NRD) with biofuel.
Detailed project description	The NRD consumed for locomotive traction represents the first item of the GETLINK group GHG inventory (17010 tonnes CO_2 in 2020). The reduction of these emissions related to traction fuel is a key issue for the Group. The replacement of NRD with agrofuels in current locomotives reduces these emissions by at least 60%. This project aims in particular to: - Confirm the feasibility of using Oleo100 biofuel on Euro4000 locomotives during a full-scale test over a period of 3 months (and not on the test bench because the group does not have the operational flexibility to be able to demobilize one of its locomotives) - Confirm the operational impacts (positioning of fuel tanks and supply, identification of possible operational impacts, adjustment of driving and maintenance procedures...). The fuel used is developed from 100% French rapeseed by SAIPOL, subsidiary of the AVRIL group. The product used is a co-product resulting from the transformation of rapeseed into edible oil and protein-rich oil serving as a cake for the nutrition of livestock. Link to biofuel: https://oleo100.com/oleo-assets/uploads/2020/02/oleo_1911161_brochure_oleo_210x297mm_8pages-2.pdf
Main project's drivers for reducing the greenhouse gas emissions	

Reduction levers	**Details on the aspects of the project**
☐ Energy and resource efficiency (including behaviour)	
☒ Energy Decarbonisation	Decarbonisation of locomotive traction energy
☐ Energy efficiency improvements	
☐ Improving efficiency in non-energy resources	
☐ Emissions absorption: creation of carbon sinks, negative emissions (BECCS, CCU/S, ...)	
☐ Financing low-carbon producers or disinvestment from carbon assets	
☐ Reduction of other greenhouse gases emission	

Emission scope(s) on which the project has a significant impact and quantification of GHG emission reductions per emission scope

	Aspects of the project contributing to the reduction of emissions by emission category	**Quantification of associated GHG emissions by emission category** **Please follow the quantification methodology used in the Afep guidelines.**
Reduction of the company's carbon dependency		

	Scope 1 *Direct emissions generated by the company's activity.*	Reduction of emissions from the combustion of biofuel in locomotives	Scope 1 before-project (project-wide) = 126 tCO2 - 50 000 litres - EF NRD : 2.52 kgCO2/l Scope 1 after-project = 55 tCO2 - 50 000 litres - EF Oleo 100 : 1.106 kgCO2/l **71 tCO2 reduction**(for the 3 months of the trial)
	Scope 2 *Indirect emissions associated with the company's electricity and heat consumption.*		
	Scope 3 *Emissions induced (upstream or downstream) by the company's activities, products and/or services in its value chain.*	Reduction of upstream emissions of biofuel in locomotives.	Scope 3 before-project (project-wide) = 33 tCO2 - 50 000 litres - EF GNR : 0.66 kgCO2/l Scope 3 after-project = 0 t - 50 000 litres - EF Oleo 100 : 0 kgCO2/l **33 tCO2 reduction**(for the 3 months of the trial)
	Increase of carbon sinks		
	Emissions Absorption *Carbon sinks creation, (BECCS, CCU/S, …)*		
	GHG emissions avoided by the company at third parties		
	Avoided Emissions *Emissions avoided by the activities, products and/or services in charge of the project, or by the financing of emission reduction projects.*		

Clarification on the calculation or other remarks:
By totaling the gain in Scope 1 and Scope 3, the project saves **104** tons of CO2 over 3 months.
The Oleo100 emission factor (EF) of 1.106kgCO2/l is the result of a durability calculation as part of the Saipol certification scheme audited by Bureau Veritas.
It should be noted that according to the carbon accounting rules of the GETLINK group (based on public benchmarks and in particular the ADEME database), emissions related to the combustion of Oleo100 (like all biofuels) will be counted as zero. Nevertheless, the overall gain (scope Scopes 1 and 3) will remain the same as in the approach adopted in this sheet.

Modality of verification of the quantification.	**Calculation standard used (ADEME base, GHG protocol, etc.):** The emission factor used for non-road diesel is that of the ADEME database available on the date of the Group reporting, like most of the Group's emission factors. **Verification of the calculation (internal or external):** The calculation was reviewed by Carbone 4 at the end of 2020. In addition, the reduction in the GHG balance is attested by a sustainability certificate provided by the producer to the user (GETLINK) but also to the French authorities.
Other environmental and social benefits of the project	The biofuel used improves air quality by significantly reducing emissions of fine and ultrafine particles. The rapeseed used is part of a trajectory of progress, particularly on its environmental balance with a real policy of defense of biodiversity (cultural rotation, pollinating activity, non-irrigated culture...). The production of traction energy from food residues is also a successful example of a circular economy contributing to national energy independence. In this sense, the project contributes to the following SDGs: ● SDG 3 Good Health and well-being ● SDG 11 Sustainable Cities and Communities ● SDG 13 Climate Action 

Project maturity level	☐ Prototype laboratory test (TRL 7) ☐ Real life testing (TRL 7-8) ☐ Pre-commercial prototype (TRL 9) ☒ Small-scale implementation ☐ Medium to large scale implementation **Remarks**: N/A
Capacity and conditions of the project reproducibility, with associated climate impact mitigation potential	This test project aims to be able to expand the use of Oleo100 to about 1.1 million liters per year by 2023, which will eventually represent a reduction of 2340 tons of CO2 per year.
Amount of investment made (in €)	No hardware investment cost. Costs are operating costs related to the purchase and supply of the biofuel
Economic profitability of the project (ROI)	☐ ST (0-3 years) ☐ MT (4-10 years) ☒ LT (> 10 years) **Remarks:** At this stage the project is not profitable given the unit price per litre of biofuel and the unfavourable tax gap between RNG and Oleo100.
Engaged partnerships	Partnerships with EUROPORTE, AVRIL/SAIPOL and STADLER have been initiated through this project.
Open comments from the project owner	/
More about the project	
Contact the company carrying the project	Romain.dufour@getlinkgroup.com
Project URL links	https://presse.getlinkgroup.com/actualites/europorte-et-saipol-unis-pour-decarboner-le-rail-avec-oleo100-f582-f6b8a.html
Illustrations of the project