

Installation of a tri-generation plant



In order to stop gas consumption on its production site in Lentzweiler (Luxembourg), Tarkett has the project to install by 2024 a tri-generation plant on its site which will stop the incinerator currently used in the production process.

Starting date of the project	2015 : Start of preliminary studies 2018 : Obtaining the operating permit 2024 : Putting into service of tri-generation plant		
Project Localisation Places of implementation of the project at this stage and targeted geography if replicable.	Installation of the biomass plant at the Lentzweiler factory, Luxembourg		
Project objectives Type of climate innovation of the project with a description of the problem/issue addressed	Reduce GHG emissions at the Lentzweiler site by eliminating the use of gas and stopping the incinerator		
Detailed project description	<p>The project consists in installing a tri-generation plant (capacity 52kt of wood/year) in partnership with Engie close to the Tarkett plant.</p> <ul style="list-style-type: none"> To supply Tarkett with 47GWh/year of energy : <ul style="list-style-type: none"> Thermal (28 GWh/year for the process and 7.3 GWh/year for heating) Refrigeration (9.6 GWh/year) Inject 36.3 GWh of electricity into the Luxembourg grid Recover fatal heat (30°C < water < 40°C depending on the season) to produce pellets (41,1 GWh/year) <p>This project is divided into several phases.</p> <p>Phase 1: Currently, the thermal oil used in the production processes is heated by the combustion of gas in two gas in two boilers. The thermal energy, supplied in the form of steam, will be used to heat the thermal oil necessary for the process as well as the heating network of the buildings. It will also allow, thanks to an It will also provide the cold necessary to produce the chilled water required for the process, thanks to an absorption unit. This will reduce emissions by nearly 8400 tCO2 eq (7200 tCO2 eq for Cofely with the transport of the Biomass).</p> <p>Phase 2: Another project related to the biomass installation is the shutdown of the incinerator currently used to burn the fumes from the coating line in order to comply with environmental standards. The incinerator would be replaced by a flue gas condenser. Shutting down the incinerator would result in savings of 12 GWh/year and a reduction in emissions of 2800 t CO2 eq. These 2 joint projects would make it possible to stop consuming gas at the Lentzweiler site.</p>		
Main project's drivers for reducing the greenhouse gas emissions	Reduction levers	Details on the aspects of the project	
	<input type="checkbox"/> Energy and resource efficiency (including behaviour)		
	<input checked="" type="checkbox"/> Energy Decarbonisation	Shutdown of the incinerator Replacement of the use of gas by the energy produced by the tri-generation plant	
	<input type="checkbox"/> Energy efficiency improvements		
	<input type="checkbox"/> Improving efficiency in non-energy resources		
	<input type="checkbox"/> Emissions absorption: creation of carbon sinks, negative emissions (BECCS, CCU/S, ...)		
	<input type="checkbox"/> Financing low-carbon producers or disinvestment from carbon assets		

	<input type="checkbox"/> 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	<table border="1"> <thead> <tr> <th data-bbox="481 439 817 609"></th> <th data-bbox="817 439 1145 609">Aspects of the project contributing to the reduction of emissions by emission category</th> <th data-bbox="1145 439 1474 609">Quantification of associated GHG emissions by emission category Please follow the quantification methodology used in the Afep guidelines.</th> </tr> </thead> <tbody> <tr> <td colspan="3" data-bbox="481 609 1474 636">Reduction of the company's carbon dependency</td> </tr> <tr> <td data-bbox="481 636 817 734"> Scope 1 <i>Direct emissions generated by the company's activity.</i> </td> <td data-bbox="817 636 1145 734"> Stopping the consumption of gas for heating and production Shutdown of the incinerator </td> <td data-bbox="1145 636 1474 734"> -8.4 ktCO₂/year -2.8 ktCO₂/year </td> </tr> <tr> <td data-bbox="481 734 817 833"> Scope 2 <i>Indirect emissions associated with the company's electricity and heat consumption.</i> </td> <td data-bbox="817 734 1145 833"> Heat (steam) imported from from the trigeneration plant </td> <td data-bbox="1145 734 1474 833"> Marginal (<1 tCO₂/year) </td> </tr> <tr> <td data-bbox="481 833 817 981"> Scope 3 <i>Emissions induced (upstream or downstream) by the company's activities, products and/or services in its value chain.</i> </td> <td data-bbox="817 833 1145 981"></td> <td data-bbox="1145 833 1474 981"></td> </tr> <tr> <td colspan="3" data-bbox="481 981 1474 1008">Increase of carbon sinks</td> </tr> <tr> <td data-bbox="481 1008 817 1084"> Emissions Absorption <i>Carbon sinks creation, (BECCS, CCU/S, ...)</i> </td> <td data-bbox="817 1008 1145 1084"></td> <td data-bbox="1145 1008 1474 1084"></td> </tr> <tr> <td colspan="3" data-bbox="481 1084 1474 1111">GHG emissions avoided by the company at third parties</td> </tr> <tr> <td data-bbox="481 1111 817 1258"> Avoided Emissions <i>Emissions avoided by the activities, products and/or services in charge of the project, or by the financing of emission reduction projects.</i> </td> <td data-bbox="817 1111 1145 1258"> Injection of electricity produced from from the trigeneration plant on the Luxembourg grid Luxembourg grid </td> <td data-bbox="1145 1111 1474 1258"> -14,8 ktCO₂ </td> </tr> </tbody> </table> <p>Clarification on the calculation or other remarks The Lentzweiler site consumed 47 GWh PCI of gas per year before the project was launched. Considering an average EF of 239 kgCO₂/MWh PCI, this represented nearly 11.2 ktCO₂/year.</p> <p>The cessation of gas consumption for heating and production lines (thermal oil production) as well as the production lines (thermal oil production) as well as the shutdown of the incinerator will enable the site to completely eliminate its gas consumption.</p> <p>Phase 1 of the project, which consists of replacing the energy produced by the two gas boilers with the tri-generation plant will reduce gas consumption by 28 GWh PCI/year for the process part and 7.3 GWh PCI/year for the heating part. We can therefore consider a total saving thanks to phase 1 of the project of about 8.4 ktCO₂/year.</p> <p>Phase 2 aims at stopping the incinerator and the associated gas consumption (12 GWh PCI/year). This is equivalent to to a reduction of emissions of about 2.8 tCO₂eq/year (it is considered that the condenser does not smoke does not lead to GHG emissions).</p> <p>Phases 1 and 2 therefore reduce emissions by 11.2 tCO₂eq/year. The energy required for the site's uses is now produced by the tri-generation plant. The emission factor of this heat is very low compared to that of natural gas. The production of the 47GWh (from the tri-generation plant) therefore leads to estimated marginal CO₂ emissions (<1 tCO₂/year). The tri-generation plant allows the production of 36,3 GWh/year injected in the Luxembourg grid. In considering that the emission factor of the electricity of the Luxembourg grid is 410 kgCO₂/MWh (Ademe carbon base). This makes it possible to avoid nearly 14.8 ktCO₂/year.</p>				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 <i>Direct emissions generated by the company's activity.</i>	Stopping the consumption of gas for heating and production Shutdown of the incinerator	-8.4 ktCO ₂ /year -2.8 ktCO ₂ /year	Scope 2 <i>Indirect emissions associated with the company's electricity and heat consumption.</i>	Heat (steam) imported from from the trigeneration plant	Marginal (<1 tCO ₂ /year)	Scope 3 <i>Emissions induced (upstream or downstream) by the company's activities, products and/or services in its value chain.</i>			Increase of carbon sinks			Emissions Absorption <i>Carbon sinks creation, (BECCS, CCU/S, ...)</i>			GHG emissions avoided by the company at third parties			Avoided Emissions <i>Emissions avoided by the activities, products and/or services in charge of the project, or by the financing of emission reduction projects.</i>	Injection of electricity produced from from the trigeneration plant on the Luxembourg grid Luxembourg grid	-14,8 ktCO ₂
	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 <i>Direct emissions generated by the company's activity.</i>	Stopping the consumption of gas for heating and production Shutdown of the incinerator	-8.4 ktCO ₂ /year -2.8 ktCO ₂ /year																												
Scope 2 <i>Indirect emissions associated with the company's electricity and heat consumption.</i>	Heat (steam) imported from from the trigeneration plant	Marginal (<1 tCO ₂ /year)																												
Scope 3 <i>Emissions induced (upstream or downstream) by the company's activities, products and/or services in its value chain.</i>																														
Increase of carbon sinks																														
Emissions Absorption <i>Carbon sinks creation, (BECCS, CCU/S, ...)</i>																														
GHG emissions avoided by the company at third parties																														
Avoided Emissions <i>Emissions avoided by the activities, products and/or services in charge of the project, or by the financing of emission reduction projects.</i>	Injection of electricity produced from from the trigeneration plant on the Luxembourg grid Luxembourg grid	-14,8 ktCO ₂																												
Modality of verification of the quantification.	<p>Calculation standard used (ADEME base, GHG protocol, etc.): Use of the conversion factor from the Ministry of Economy of Luxembourg.</p> <p>Verification of the calculation (internal or external): internal verification by the Group</p>																													

Other environmental and social benefits of the project	<p>This project brings other benefits:</p> <ul style="list-style-type: none"> • Creation of 10 jobs in the biomass plant • Creation of 15 jobs for the pellet plant • The wood used (shrubbery, roadside clearing, forestry pellets) will come from a radius of 200km maximum around the plant
Project maturity level	<p> <input type="checkbox"/> Prototype laboratory test (TRL 7) <input type="checkbox"/> Real life testing (TRL 7-8) <input type="checkbox"/> Pre-commercial prototype (TRL 9) <input checked="" type="checkbox"/> Small-scale implementation <input type="checkbox"/> Medium to large scale implementation </p> <p>Remarks: COMODO (authorization to operate) granted in December 2018</p>
Capacity and conditions of the project reproducibility, with associated climate impact mitigation potential	Particular economic set-up with a direct link to Luxembourg aid for this type of project
Amount of investment made (in €)	Total investment of about 40 to 50 m€, partly financed by state subsidies Luxembourg government.
Economic profitability of the project (ROI)	<p> <input type="checkbox"/> ST (0-3 years) <input checked="" type="checkbox"/> MT (4-10 years) <input type="checkbox"/> LT (> 10 years) </p> <p>Remarks: This project allows Tarkett : <ul style="list-style-type: none"> • Avoid a significant part of the new carbon tax in Luxembourg • To make a significant saving on gas expenses </p>
Engaged partnerships	A long-term commitment contract has been signed with Engie
Open comments from the project owner	/
More about the project	
Contact the company carrying the project	communication@tarkett.com
Project URL links	/
Illustrations of the project	<p>The diagram illustrates the project's workflow. On the left, raw wood chips are fed into a processing unit labeled 'Biogie S.A.'. This unit is connected to a central 'Process' box, which includes 'Chauffage bâtiments' (building heating) and an 'Absorption chiller'. The 'Process' box is linked to 'Biogie Pellets S.A.' on the right, which produces finished wood pellets. An 'Energie totale' (total energy) flow is indicated between the processing unit and the pellet production stage. The Tarkett logo is prominently displayed at the bottom left of the diagram.</p>