

Improvement of the energy performance of industrial railway sites



The energy performance of industrial rail sites is now a priority for Alstom which is taking action to reduce the energy consumption of its production sites.

Starting date of the project	2014	
Project Localisation Places of implementation of the project at this stage and targeted geography if replicable.	France - experiments in Tarbes (Hautes Pyrénées) and Villeurbanne (Rhône Alpes)	
Project objectives Type of climate innovation of the project with a description of the problem/issue addressed	Improving the energy performance of the industrial sites operated by Alstom France, in particular by implementing a thermal renovation plan for buildings (industrial roofs, HQE tertiary buildings) and an energy savings plan.	
Detailed project description	<p>Rail transport has many environmental advantages. However, there is still room for improvement, particularly in terms of the energy performance of industrial facilities, for at least three reasons:</p> <ol style="list-style-type: none"> 1. The age of the railway industrial sites, most of which were built at the beginning of the 20th century (e.g.: creation of the Aytré site in 1920); 2. Very large sites linked to the size of the products (e.g.: ~31,000 m2 of buildings for the Tarbes production site); 3. Duration of the return on energy performance investments (~10 years) much higher than the industrial load visibility <p>Alstom France is taking actions to reduce its energy consumption in order to limit the carbon impact of the manufacturing process and to have a better allocation and management of resources.</p> <p>These actions are implemented throughout the country, for instance:</p> <ul style="list-style-type: none"> • Alstom site in La Rochelle: Alstom is one of the founding partners of the carbon cooperative in La Rochelle, which is part of the "La Rochelle, Zero-Carbon Territory) in 2040", launched in 2018 and bringing together initiatives aimed at drastically reducing the agglomeration's CO2 emissions. Alstom is participating in the achievement of this objective by reducing its site's carbon emissions and by participating in projects to design MaaS (Mobility as a Service) transportation projects; • Deployment of LED lighting on all French sites (2018/2020); • Installation of solar panels for the production of renewable electricity at the Tarbes site (2010) <p>Between 2014 and 2020, Alstom's goal was to reduce its energy intensity by 10%. The objective was reached in 2020 with an energy intensity decreased by 17.6% compared to 2014.</p> <p>In order to reduce CO2 emissions linked to the energy consumption of its industrial sites, Alstom aims to obtain 100% of its electricity supply from renewable energies (self-consumption with photovoltaic panels + certificates) on its French industrial sites.</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	Use and production of electricity from renewable energy
	<input checked="" type="checkbox"/> Energy efficiency improvements	Installation of less energy consuming equipment Thermal renovation of buildings
	<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="475 280 817 481"></th> <th data-bbox="817 280 1145 481">Aspects of the project contributing to the reduction of emissions by emission category</th> <th data-bbox="1145 280 1543 481">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="475 481 1543 510">Reduction of the company's carbon dependency</td> </tr> <tr> <td data-bbox="475 510 817 824"> Scope 1 <i>Direct emissions generated by the company's activity.</i> </td> <td data-bbox="817 510 1145 824">Thermal renovation of buildings</td> <td data-bbox="1145 510 1543 824"> Scope 1 emissions: 2014: 21,140 tCO₂eq/year 2020: 20,306 tCO₂eq/year This represents a 4% reduction in CO₂ emissions in absolute value Relation to sales (France) 2014: €1,324 billion 2020: €1,530 billion This represents a 17% decrease as a proportion of The turnover </td> </tr> <tr> <td data-bbox="475 824 817 1220"> Scope 2 <i>Indirect emissions associated with the company's electricity and heat consumption.</i> </td> <td data-bbox="817 824 1145 1220">Deployment of LEDs Use of electricity from renewable energy</td> <td data-bbox="1145 824 1543 1220"> Scope 2 emissions: 2014: 6,246 tCO₂eq/year 2020: 1,612 tCO₂eq/year (data in market based taking into account renewable energies). This represents a 74% reduction in CO₂ emissions in absolute value. Relation to sales (France) 2014: €1,324 billion 2020: €1,530 billion That represents a decrease of 80% in proportion of the turnover </td> </tr> <tr> <td data-bbox="475 1220 817 1366"> 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 1220 1145 1366"></td> <td data-bbox="1145 1220 1543 1366"></td> </tr> <tr> <td colspan="3" data-bbox="475 1366 1543 1395">Increase of carbon sinks</td> </tr> <tr> <td data-bbox="475 1395 817 1467"> Emissions Absorption <i>Carbon sinks creation, (BECCS, CCU/S, ...)</i> </td> <td data-bbox="817 1395 1145 1467"></td> <td data-bbox="1145 1395 1543 1467"></td> </tr> <tr> <td colspan="3" data-bbox="475 1467 1543 1496">GHG emissions avoided by the company at third parties</td> </tr> <tr> <td data-bbox="475 1496 817 1641"> 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 1496 1145 1641"></td> <td data-bbox="1145 1496 1543 1641"></td> </tr> </tbody> </table> <p data-bbox="475 1668 1543 1769"> Clarification on the calculation or other remarks: Calculation based on IEA emission factors, updated annually, for France. Carbon emissions related to scope 2 are calculated using a market-based approach to take into account the use of electricity from renewable sources. </p> <p data-bbox="475 1792 1543 1863"> All production sites, all depots operated and managed by Alstom in the case of a contract of five years or more, all permanent offices occupied and managed by Alstom and all permanent sites with more than 200 employees are consolidated in the environmental reporting. </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>	Thermal renovation of buildings	Scope 1 emissions: 2014: 21,140 tCO ₂ eq/year 2020: 20,306 tCO ₂ eq/year This represents a 4% reduction in CO ₂ emissions in absolute value Relation to sales (France) 2014: €1,324 billion 2020: €1,530 billion This represents a 17% decrease as a proportion of The turnover	Scope 2 <i>Indirect emissions associated with the company's electricity and heat consumption.</i>	Deployment of LEDs Use of electricity from renewable energy	Scope 2 emissions: 2014: 6,246 tCO ₂ eq/year 2020: 1,612 tCO ₂ eq/year (data in market based taking into account renewable energies). This represents a 74% reduction in CO ₂ emissions in absolute value. Relation to sales (France) 2014: €1,324 billion 2020: €1,530 billion That represents a decrease of 80% in proportion of the turnover	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>		
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Modality of verification of the quantification	Calculation standard used (ADEME base, GHG protocol, etc.): International Energy Agency (IEA) emission factors Verification of the calculation (internal or external): External																												
Other environmental and social benefits of the project	The aim of this project is to develop a "ripple effect" on the sector, with the aim of spreading good practices in terms of energy consumption. In this sense, the project contributes to the SDGs 9 Industry, Innovation, Infrastructure and SDG 12 Responsible consumption and production.																												

Project maturity level	<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 type="checkbox"/> Small-scale implementation <input checked="" type="checkbox"/> Medium to large scale implementation
Capacity and conditions of the project reproducibility, with associated climate impact mitigation potential	The purchase of green energy and the widespread installation of LEDs are intended to be reproduced on all sites in France. Only the “Zero Carbone Territory” project in La Rochelle is purely developed locally.
Amount of investment made (in €)	“Zero Carbone Territory” project, 2018: k€ 200 - Deployment of LED lighting: k€ 450 - Industrial initiative around the manufacture of electronic cards on Villeurbanne site: k€106 - Installation of solar panels on Tarbes site: Not communicated
Economic profitability of the project (ROI)	<input type="checkbox"/> ST (0-3 years) <input type="checkbox"/> MT (4-10 years) <input checked="" type="checkbox"/> LT (> 10 years) Remarks: Not disclosed at this stage
Engaged partnerships	La Rochelle site: Alstom is a member of “Zero Carbone Territory project”, a group of partners between the industrial sector and local and environmental institutions in La Rochelle.
Open comments from the project owner	/
More about the project	
Contact the company carrying the project	Sustainability-csr@alstomgroup.com
Project URL links	Local and transversal initiative on the Zero Carbon Territory project: https://www.agglo-larochelle.fr/projet-de-territoire/territoire-zero-carbone
Illustrations of the project	  