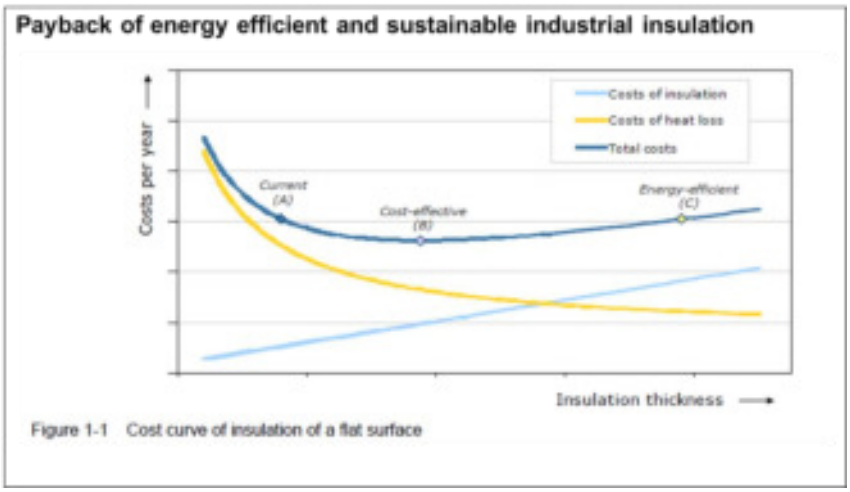
TIP-4-BEST: Thermal insulation performance audit program to boost energy efficiency and reduce heat losses in plants

To reduce energy consumption and CO2 emissions in its plants, the Saint-Gobain Group acts upstream by training its engineers in the EiiF's TIPCHECK energy assessment program so that they can implement relevant and appropriate sustainable insulation solutions in the plants.

Starting date of the project	2013
Project Localisation Places of implementation of the project at this stage and targeted geography if replicable.	The project is carried out on a worldwide scale in Saint-Gobain factories, its reproducibility being also on a worldwide scale.
Project objectives Type of climate innovation of the project with a description of the problem/issue addressed	• Assess the performance of insulation installed in thermal equipments such as ovens, storage tanks and insulated pipes at all Saint-Gobain sites • Undertake work to improve the energy performance of equipments where room for improvement has been identified
Detailed project description	This project is in line with the advocacy of EiiF (European Industrial Insulation Foundation) for the promotion of sustainable insulation systems (using mineral wool produced by Saint-Gobain/Isover) in order to save energy and reduce CO_2 emissions. Indeed, EiiF has created an energy assessment program called "TIPCHECK", which trains and certifies engineers. These engineers are then able to analyse the energy losses of industries and to advise on the most relevant and appropriate sustainable insulation solutions. On-site audits allow work to be undertaken to repair damaged or poorly insulated areas, to insulate areas that are not insulated, or to propose better insulation solutions Part of this program is then to develop in-house insulation solutions for industrial customers. By extending this program within Saint-Gobain, the company wants to show that the motto of this project is '"leading by example".  Figure 1-1 Cost curve of insulation of a flat surface The ultimate goal is to reduce energy consumption and CO_2 emissions.
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	
☒ Energy efficiency improvements	Improving the insulation of equipments at Saint-Gobain sites
☐ 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.*	Improving the insulation of equipments at Saint-Gobain sites	Example for a glass furnace: -785 teqCO_2/year
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.*		
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:
The reduced emissions strongly depend on the type and size of the installation, its condition before the project and the used energy types. In the example of the glass furnace above, the gain in natural gas is 3,888MWh/year, i.e. a reduction of 785 teqCO_2/year considering an emission factor of 0.202 tCO2eq/MWh of natural gas (IPCC 2006 guidelines for National Greenhouse Gas Inventories).

Modality of verification of the quantification.

Calculation standard used (ADEME base, GHG protocol, etc.): By energy audits carried out by accredited experts having the required qualification: TIPCHECK Engineers. This certification is delivered by EiiF after a specific training and the passing of an exam.

Verification of the calculation (internal or external): External audit

Other environmental and social benefits of the project

If possible, list the impacts and Sustainable Development Objectives concerned

By improving the energy efficiency of its factories, Saint-Gobain's program contributes to more sustainable production and thus to SDG 9 Industry, Innovation and Infrastructure.

Project maturity level

Tick the corresponding current 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:

- More than 30 major thermal audits in several Saint-Gobain plants.
- Several TIPCHECK audits have been carried out at customers' premises, confirming the results obtained in the framework of Saint-Gobain's TIP-4-BEST program.
- The marketing of this type of audits deployed in more than 5 countries

Capacity and conditions of the project reproducibility, with

This project is replicable in any industrial environment using thermal energy in its processes.

associated climate impact mitigation potential	The involvement of top management and the availability of CAPEX are two factors that condition the success of the project.
Amount of investment made (in €)	• 12,000€ per year to maintain the certification of TIPCHECK engineers and to keep up to date with any improvements in this area, methodology and software • 40,000€ for special equipments such as infrared cameras and precise thermometers. • Concerning the audits carried out at Saint-Gobain, the investments depend on the insulation to be installed and the size of the installations: this can vary from a few dozen to a few hundred k€
Economic profitability of the project (ROI)	☒ ST (0-3 years) ☐ MT (4-10 years) ☐ LT (> 10 years) **Remarks:** The payback period for the proposed solutions in this process is, on average, less than two years. For most of the poorly insulated inspected equipments, the payback period is only a few months.
Engaged partnerships	The main organisation supporting this project is the European Industrial Insulation Foundation (EiiF), a European non-profit foundation created to promote and establish the use of industrial insulation as a widely understood and accepted means of achieving sustainability.
Open comments from the project owner	TIP-4-BEST is a project that allows the Saint-Gobain Group to achieve its ambitious sustainability goals and, at the same time, to set an example by helping the rest of the industries (customers) to become more efficient and less emissive.
More about the project	
Contact the company carrying the project	dehs@saint-gobain.com
Project URL links	https://www.isover-technical-insulation.com/eiif-sustainable-industry
Illustrations of the project	Visualisation of heat losses with infrared cameras