



# SIKA AT WORK

## SHOPPING CENTER IN CAMPANIA, ITALY

SUSTAINABLE ROOFING SOLUTION

BUILDING TRUST



# SIKA ROOFING SOLUTIONS

Sustainable Solutions measured by Life Cycle Assessment (LCA)



## PROJECT DESCRIPTION

This project is about the refurbishment of the roof of a shopping center in Italy. The owner was looking for a long lasting and high quality refurbishment solution for a total area of 35'000 m<sup>2</sup>.

## PROJECT REQUIREMENTS

The customer was very interested in details regarding durability, performance, and especially on benefits the system could bring in the use phase. The rehabilitation with a competitive generic roofing solution, namely a new 2-layer bituminous waterproofing membrane, was considered as well. Sika convinced the customer with its high performance thermoplastic roofing solution to fulfil their requirements from a technical, economic and environmental point of view.

## SIKA'S SUSTAINABLE APPROACH

In warm climates like Italy it is known that white, highly reflective roofing membranes are able to reduce heat absorption and reduce both the cooling energy consumption of buildings and the energy costs.

Thus, Sika proposed an alternative cost-effective solution not only considering the initial construction costs and environmental impacts, but also taking into account the potential savings in terms of Energy and Carbon Footprint that the installation of a high reflective roofing membrane provides. To differentiate from the black colored generic bituminous solution and to convince the customer of the additional benefits of highly reflective thermoplastic cool roofs, Sika's Global Product Sustainability Group performed a Life Cycle Assessment (LCA) of the two proposed refurbishment solutions with similar performance.

## TECHNICAL SOLUTION

Refurbishment solution	Components	Sika Solution	Competitive Solution
Refurbishment system	Waterproofing	Sarnafil TS 77-18 RAL 9016 SR	2-layer bitumen
	Adhesive	-	Bituminous paste
	Levelling layer	Sarnafelt PP 400	-
	Fasteners	Screw: SFS TI 6,3 Washer: Sarnafast KTL 82 x 40	Screw: SFS TI 6,3 Washer: Sarnafast KTL 82 x 40
Original system (left as a substrate)	Waterproofing		2- layer bitumen
	Insulation		PUR (30 mm)
	Vapour control		Bituminous layer
	Substrate		Concrete deck

## ENVIRONMENTAL EVALUATION

Sika's refurbishment solution in terms of relevant environmental indicators such as Energy Footprint and Carbon Footprint has significantly lower impacts than the generic competitive solution:

- -54% in Cumulative Energy (CED)
- -30% in CO<sub>2</sub> emissions (GWP)

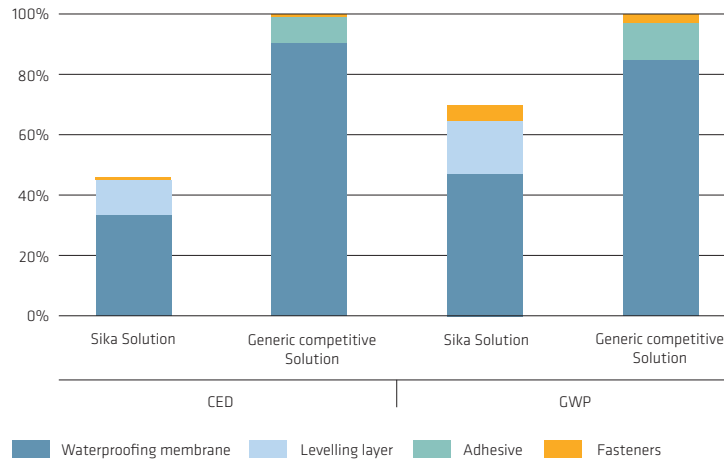
Using light coloured reflective membranes can help reduce energy consumption from avoided heating/cooling. Therefore the estimated potential energy and carbon savings from avoided cooling/heating of the building due to the installation of the white membrane over the black roof are calculated to determine the energy and carbon break-even point of the roofing system, with significant savings.

The estimated potential savings surpass the energy and carbon cradle to gate impacts of Sika's refurbishment solution within a year.

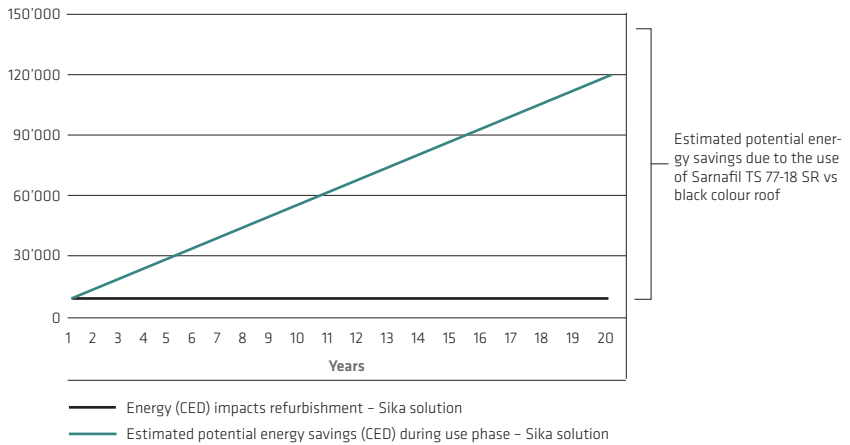
Besides, it is estimated that with the white membrane almost 119'000 GJ of energy (CED) could be potentially saved compared with the black colour roof in a period of 20 years. This represents potential savings of 600 MWh/year in terms of electricity consumption (and consequently a reduction in the electricity bill).

In terms on GWP, a reduction potential of 6'000 tons CO<sub>2</sub>-eq. with the white membrane could be estimated compared with the black roof in a period of 20 years. This means a potential reduction of 300 tons CO<sub>2</sub>-eq/year (based on Italian electricity grid mix).

Environmental impacts of the refurbishment solutions [35 000 m<sup>2</sup>]



Break even energy Sika's refurbishment solution: Cumulative Energy Demand (CED) [GJ / 35'000 m<sup>2</sup>]



## INVESTING IN SUSTAINABLE SOLUTIONS

Thanks to LCA it is possible to evaluate the systems' potential environmental impacts over the entire life cycle and thus select a cost-effective solution not only considering the initial construction costs and environmental impacts, but also taking into account the potential savings in terms of Energy and Carbon Footprint that the installation of a white membrane provides.

The results of the evaluation were decisive for the customer to choose the Sarnafil TS 77-18 RAL 9016 SR, a high solar reflective white membrane, over the bituminous membrane, based on the reduction of the overall environmental impacts, and therefore less costs (economic and environmental) in the long run.

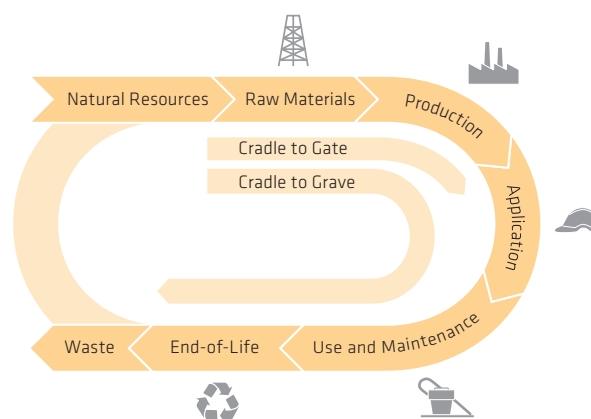
The project allowed Sika to demonstrate its competence and expertise in sustainability, including all relevant quantitative contributions to a sustainable high performance tailor-made roofing solution to fulfil the customer requirements from a technical, economic and environmental point of view.

# THE SIKA LIFE CYCLE ASSESSMENT (LCA) APPROACH



Life Cycle Assessment (LCA) is a standardized method to assess and compare the inputs, outputs and potential environmental impacts of products and services over their life cycle. LCA's are increasingly recognized as the best way to evaluate the sustainability performance of products and systems. The LCA can greatly assist our customers in evaluating Sika's products and systems namely by providing quantitative data on their environmental profile. This enables the differentiation of products that may have similar performance, but greater variations concerning their environmental impact - where obviously the lower, the better. Sika carries out LCA's according to the ISO 14040 series and the standard EN 15804. The impact assessment methodology used is CML 2001. The LCA results are presented for the following three relevant impact categories deemed most relevant for roofing systems:

- Global Warming Potential (GWP) [kg CO<sub>2</sub>-eq.] ("Carbon Footprint") – is the potential contribution to climate change due to greenhouse gas emissions.
- Cumulative Energy Demand (CED) [MJ] ("Energy Footprint") – is the total amount of primary energy from renewable and non-renewable resources.



## PROJECT PARTICIPANTS

Owner: ILD Italia di D'introna Alessandro o & C. S.a.s  
 Via Aurelio Saffi, 15 25121 Brescia  
 Contractor: Cover Tech S.r.l.  
 Zona Industriale - Contrada Alezza - 74012 Crispiano (TA)

Our most current General Sales Conditions shall apply. Please consult the most current local Product Data Sheet prior to any use.



**SIKA SERVICES AG**  
 Tueffenwies 16  
 CH-8048 Zurich  
 Switzerland

**Contact**  
 Phone +41 58 436 23 68  
 Fax +41 58 436 23 77  
[www.sika.com](http://www.sika.com)

**BUILDING TRUST**

