



SIKA AT WORK

SUSTAINABLE SOLUTIONS FOR A MEDICAL CLINIC: ASSOCIAZIONE CATERINA ONLUS

FLOORING: Sikafloor®, Sika ComfortFloor®, Sikagard®

BUILDING TRUST



ASSOCIAZIONE CATERINA ONLUS

Sustainable Solutions measured by Life Cycle Assessment (LCA)

PROJECT DESCRIPTION

This project involved the installation of a flooring and a wall coating system in a medical clinic run by the Associazione Caterina Onlus in the province of Salerno, destined to host gynaecological, paediatric and general medicine departments.

The Associazione Caterina Onlus was formed in 2006. Since then the Association has provided assistance for underprivileged and poor communities in the south of Naples. On the 12th April 2011, the Association inaugurated a "soup kitchen" of 400 square metres in size, financed entirely by donations.

Associazione Caterina Onlus decided to dedicate about 300 square meters of ground, near the canteen, to the construction of a medical centre to serve the most vulnerable members of society, including pregnant women, children from poor families, immigrants from within and outside the European Community and elderly persons in financial difficulty. The centre will offer the local community easier access to a social right of primary importance: healthcare.

The medical clinic and the doctors who have joined this

project will offer a full-time service and provide many families with medical assistance previously difficult to access. The installation of the centre's floors and walls was part of Sika Italia's first social project, and was fully financed by the Romuald Burkard Foundation. This social project also provided free canteen meals for one year and the purchase of all the centre's medical equipment.

PROJECT REQUIREMENTS

The Association asked for many requirements, but the most important was the need of a seamless and anti-allergenic floor in accordance to all applicable hygiene and health standards, to prevent the proliferation of bacteria in critical areas. The floor surface therefore had to be easy to clean and maintain, as well as resistant to wear, humidity and chemical agents.

The Association also required an anti-bacterial protective coating for the walls, certified for use in "white rooms" and hospitals.

The client was therefore looking for a complete, reliable flooring system and chose a trusted partner capable of offering a lasting, safe and certified solution.



TECHNICAL SOLUTION

First of all, the entire floor was covered with a cement-based screed mixed with **Sika® Screed Rapid**, fast drying binder. This product has allowed to realize a screed of about 5 cm and, thanks to its rapid drying properties, the following day it was possible to apply the resin floor.

Then because of the absence of a vapour barrier, 4.5 kg/sq.m. of **Sikafloor®-81 EpoCem**, a three-component cement and epoxy self-levelling mortar, was applied. The application of this product to a thickness of only 2 mm allows resin floors to be installed indoor and outdoor over substrates with a relative humidity >4%.

The installation of **Sika® ComfortFloor** system began as soon as the mortar was dry. This flooring system consists of liquid polyurethane resins and is ideal for creating floors in any colour, free from joints, hygienic and easy to clean, long lasting, resistant to constant traffic and furniture movements, but soft and comfortable to the touch too.

The steps of the realization of **Sika ComfortFloor®** system are four.

The first stage involves the application of a two-component, total solid epoxy primer, **Sikafloor®-156**.

In the second phase, which took place the following day, we applied **Sikafloor®-3000**, a two-component, coloured, self-levelling polyurethane resin. Thanks to an extended open time, high fluidity and excellent de-aerating properties, this product did not need treatment with a bubble-breaking roller after application. It also permits to achieve a completely seamless and hygienic surface, and to qualify the floor for class Bfl-S1 fire certification.

In the third phase, covings had been realized by the use of **Sikaflex® PRO-3**, one-component polyurethane sealant, to achieve a continuous layer from the horizontal to the vertical surface.

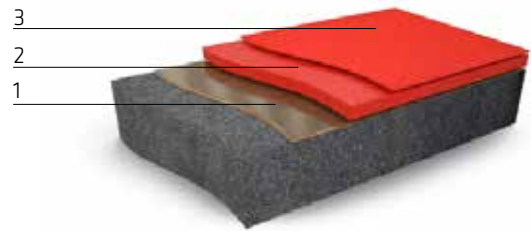
Finally, the entire floor surface and the first 10 cm of wall were painted with **Sikafloor®-305 W**, a two-component, water-based, low VOC, matt polyurethane seal coat.

The walls were coated and smoothed using around 500 g/sq.m. of **Sika® E2 Malta New**, a thixotropic, low thickness, three-component epoxy-cement finishing coat. About 24 hours after the application of the finishing coat, the walls were coated with **Sikagard®-403 W**, a one-component, coloured, elastic, anti-bacterial coating. Thanks to its low VOC emission, vapour transmission coefficient and certified anti-bacterial properties, this product is ideal for use in healthcare and food chain environments.

Flooring:

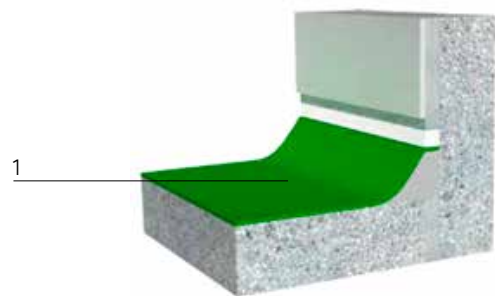
Sika ComfortFloor®: smooth polyurethane, elastic, coloured, low VOC flooring system.

1. Primer: **Sikafloor®-156**
2. Wear layer: **Sikafloor®-3000**
3. Top Coat: **Sikafloor®-305 W**



Sealant:

1. Fillet sealant: **Sikaflex® PRO-3**
Elastic, water-hardening, polyurethane-base, one-part floor sealant.



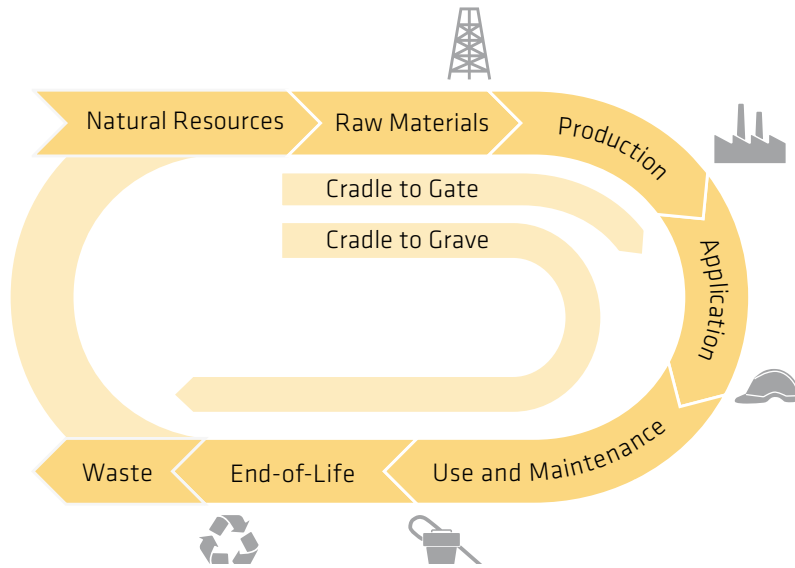
Wall covering:

1. Skimming and smoothing: **Sika® E2 Malta New**
Three-part epoxy-cement, thixotropic, low thickness skim coat.
2. Coloured, anti-bacterial finishing coat: **Sikagard®-403 W**
One-part, acrylic, coloured, elastic, anti-bacterial coating, applied in two coats.



SIKA'S SUSTAINABLE APPROACH

For this project, Sika evaluated the sustainability of individual products and of the **Sika ComfortFloor®** system using LCA. LCA, or Life Cycle Analysis, compares and assesses the environmental impact that products and systems generate throughout their entire life cycle, commonly referred to as their “cradle to grave” cycle (i.e. from natural resources to end of life disposal). LCA assessments help distinguish between products that may be similar in performance but quite different in terms of environmental impact. Obviously, the lower the impact, the better the product.



The results of LCA assessments are expressed using two indicators:

- **Cumulative Energy Demand (CED)**

Cumulative energy demand (CED) quantifies a product's total consumption of energy resources, i.e. its total consumption of primary energy from renewable and non-renewable sources.

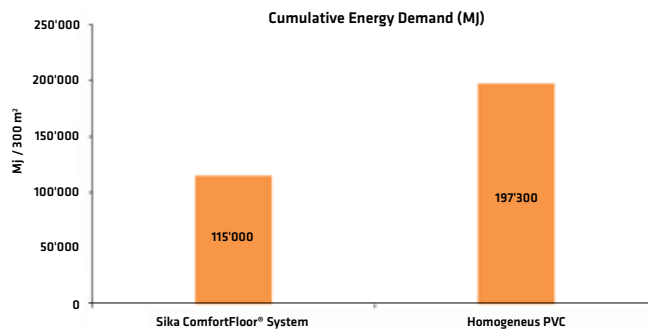
- **Global Warming Potential (GWP)**

Global warming potential (GWP) measures a product's potential contribution to climate change, with particular reference to the emission of greenhouse gasses like carbon dioxide (CO₂) that increase thermal absorption in the atmosphere and cause temperature to rise on the surface of the Earth.

LCA results for the **Sika ComfortFloor® PS-23** system were compared to results for a resilient floor made from homogeneous PVC of the type commonly used in hospitals and certified to EN 649 and ISO 10581 standards.



The first figure shows the results for Cumulative Energy Demand (CED) for the entire floor. The environmental impact of the **Sika ComfortFloor® PS-23** system is 115,000 MJ, equivalent to 32,000 kWh of energy. The homogeneous PVC floor, on the other hand, has an impact of around 200,000 MJ, equivalent to 55,500 kWh of energy. This shows that the **Sika ComfortFloor®** system has 42% less cumulative energy demand than a typical PVC floor.

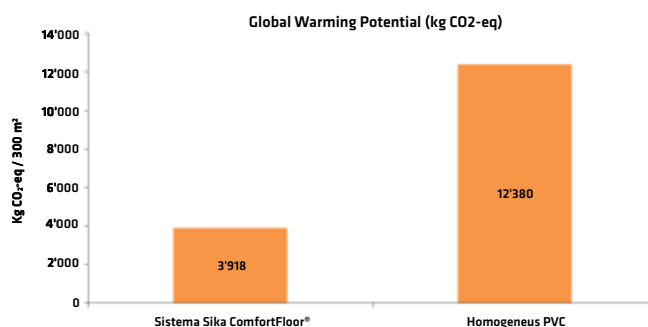


The second figure shows results for Global Warming Potential (GWP) for the entire floor.

The global warming caused by **Sika ComfortFloor®** is approximately 4,000 kg CO₂ equivalent, while that caused by the homogeneous PVC floor is approximately 12,400 kg CO₂.

This shows that **Sika ComfortFloor®** has 68% less global warming potential than a typical PVC floor.

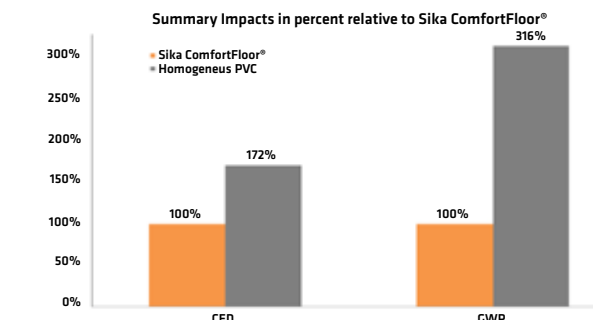
By way of comparison, 4,000 kg of CO₂ are emitted by a utility class vehicle travelling for around 37,000 km, while 12,400 kg of CO₂ are emitted by the same vehicle in around 110,000 km.



Comparing the two figures, it can be seen that homogeneous PVC generates 72% more impact in terms of cumulative energy demand (CED) than **Sika ComfortFloor® PS-23**.

Homogeneous PVC also generates 216% more impact in terms of global warming potential (GWP) than

Sika ComfortFloor® PS-23.



On the basis of these LCA results and current know-how, the **Sika ComfortFloor®** system should have a useful lifetime of around 30 years*.

Sika ComfortFloor® floors require resurfacing every 10 years, but this only involves simple smoothing and the application of a new coating of **Sikafloor®-305W**, as stated in the technical data sheet.

Homogeneous PVC floors have a useful lifetime of some 20 years, but the resurfacing needed after ten years involves filling in holes or repairing whole areas, compromising easy cleaning and floor hygiene.

At the end of its useful life, 100% of applied material in the **Sika ComfortFloor®** system can be disposed of in landfills. In the case of a homogeneous PVC floor, 80% of applied material has to be incinerated; only 20% can be disposed of in landfills.

CONCLUSIONS

Sika ComfortFloor® is an excellent performer in environmental terms as it consumes less raw materials and energy during its life cycle than common, generic flooring systems. Furthermore, if resurfacing is required, thanks to the exceptional durability of the **Sika ComfortFloor®** system, all that is needed is the application of a simple finishing coat to restore the floor to its original condition. If a PVC floor deteriorates, on the other hand, a complete new layer of PVC is needed, changing the floor's appearance and functional characteristics.

These advantages lead to a significant reduction in maintenance and labour costs and contribute to keeping the building fully functional and sustainable from cradle to grave.

Sika supplies a vast range of sustainable and economical flooring systems to satisfy all possible needs, and offers long lasting flooring capable of saving energy and resources.

Given their exceptional life cycle performance, Sika solutions also prove highly economical and help improve the sustainability of buildings.

* This estimate assumes that all Sika's installation and maintenance instructions are followed. Installers must also use all the necessary equipment and be properly trained in the installation of resin flooring.

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Waterproofed area: 700 m²
Year of completion: 2016

APPLICATOR

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