

ambitions

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Sustainable Solutions

Sika Collaborates in a Cutting-Edge Building

Sika supports the ETH Zurich and the Swiss Alpine Club (SAC) in the unique construction project Monte Rosa hut, the goal of which is to present the added value of ecologically sensible construction even and particularly in an extreme location at 2,883 meters above sea level. The Monte Rosa hut draws more than 90 percent of its energy demand locally from solar energy, and meets its need for water with melt water.

All construction materials must be delivered to the site by helicopter. As a result, the lodge is built as timber scaffolding, because the wooden parts are easier to transport. The timber structure must – especially because of the extreme location – be fully protected from wind and weather. The entire wooden scaffolding is externally protected by **Sarnafil® TU 222** sub-roof membranes which are very robust, withstand high fluctuations in temperature and UV-radiation and are therefore very durable.

Additionally, the **Sarnafil® TU 222** sub-roof membranes are optimally suited for the wooden structure of the Monte Rosa Lodge because they are vapor-permeable and simultaneously watertight. Sika makes a crucial contribution to this milestone in high alpine construction.



Sika at Work



Oasis of the Seas – a Floating City

The MS Oasis of the Seas is the largest and most modern cruise ship ever built. The vessel offers luxury that includes an outdoor aquatheater with 1,380 seats, more than 70 bars, 2 shopping streets – one of them located in a true copy of Central Park, NY, with more than 1,200 trees and bushes. If that is not enough, passengers can even enjoy one of the 21 swimming

pools, go ice skating or relax while watching a movie in the cinema. But when the vessel glides through the water, the engine power of more than 97,000 kW will cause considerable vibration in the ship. And 5400 passengers plus more than 2100 crew members who talk, play, run in the gym, listen to entertainment or even work also generate noise. On a cruise ship such noise and vibrations can turn the perfect vacation into the worst sleepless holiday nightmare.

Sika Acoustic Flooring plays a key role in preventing such problems. Sika provides high quality sophisticated acoustic flooring systems; the extensive range of the **SikaFloor®** Marine portfolio consists of visco-elastic vibration damping systems, floating floors, primary deck coverings and much more. These systems solve problems of vibrations as well as noise. The passengers of the MS Oasis of the Seas will not even notice that under the carpets in the corridors, the tiles in the wet areas, their cabin and a lot of the indoor facilities Sika has laid the basis for a quiet and peaceful journey, providing more than 110.000 m² (equal to 17 international football fields) of acoustic flooring.





Gotthard – a massif part of Sika history

The Gotthard massif plays a key role in the history of Sika and in the infrastructure and economic development of Switzerland. Ninety years ago Sika succeeded in waterproofing the Gotthard tunnel, enabling the Swiss railway company to electrify this important connection between Northern and Southern Europe.

Today the extension of the Gotthard tunnel (NEAT: New European Alp Transit) is again an important Sika project. Since 1993, work has been going on at five sites that will eventually connect a large, dual-corridor, single-track tunnel system.

When completed in 2016, the Gotthard Base Tunnel will provide passage for fast trains, that weigh twice the maximum of existing freight trains and will traverse Europe's main axis between North and South at speeds of up to 250 km/h, reducing travel time by 50 minutes.

The deepest point of the 57 km tunnel is 2000 meters beneath the mountaintop. The Swiss massif of slate and gneiss and the high temperatures and humidity underground call for high-tech admixtures for concrete and tailored waterproofing. **Sika® ViscoCrete®**, **SikaTard®** and **Sigunit®-AF** are applied for a durable and workable shotcrete. Millions of square meters of **Sikaplan®** water-membranes are also being used to waterproof the longest tunnel on earth.

With know-how and experience in waterproofing, Sika has been a reliable partner from groundbreaking all the way to the end, enabling the 23-year pioneering journey through 13 million cubic meters of rock.



Sika-1®

Sika-1® is a waterproofing admixture for mortars. It is an aqueous solution containing complex colloidal silicates. In the presence of water these swell and block the capillaries and pores in the applied sand/cement renders, screeds and mortar to provide an effective barrier against the influx of liquid water.

In 1918 **Sika-1®** was used to waterproof the Gotthard tunnel. Today the extension of the Gotthard tunnel (NEAT: New European Alp Transit, www.neat.ch) is again an important project for Sika). Although **Sika-1®** is still part of Sika's product range, today high-tech admixtures for shotcrete and tailored waterproofing systems are used to build the new 57 km tunnel (NEAT: New European Alp Transit, www.neat.ch) the longest tunnel on earth.



Sika looks back on an extensive history

100 years ago company founder Kaspar Winkler started his business with Sika products and invented the legendary first product **Sika-1®**, which was used in the construction of the St. Gotthard rail tunnel in Switzerland to stop water infiltration. Sika's first admixture products immediately earned widespread acclaim by providing such vital benefits



as faster setting times and waterproofing, quickly propelling Sika into early and sustained growth. Kaspar Winkler launched subsidiaries around the world. Already in the 1930s, 15 Sika subsidiaries in Europe, USA, Argentina, Brazil and Japan established new construction chemicals markets.

Today Sika is a global company with more than 100 production and marketing companies in over 70 countries and concentrates its activities on construction chemicals as its core business with a very strong focus in the marine, industrial flooring and automotive industries. Sika looks to the future with optimism, as its know-how, service and its products are needed more than ever.



Unusual application of Sika Anchorfix®-3

Sometimes Sika products find extraordinary applications, as for example on the backs of green turtles. This happened when Sika South Africa (East African Branch) participated in the WWF Global marine turtle conservation project.

The **Sika Anchorfix®-3** epoxy was donated and used to secure the satellite tracking transmitters to the backs of a number of green turtles during the catch and release operation on the Kenyan North Coast. The satellite tracking transmitters enable the localization of the turtles every time they surface to breathe, which can be intervals between 1hr to a few minutes. The endangered species of marine turtles are estimated to have a population reduction of around 50% over the last 3 generations.



Company Investments

New high-tech production plant

Kapaflex, Sika's new production plant for **Sikaflex®** and **SikaBond®** sealants and adhesives in Düringen, Switzerland was built to secure production capacity, increase efficiency in volume production for Sika's best polyurethane technology and to set a new standard.

With an innovative and more efficient production process, the newly built plant will enable high-quality production for large volumes and increase Sika's competitiveness.

With a surface of 40,000 m², Kapaflex is equipped with a highly automated, closed production process. This unique and innovative process yields constant product quality and high production efficiency. In addition to commitment to quality, the new plant demonstrates opportu-

nity in ecology. The set start-up capacity of 30,000 tons per year shall be increased in a second construction phase to 60,000 tons per annum.

Sikaflex® and **SikaBond®** are well established brands worldwide, used for sealing of buildings, bonding of wooden floors and elements in the building construction sector. In vehicle construction, steel is increasingly replaced by plastics and composite materials to save weight and thereby lower vehicles' energy consumption. These new materials cannot be welded, and that's where **Sikaflex®** is used for best bonding.

Sika's investment not only reaffirms its trust in Switzerland as the company's seat of industry, but also exhibits confidence in its polyurethane technology.





Technology leader in liquid membranes

In 2009, Sika AG acquired the Iotech Group Limited, the technology leader in liquid membranes with headquarters in England and subsidiaries in the USA and Belgium. The Iotech Group specializes in formulation, production and supply of polyurethane liquid membranes and intermediates for roofing and waterproofing applications.

Liquid membranes are ideally suited to the highly profitable and crisis-resistant roof refurbishment market – with good reason. While companies can postpone new construction projects for several years, they cannot postpone the refurbishment of a leaking roof, as this could lead to a production shutdown and massive financial losses. For this, liquid applied membranes are the right choice because in most cases they can be applied directly over the existing bitumen system, avoiding the cost of removal and disposal. Especially for green roofs, liquid applied membranes are a great benefit because the product is fully bonded to the substrate, which thereby reduces the risk of water migration behind the waterproofing system. With the acquisition of the Iotech Group, Sika obtained exclusive rights to its unique moisture-triggered technology as well as the opportunity to conquer new markets.

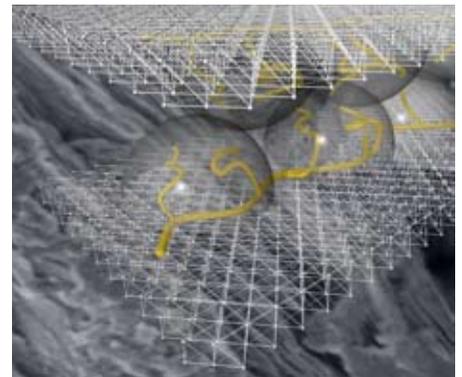
Our Employees

It is easier to get there, if you know where to go

“Unfortunately, in R&D that is not enough. We also need to know about possible natural obstacles and dead ends as well the ways to get around them. Corporate research is all about helping our development colleagues to do this in difficult or unexplored territories. Together with them, we identify the scientific questions that most pressing need to be answered. We thereby define long term objectives and focus our research. Depending on the topics, this may lead to collaboration with universities that are selected on a competence basis throughout the world.”



Dr. Robert Flatt
Principal Scientist
Head of inorganic chemistry
Sika Technology AG [CH]



Layered mineral with polymers caught in between the layers.

Social Responsibility



Local solutions to fundamental needs in developing countries

Sika France signed a financial and technical partnership contract with Antenna Technologies, an association aiming at fighting against malnutrition and ensuring access to drinking water in developing countries. The first project within that partnership: construction of a spirulina farm in Nouakchott (Mauritania) in order to supply treatment against malnutrition to 7000 children. Spirulina is a food complement with a high nutritional value. Clinical trials realized by Antenna Technologies and the Medical College of Madurai (south of India) and presented to the World Nutrition Congress (1999) have shown that one to three grams of spirulina per day, during 4 to 6 weeks, can efficiently complement the meals of 0 to 5 year-old children. The aquatic microorganism spirulina can be produced locally in warm regions.

Sika France helps through financial contribution, as well as by supplying technical expertise. Of the planned three cultivation pools, the first one is already operational and has been waterproofed with a Sika membrane, a solution more efficient and long lasting than the traditional plastic films used previously. The first spirulina harvest in Nouakchott is expected mid-December, just 7 months after the project began.

More information about Antenna Technologies worldwide: www.antenna.ch

Information about the Nouakchott farm: www.antenna-france.org/modules/libre.php?id=106

Sustainability as key driver for innovation

Sika's Plasticizers and High Range Water Reducers already contribute to sustainability by improving the durability of structures reducing the amount of water needed to produce concrete and enabling customers to reduce cement content in their mix. But in Latin America they go even one step further.

In Chile the new "Biotechnology and Fine Chemicals" lab was founded and equipped with modern bioreactors and a highly qualified staff. There a natural by-product from sugar production was converted into a new intermediate. This intermediate is now used in many admixtures in Chile and received positive feedback from our clients. After this success, the technique is now being shared with all other Sika regions to investigate its feasibility.

In a further step, a completely green process is being studied to obtain a sustainable type of admixture using biotechnology. This work is being carried out in close collaboration with the research group in Zürich.

In Ecuador, the use of vinasse, a waste product obtained during alcohol production from sugar cane has been under investigation. As this material is normally dumped it contaminates different water sources. In a project



Luis Cuadrado, R&D Laboratory supervisor, Sika EC.

carried out together with Producargo S.A., Sika Ecuatoriana was able to use vinasse in their admixtures, benefiting the environment and resulting in cost/effective products.

Both examples from Latin America show that Sika is actively looking for sustainable solutions, for the benefit of the group as well as for us all.

Citius, altius, fortius – swifter, higher, stronger

For the past three years, students from the Swiss Federal Institute of Technology Zurich and several industry partners have been working on a new, better, and most importantly swifter bobsled for the Olympic Winter Games in Vancouver. Under the guidance of Christian Reich, former bobsledder and now bob designer, they developed the new optimized bob for the Swiss national team. Sika supported the project with know-how and technology.

In the sport of bobsledding, hundredths of a second separate victory from defeat. At top speeds of up to 150 km/h, the armchair athlete cannot imagine that such fractional differences can be so consequential. But the higher the possible velocity on the bob run, the greater the importance of the material composing the bobsled itself.

Norman Blank, Chief Research Officer of Sika says: "For the Citius bob we had to develop an adhesive that is mechanically resilient at low temperatures." Only such an adhesive can withstand the extreme strains within the bob run. The bonding elements within the new bobsled are a decisive factor in reaching higher velocities during the run. In earlier Swiss national team bobsleds there were hardly any exchangeable connecting elements. Nevertheless, every vibration withdraws a bit of energy from the sled and hampers the control of the vehicle. Reducing vibrations was therefore critical in the development and construction of the new bobsled.

The result has been highly satisfying.

The Swiss bobsledding athletes and the involved Sika team are hoping for a medal at the Olympic Winter Games!



The power of water

Brazil is a country of abundant hydro resources, with 15% of the world's freshwater and having at 255,000 MW the third largest hydroelectric potential on Earth. Having used only 25% of this potential to date hydroelectric power generation is at the top of the Brazilian energy matrix. While the total amount of the used hydroelectric power in the world represents less than 2.5%, in Brazil it is with 14.5% way above average. Sika Brazil is very active in this field, being responsible for the supply of materials for some big hydroelectric power projects in Brazil.

Located at Araguari River (Paraná basin), hydropower station Amador

Aguiar generates 450 MW, with a total investment of 336 million Swiss francs. Amador Aguiar is an outstanding and complex project, consisting of Amador Aguiar I -240MW and Amador Aguiar II -210MW. The volume of used concrete reached 150,000 m³ (conventional concrete) plus 200,000 m³ of Roller Compacted Concrete. Sika Brazil contributed to the project and developed tailor made admixtures, for example the first PCE-based **ViscoCrete® 3535 CB** or a mid-range **Sikament® CB** specially developed for RCC (Roller Compacted Concrete) and used at high temperatures. The main requirements were plasticizing and slump maintenance. Sika furthermore supplied the line of waterbars O-22 and O-32 and **Sikafloor® 2530 W** for the power station.



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Sika Solutions for Drinking Water Facilities

Drinking water, the most important foodstuff is an increasingly precious treasure. Therefore in future its extraction, storage and conveyance deserve utmost consideration.

Modern potable water tanks are made of reinforced concrete or steel, in most cases with an inner coating or liner. The complex demands imposed on such systems are influenced by the "legislation for materials in contact with foodstuffs or "hygiene regulations". Furthermore factors like water quality, service life, workability, aesthetic appearance and cleaning properties must be considered.

In many countries the severe legislation imposed on materials in contact with foodstuffs leaves little room for variation in formulations.

Sika takes these circumstances into account, offering a full range of specially tested and approved systems for use in drinking water applications.



The Sika Products for potable water facilities:

Admixtures for watertight concrete:

Sikament® and Sika ViscoCrete®

Movement joint system:

Sikadur® Combiflex
Sika® Waterbars

Rigid joint systems:

Sika® Injectoflex and swelling profiles
Sika® Waterbars

Mineral based liners:

Sika®-101HD,
Sika®-102 HD and
SikaTop® Seal 107

Polymer based liner:

Sikagard®-136 DW

Polyolefine membrane liner:

Sikaplan® WT 4220-15 C