

ambitions

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Extraordinary

Solar-powered round-the-world trip

A total of 825 panels comprising 38'000 individual photovoltaic cells cover an area of over 536 m². These convert the solar energy needed to charge the lithium ion batteries that supply four electric motors. Solar panels are supplemented by extendable side wings that are also equipped with solar modules. With no other drive units of any kind on board, the 31-meter-long solar-powered catamaran "Tûranor PlanetSolar" has become the first solar-powered catamaran circumnavigating the globe.

After eight years of hard work, difficulties, doubts, storms and adventures, the successful completion of the first circumnavigation under solar power was celebrated on May 4, 2012 at the starting and destination port of Monaco. At an impressive average speed of 8 knots, the expedition took a total of 20 months and a distance of 60'254 km on sea with an environmentally friendly and nearly noiseless travel.

The design had to combine characteristics that had previously been incompatible, as the vessel's hull had to remain flexible in all directions in order to adapt to the demands of the marine environment, such as wave action. This is no simple matter, as solar panels tend to break when they are bent. In cooperation with Sika Germany, the bonding surfaces were tested and were approved for use. This was achieved by having the manufacturer bond the photovoltaic modules to PVC sandwich panels laminated on both sides with Sikaflex®-292. The elasticity of this construction adhesive that has been specifically developed for boatbuilding and shipbuilding enables it to compensate the kinetic energy transmitted through the hull of the vessel. Roughly half a ton of Sikaflex®-292 has been proving its reliability on a major voyage, protecting the rigid solar modules against fractures on the flexible hull.





Liter of Light

Just think what it would be like to live without electric lights – something people trapped in poverty have to deal with every day. Imagine living in the dark inside your own apartment and never being able to see anything when you get there. According to statistics, almost one in four people worldwide have no electric power. Without electricity they are at a disadvantage in virtually every aspect of their lives. They are unable to preserve food or pump safe water and have no access to radio or TV. Even a simple thing such as charging a cell phone becomes a major task. And productive work is limited to outdoor activities during the daytime, because all these households still continue to live in darkness.

The goal of the *Liter of Light* initiative is to provide light to underprivileged communities around the globe by giving them an economically and ecologically sustainable source of light as an immediate solution. The plan is as simple as it is effective: Used clear plastic bottles are recycled, water and bleach are added, and the bottles are installed in the roof of the housing. Adding bleach ensures that the water stays clean and transparent and prevents the growth of algae, which would turn it green.

Sikaflex® is used to bond and seal the bottle to the roof. After installation this solar light bulb can provide approximately 55 watts of sunlight, capturing and diffracting it to all parts of the room. Without the water, there would be nothing more than a bright spot on the floor, surrounded by relative darkness. Sika is providing technical support for *Liter of Light*, along with know-how and product recommendations. In many countries where *Liter of Light* is being implemented, local Sika companies donate the necessary products such as Sikaflex® to the organization for free. The idea was launched in the Philippines in 2009, followed by countries like Mexico and Spain, with Colombia and Peru scheduled to participate this year. The aim of *Liter of Light* is also to facilitate the set-up of a global network to build a basis for international cooperation. This should increase awareness of the idea, simplify fundraising and make the sourcing of materials more cost-efficient.



A volunteer using Sikaflex® AT-Connection



Teaching children how to use the bottles



One room enlightened by two bottles



Preserving an icon

The Sydney Harbour Bridge is one of Australia's best known and most photographed landmarks. It is the world's largest steel arch bridge, with the top of the bridge standing 134 meters above the harbour. Construction started in 1924, and it took 1'400 men eight years to build at a cost of £ 4.2 million. Six million hand-driven rivets and 53'000 tonnes of steel were used in its construction. Lately the bridge underwent its largest refurbishment since construction. Works included resurfacing and replacement of its original and now 80-year-old waterproofing with a unique waterproofing system from Sika Australia under very challenging weather conditions.

Maintenance work had been carried out from time to time in the past, but by around 2009 it was recognized that the 80-year-old concrete slab was no longer watertight. Owing to the ingress of water, the steel deck and the steel structure underneath it had started corroding, and considerable movement of the approach spans was noticed. The waterproofing system selected had to meet stringent performance criteria specified by New South Wales Roads and Maritime Services (RMS) with regard to adhesion, tensile and flexural testing as well as cyclic performance. Due to the impact of bridge closure on traffic congestion within the Sydney CBD (the bridge is used by approx. 160'000 vehicles a day), application and curing of the waterproofing system had to be very fast.



After a rigorous series of laboratory and field tests, the fast-curing Sikalastic® bridge deck waterproofing system was selected. The system consisted of a Sika® Concrete Primer, a fast-curing polyurea/polyurethane primer broadcast with quartz sand and Sikalastic®-841 ST – a pure polyurea sprayed onto waterproofing membranes. Furthermore, the accelerated epoxy resin Sikafloor®-161 was used as an adhesive for Sikalastic®-827 HT as its hot melt pellets were applied to ensure proper bonding between the asphalt concrete overlay and the waterproofing membrane.

As initially planned, it was possible to cover a surface of approximately 5'000 m² of exposed concrete with the advanced and fast-curing waterproofing system during a single weekend. The total surface of 10'000 m² was refurbished within two weekends. Because of the fast-curing primer and membrane, even rain showers during the execution of the work did not cause any difficulties.

"Our team is proud to have its products chosen for the rejuvenation and protection of this Sydney icon," adds Jamie Byrne, Technical Sales Representative of Sika Australia. Sika Australia has been involved in a large number of major works and remedial repairs on public structures, both locally and internationally, with its core competency in sealing, bonding, damping, reinforcing and protecting. This has included joint sealing of the Sydney Opera House, the Victorian and Kurnell Desalination Plants and commercial properties such as the Coca-Cola offices.



What about Thailand?

Severe flooding occurred during the 2011 monsoon season in Thailand. Beginning at the end of July triggered by the landfall of Tropical Storm Nock-ten, flooding soon spread through provinces and Central Thailand river basins. Last October floodwaters inundated parts of Bangkok and persisted in some areas until mid-January 2012. Sixty-five of Thailand's 77 provinces were declared flood disaster zones. In order to picture the current situation we talked with Mario Gross, General Manager of Sika Thailand in Chonburi, which is 100 km south east of Bangkok.

What has been the situation in Thailand as of last year?

Hundreds of thousands of houses, commercial properties and infrastructure have been seriously damaged. More than 10'000 factories and offices have been closed, while nearly 1 million people have become temporarily unemployed. 3 million acres of farmland have been destroyed, leading to a major loss of income for many farmers. A large number of roads and rail links were cut, complicating efforts to transport supporting goods to the flooded areas. The World Bank has estimated the economic damage at US\$ 45.7 billion, suffered mostly by the manufacturing industry, as seven major industrial estates were inundated by as much 3 meters during the floods.

How has Sika Thailand provided first aid for the victims?

As almost all provinces were affected and millions of people lost their homes, Sika Thailand organized immediate support for the flooding victims by donating instant food, drinking water, milk, medicine and goods for daily use to three different organizations and flooding victim camps, intended especially for the orphaned children evacuated from the flooded areas.

How did you deal with the flooding crisis within Sika Thailand?

Sika Thailand faced numerous challenges during the crisis, most importantly securing the safety of our employees and their families, as well as the future of our customers and suppliers. We evacuated more than 10 employees and their families out of the Bangkok area to Sika colleagues' homes or rented apartments



Mario Gross, General Manager of Sika Thailand

close to our factory. Some of our colleagues' homes had been badly damaged and with the tremendous support and commitment of our Sika Sister companies in Asia Pacific we set up a program to collect € 10'000 to give to those of our colleagues who had been affected to enable them to repair their homes and replace damaged appliances.

How could you provide support to customers during the flooding?

The warehouses of two of our Distribution Key Accounts were in the flooded area, so we changed our delivery channels and supplied Sika products directly from our factory to their shops and branches around Thailand. Sika Thailand helped other customers by taking goods out of their warehouses and storing them until the water finally receded. While the support functions handled staff safety, the supply chain, and payment extensions to ease the burden on our customers, the Sales team was active with roadshows and technical explanations at our customers' sites, even approaching the flooded areas by boat. Our Logistics team evaluated the remaining transport routes to our customers on a daily basis, deploying more trucks and ensuring deliveries 7 days a week for almost 3 consecutive months.

Has Thailand returned to normal life? How is Sika Thailand helping to overcome the crisis?

Since December 2011, Thailand has been rebuilding its infrastructure and repairing houses and damaged factories. Sika has held more than 15 seminars on repair systems and solutions for flood protection construction for affected stakeholders. The main product areas are Concrete Repair, Industrial Flooring and Waterproofing.



Employees preparing needed goods for children



Homeless children receiving needed goods from Sika after the flooding



Employees checking the flooding status to propose adequate repair systems

Roofing

Art gets proper housing

Tate Britain is a renowned art gallery and part of the British Tate gallery network. Located in the Tate's original premises on Millbank, London on the site of Millbank Prison, it is the oldest gallery in the network, dating from 1897. It is visited by around 1.5 million people every year. Tate holds the national collection of British art from 1500 to the present day as well as international modern and contemporary art.

The collection embraces all media, from painting, drawing, sculpture and prints to photography, video and film, installation and performance. The galleries seek to portray significant developments across all areas of fine art with works of outstanding quality and importance. British art is represented by artists chosen for their contribution to its history and development, rather than their nationality alone. While it has traditionally focused on art from Western Europe and North America, Tate has recently expanded its holdings with modern and contemporary artworks from Latin America, South-East Asia and Eastern Europe.

A large-scale renovation was recently carried out on the museum building. This sought to do justice to its architectural style while also enhancing its advantages. The front part of the building has a classical portico and dome behind, including a lead rotunda roof which had fissured and split over the years. This 600 m² roof presented a very complex re-waterproofing challenge due to the difficult details over the existing lead rolls, and required the installation of a product that was heat tolerant and able to deal with high levels of movement whilst maintaining the waterproof integrity.



The Solution A Decothane Delta 25 system from Sika Liquid Plastics was specified for the project. This is a cold applied, liquid membrane that cures to provide guaranteed waterproof protection. The membrane is seamless membrane that can be installed quickly and easily even around complex detail areas, making it ideal for use on complicated roofs. Once installed, it meets the highest fire ratings available for a roof system. The color used is also very similar to that of lead, and because it was applied over the existing lead work the finished aesthetics are very similar to those of the original roof.

Our Employees

Lifelong learning and team spirit



Louis Schneller
Senior Project Manager
Sika Services AG

You have been working at Sika for 38 years now – what were your main challenges?

I started out as a plant manager in Zurich, was a regional production manager in the Asia/Pacific region and a troubleshooter in the US, and am now responsible for overseeing factories worldwide. I could closely follow the development of Sika's products, beginning with the simpler ones in the 1970s right up to today's high tech products.

What fascinates you and what has been your principal motivation?

Obviously to be part of the development of the different segments in our business has been both a challenge and a source of great fascination. To be in contact with different individuals from different cultures was among the

things that attracted me most. Seeing the progress made in achieving common goals and also encountering motivated people drove me in my work. One of the fascinating things about Sika is that all accomplishments were made possible thanks to the Sika Spirit. Even when times were hard, we always worked as a team.

What strong values have you experienced over all these years?

The strong values embodied by Sika are never giving up, always looking forward, as well as respecting fellow humans and nature. I always felt I was part of a big family whose prime objectives were to improve and to grow. The focus on the construction business with all its facets was an experience for a chemist. The focus on adhesion for all purposes and applications, which provided the impetus to be an active player in industry, added security to our jobs.

In what way would you change the world if you could?

I don't think we can change the world. It follows the course that nature dictates. I try to influence developments such as lowering our carbon footprint, reducing poverty and giving children opportunities to dream and get a good education.

Gaining Concrete Experience

“Hello! my name is João Moura. I was born in Braga, Portugal and I’m 24 years old. I took a Masters Degree in Civil Engineering course at Universidade do Minho. After finishing the course, I worked in Poland for the German company Max Bögl as site engineer in the construction of the Wrocław football stadium for EURO 2012.”

“My name is Fernando Bueno and I’m from Goiânia, Brazil. I’ll be finishing my civil engineering course at the Universidade Federal de Goiás by the end of this month and I’ve already started my Master of Engineering course at the same university. I worked as a trainee in a ready mixed concrete plant for 2 years, dealing with concrete technology. Thereafter, I went to Rio de Janeiro for a short internship where I worked in the construction of the shipyard and the naval base for the Brazilian Submarines Program (PROSUB – EBN), by Odebrecht.”

“Hi, this is Nader from Egypt. I’m a civil engineer who graduated in August 2011 and am currently working as a site engineer in Egypt responsible for revising the execution work on site for the different stages of a project. I am now studying for a diploma in sales and marketing so that I can become a sales engineer. In order to do this I also need technical experience, and my current work is helping me to build up this experience. I am planning to become a sales engineer in the chemical construction products sector.”



João Moura (Portugal), Nader Younan (Egypt), Fernando Bueno Santos (Brazil)



Students spraying shotcrete themselves



Preparing self-compacting concrete

“We are really glad to share our great experience abroad: the “Sika concrete experience”! We had the opportunity to immerse ourselves in Sika’s world of concrete, visiting jobsites, labs, plant facilities, workshops and much more. In Switzerland, during the internship, we had the chance to learn a lot about concrete mix design so that we were even able to design SCC (self-compacting concrete) recipes ourselves with special Sika software. Later, we were able to produce the concrete designed by us. The first try was hard. But after a number of attempts we were successful. It was just a fantastic experience. Other great moments were visiting the facilities, where we could see the process production

of waterproofing systems, admixtures, equipment for shotcrete (Aliva), Sika’s microstructure technology lab and the VSH lab (where companies run their own tests on a large scale). We were really impressed by the Sika microstructure lab. There, they are always analyzing new things and improving their own products. In this lab, we could see some impressive high-tech equipment at work – including x-ray diffraction and an electron microscope. In the VSH Lab we learned more about shotcrete and even had a chance to spray it ourselves! Besides the technical learning experience, we also enjoyed some sightseeing and took part in exciting sports – such as body flying, where you can fly above a huge ventilator! Finally we would like to thank the whole Sika staff: you were very hospitable, and helped to make this trip an unforgettable one!”



Weightless and windy: bodyflying

For more details of this Concrete Experience please see: “Sika Concrete Experience”

Charity

Operation Smile

In Vietnam, as in other developing countries, one out of 500 newborns suffers from facial deformities. Every year, an estimated 3'000 babies are born with cleft lips or palate deformities in this country. Operation Smile Vietnam and Sika Vietnam have now joined forces to provide free reconstructive treatment for disfigured



Vietnamese children with cleft deformities through surgical missions and by well-skilled and credentialed medical volunteers. In doing so, they hope to give the unfortunate children a new smile and the prospect of a full and normal life as productive members of society.

Between 2010 and 2012, Sika Vietnam has contributed a total of US\$ 160'000 to Operation Smile Vietnam, helping it to provide corrective facial surgery for children suffering from cleft lip and cleft palate deformities at mission sites across the country. More than 600 patients have been screened and 400 operated on. In 2011, Sika Vietnam received Operation Smile's prize for "Unselfish contributions and outstanding partnership" to the children of Vietnam.

This is the third year that Sika Vietnam has assisted in the campaign to heal children's smiles and bring them new lives and a new future. In seven missions from 2010 and 2012, Sika's support significantly improved the lives of hundreds of children from all over Vietnam who underwent cleft lip and cleft palate surgery thanks to its donations. The latest sponsored mission took place in Nghe An in the beginning of June 2012, where 100 patients received treatment.

In addition to the financial support, a number of dedicated Sika employees participated as volunteers to assist the medical teams with invaluable logistical assistance, such as providing non-medical supplies, arranging the screening site, preparing medical records, allocating patients and taking them to and from the operating theatres.

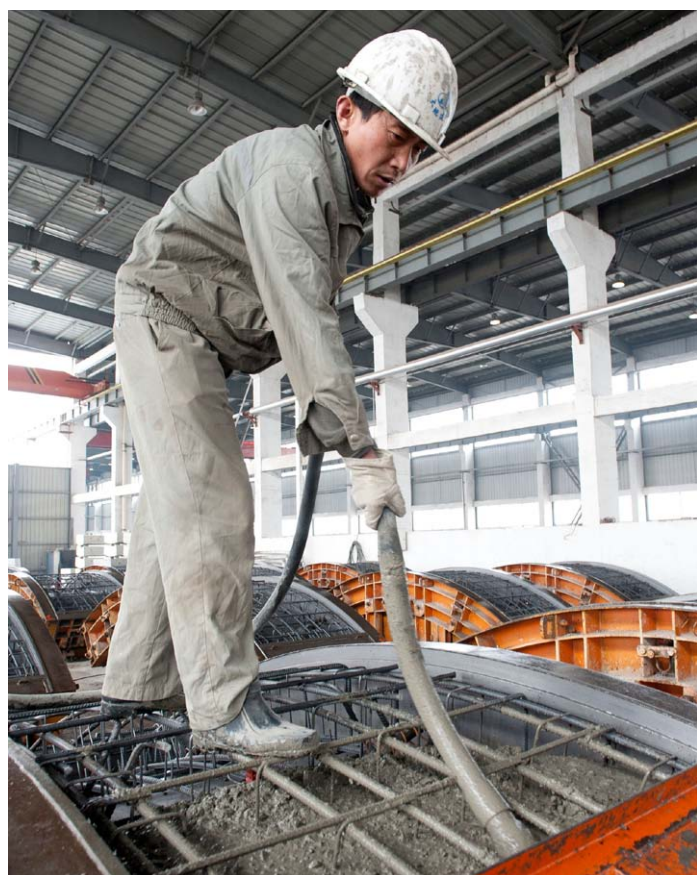
Concrete

Life underground

With an urban population of over five million, Nanjing is the second-largest commercial center in the East China region after Shanghai, from which it lies 300 km to the northwest. As the capital of Jiangsu province, Nanjing has a prominent place in Chinese history and culture. Situated in one of the largest economic zones of China in the lower Yangtze River drainage basin, the city covers a total land area of 6'598 m² and is one of China's most important cities. It is recognized as one of the Four Great Ancient Capitals of China. It has long been a national center of education, research, transport networks, and tourism. In 2014 it will host the Summer Youth Olympics.

The well-planned and widely extended infrastructure is a must for its inhabitants. The Nanjing metro was opened in 2005, and as of 2010 there have been two lines in operation, covering 87 km of track. The finished metro will be 617 km long, consisting of 17 lines. Construction is to continue for the next 20 years. Stable metro segment demand will last for another 19 years before its completion in year 2030. Sika China now is providing support in the form of products as well as professional technical services and reliable on-time logistics. Sika® ViscoCrete®-20 HE is the ideal solution for the challenging requirements of precast segment production, when high-strength concrete in combination with a smooth and uniform surface finish is needed. Due to a constant tunnel construction progress of 30 km per year, it is necessary to produce 500 concrete tunnel segments per day. This poses a challenge in terms of the early strength development of the concrete in order to achieve a rapid formwork turnaround. Normally, setting times must be controlled within 100 minutes and early compressive strength development over 30 km/h has to be ensured for a three-shift operation.

The high early strength gained by using Sika® ViscoCrete®-20 HE has shortened the striking time and hence accelerated the turnaround of formwork and, in addition, steam curing time and energy consumption can be reduced. The overall result for the segment manufacturer is an increased production rate with significantly improved product quality.





Recycling Concrete

Concrete is the most used construction material worldwide – summarized approx. 8 billion m³ per year. When structures made of concrete are demolished or renovated, concrete recycling has become a sustainable method of utilizing the rubble. Concrete was once routinely trucked to landfills for disposal, but recycling however has a number of benefits.

One of the greatest benefits of recycling concrete is that this procedure helps to save natural resources. Also the environmental impact is reduced as exploitation of primary materials is not necessary and transportation ways are significantly shorter. Furthermore recycling minimizes the waste going to landfill. But to recycle concrete in a profitable way, proper technology is needed. Mixed rubble granulates have many problematic foreign substances in their fines content. These uncontrolled materials lead to fluctuations in the quality and a high water absorption. Cleaning, the classification and separating the different sizes of materials are crucial and represent the keys to success.

A key project of Sika Switzerland which was lately finished is an office building of the Richi AG, which has been constructed with recycled concrete with 75% of mixed rubble granulates in its content. In total some 2'400 m³ of recycled concrete were used. The superplasticizer Sika® ViscoCrete®-3095 X with highly specific liquifaction properties and great water reduction made it possible to produce concrete with low water-cement ratio and at the same time easy processable in its consistence. Especially used in concrete with high sucking aggregates like recycled concrete Sika® ViscoCrete®-3095 X is outstanding for its consistency behaviour.



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