AMBITIONS

A dive into Sika's world

AMBITIONS ISSUE #19

BUILDING TRUST

RESPONSIBILITY

ASTRID SCHNEIDER
Marketing & Product Communications Manager
Sika Services

In philosophy, moral responsibility is the status of morally deserving praise, blame, reward, or punishment for an act or omission, in accordance with one's moral obligations. Deciding what (if anything) counts as "morally obligatory" is a principal concern of ethics. Philosophers refer to people who have moral responsibility for an action as moral agents. Agents have the capability to reflect on their situation, to form intentions about how they will act, and then to carry out that action. The notion of free will has become an important issue in the debate on whether individuals are ever morally responsible for their actions and, if so, in what sense. Incompatibilists regard determinism as at odds with free will, whereas compatibilists think the two can coexist. But responsibility can be a huge burden. Jean-Paul Sartre suggested that people sometimes avoid incrimination and responsibility by hiding behind determinism. He believed that we are always ready to take refuge in a belief in determinism if this freedom weighs upon us or if we need an excuse. But humans can fight against that, be strong and move forward. Like Sika Sarnafil in France, where employees had the courage to get 40,000 new workers on board on the company's green office rooftop to support the city's ecosystem and produce delicious honey for harvesting (p. 37). Others use structural bonding to enhance the natural properties of photovoltaic systems, which have a positive impact on CO2 and eco footprints (p. 24). We also take a look at social responsibility. Over 60,000 children in Romania grow up as orphans who depend on the support of the state. The organization UPSV ("A Step to the Future") and Sika Romania are supporting the refurbishment of a building to house some of the children, doing so because they subscribe to a vision of giving underprivileged youths the best opportunity for an independent life and integration into society (p. 41). Peru Sika also discovered that there is a lot they can do by helping 250 pre-schoolers who come from broken homes or are living in precarious economic circumstances (p. 39). There are many different ways to take responsibility.

Yours sincerely,

ASTRID SCHNEIDER

CONTRIBUTORS

ILEANA NICOLAE
Head of Europe East, Sika Romania

We are involved in this great project with the purpose to give young people, who have lost care at a young age a chance to integrate into society. We handle matters regarding their comfort, their health and trainings.

LAURA EGLI
Marketing Manager
Sika Services AG

Solar energy technologies use the sun's energy to provide heat, light, hot water, electricity, for homes, businesses, and industry. Sika provides bonding solutions which make this technology even more advantageous and reliable.

KATARZYNA SPYRA
Marketing Coordinator, Sika Poland

I live in Poznań and as a frequent train traveler I must admit that it comes in handy to have a shopping mall right next to the train station. Due to its shape, local people call it "bread box".

GEORGE KIAGIAS
Corporate System Engineer

Having covered most demands of car parks and offering a total package of waterproofing, surfacing and protection solutions, new and existing structures orientate to improve their durability, safety and trustiness within the Sika world.

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POZNAŃ GŁÓWNY

URBAN SPACE IN ITS BEST USAGE

Poznań is a city by the Warta River in west-central Poland. It has a population of some 550,000, while the continuous conurbation taking in Poznań County and several other communities is inhabited by almost 1.1 million people. The Larger Poznań Metropolitan Area (PMA) numbers 1.4 million inhabitants and extends to a satellite town, making it the fourth largest such population nucleus in Poland.

TEXT: KATARZYNA SPYRA, ASTRID SCHNEIDER
FOTO: FOTOLIA, KATARZYNA SPYRA

> The city is among the oldest in Poland and was one of the most important centers in the early Polish state in the tenth and eleventh centuries. The oldest part of the city is Ostrów Tumski, the natural island on the Warta river – very much reminiscent of the Île de la Cité in Paris. Over the period from 2007 until 2012, an astonishing eye-catcher gradually arose within the city: the brand new integrated transportation center, a modern complex combining a new railway station (PKP), a new bus station (PKS), the 60,000 m^2 Poznań City Center retail mall, additional offices, hotel and leisure facilities, and a multi-story parking deck. The entire complex covers an area of approx. 148,000 m^2, or the equivalent of more than 15 soccer fields.

The new complex was built on the site of the old railway station and the surrounding area. Following the project launch in 2007, the first stage comprised modernization of the rails and platforms and construction of a new railway station building. It was completed in May 2012, in time for the 2012 UEFA European Championship. The integrated transport hub and Poznań City Center shopping plaza were opened in November 2013. The bus station was transferred to the new terminal, located below the shopping center. A major investment of this magnitude called for high-quality materials and tried and proven technologies.

What were the individual building stages? First, Sika Poland delivered elastic fixing and damping solutions to modernize the rails and platforms (Icosit® system). This system reduces noise and vibration, provides resistance to service loads and improves passenger comfort and safety. Modernization work included renovation of the platforms and the installation of pedestrian deck flooring above the tunnel, using the Sikadur® Combiflex® SG System and SikaCor® Elastomastic TF.

The next step was the construction of the buildings for the new railway sta- >

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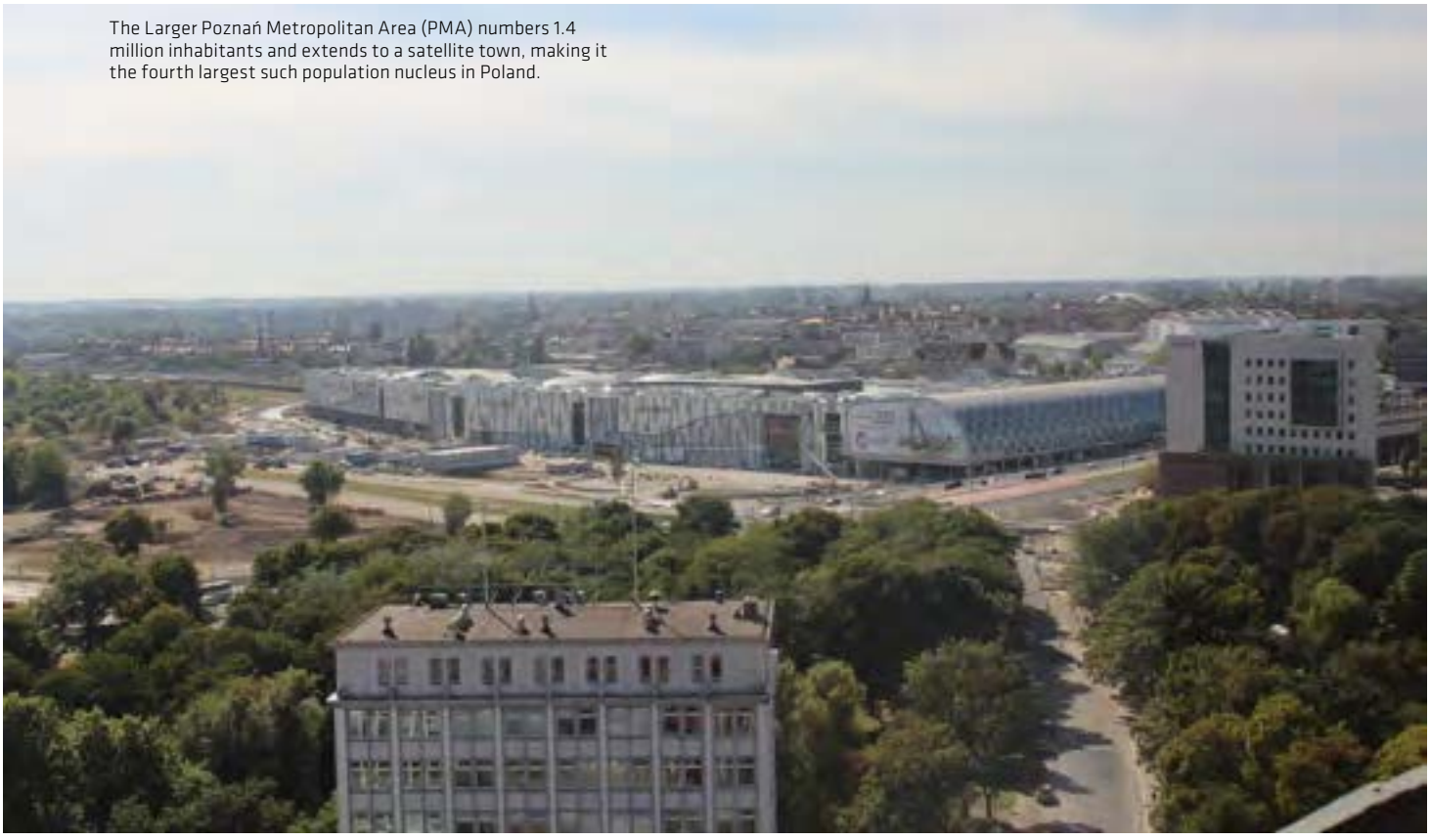

> tion and the Poznań City Center. Both complexes had to be built with precast concrete elements that satisfy defined standards of strength and exposure resistance. It was crucial to select the right Sika concrete admixtures. To achieve the required high early strength and ensure the concrete quality, superplasticizers combined with accelerators and stabilizers were used, allowing the precast concrete elements to be demolded after 10-18 hours.

The individual elements were demolded after they obtained the required strength. The time it took to reach the minimum strength was strongly dependent on the working temperature. What is more, Sika® ViscoCrete® 21 ST not only provided the relevant technological parameters, it also guaranteed a smooth surface without voids and holes to create an excellent visual appeal. Sika® LPS V was used to air-entrain the concrete mix and render the precast elements frost-resistant.

During the winter, Sika® Rapid 2.1. was admixed to the TT floor slabs in order to shorten demolding time. The concrete which contained the Sika admixtures was used to produce reinforced beams and columns, pre-stressed beams and TT floor slabs, and other concrete elements.

This new urban area certainly provides a fast-paced infrastructure and transportation system as well as giving residents a new living space in attractive, ultra-modern surroundings. Poznań is an innovatice place and in competition organized by National Geographic Traveler Magazine, had received before the first prize as one of the seven "New Polish Wonders", another top accolade in recognition of the high quality of life afforded by Poland's acclaimed city of Poznań. The Poznań City Center itself received a 5 star award for Best Mixed-Use Development in Poland. Now this integrated transportation center will make this amazing city even more appealing and connected.

Visit YouTube to see the mega zone for yourself on the architect's site: http://youtu.be/D46MrMMCbfs <

THE POZNAŃ CITY CENTER RECEIVED A 5 STAR AWARD FOR BEST MIXED-USE DEVELOPMENT IN POLAND

The old city center is charming and traditional at the same time.

This new urban area certainly provides a fast-paced infrastructure and transportation system as well as giving new residents.

SYMBOL OF KNOWLEDGE

The new National Library in the Saudi Arabian capital Riyadh completely encapsulates the original library complex, which was built in the 1980s. The library has opened its doors to the public once again, ten years after Gerber Architekten won an international competition for the project. It has become another of Riyadh's landmark buildings, alongside the iconic Kingdom and Faisaliah Towers, and provides a new symbolic architectural image for the Riyadh cityscape. It was completed and re-opened in November 2013.

TEXT: KATY ALLAFRANCO
PHOTOS: MAZEN HAMOUD

> The King Fahad Library is now one of the most significant cultural centers in the region. Part of a program to enable interaction, collaboration and study within the city, the structure connects with the surrounding landscape, acting as the centerpiece of an urban park – despite its huge size. The design echoes elements of Arabian culture, with a cuboid shape surrounding the previous structure to create a new series of elevations. It is a strong cultural symbol of knowledge and serves as the kingdom's main legal depository and copyright office.

The interior is a byword for comfort, providing a calming, peaceful atmosphere. The well-lit spaces simply invite an exchange of knowledge and information, as any good library should. The main hall is located at ground level, next to the exhibition areas, a bookshop and a restaurant. The first floor includes a separate area specifically for women, where female guests can relax and feel comfortable out of traditional dress.

Following a comparative study conducted by its Director General in three international national libraries (the British Library, the Australian National Library and the National Library of Singapore), the King Fahd Library has finished its plan framework and will be launching a call for tenders soon. Sparing no effort to provide high-quality electronic services to its customers, the library has drawn up a plan consisting of several projects to be implemented within the coming five years.

The recent redesign involved the extension and refurbishment of an existing building. The new construction included 18,000m² of exposed single-ply roofs on a lightweight steel structure, a roof design rarely seen in Saudi Arabia. The new cuboid shape covers the existing building on all sides. The old building thus still serves as the core of the new one and provides a kind of layer of temporality from old to new, contrasting the traditional qualities of the original building against the novel materials and construction techniques of the new one.

Its contemporary structure features a stunning PTFE facade with a mechanically fastened exposed Sika Sarnafil® TPO roof. The excellent cooperation between the roofing applicator, the main contractor and the tradespeople ensured that the roof was fully protected at all times and installed far quicker than with a traditional concrete construction process. In addition, Sika was able to utilize its high-performance MTC liquid polyurethane membrane Sikalastic® 621 to waterproof the 56 cantilevered steel trusses that penetrate the roof and would have been impossible to detail using sheet material. We can only imagine how wonderful it must be to read books in that library. You would probably never want to stop. Or maybe the lighting and ventilation through the white roof parts are so pleasant that it becomes hard to concentrate, but extremely easy to take a nap. Local sources tell us that someone was even found there once the next morning when they opened up. So this is definitely a library that you won't want to leave. <

Installing Sarnafil TS77-15 membrane using Sarnafast in lap fastening method. Mechanical fastening calculation was undertaken by Sika using our Jet-Stream software giving the applicator and consultant confidence that the attachment of the membrane was calculated in accordance to Eurocode EN-1991-1-4(2005). The final design included the use of SFSintec IR3 4.8 fasteners with Sarnafast Washer KT for the membrane and Sarnafast Insulation Washer DT for the insulation.

THE NEW CUBOID SHAPE COVERS THE EXISTING BUILDING ON ALL SIDES


LANDESKIRCHLICHES ARCHIV

LUTHER AND DÜRER WOULD BE HAPPY ABOUT DAMP-ROOFING

Located in Nuremberg, the State Archive of the Evangelical Lutheran Church in Bavaria manages and preserves the church's historically valuable records, which include documents from popes and emperors, letters from Luther and Melanchthon, originals by Dürer, historic films, sound recordings and newspaper cuttings, as well as around 120,000 books. Since the original archive no longer met capacity requirements, a new building, which was completed in 2013, was erected on a neighboring plot of land.

TEXT: JEANNINE LEUPPI
PHOTOS: OLIVER KAGE

> Built on an area of 2,500 m² and directly overlooking the Wöhrder Lake, the new archive with its one basement and six upper floors offers plenty of space for its precious contents. The award-winning design was by Hamburg architects Gerkan, Marg and Partners, whose portfolio includes the Shanghai City Planning Archive and the Christ Pavilion for the Expo 2000 in Hanover. The striking new archive building in Nuremberg consists of two intersecting solid cubes which seem to float above a one-meter-high plinth. The solitary building sculpture visually complements the adjacent seminary, whose parklike gardens border on the new archive. The public area of the building is located on the ground floor, comprising a foyer, library and reading room, as well as an events room for 150 people. The other floors are reserved mainly for repository areas capable of holding up to around 30 shelf kilometers of archived material. The new archive also houses administrative offices and an area

THE OTHER FLOORS ARE RESERVED MAINLY FOR REPOSITORY AREAS CAPABLE OF HOLDING UP TO AROUND 30 SHELF KILOMETERS OF ARCHIVED MATERIAL

> for restoring and processing the documents in its safekeeping. One of the intended functions of the newly constructed archive was to provide a dedicated storage zone on the basement floor for historic records sensitive to damp. However, since the basement is at groundwater level, the exterior walls are constantly exposed to water pressure. And because the terrain slopes in a southerly direction, the basement is partially embedded in the soil. The priceless records are now optimally protected against damage from damp calls for a 100% dependable waterproofing solution that can withstand severe structural stresses.

A utility class A watertight concrete basement structure was built on a 3,500 m^2 area. To ensure permanent structural waterproofing and prevent any lateral water underflow, the flexible, crack-bridging fresh concrete composite sheet membrane waterproofing system SikaProof A from Sika Germany had been pre-applied to the watertight structure. Based on Sika's unique grid seal technology, this waterproofing sheet membrane combines the strengths of a watertight concrete construction with surface sealing. It is installed prior to reinforcement and concrete work on the floor and wall formwork.

SikaProof A consists of a multilayer waterproofing membrane based on highly flexible polyolefins. On the concreting side, the membrane is laminated with a fleece. The fresh concrete penetrates the fleece during the concreting process and fills it with cement paste. The unique grid seal technology prevents lateral water underflow. The grid structure of the sheet membrane waterproofing system is filled with a polyolefin sealant. In the event of damage to the waterproofing membrane, any ingressing water is trapped in a mini 'compartment' designed to block lateral underflow into the composite waterproofing system. Water can only infiltrate the structure if a crack or fault in the concrete occurs at the same spot as any damage to the membrane. But even if this happens, it is very easy to remedy with a bore packer injection.

> To ensure flawless waterproofing of the new archive building, following installation of SikaProof A, all structural features such as pipe conduits, tie holes and floor/wall joints were closed using the Tricoflex adhesive system – another product from the Sika Germany range. This system is composed of highly flexible Tricoflex TPE sealing strips and the 2-component epoxy resin glue FU 60. The two systems Tricoflex and SikaProof A are a perfect combination for durable, secure waterproofing.

After completion of all the various operations, the new State Archive of the Evangelical Lutheran Church in Nuremberg is completely surrounded by an impermeable waterproofing barrier. Thanks to the SikaProof A fresh concrete composite sheet membrane waterproofing system, the building and the church's priceless historic records will be lastingly protected against dampness and secondary damage. <

CHAMPIONSHIPS PREPARATION AT MATTERHORN

On July 14, 1865, Englishman Edward Whymper climbed to the summit of the Matterhorn (4478 m), the first person to accomplish this feat. The Matterhorn was one of the last great Alpine peaks to be climbed and its first ascent marked the end of the golden age of alpinism.

TEXT: MONIKA ZIGERLIG-WIRTH
PHOTO: SIKA SWITZERLAND

MARKING THE 150TH ANNIVERSARY OF THE CONQUEST OF THE MATTERHORN, THE HÖRNLI LODGE IS BEING REMODELED AND EXPANDED

CANDIDATES FACED THE ADDED CHALLENGES OF POWER CUTS, TRYING TO SLEEP AT COLD NIGHT-TIME TEMPERATURES, SNOW IN AUGUST, LONG WORKING DAYS, AND NO SHOWERS

> Even in his wildest dreams he would never have imagined that this peak would go down in Swiss history as the country's most photographed landmark or conquer the entire world in its chocolate manifestation. The history of the Matterhorn has produced countless tragedies and legends, not least because of the virtually unsurmountable North Wall.

One other milestone witnessed by the "Höra" (the locals' pet name for their mountain) was the construction of the Hörnlihütte, or Hörnli lodge, in 1880. Situated 3260 m above sea level, it has since served countless mountaineers as base camp for a Matterhorn ascent. Marking the 150th anniversary of the conquest of the Matterhorn, the Hörnli lodge is being remodeled and expanded in line with current standards of environmental compatibility, safety, hygiene and functionality under the banner of sustainability. The costs of the renovation and expansion project are put at approx. CHF 8 million.

Switzerland's trade association for tilers and pavers (SPV) was given the go-ahead to carry out the tiling work on the Hörnli lodge as part of its trainee development program. The 13 best tiler apprentices in their year spent 12 days at the Hörnli lodge in preparation for the upcoming SwissSkills vocational championships. In addition to the demands of the job, candidates faced the added challenges of power cuts, trying to sleep at cold night-time temperatures, snow in August, long working days, and no showers.

To ensure that the lodge can structurally withstand the trials of the next 100 years, all sanitary units were sealed with Sikalastic®-295 Quick. Exposed to somewhat higher volumes of human traffic, the kitchen was treated with Sika® Sealmat I. In the entrance area, the Onsernone granite was laid using ultra-low-emission SikaCeram®-254 Fibre rapid. The special bonding agents it contains ensured high water-binding capacity and fast trafficability even at Alpine temperatures. The budding tilers did an outstanding job at an extraordinary construction site. <

LIGHT GETS SUPPORTED BY STRUCTURAL BONDING

Which possibilities photovoltaics open up? The sector is nowadays facing a rough head wind with the current economic situation and the volatile governmental incentive schemes. Probably the biggest challenge in this situation for the module producers and integrators is cost reduction, combined with a continued improvement in the quality of the module and system, particularly with regard to longevity and performance.

TEXT: LEO SCHEIWILLER
PHOTO: FOTOLIA

> An additional subject is the need for diversification from competition. The structural bonding technology allows tackling these challenging requirements by reduced material consumption and labor, increased productivity, less stress on the modules and new design options. The adhesive and bonding technology is not as young and unknown as many would think. It actually exists since several thousand years and presents in many industries an indispensable technology.

Like the automotive industry, where an average car includes nowadays about 30kg of adhesives and it proved to be a major factor for the significant cost reductions and safety increase. Many other industries can be outlined which went for this advantages as well; like facade, rail, marine or wind industry. With these proven advantages in hand and the potential values for the photovoltaic module production and installation, this technology should definitely catch attention in the solar and photovoltaic industry.

As cost reductions over the whole system from module to final installation are required, all existing solutions should be challenged for improvements. One of the things which could be questioned at first is the need for the aluminum framing and later clamping of the crystalline PV modules. The aluminum frame consisting of eight pieces in total and requires sophisticated assembly equipment in high volume production and counts for about 5-7% of the material costs per module. Thanks to the proven structural bonding technology, simplified and frameless mounting systems become feasible and already exist, which ensure a lifetime of over 25 years.

With such systems the overall costs could be reduced by up to 15%. In the PV thin-film sector this technology is already state-of-the-art. The reduction of the metal content of the system has an additional advantage in the positive effect in CO_2- and eco-balances.

The advantage of the structural yet flexible adhesive technology is that the loads of wind, snow or dead load are distributed over the module area. The risk of stress peaks or module bending, as it may occur on framed or clamped modules, is minimized due to the elasticity of the adhesive. Therefore the risk for glass breakage or micro-cracks in the PV cells is negligible. Furthermore due to the smooth surface, compared to the overlapping edges of framed modules, dirt, snow or leaves are washed off more easily, which reduces the maintenance efforts. Both of these advantages have a positive effect on the long term yield.

Additionally larger module dimensions becoming more easily feasible without a large impact on the general system, respectively the system can be rather easy adjusted to the dimension. Another aspect is the electrical grounding which is required with framed photovoltaic modules. As with the frameless modules, installed through a bonded mounting system, there is no contact to life parts, no grounding is needed. For building integrated photovoltaic (BIPV) the structural bonding technology increases the architectural appeal thanks to hidden constructions and new design options. The PV modules can be completely integrated into facade systems. This opens and increases a new application field for the industry.

The highest spectrum of the benefits can be achieved by using the solution within the module production line. By the frameless design the sophisticated frame pressing and sealing can be abandoned. With the new adhesive technology it is possible to bond and assemble the back rails or other mounting devices to the modules within standard production cycle times and the handling is feasible directly or short after. As the back rails are already part of the mounting system,

the modules can be directly fit or hooked into the prepared substructure, without the need of time consuming screwing or clamping. Existing solutions have proven that the installation time can be reduced by as much as 40%.

As the photovoltaic systems have a high life time expectancy of 25 years or more, combined with the demand for low maintenance and high processability, the right selection and application of the adhesive technology as well as quality control is crucial. It should not be neglected that the systems can be installed in different climatic zones with UV radiation, loads from wind and snow as well as temperature changes. The test for structural bonding of the EOTA ETAG 002 (European Organization of Technical Approvals), provides a common standard from the facade industry for structural glazing, proves itself as the preferred test method for the structural adhesives. This standard is accomplished with the assumption that the positively tested material will withstand a life time of more than 25 years.

Innovative photovoltaic module manufacturers and integrators will go for the structural bonding technology to benefit from the process and material savings. It not only shows cost saving potentials but

THE ADHESIVE AND BONDING TECHNOLOGY IS NOT AS YOUNG AND UNKNOWN AS MANY WOULD THINK

a chance for forward integration in direction to end customers or differentiation from competition. As existing examples in the solar and many well established industries proved, the structural bonding technology is a valuable solution. <

NEW HOME FOR ZURICH ZOO'S GENTLE GIANTS

Brimming with curiosity, the elephants at Zurich Zoo moved into their new domicile this spring after a long, patient wait. Extending over more than 11,000 m^2, the Kaeng Krachan elephant park offers the zoo's giants a species-appropriate habitat six times the size of their previous home.

TEXT: MONIKA ZIGERLIG-WIRTH
PHOTO: RICARDO GOMEZ

Photo: Ricardo Gomez

KAENG KRACHAN – TECHNICAL EXPERTISE AT ITS MOST SUBLIME FROM FOUNDATIONS TO ROOF

The centerpiece of the Kaeng Krachan elephant park is the 6,000 m^2 elephant house, containing a state-of-the-art tract for the elephants to withdraw to, as well as facilities utility services and plant rooms. Boasting superior construction quality and cutting-edge technical installations, these areas ensure the efficient running of the facility and the wellbeing of the elephants.

FLOORING AND WATERPROOFING IN ONE

Concrete technology, waterproofing and flooring had to satisfy the most stringent requirements. The floors needed to be absolutely watertight, durable, resistant to excrement, food remains and other waste matter, as well as very easy to clean.

Rainwater from the roofs is collected in concrete holding tanks. As an integral part of the static concrete structure, these tanks also have to be absolutely watertight. Fast-curing Sika polyurea technology was selected as the main solution for waterproofing and lining. Sikalastic® technology is the tried and proven answer when it comes to waterproofing and durability. Joints and cast fixtures to attach dividing grills, doors and other structural components were, if necessary, treated with additional sealants such as the Sikadur-Combiflex® system. This ensures all-round protection for the technical installations in the basement plus high-grade lining in one.

THE ROOF AS STAR ATTRACTION

The imposing roof spans up to 80 m at its longest and requires no additional columns inside for support. Designers and engineers faced the most exacting of challenges in terms of statics, construction physics and materials. Employing a prototype waterproofing solution, the roofing contractors achieved a master stroke with this free-form roof design. With roof slopes ranging from 0 to 55 degrees, maximum safety precautions were called for, including workers being roped up at all times.

Successfully applied by customers for over 25 years, the Sarnafil® TG roofing membrane system was fully bonded to the Duripanel boards that make up the substructure. The plasticizer-free TPO roofing system was felt-laminated on

Photo: Ricardo Gomez

ALL OF THE UPSTANDS AND APPROXIMATELY 1,500 CORNER SECTIONS HAD TO BE CONSTRUCTED BY HAND

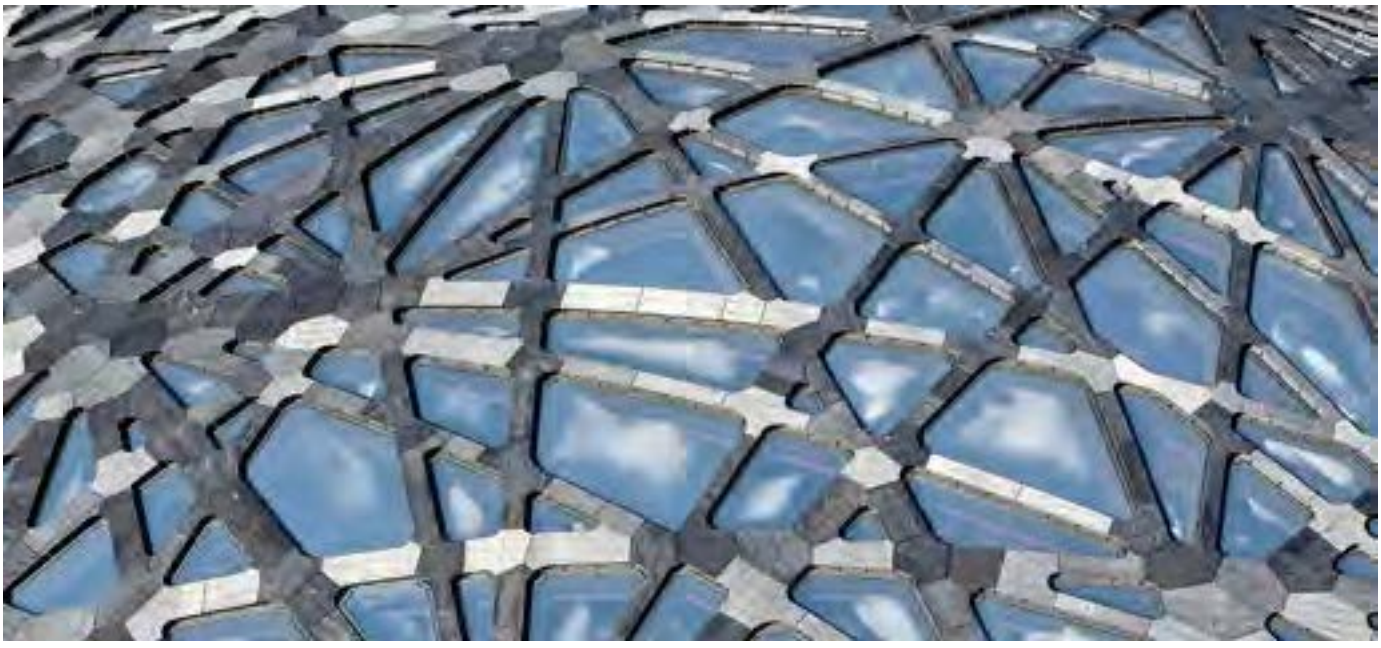

Photo: Ricardo Gomez

the underside to completely bridge the joints in the substructure. Flooded with light, the hall has 271 roof lights, each with a different shape. All of the upstands and approximately 1,500 corner sections had to be constructed by hand due to the various angles for which standard profiles were not available.

To meet the high aesthetic requirements and also to create a safe working level, a continuous timber platform was designed to span the roof 50 cm above the Sarnafil® waterproofing membrane. This timber structure is set on 5,615 supports. The base of each support is enclosed in a maintenance-free Sarnafil® T fitting that was specially developed by Sika.

STRICTEST OF CONCRETE SPECIFICATIONS FOR PRESTRESSED RING BEAMS

The ring beam is structurally the central link between the actual timber roof shell and the abutment areas and provides support for the roof shell. The huge loads from the timber shell are absorbed circumferentially by the prestressed, free running concrete ring beams and are transferred to the ground at three low points in the facade through specially piled foundations. Rigorous concrete specifications were stipulated for strength development, self-compaction, low shrinkage and optimum installation within defined minimum time frames.

In order to satisfy these requirements and enhance installation, Sika® ViscoCrete® technology was used to achieve optimum concrete flow, compaction and ultimate strengths. The provenly reliable reducing agent Sika® Control-60 was used to lower shrinkage and so increase durability.

THE CONCRETE TECHNOLOGY BEHIND WATERTIGHT CONCRETE

Some of the areas below ground are built up to 7 meters deep into a slope. To prevent a serious risk of ground water penetration, the entire basement had to be waterproofed. Since the framework is built as a watertight in situ concrete structure, the concrete serves not only as a load-bearing medium, but also as a waterproofing barrier.

The main excavation also required a high degree of slope stability, with sprayed concrete sides and pile walls. Sika supplied the engineer and building contractor with Sika® ViscoCrete® admixtures and Sigunit® sprayed concrete accelerators for optimum performance and rapid completion of the sprayed concrete walls between the piles.

A FACADE WITH PERSPECTIVE

The facade was designed to 'speak' the same naturalistic architectural language as the roof, while remaining an autonomous element in its own right. The roof deformations in the wide-span high areas between the load-transferring low areas meant that an elastic, movement-accommodating, airtight bedding for the glazing was necessary to prevent stress and unwanted constraints on the glass panels. Sika adhesives and sealants were used for structural bonding of the overhead glazing in adapted profiles, as well as for sealing and UV-resistant bonding of the insulated glazing for the edge seals.

SIKA KNOW-HOW FROM ITS DESIGN AND BUILDING CONSULTANTS

Because the engineer and architect got Sika's design and building consultants on board at a very early phase of planning, our top-quality solutions could be optimally fine-tuned to application and durability requirements for the project.<

DESIGNERS AND ENGINEERS FACED THE MOST EXACTING OF CHALLENGES IN TERMS OF STATICS, CONSTRUCTION PHYSICS AND MATERIALS

The newborn was happy about his wonderful playground.

Photo: Ricardo Gomez

A CAR PARK GETS A NEW DURABLE MAKEOVER

Car parks always provide a welcome relief, making life much easier when they are located close to supermarkets and other shopping facilities, or near hospitals and schools.

TEXT: GEORGE KIAGIAS, STEVE COCKER, ASTRID SCHNEIDER
PHOTO: BRIAN GOUGH

> They also allow you to access an entire city infrastructure by car, which, depending on the situation, might simply be more convenient or be really necessary. Upper Hundreds multi-storey car park is located in Aylesbury Town Centre with spaces for 305 vehicles. The car park, which is owned by Aylesbury District Council, was suffering from a failed waterproofing system on its top deck, allowing water ingress into the lower decks of the car park. This water ingress had caused spalling to the concrete screed, to the ramps and pedestrian walkways.

After further testing it was found that the concrete substrate did not have sufficient cohesive strength to support the application of a new car park deck system without further case hardening.

The project required removing existing failed coatings and concrete screed and repairing damaged concrete on the deck, ramps and soffits. A case-hardening resin had to be applied to increase the cohesive strength of the concrete.

Concrete repairs were carried out using Sika® Rapid Repair Mortar, a cementitious mortar with high early strength. The high early strength property ensured that the time the deck was out of service was kept to a minimum. To increase the cohesive strength of the concrete decks, application of a case-hardening resin was required. Sikafloor® low viscosity epoxy case-hardening resin was chosen to strengthen the concrete prior to the application of further car park deck systems.

To ensure the future integrity of the car park, a waterproof car park deck system with fast setting properties were required to prevent future water penetration and the resulting damage. Makers, the main contractors on the project, applied Sikafloor®-32 Pronto, a fast-curing, crack-bridging, mechanically and chemically resistant, elastomeric deck system. This system was chosen to give a slip-resistant, hard wearing waterproof surface.

1

2

3

1. Broadcasting with quartz Sand to increase the mechanical resistancy
2. Place the wearing coat on the floor
3. Application of the coat with a roller

THE WATER INGRESS HAD CAUSED SPALLING TO THE CONCRETE SCREED, TO THE RAMPS AND PEDESTRIAN WALKWAYS

Sika® Reemat Premium was incorporated into the Sikafloor®-32 Pronto system to protect areas of movement such as construction joints, existing cracking and up-stands. This system with the inclusion of Sika® Reemat Premium has been fully tested to meet the highest crack-bridging standards available on the market. These include BSEN1062-7 Method B, which tests the complete system through 20,000 crack cycles up to 0.5 mm @ -20 oc. The test demonstrates the ability of the system to protect against reflective cracking penetrating through the

> membrane and ensures the future integrity of the deck. The fast-setting properties of Sikafloor®-32 Pronto decking system, even at low temperatures, allow work to proceed quickly, minimizing disruption to the client.

Sika Car Park Decking systems are specially designed to meet the harsh conditions that car parks are subject to, and provide durability, cost effectiveness and an excellent finish. So the citizens of Aylesbury can look forward to enjoying its advantages safely and for a long time. <

HONEY IN THE CITY

There are nearly 20,000 known species of bees in seven to nine recognized families, though many are undescribed and the actual number is probably higher. They are found on every continent except Antarctica, in every habitat on the planet that contains insect-pollinated flowering plants.

TEXT: ASTRID SCHNEIDER
PHOTO: SIKA SARNAFIL

> Bees are adapted for feeding on nectar and pollen, the former primarily as an energy source and the latter primarily for protein and other nutrients. Most pollen is used as food for larvae.

They have a long, complex "tongue" that enables them to obtain the nectar from flowers. The antennae are almost universally made up of 13 segments in males and 12 in females, as is typical for the superfamily. Tiny stingless bee species exist whose workers are less than 2 mm (0.079 inches) long. The largest bee in the world is a leafcutter, the females of which can attain a length of 39 mm (1.5 inches). Members of the family Halictidae, or sweat bees, are the most common type of bee in the Northern Hemisphere, though they are small and often mistaken for wasps or flies. The best-known bee species is the European honey bee, which, as its name suggests, produces honey, as do a few other types of bee. Human management of this species is known as beekeeping or apiculture.

Sika Sarnafil in Champagne au Mont d'Or, France, is doing an amazing job ensuring biodiversity in the city. In 2005, they put a Sarnavert green roof from their own production range on their office building and later installed two beehives up there, which they share with another company.

> This was the beginning of a new friendship. The bees feel very comfortable on the green roof and are treated like 40,000 new Sika employees and clients can visit them as a model.

The first crop of honey was harvested in September 2014, each hive producing 15 kg. This is quality honey, guaranteed

pesticide-free, made inside a city. The hives are maintained by a Sika technician, while a beekeeper is responsible for harvesting. The honey bears the Sika label, and with a bit of luck you might get a pot from your Sika Sarnafil France dealer after the next harvest!

Bees play an important role in pollinating flowering plants, and are the major type of pollinator in ecosystems that contain flowering plants. They either focus on gathering nectar or on gathering pollen, depending on demand, especially in social species. Bees gathering nectar may accomplish pollination, but bees that are deliberately gathering pollen are more efficient pollinators. It is estimated that one third of the human food supply depends on insect pollination, most of which is accomplished by bees, especially the domesticated European honey bee.

Contract pollination has overtaken the role of honey production for beekeepers in many countries. Monoculture and the massive decline of many species (both wild and domesticated) have increasingly caused honey beekeepers to become migratory so that bees can be concentrated in seasonally varying high-demand areas of pollination. More and more green areas in an urban environment should be used to give bees a new habitat. And remember: you will get honey afterwards. And never forget that these small creatures are responsible for a substantial 30% of our food supply. So we should treat them well. <

"BUILDER OF THE YEAR" TO HELP THE "RAYITO DE SOL" PRE-SCHOOL

The "Builder of the Year" contest is the brainchild of Peruvian-based Sencico. The contest has been running since 1993, underlining the social responsibility assumed by this institution, with its long and successful track record in training young professionals in the construction industry.

TEXT: ALICIA CONDADO
PHOTO: SIKA PERU

> The beneficiaries of the 2014 contest were the children of the "Rayito de Sol" school (officially known as Initial Educational Institution No 648), located in the district of Villa Maria del Triunfo and whose classrooms accommodate an average of 250 pre-schoolers between 2 and 5 years old. Many of these children come from broken homes and live in precarious economic circumstances.

Sencico is a national training service for the construction industry. Its purpose is the training of workers in the construction sector, non-university higher education, the development of research related to the problems of housing and construction, as well as proposing technical standards to be applied nationally. Its mission is to provide excellent training and research, to evaluate and propose innovative construction system standards for the development of the construction industry, and to contribute to increasing construction companies' productivity and improving people's quality of life

Sika Peru seized the opportunity to con-

1. Sealing joints – Sikaflex®- 11 FC

2. Repairing cracks – Sikadur® and Sika Rep®

> tribute to this worthy cause, donating the prize for the team ranking third. Held on Wednesday, 22 October, the competition consisted of laying about 200 m² of ceramic tiles in the school's 4 classrooms.

This year, 22 teams entered the competition, each one comprising an instructor and his assistant. The four judges were also tasked with monitoring the entire process. They represented the Peruvian Chamber of Construction, the Engineers Association of Peru, Tile Company Ceramics San Lorenzo and Sencico.

At the end of a day focused on teamwork and a strong sense of social commitment, the CISSAC crew won the Golden Trowel ("Badilejo de Oro") and also took third place to win the Bronze Trowel ("Badilejo de Bronce") donated by Sika Peru. Runners-up Cosapi received the Silver Trowel ("Badilejo Plateado").

With the support of its Technical Team, Sika carried out improvements on the pre-school's outside play area. Work included sealing concrete joints with Sikaflex®-11 FC, repairing floor cracks with SikaDur® and Sika Rep®, repairing part of the playground with SikaGrout® and SikaDur®, and repairing the back wall with Igol Sellamuro®.

The "Rayito de Sol" educational community was grateful for the coordinated action of SENCICO and SIKA. When the contest was over, it was possible to see the improvements in benefit of the children. <

HELPING THE WEAKEST

Over 60,000 children in Romania grow up as orphans and depend on the support of the state. There are not enough places in orphanages and far too few resources for the children. In 2012 the average monthly amount for an orphan equaled EUR 80 (EUR 2.66 per day) for food, clothing, medicine, school, courses for education and comfort. The organization UPSV ("A Step to the Future") supports social integration.

TEXT: ASTRID SCHNEIDER
PHOTO: UPSV, SIKA ROMANIA

> Orphans cannot always attend school and often have difficulties to integrate into society, finding a job and building up a self-dependent life. Generally the social integration center UPSV helps children with difficult backgrounds. It helps disadvantaged children from orphanages and impoverished families develop the skills and behaviors they need to become happy and active members of society.

Florin Catanescu, the founder of the organization, grew up as an orphan himself. His dream was to be able to help other orphans to have a better life. Therefore, he created the organization at the age of 25 in 2003. The UPSV provides orphans who are excluded from the system at age 18 accommodation for one year and helps them to integrate in society. They teach independent living skills such as cooking and managing finances, give legal advice and counseling, assist in writing CVs, train them for job interviews and help them in job applications.

The organization constantly tries to improve their facilities for the orphans. In 2006 they moved to a building in very poor condition and, despite of an insecure future due to only short term renting contract, with the financial help of sponsors the youth rehabilitated it themselves. UPSV could now sign a 15 years contract for another building in Brasov. The building is in very poor condition but the organization sees a huge potential to turn it into a date facility center which is desperately needed in the city. With limited resources, the organization already managed to renovate two rooms, the kitchen and a meeting room – but a lot of work is still necessary.

Sika Romania supports the refurbishment of a building. Sika believes in the vision to give underprivileged youths the best basis for a self-dependent life and integration

SIKA ROMANIA SUPPORTS THE REFURBISH-MENT OF A BUILDING

FLORIN CATANESCU, THE FOUNDER OF THE ORGANIZATION, GREW UP AS AN ORPHAN HIMSELF

> into society. Dedicated to support sustainable projects Sika Romania was founded in 2002 with four employees. It has rapidly grown over the years and now counts 60 employees and generates a sales volume of CHF 25 million. Their administrative quarters are located in Brasov and they are very dedicated to support sustainable projects in their region.

Learn more at http://www.upsv.org/ <

BUILDING TRUST