

AMBITIONS

A dive into Sika's world



**RIALTO BRIDGE
GETS
A MAKEOVER**

30

**WORLD VIEWS
CHILE**

A geographically narrow
but rich country

22

**HOW TO BUILD
A HOUSE INTO
A TREE?**

50

**SPEEDING UP
TUNNEL BORING
MACHINES**

12

**A 12,000 M²
PHILHARMONIC
HALL IN POLAND**

Graffiti-protected facade

5

AMBITIONS ISSUE #28

BUILDING TRUST



POWER



ASTRID SCHNEIDER
Marketing & Communications
Manager, Sika Services

Whether political, industrial, natural or media-driven, we know and experience a lot of different kinds of power in our lives. In physics, power is the rate of doing work. In an industrial organization, market power is a firm's ability to profitably raise the market price of a good or service over marginal cost. Power in international relations is defined in several different ways. Modern discourse generally speaks in terms of state power, although there is no commonly accepted standard for what defines a powerful state. Other powerful entities may include multilateral international bodies, multinational corporations or non-governmental organizations. In the final analysis, it is personally on us what we perceive as powerful and how much significance we ascribe to it. The current edition of ambitions addresses various aspects of construction which are truly about power. While today's tunnel boring machines (TBM) may seem slow with advance speeds of 40 - 60mm/min (p.12), they evidently have the power to drill their way through solid rock. Given that excavation goes on 24 hours a day, 365 days a year, regardless of weather or ground conditions, TBMs far outperform alternative excavation technologies. Tunnels several kilometers long can be easily bored within a matter of months. TBMs are even becoming more powerful thanks to Sika tail sealants, which are injected between the back of the shield of the TBM and the lining segments to prevent water, soil and the backfilling grout from entering the TBM.

One of the world's most popular monuments, the Rialto Bridge in Venice also requires a strong structure (p.30). But the millions of tourists walking across it over countless decades have diminished its structural power. Sika provided solutions such as the FRP structural strengthening system SikaWrap® to reinforce the stone cantilevers and to increase the safety of the balustrade, blocking further rotations.

Another question is how to preserve the architectural power of a building damaged by graffiti? The facades of the award-winning Philharmonic Hall in Polish Szczecin, reminiscent of an iceberg, are made of white-lacquered sheet metal (p.4). Sikagard R-778 protects the graffiti-proof substrate from spray paints, water-resistant markers, ink, contaminated air, acid rain and moisture for at least 7 years. This is real power against vandalism. Committed to giving more power to the community, Smiling Gecko in Cambodia is dedicated to helping people either in the form of direct aid or by supporting other NGOs (p.54). Focusing on areas of the greatest need, with the help of Sika Smiling Gecko enables families and children to help themselves through sustainable cluster projects.

Yours sincerely,

ASTRID SCHNEIDER

CONTRIBUTORS



ALEJANDRO VELEZ
Corporate Product Engineer TBM
Products, Sika Services AG

"Tunnel Boring Machines already changed the way of excavating tunnels. It is amazing to see how these "moving factories" are making our life more comfortable".



SANDRA ROMAN
Communications Manager,
Sika Chile

In Sika Chile we incorporate innovation; we are searching for more and better solutions for the construction world. We share our firm commitment of the values that inspire Sika.



PETE MANNING
Marketing Manager Roofing,
Sika UK

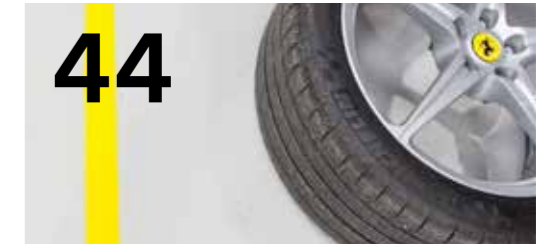
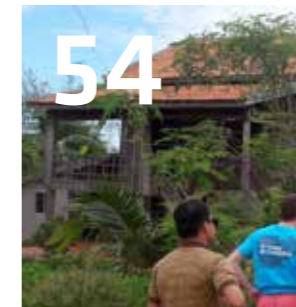
This project shows a clear partnership between, Sika, the installer and the client. The client wanted a solution many installers would walk away from, however together we collaborated to design the ideal solution and of course, produced a magnificent looking project!



PIOTR ZUZEK
KAM Infrastructure, Sika Poland

Unsolicited graffiti and other forms of vandalism cause a serious aesthetic problem nowadays. I'm really happy that Sika could apply the high-quality product Sikagard-781 S to protect the Philharmonic Hall against ink and spray graffiti for at least 5 years.

AMBITIONS #28 2017



5 COATING
Graffiti-protected

12 TUNNELING
The breakthrough for tunnel boring machines

22 WORLD VIEWS
What about Chile?

30 REFURBISHMENT
New shine and old charm

38 WATERPROOFING
A golden traw hat in the rainforest

44 FLOORING
High-gloss surface fit for a Ferrari

50 ROOFING
Urban tree room

54 SOCIAL RESPONSABILITY
Infrastructure for a better life

IMPRINT

Editors' address: Sika Services AG, Corporate Marketing, Tüffenwies 16, CH-8048 Zurich, Switzerland, e-mail: ambitions.magazine@ch.sika.com
Layout and Design: Sika Services AG, Corporate Marketing, Marketing Services
Visit us on the internet: www.sika.com

All trademarks used or mentioned herein are protected by law. All photo copyrights are owned by Sika except when mentioned. Reproduction is permitted with the written consent of the publisher.

A wide staircase leads up to the symphony hall stalls, then narrows to provide access to its balcony.

COATING

GRAFFITI-PROTECTED

The building emerges totally from its urban context, influenced by the steeply pitched roofs and the verticality of the city's residential buildings, by the monumentality of the upright ornaments of its neo-Gothic churches and the heavy volumes of its classicistic buildings, and by the towers that dot its entire skyline and the cranes of its port.

TEXT: ASTRID SCHNEIDER
PHOTO: YURI MARTYNOV

> Housing a 1,000-seat symphony hall and a 200-capacity chamber hall, the four-storey 12,000 m² Szczecin Philharmonic Hall in Poland is the first major public building commissioned in the city for 30 years. The project signaled the desire of a city, once famous for shipbuilding, to redefine itself, post-industrial decline, by widening its cultural agenda for tourists, as well as the many Germans living nearby across the border, who already come to shop for cheaper goods and services. It is a redefinition that seems to be being echoed now in a more ad hoc way across the city, with nascent

hipster-esque coffee bars starting to pop up, like the first buds of gentrification.

The award-winning Philharmonic Hall is located in a modern building completed in 2014 and designed by the Barcelona architectural studio Estudio Barozzi Veiga. The facades, reminiscent of an iceberg, are made of white-lacquered sheet metal. In the evening and at night, thanks to the thousands of LEDs mounted inside the facade, the building turns into a white lantern during artistic events, and appears white and red on national holidays.

During municipal festivals, the outside shines green, blue and navy blue to represent a city of floating gardens, capturing the meaning of the Polish name Szczecin.

The interior of the Philharmonic Hall is imbued with a sensation of calm. Whites predominate, from the plaster and plastic of the internal walls, furnishings and bar to the strips of anodized aluminum that raise the height of the two external walls concealing additional offices, services and fire escapes. A wide staircase leads up to the symphony hall stalls, then narrows to provide access to its balcony. Clear daylight filters down from skylights on the sides of the pitched roofs above.

But unfortunately, even such architectural pearls are not spared the colossal damage caused by vandalism. Unsolicited graffiti poses a serious aesthetic and financial problem for owners and municipal service departments in terms of the maintenance of buildings and facilities. The Philharmonic Hall's impressive manifestation clearly depends on the aesthetic appearance of its immaculate white facade, which needed to be preserved. The white-painted, profiled sheet metal is now protected by Sika Anti-Graffiti solutions.

>

The Philharmonic Hall's impressive manifestation clearly depends on the aesthetic appearance of its white facade, which needed to be preserved.





1 The facades, reminiscent of an iceberg, are made of whitelacquered sheet metal.

Sika provides the permanent, transparent coating Sikagard®-850 AG Anti-Graffiti and Anti-Poster, which easily can be applied by brush, roller and professional spray equipment to mineral substrates, coated substrates, wood and even metal.

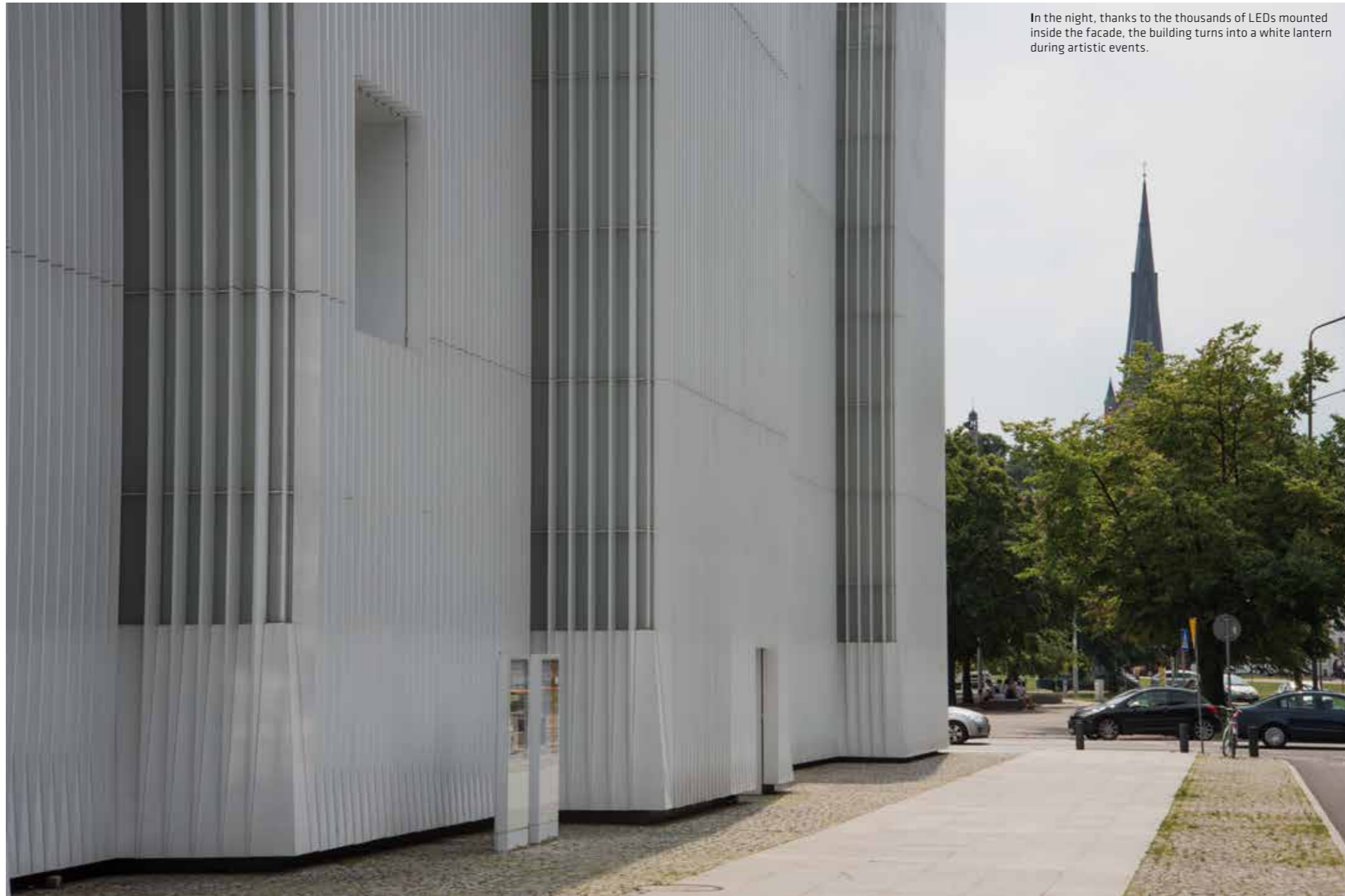
The substrate does not need to be recoated after graffiti removal as is the case with alternative sacrificial systems. There is no need for detergents, aggressive cleaners, hot water or high pressure blasting. All that is required is simple water jetting or a cold water hose, and the graffiti can be readily wiped off with a clean cloth. Posters, however, will be prevented from bonding. They will just fall off on their own after a few days. After application, the product leaves a glossy film which can subtly emphasize the colors of a property.

Sika Anti-Graffiti solutions ensure that Szczecin's new cultural and architectural treasure is conserved. The city was the capital of the Duchy of Pomerania over long periods, a prominent member of the wealthy Hanseatic League and, later, a Swedish military outpost. Acquired by Prussia in 1720, it experienced a period of stagnation before expanding tenfold at the end of the 19th century to become the largest German port on the Baltic – and, briefly, the third largest city in Germany.

In 1945, it was handed over to Poland and the existing population departed almost in its entirety, to be replaced by a new one from the east, resulting in a city without memory. The Philharmonic Hall is just the latest, and largest, in a series of labored but conscientious efforts by post-Soviet city governments to move beyond Szczecin's various pasts and look ahead to a new future. >

> THE FACADES, REMINISCENT OF AN ICEBERG, ARE MADE OF WHITE-LACQUERED SHEET METAL

THE INTERIOR OF THE PHILHARMONIC HALL IS IMBUED WITH A SENSATION OF CALM



In the night, thanks to the thousands of LEDs mounted inside the facade, the building turns into a white lantern during artistic events.



For more information:
<http://pol.sika.com/>

<http://www.archdaily.com/561343/philharmonic-hall-szczecin-estudio-barozzi-veiga>

<https://www.architectural-review.com/today/filharmonia-in-szczecin-poland-by-estudio-barozzi-veiga/8679660.article>

<https://www.iconeye.com/architecture/features/item/12125-symphony-of-echoes-szczecin-philharmonic-hall-in-poland-by-barozzi-veiga>



THE BREAKTHROUGH FOR TUNNEL BORING MACHINES

Anyone reading this article will have regularly enjoyed the benefits of modern tunneling technology – whether by driving on highways, crossing mountains or passing below rivers with the train, by taking the metro on the way to work, drinking fresh water from the faucet or simply flushing the toilet. All these everyday activities and many more would be impossible without tunnels.

TEXT: ALEJANDRO VELEZ
PHOTO: SIKA AG, HERRENKNECHT AG

- > Many of these tunnels are likely to have been excavated by tunnel boring machines (TBMs). These high-tech machines are used as an alternative to “drilling and blasting” through rock or “conventional mechanical excavation” in soft ground.

In recent years, with the rapid growth of underground construction, especially in megacities, TBM excavation has gained increasing importance.

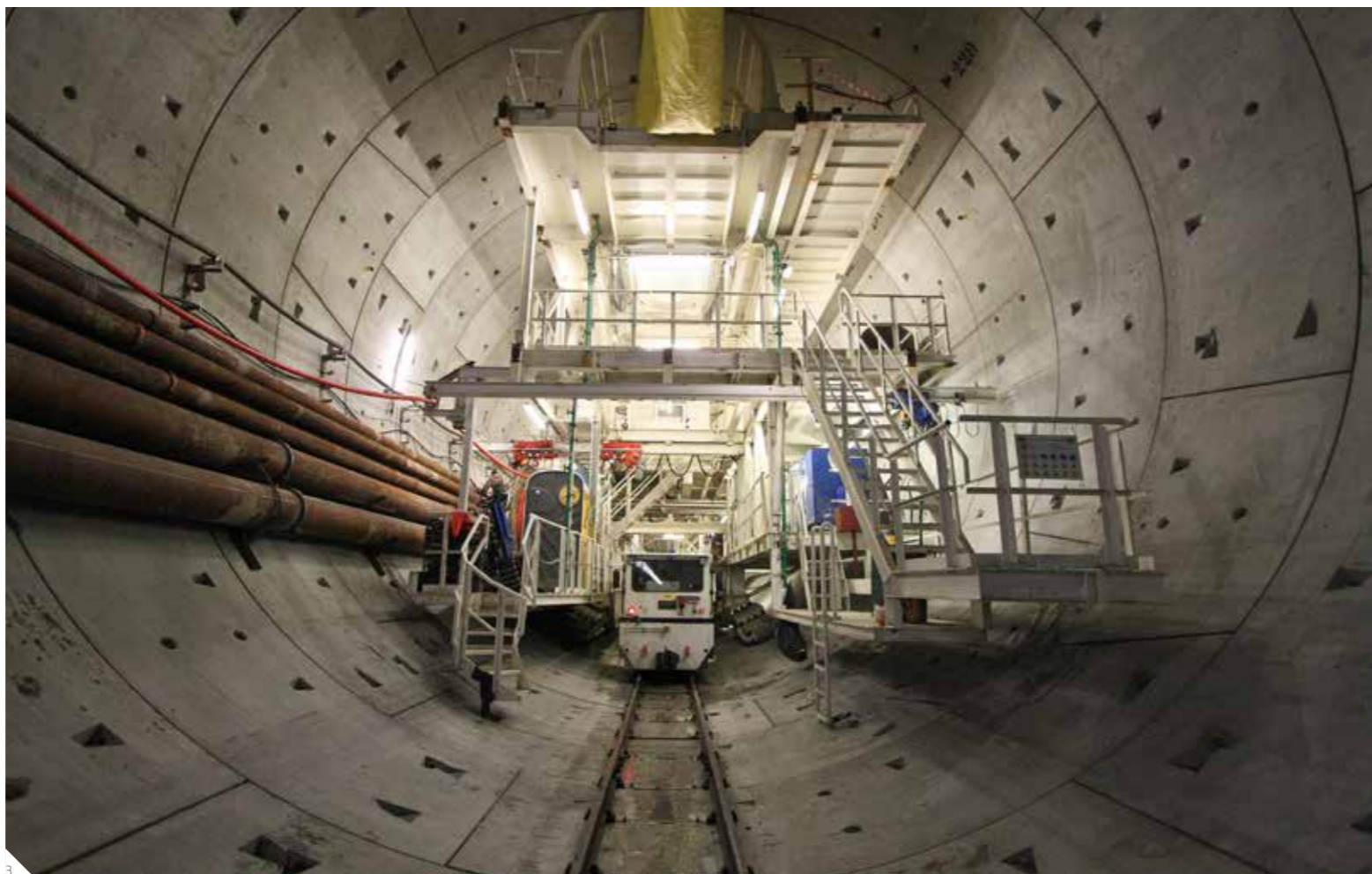
With advance speeds of 40 – 60 mm/min, TBMs may seem slow. Yet, given that excavation proceeds 24 hours a day, 365 days a year, regardless of weather or ground conditions, TBMs far outperform alternative excavation technologies. Tunnels several kilometers long can be easily driven within a matter of months. Moreover, TBM excavation causes next to no disruption, with the buildings, roads and landscape above the tunnel remaining unaffected during the construction period.

The TBM’s cutting wheel with its cutting tools, the main drive – equivalent to the motor – and the shield are custom-designed in line with the geological conditions and characteristics of the tunnel drive so as to meet the highest demands. The back-up is also specially configured to carry the required electrical and hydraulic installations along with the logistics-related equipment needed to build the finished tunnel.

The design and diameter of the cutting wheel are geared to the geology and intended use of the tunnel. The diameter of tunnels carrying water or electrical cables, for example, may range between a few centimeters and up to 4 or 5 meters. The diameter of tunnels for metros, trains or roads is normally around 9 to 12 meters, though may be anything up to 17 meters, as for a recently built tunnel in Hong Kong.

Not only the cutting wheel, the shield of





1-2 Sika TBM products during filling
3 Supply train entering the entry of the TBM

4 Supply train on its way to the TBM, carrying the backfill grout and Sika Foam TBM products
5 Inside the control center of the TBM

> the TBM is also adapted in line with the conditions of excavation. This explains the wide range of TBM features, which include hard rock shields, grippers, earth pressure balance (EPB) with screw conveyor and slurry shields with steel pipes for material extraction.

The back-up is the name given to the steel structure on bogies or rails behind the shield. It houses pumps, tanks, cranes, containers, transformers, cabinets, ventilators and all the equipment needed to keep the huge factory working. Depending on the tunnel length, it may even accommodate a lunchroom, restroom, nursery or rescue chamber. While standard back-ups are around 80 - 100m long, they are sometimes bigger than four football fields - as for the gripper machines used to excavate the Gotthard Tunnel in Switzerland, which last year became the world's longest rail tunnel.

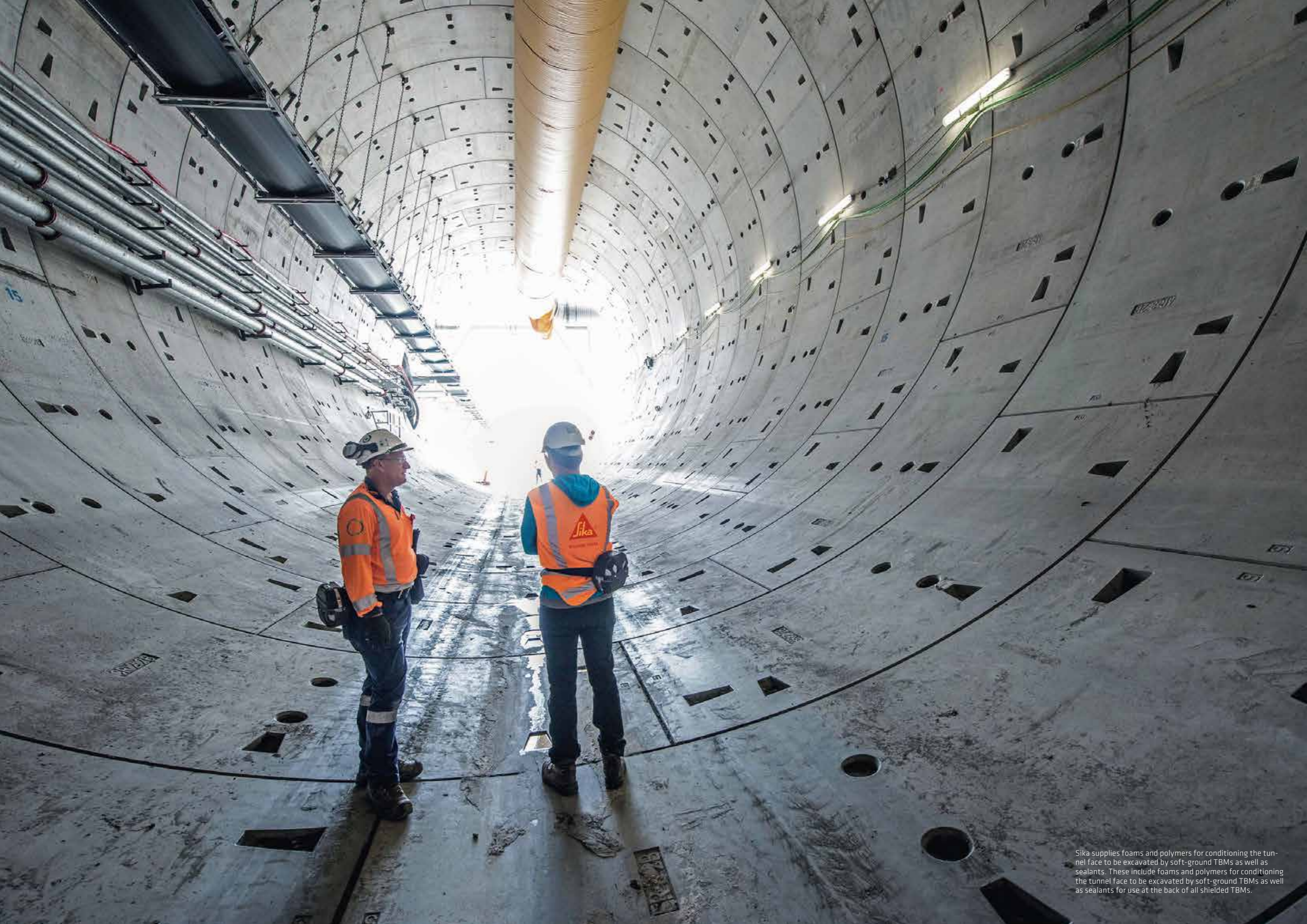
For decades, Sika has successfully delivered concrete and waterproofing solutions for numerous tunnels worldwide. A lesser-known fact is that Sika also provides a wide range of products designed specifically for use with the various types of TBM. These include foams and polymers for conditioning the tunnel face to be excavated by soft-ground TBMs as well as sealants (similar to greases) for use at the back of all shielded TBMs.

The injection of foams, polymers and

other additives into the tunnel face can significantly modify the characteristics, e.g. plasticity, texture and permeability, of the soft ground in order to facilitate and speed up the progress of the drive. Selection of the best type and quantity of ground-conditioning product depends on the specific geological conditions and equipment available in the TBM.

Sika sealants were specially developed with a hydrocarbon-free, vegetable-oil-

>



Sika supplies foams and polymers for conditioning the tunnel face to be excavated by soft-ground TBMs as well as sealants. These include foams and polymers for conditioning the tunnel face to be excavated by soft-ground TBMs as well as sealants for use at the back of all shielded TBMs.

> based formulation so as to resist water and ground pressure while avoiding any residual spoil contamination. Tail sealants are injected between the back of the shield and the lining segments to prevent water, soil and the backfilling grout from entering the TBM.

Now, after many decades of development, TBMs tackle much bigger challenges. And, without the resulting tunnel structures, we would no doubt have to plan our time quite differently. <

For more information on TBM technologies and products, please visit: http://www.sika.com/en/solutions_products/construction-markets/sika-tunneling-mining/tbm-solutions.html

<https://www.youtube.com/watch?v=-EGipAuWOHQ>



Launch shaft for the Eurasia Tunnel on the Asian side of the Bosphorus, Istanbul, Mixshield, Ø13,660 mm.

WHAT ABOUT CHILE?

Chile is situated along the western seaboard of South America. It extends approximately 4,300 km from its boundary with Peru to the tip of South America at Cape Horn, a point only about 640 km north of Antarctica. A long, narrow country, it has an average width of only about 180 km, with a minimum of 15 km near Puerto Natales. Chile has been one of Latin America's fastest-growing economies over the past decade.

TEXT: ASTRID SCHNEIDER
PHOTO: SIKA CHILE, I-STOCK



>



Francisco Jimenez,
General Manager of Sika Chile

However, the unemployment rate rose slightly, from 5.7 percent in July 2013 to 5.8 percent in January 2016. But thanks to ambitious structural reforms, Chile has maintained its status as a Latin American reference of progress whose creative public policies have become international models of good governance. We wanted to form our own conclusions and flew to its capital Santiago de Chile to talk with the General Manager of Sika Chile, Francisco Jimenez.

What are your personal secrets for managing a team?

It is difficult to try to reduce them to a recipe, but in general I would say that it is important to establish clear and fo-

cus objectives, be prepared to drop those tasks that do not add value, be able to assume a reasonable share of risk when making decisions and, especially, be ready to ask for help or simply accept when a problem cannot be solved. This is all part of leading and managing an organization. Similarly, feedback and an assessment of what and how we are doing is important and necessary to create an environment of confidence.

Leadership requires constant sharpening, refocusing, never really being satisfied. At the same time, anyone in a leadership role should not even try to guess at the answers, but should always reach

>



METRO LÍNEA 4

Line 4 is one of the 5 current lines that make up the metropolitan railway of Metro in Santiago de Chile. Sika participated in the construction with concrete solutions Sika Sigunit, Sika Fume, Sika Viscocrete 5000.



EDIFICIO TITANIUM

“Titanium The Cover” is one of the most emblematic constructions of last years in Chile for its dimensions, its technology aligned with the environment and for its exemplary behavior in earthquakes. Sika Viscocrete 5000.

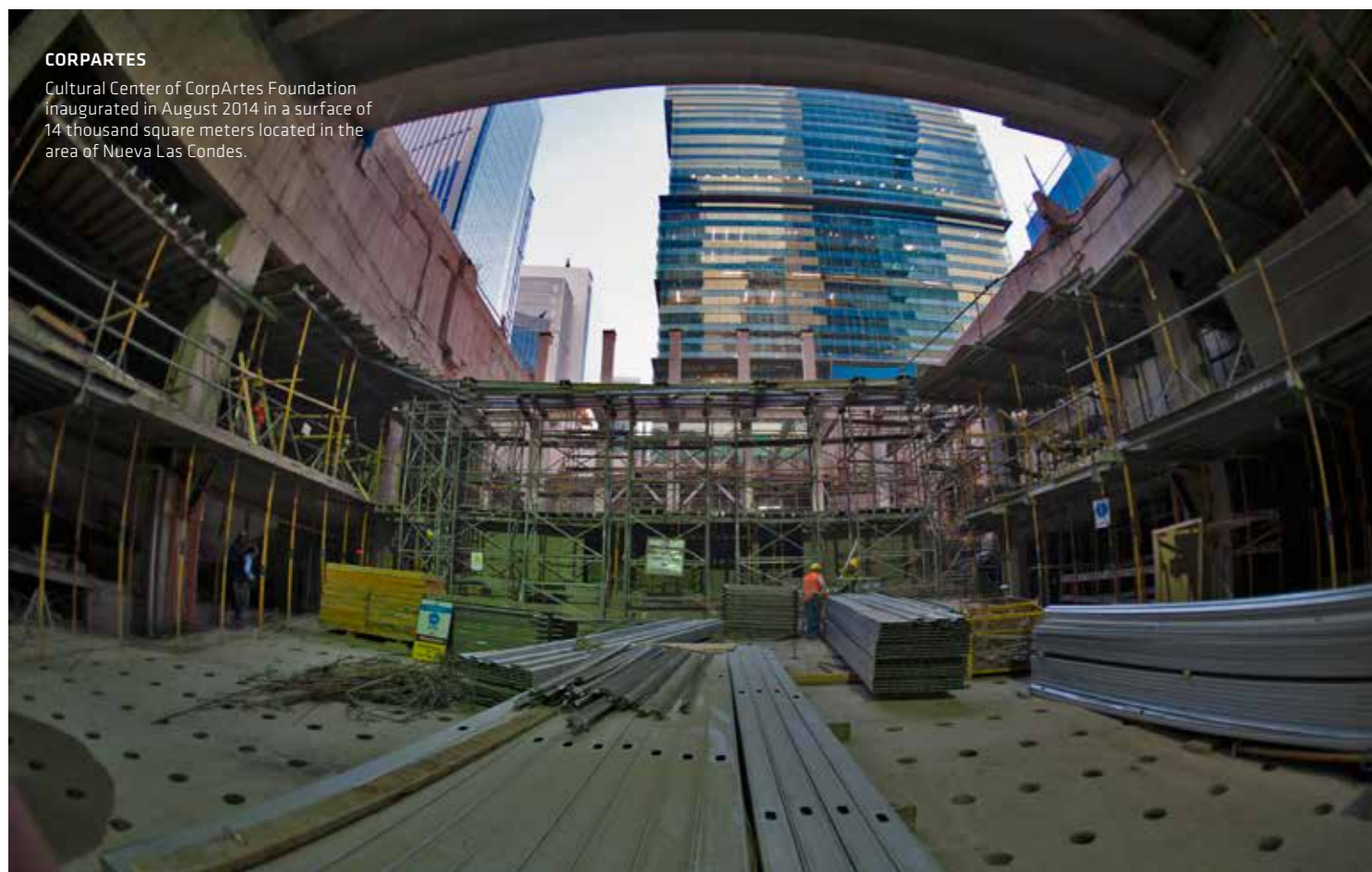
1 COSTANERA CENTER

Real estate project located in Santiago City, the central building is 300 meters high. 6,300 m² of quartz stones in 480 pillars were bonded with our Sikaflex 252 and Sika Primer 215 adhesives.



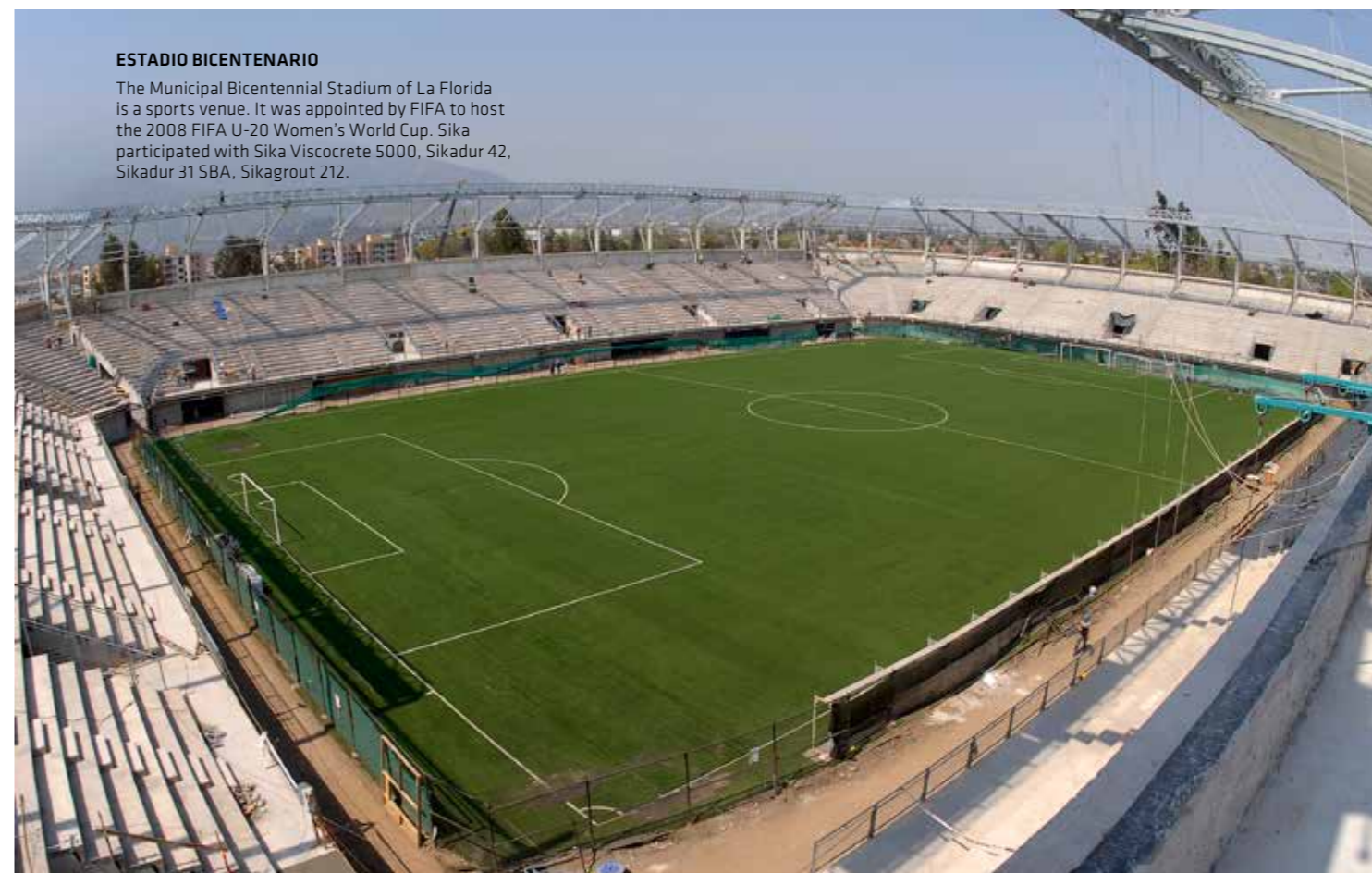
CORPARTES

Cultural Center of CorpArtes Foundation inaugurated in August 2014 in a surface of 14 thousand square meters located in the area of Nueva Las Condes.



ESTADIO BICENTENARIO

The Municipal Bicentennial Stadium of La Florida is a sports venue. It was appointed by FIFA to host the 2008 FIFA U-20 Women's World Cup. Sika participated with Sika Viscocrete 5000, Sikadur 42, Sikadur 31 SBA, Sikagrout 212.



BEING ABLE TO REACH THE MOUNTAINS AND THE OCEAN WITHIN JUST 2 HOURS IS A PRIVILEGE

> out to customers in a systematic search for those answers. I encourage maintaining a passionate and motivated attitude.

What is the first thing that comes to mind when you think about working at Sika Chile?

First of all, having a brand recognized in the market, having the resources and support to develop initiatives and propose improvements, being in a friendly but challenging work environment, and finally the possibility to develop both personally and professionally. Sika is acknowledged as an organization that rises to challenges, especially among people in the construction business.

Chile has been one of Latin America's fastest-growing economies over the past decade. But the overall economic picture remained fairly gloomy heading into 2017, with growth lackluster and the economy operating considerably below potential. What is your personal outlook?

Countries go through different stages of growth, but the really important thing is the ability to correct and improve. In this sense, our country has demonstrated that is able to recover from adversity, as evidenced by the earthquake in 2010, as well as to survive different economic cycles. Nevertheless, to meet growing needs and succeed in a turbulent and exciting environment we must focus on our mission, demonstrate accountability, and achieve results.

And the construction market? Where exactly does Chile profit from Sika?

Our country has achieved a strong level of professionalism in the construction industry and requires solutions that are increasingly more durable and environ-

mentally friendly. Major projects in the mining, energy, construction, roads and healthcare sectors have provided Chile with a very solid infrastructure.

In the housing segment, the challenge is to incorporate more demanding standards of earthquake safety, as well as to make new materials more durable, lightweight and economic, which opens great opportunities to a company such as ours. All this calls for practical solutions and technical knowledge.

What infrastructure vision do you have for the country in terms of making people's life easier in the future?

Our infrastructure still requires additional investment, especially in improving road and port connectivity in Chile's extremities, incorporating sustainability concepts, exploiting natural conditions to develop non-conventional energy sources (wind, radiation, tides, etc.) and stewarding water, an increasingly scarce resource.

What are the immediate goals for Sika Chile?

First of all, our task is to defend our market leadership. Competition is becoming stronger and the arrival of new entrants makes it more challenging. On the other hand, our more immediate objective is entering new markets with work underway to build an acrylics plant and to grow the mortar business. To this end, we are looking for alternatives in the development of products and channels, allowing us to expand our product range and coverage, while maintaining an attractive level of profitability.

Our second objective is to generate and fast-track more effective alternatives for

potential acquisitions that will allow us to expand our base of operations both in terms of volume and geographical reach. Finally, we must consolidate and expand our presence in the North to increase our penetration and make better use of our resources at the Antofagasta site.

Diverse landscapes unfurl over a 4,300 km stretch while the country averages just 175 km wide - a land of extremes, versatility and beauty. Does this come close to what Chile is about?

Not necessarily. Although Chile is recognized as a long and narrow strip of land, it boasts an enviable ocean, more than 5,000 km of coastline, and a mountain range which in addition to being beautiful and challenging is rich in natural resources.

On the other hand, a decades-long connection and relationship with Asia is transforming Chile into a gateway to Latin America.

What is it that you personally enjoy the most about life in Chile?

I think being able to reach the mountains and the ocean within just 2 hours is a privilege. And Chile's diversity of landscapes, cultures, climates and customs make it a very special country.

What are your aspirations for your country looking forward?

Our path of development so far has required a lot of courage and drive, but we must now move on to the next stage, where human resources are very important. In this sense, the challenge is huge, because we have to broaden our base of support staff with new and different skills, improve our productivity, achieve more ambitious goals as a country and

at the same time maintain what we have built.

The question is what do we have to do today to accomplish results. Planning is not an event, it is a continuous process of strengthening what really works and

avoiding what does not, it means taking risks and decisions in full awareness of their potential effect, setting objectives, appraising performance and results through systematic feedback, and making ongoing adjustments as conditions change.



The Senior Management of Sika Chile.

NEW SHINE AND OLD CHARM

Italy's Venice is the consummate magician. It makes marble palaces vanish into silent fogs, labyrinthine streets disappear at the whim of moody tides, and can even turn the most pedestrian of people into fantastical, masked creatures. Just like its world-famous Carnevale, Venice thrives on mystery and awe. Boasting more than 6.4 million visitors yearly, the historic center of the city remains a top global tourist destination.

TEXT: ASTRID SCHNEIDER

PHOTO: ANTONINO MONTALBANO, SIKA ITALY, RICARDO GOMEZ, I-STOCK



The Rialto Bridge has become one of the architectural icons of the city of Venice.

> The Rialto Bridge is right in the middle of all this bustle, still one of the most well-known bridges in the world. It is certainly the most famous bridge in Venice, where every day thousands of tourists take pictures, walk over it, or sail under it by gondola. It is one of the four bridges spanning the Canal Grande, the other three being the Ponte dell'Accademia, Ponte della Costituzione and Ponte degli Scalzi. The first Rialto Bridge was built in 1181, following a design by Nicolo Barattieri, but perished in a fire. It was, in fact, a pontoon bridge, and its lack of reliability forced the authorities to have a wooden bridge built after the first Ponte di Rialto was removed. Parts of the second bridge were destroyed in a fire during a rebellion in 1310, an event which triggered a series of similar incidents which finally led to the total collapse of the structure in 1524. The decision to build the present bridge was made in 1551. Construction work started in 1588 and was completed in 1591. The bridge, after a design by Antonio da Ponte, was to be made of stone, a material much more reliable and suitable for a structure as important as the Rialto Bridge. Resting on two ramps, the bridge is 48 m long with a single 22 m span arch made of stone. On either side

of the central portico, the covered ramps carry rows of shops. During the building of the bridge, many believed the project was too audacious from an engineering point of view, yet the bridge is still standing and has become one of the architectural icons of the city of Venice.

After years of bearing millions of tourists and exposure to the ravages of foot traffic and salt water, restoration finally became inevitable. The refurbishment project was based on an awareness of the bridge's strong historical, architectural and constructional heritage as a landmark of the city of Venice. Accordingly, the design took into consideration three main factors: the general architectural design, preservation of the materials, and structural strengthening. Under the restoration project, all of the bridge's structural elements are being treated for the first time in more than 400 years. A team of 25 conservators dismantled the sandstone paving on the central steps and the two exterior ramps for cleaning.

To protect the northern and southern balustrades from the lagoon's brackish waters, as well as the tourists who walk across it, the banisters were reinforced

using carbon-fiber bandages and duplex stainless steel brackets that resist corrosion. The 364 columns, which presented fractures on their capitals and bases, were also reset in molten lead, and some of the cornerstones were completely replaced.

Sika became involved in this project in the latter part of 2015. The ultimate goals were to carry out the restoration, maintenance and overall refurbishment of the Rialto Bridge, while preserving the architectural nature of the original materials by applying non-invasive yet efficient structural solutions, as well as to stop the decay of its structure and materials.

Both sides of the Rialto Bridge are bordered by a balustrade made of Istria stone. The balustrade protrudes beyond the external edge of the masonry arch and rests on stone cantilevers anchored underneath the deck. Upon removal of the stone deck, numerous cantilevers supporting the balustrade revealed cracks, and the balustrade rotated outward slightly.

Sika provided solutions such as the

>



The entire strengthening solution is now absolutely non-invasive and invisible as it is hidden under the deck.



Sika provided SikaWrap® to reinforce the stone cantilevers and to increase the safety of the balustrade.

A must-see for every visitor: resting on two ramps, the Rialto Bridge is 48 meters long with a single 22-meter span arch made of stone.





View to a sidewalk going down the Rialto Bridge.

- > FRP structural strengthening system SikaWrap® to reinforce the stone cantilevers and to increase the safety of the balustrade, blocking further rotations. The entire strengthening solution is absolutely non-invasive and invisible as it is hidden under the deck. A special procedure developed by Sika was used for the application of SikaWrap® FX-50 C connectors. This procedure allows the connectors to be applied "all-at-once". At first, holes in the stone were drilled and thoroughly cleaned with compressed air and a round brush, then the holes were partially filled with Sika AnchorFix® from the bottom up. SikaWrap® FX-50 C carbon-fiber connectors were impregnated with Sikadur® Injection, inserted in the holes and spread on the surface of the stone. The SikaWrap® carbon-fiber fabric was cut to size and impregnated with Sikadur® epoxy resin directly on the substrate, after precise preparation and cleaning of the stone surface.



La Biennale di Venezia is now one of the most prestigious cultural organizations in the world. This shot shows the exhibition of 2016.

Local newspaper La Nuova di Venezia has already hailed the project as exemplary for reusing 99% of the bridge's existing materials and keeping to schedule. But the official inauguration of the refreshed

structure will have to wait until May as the city council has timed the event to coincide with the opening of the Venice Biennale. So if you are in Venice then, take a little time away from the delights

of art, architecture and film that the Biennale has to offer and walk across the newly opened Rialto Bridge with its new shine and old charm. <

The refurbishment of the Rialto Bridge was called as exemplary for reusing 99% of the bridge's existing materials and keeping to schedule.



A GOLDEN TRAW HAT IN THE RAINFOREST

Despite their different folk costumes, the thirteen minority groups who live in Xishuangbanna, Yunnan, in the southwest of China all wear straw hats. Resembling a giant golden straw hat, the Dai Show Theatre rises from the rainforest. The roof above the heads of the tourists enjoying the wonderful shows inside is protected with a Sika roofing waterproof system.

TEXT: LIU JINGDONG, ASTRID SCHNEIDER
PHOTO: TIM FRANCO

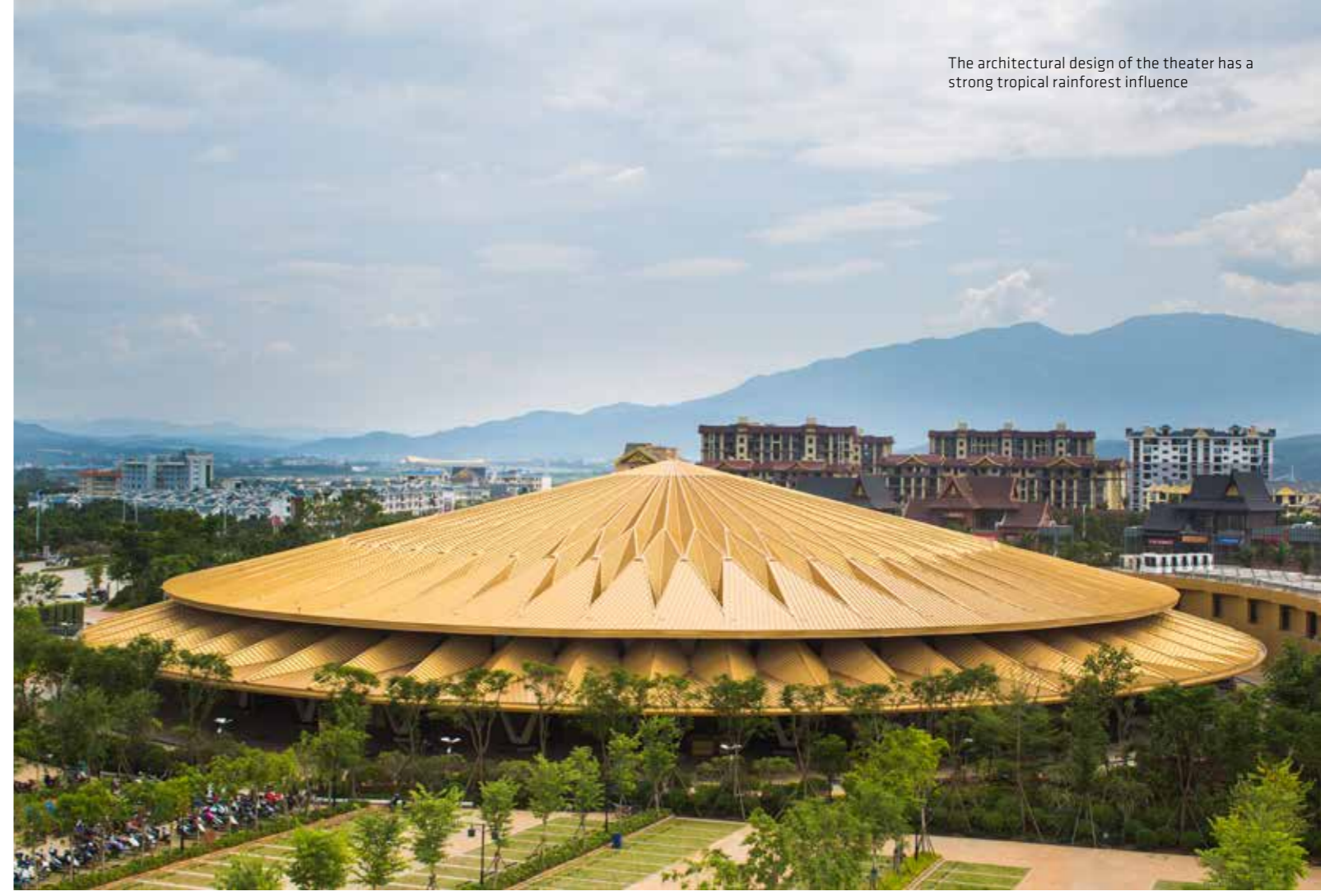
> Xishuangbanna is called “Mengbalanaxi” in the ancient Dai language, which means “an ideal and fantastic paradise”. With its primeval forests, this place is home to many wild animals. It is also a haven for the Dai people with bamboo houses among the trees, graceful figures of Dai girls, and the beautiful peacock dance. The world-class modern hi-tech Dai Show Theatre is located in Jinghong, the capital of Xishuangbanna prefecture.

Representing a vast investment, it was built by the Wanda Culture Industry Group. The theater, integrating Dai culture with modern technologies, was designed by Mark Fisher, one of the world’s foremost architects and artistic director of the opening and closing ceremonies of the Beijing and London Olympic Games.

The architectural design of the theater has a strong tropical rainforest influence. Given the building’s resemblance to the straw hats often worn by Dai girls, the theater is nicknamed “golden straw hat”. Inspired by the geometrical form of palm leaves common in tropical areas, the de-



The architectural design of the theater has a strong tropical rainforest influence



The area has a five-month annual rainy season, so the building is required to be exceedingly waterproof.



THE DESIGN OF THE FOLDED PITCHED ROOF IS INSPIRED BY THE GEOMETRICAL SHAPE OF PALM LEAVES COMMON IN TROPICAL AREAS AND BEARS COMPARISON WITH THE ROOFS OF LOCAL DAI BUILDINGS

> sign of the folded pitched roof calls to mind the similarly shaped roofs of local Dai buildings.

The two-layered roof structure of the hall is made up of tubular elements, embodying a modern interpretation of the traditional Dai bamboo houses. Under the crown is an outdoor theater surrounded by trunk-shaped pillars. The space between the two layers forms a natural ventilation system introducing a natural breeze into the theater to counter the hot climate of Xishuangbanna. The side openings also enable tourists to enjoy the scenery outside.

Since Xishuangbanna is located in a tropical area with a five-month annual rainy season, the building is required to be exceedingly waterproof. The waterproof system installed under the lower layer of the roof is a non-exposed mechanical fixed system with an extended waterproof area of 14,000 m². On the lower layer of the roof, there are in excess of 24,000 structural pillars supporting the upper layer, i.e. more than 1.5 per m². These protruding components and structures posed huge challenges in terms of the installation and material quality of the waterproof membrane.

After witnessing the excellent performance displayed during sample construction on site as well as the superior building techniques employed by the contractor, the customer selected Sika's PVC waterproof membrane for the project. Due to the presence of a welded right-angle junction plate on the structural pil-

lars of the upper layer of the roof, standard prefabricated PVC waterproof parts could not be used on the construction site. Instead, the waterproof parts of all the support details had to be handmade. Moreover, as the quality directly determines the efficiency of the entire waterproof system, the contractor fabricated semi-finished handmade prefab interiors based on the shape and specifications of the protruding parts to be covered.

Since the indoor construction environment was far better than that of the construction site, welding standards was drastically improved and had reduced the potential safety hazards caused by faked welded seams. What is more, the prefab-

ricated waterproof parts shortened the time required for membrane cutting, welding, and on-site checking, thus accelerating the overall construction process and guaranteeing the successful architectural effect of the whole roof system.

Today, the Dai Show narrates the ancient and mysterious love stories of the Dai people to tourists every day and represents the mysterious rainforest life and beautiful Dai myths through the medium of modern technologies and spectacular performances. While tourists come and go, the "golden straw hat" and the Sika roof waterproof system, the theater's silent protector, will remain permanent features of the rainforest. <



Today, the Dai Show narrates the ancient and mysterious love stories of the Dai people to tourists.



Indoor view of the theatre.



HIGH-GLOSS SURFACE FIT FOR A FERRARI

The story of Ferrari officially began in 1947, when the first Ferrari emerged from the historic factory entrance on Via Abetone Inferiore in Maranello. The 125 S, as it was known, embodied the passion and determination of the company's founder. However, the company hadn't yet started mass-producing cars – only two of this first model were manufactured.

TEXT: ASTRID SCHNEIDER
PHOTO: KIRSTEN. J. PLATT

MOST PEOPLE STILL OVERWHELMINGLY CHOOSE RED AS THE COLOR FOR THEIR FERRARI, THE COLOR OF 45% OF FERRARIS SOLD

> Founder Enzo Ferrari was born in Modena in 1898 and died on August 14, 1988. He devoted his entire life to designing and building sports cars and, of course, to the track. Having been made an official Alfa Romeo driver in 1924, within five years he had gone on to found the Scuderia Ferrari

on Viale Trento Trieste in Modena, which assisted mostly gentlemen drivers in racing their cars.

Ferrari has garnered over 5,000 victories on the world's tracks and roads, becoming a modern-day legend in the process.

In order to meet growing market demand, Enzo Ferrari sold a 50% stake in the company to the Fiat Group in 1969, a figure that rose to 90% in 1988.

A Ferrari garage in Greater Manchester >



And special cars need special treatment.



The Ferrari garage needed durable, high-gloss floor to protect the highpowered, high-specification machines.



The flooring system contains hard-wearing, non-slip properties, while offering a smooth, seamless finish to benefit mechanics and exquisite motors alike.



A light-grey finish with highslip resistance was applied.

> (UK) involved in the repair and maintenance of some of the world's most exclusive cars was searching for a durable, high-gloss floor to protect the high-powered, high-specification machines it services.

The vehicle workshop contains a hive of engineering expertise. For the refurbishment of the workshop's 700 m² floor, it was vital the new system contained hard-wearing, non-slip properties, while offering a smooth, seamless finish to benefit mechanics and exquisite motors alike. Sikafloor®-263 SL, a two-part, multipurpose binder system, proved ideal.

In preparation for the installation of the built-up floor system, IRL Group Ltd - the project's contractors - ground and shot-blasted the existing surface. Sikafloor® Level-30, a polymer-modified, pumpable, self-leveling, fast-drying cementitious screed was initially applied to the substrate in areas of anticipated heavy traffic which required higher thickness. Sikafloor® 161 primer was then applied to the whole floor, and when cured, Sikafloor®-263 SL was installed to a thickness of 2mm. Based on epoxy resin, the system offers excellent chemical and

mechanical resistance for heavy-wearing concrete and cement screeds in areas such as assembly halls, workshops, garages and loading ramps.

The floor's high-gloss, light-grey finish was supplied by Sikafloor®-264, a two-part epoxy roller and seal coat with high-slip resistance: essential traction provision for rear-wheel drive cars such as Ferraris which need to journey on and off ramps during maintenance. The Greater Manchester workshop has space to service up to five vehicles at any one time, hence the need for a smooth floor which didn't compromise on tire grip.

Mark Ollerenshaw, Managing Director at IRL Group Ltd, said: "For a floor upgrade in an environment involving big-wheeled vehicles, the surface we provided had to have proven, durable qualities. Sikafloor was absolutely ideal. Its high-gloss finish complemented its hard-wearing, high-slip resistance, resulting in the perfect floor system for a project involving prestigious cars and an abundance of highly technical equipment."

The garage remained closed while floor refurbishment was carried out. It meant

contractors had a strict seven-day deadline to complete the project and ensure the business reopened on the agreed date. Sikafloor's easy application and reliable performance ensured the timeframe was met, leaving the workshop with a safe, smart, durable floor fit for a Ferrari.

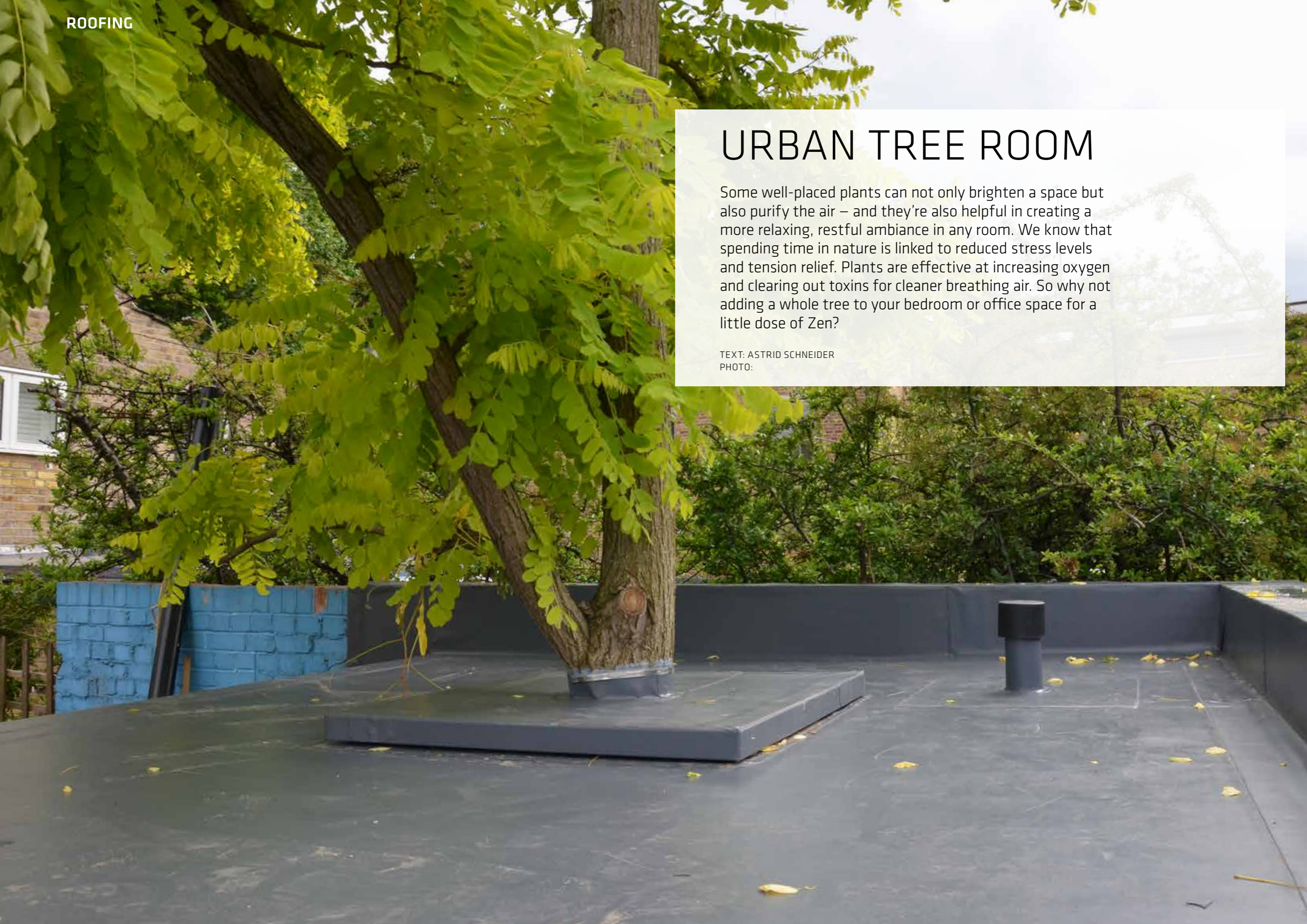
Today's Ferraris come in colors ranging from bright yellow to soft metallic grey, but originally they were all red. That wasn't Ferrari's decision, however. Red was the color that the International Automobile Federation (FIA) assigned to all Italian Grand Prix racecars in the early years of auto racing. And most people still overwhelmingly choose red as the color for their Ferrari, the color of 45% of Ferraris sold. <

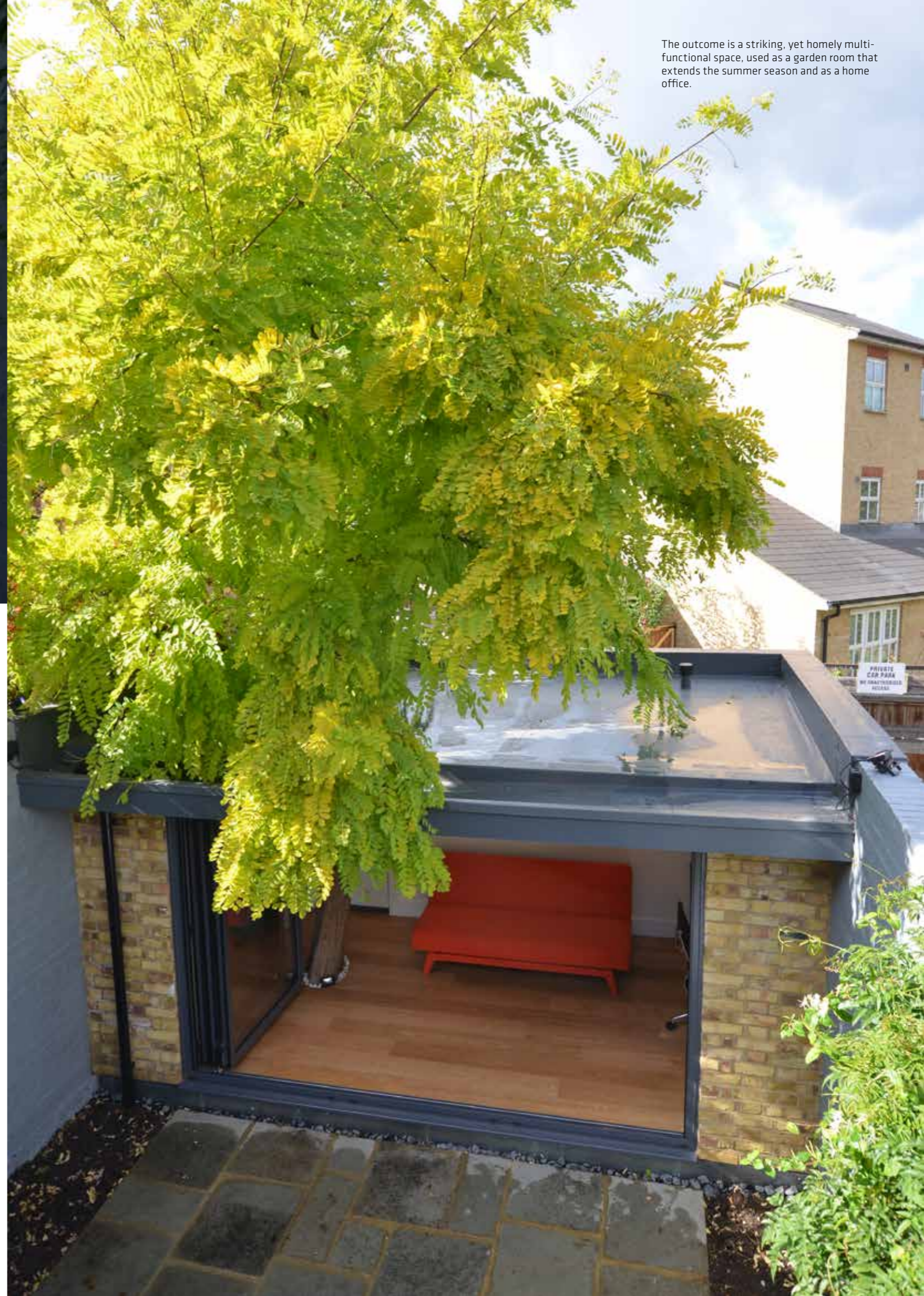
Get more information about [Sika UK flooring case studies](#)
Go to more insights of the [history of Ferrari](#)

URBAN TREE ROOM

Some well-placed plants can not only brighten a space but also purify the air – and they're also helpful in creating a more relaxing, restful ambiance in any room. We know that spending time in nature is linked to reduced stress levels and tension relief. Plants are effective at increasing oxygen and clearing out toxins for cleaner breathing air. So why not adding a whole tree to your bedroom or office space for a little dose of Zen?

TEXT: ASTRID SCHNEIDER
PHOTO:





The outcome is a striking, yet homely multi-functional space, used as a garden room that extends the summer season and as a home office.

The garden room, designed by Leckenby Architecture, in Hackney. Sika Sarnafil's durable and flexible single ply membrane was used in the roof to allow the tree to grow and sway.

> But plants and trees also enhance interior and outdoor design. Architects the world over have built commercial buildings and private homes with trees growing through the roof in one or more rooms, either through openings in the slabs or directly inside the building. Waterproofing the roofing is a particular challenge in such cases. This is why architectural greening of this kind is frequently only encountered in countries where the sun is shining virtually all year round. But this didn't deter Sika Sarnafil from constructing what is possibly the only building of its kind in the UK, when the company used its proprietary single ply membrane to waterproof a garden room with a live tree growing through it.

Hackney-based architect Andrew Leckenby specializes in working with private clients to improve their homes. But when it came to extending his family home, Andrew became his own client. Living in an urban area meant imagination was required to increase his living area.

Deciding to make the most of his home's outdoor space, Andrew settled on a garden room. However, the rear of the gar-

den contained a beautiful false acacia tree, which he did not want to remove. Thinking outside the box, Andrew drew up plans for a room that would incorporate the tree, making it the focal point of the space.

Andrew explained: "There are countless examples of trees being integrated with architecture - but these are generally found in countries where it doesn't rain quite as much! To be able to achieve the same effect in the UK, we needed a roofing membrane that was flexible enough to allow the tree to sway and grow, as well as being durable enough to keep the building watertight.

Andrew had specified Sika Sarnafil on many extensive commercial projects during his career working with larger architectural practices, so knew that the product would meet his requirements.

"Faced with a challenging roof design, I instantly thought of Sika Sarnafil. As the industry-leading single ply membrane, after decades of specifying it for corporate clients, I was confident that I could trust its quality and durability. In addition, Sarnafil's Registered Contractor

programme allowed me to identify an installer that had the training and experience to do the job - essential for detailing of this nature."

The finished article is a striking, yet homely multi-functional space, used as a garden room that extends the summer season, a home office - and not to mention a unique sleepover location for Andrew's son.

A member of the Sika Sarnafil technical team inspected the project once complete and gave a 15-year guarantee on the roof. The low maintenance membrane means Andrew only has to check the waterproofing once a year to ensure the detailing around the tree is still sound. A small price to pay, says Andrew, for such a fantastic family space. <

For more information visit <http://gbr.sarnafil.sika.com>
Visit the Leckenby Architecture website <http://www.leckenbyarchitecture.com/> for more details on Andrew Leckenby's architectural design

INFRASTRUCTURE FOR A BETTER LIFE

Since the middle of the last century, Cambodia has been ravaged by decades of civil war and suffered terribly during the Vietnam War and the terror regime of the Khmer Rouge. As a consequence, Cambodia is now one of the poorest countries in the world. In its capital Phnom Penh alone, tens of thousands of children live on the streets, suffering hunger, illness and abuse. To ensure these children and their families a reasonable standard of living, we need to provide help on the ground.

> Smiling Gecko works in Cambodia and is dedicated to helping these people – either in the form of direct aid or by supporting other NGOs. Focusing on areas of the greatest need, Smiling Gecko enables families and children to help themselves through sustainable cluster projects. Its core projects are agricultural family projects, village school educational projects, sustainable garment production, carpentry and a farmhouse to attract tourism.

To achieve these goals, Smiling Gecko believes that migration to the cities and urbanization must be stopped by offering rural people viable alternatives. By implementing promising concepts revolving around education and working conditions, the charity wants to ensure that people can gain secure employment and earn a living wage without leaving the countryside. Smiling Gecko is also involved in a resettlement program to bring people back from the slums in and around Phnom Penh.

In the area north of Phnom Penh, the organisation runs several construction projects requiring regular, high levels of construction activity. The projects are headed by architect and ETH Zurich professor Dirk E. Hebel and supported by the Center for Development and Cooperation



(CDC) of the Bern University of Applied Sciences.

With the support of Sika, Smiling Gecko has been able to open a carpentry which provides nine additional jobs and training places for young Cambodians. Furthermore, five bungalows and a restaurant have been completed under the Farmhouse project. In order to accommodate visitors, a guest house with a kitchen was built on the project site. Known as Farmhouse Smiling Gecko, it opened its

doors in November 2015. Since the number of guests and visitors keeps increasing, there is a need to extend this project and build six additional bungalows plus ancillary facilities as this is the only program that can provide the financial means to help make other Smiling Gecko projects profitable and sustainable.

Sika provided all these recent projects with a total of 130 m² of floor coating for the kitchen, as well as tile adhesives and grouts for the bathrooms, cold rooms



and deep freezers, in addition to financial support for the development of the bungalows. The local Sika subsidiary opened in 2016 a new production plant for concrete admixtures in Phnom Penh, so Sika is tapping into further potential in Cambodia's booming construction industry, which grew by 20% in 2015.

This new infrastructure should enable local Cambodians to leave poverty and deprivation behind them and assures them of genuine long-term prospects.



The projects create new opportunities, fresh hope, and a possibility for people to support their own livelihood and improve their educational and living conditions. <

- 1 Team and members of Smiling Gecko
- 2 Five bungalows and a restaurant have been completed under the Farmhouse project

