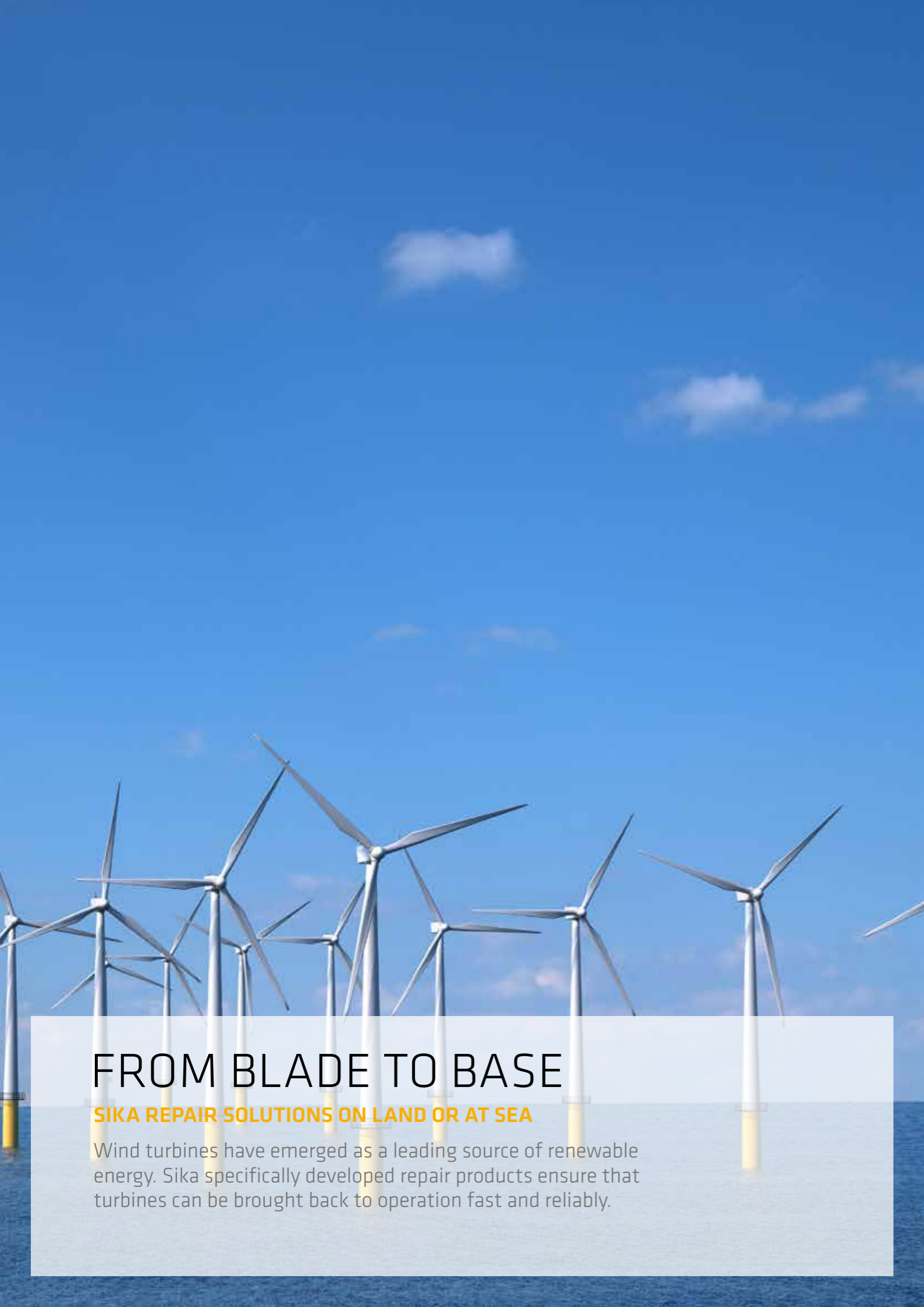




SIKA WIND ENERGY  
REPAIR SOLUTIONS  
AS GOOD AS NEW FROM  
BLADE TO BASE

BUILDING TRUST





# FROM BLADE TO BASE

## SIKA REPAIR SOLUTIONS ON LAND OR AT SEA

Wind turbines have emerged as a leading source of renewable energy. Sika specifically developed repair products ensure that turbines can be brought back to operation fast and reliably.

# CONTENTS

**05** Concrete Repair for Tower Foundations

---

**07** Waterproofing for Tower Foundations

---

**09** Structural Crack Repair of Foundations

---

**11** Repair Resins for Composite Structures

---

**13** Fillers for Profiling and Surface Finishing

---



BLADES



MOULDS



TOWERS



NACELLE



BASE



# CONCRETE REPAIR FOR TOWER FOUNDATIONS



**FOR THE REPAIR OF ONSHORE CONCRETE FOUNDATIONS** Sika has developed a fully comprehensive solution to restore and rehabilitate damaged and deteriorated concrete structures.

## Sika MonoTop®-723 N

Sika MonoTop®-723 N is a ready to mix, polymer modified surface/finishing mortar, meeting the requirement of class R3 of EN-1504-3.

### ADVANTAGES

- Easy to apply and excellent finishing
- Suitable for hand or wet spray application
- Can be applied up to 5 mm thick per application layer
- Class R3 of EN 1504-3
- Restoration work
- Sulphate resistant
- Low cracking sensitivity
- Very good resistance to water and chloride penetration
- Compatible with Sikagard® overcoat systems

### RECOMMENDED SIKA PRODUCTS

#### Sika MonoTop®-412 NFG

1-component, fibre reinforced and low shrinkage repair mortar meeting the requirements of class-R4 of EN 1504-3.

#### Sika MonoTop®-910 N

Polymer modified, 1-component cementitious bonding primer and reinforcement corrosion protection coating.

#### Sikadur®-31

Moisture tolerant, thixotropic, structural 2-component adhesive and repair mortar, based on a combination of epoxy resins and special fillers. Designed for use at temperatures between +5°C and +20°C.



Identify and assess damage.



Remove defective concrete and clean the substrate.



Application of Sika MonoTop®-910 N bonding primer and corrosion protection.



Mix the ready to use Sika MonoTop®-412 N with water using an electrical stirrer.



Press Sika MonoTop®-412 N into the repair area using a suitable hand tool.



Apply finishing mortar Sika MonoTop®-723 N and smooth the surface using a wooden trowel.





# WATERPROOFING FOR TOWER FOUNDATIONS



**A DURABLE PROTECTION OF THE TOWER/FOUNDATION** interface is a vital part of trouble free longevity of the tower/foundation interface.

**Sikalastic® Protection System** is a UV stable, waterproofed and crack bridging coating system for extending life expectancy on existing- and newly built tower/foundation interfaces for onshore wind towers. The System provides excellent adhesion on concrete, steel and coated steel structures using specialized primers.

#### ADVANTAGES

- 1-component – ready to use
- Highly elastic and crack bridging
- UV-Resistance, non-yellowing
- Slip resistant
- Fast cure
- Excellent adhesion

#### RECOMMENDED SIKA PRODUCTS

##### **Sikalastic® Moisture Seal**

High performance, two-component, water based epoxy primer and waterproofing barrier membrane.

##### **Sikalastic®-488**

UV resistant, moisture-curing single-pack elastomeric polyurethane waterproofing membrane.

##### **Sikalastic®-622 Excel Top PLUS**

Single component, uv resistant, foot traffic bearing top coat.

##### **SikaFlex® PRO**

Elastic joint sealant with high mechanical bonding properties.





# STRUCTURAL CRACK REPAIR OF FOUNDATIONS



**STRESS TO THE FOUNDATION** often leads to cracks. Proper structural repair is critical to secure the structural strength and to stop further deterioration of the foundation.

## Sika® Injection-458

Epoxy injection resins offer good adhesion to concrete, mortar and steel. The epoxy based Sika® Injection-458 is used to fill and seal voids and cracks in structures, such as bridges, and other civil engineering buildings and foundations. It not only forms an effective barrier against water infiltration and corrosion promoting media, but it also structurally bonds the concrete sections together.

## ADVANTAGES

- Solvent-free
- Suitable for both, dry and damp conditions
- Usable at low temperatures
- High mechanical and adhesive strengths
- Hard but not brittle
- Low viscosity
- Injectable with single component pumps

## RECOMMENDED SIKA PRODUCTS

<b>Sika® Injection-458</b>
<b>Sikadur®-52</b> 2-component, solvent-free, low viscosity injection liquid, based on high strength epoxy resin.
<b>Sika MonoTop®-612N</b> 1-component, ready to use, thixotropic mortar containing synthetic microfibers, for concrete repair.
<b>Sikadur®-55 SLV</b> Super low viscosity for excellent penetration into cracks by gravity. Suitable for dry and damp cracks.



Assess and clean the crack.



Drill holes for the injection packers.



Insert the injection packers.



Mix the Sika® Injection-458 pre-batched A+B containers.



Mixing components A+B using a low-speed stirrer.



Apply the epoxy resin using a 1-component injection pump.





# REPAIR RESINS FOR COMPOSITE STRUCTURES



**SIKA'S FAST LAMINATING RESINS** allow for repairs even at low temperatures.

## Sikadur® Blade Repair Kit

Sikadur® Blade Repair Kits are high performance, 2-component epoxy, hand laminating, resin systems used for structural laminate repairs of wind turbine blades. The rheology is designed to ensure excellent fibre wetting, while also exhibiting good non-draining properties for vertical applications.

### ADVANTAGES

- Good fibre impregnation and non-draining properties
- Fast strength build up during cure
- Application temperature from 5°C
- High glass transition temperature
- Crystallisation resistant for use at low temperatures
- Lightweight, low waste Mixpack packaging
- Pre-measured quantities (no weighing of components)
- Approved by DNV GL

### RECOMMENDED SIKA PRODUCTS

#### Sikadur® Blade Repair-30

2-component epoxy, hand laminating resin system with 30 minute pot life.

#### Sikadur® Blade Repair-90

2-component epoxy, hand laminating resin system with 90 minute pot life.



Structural composite damage.



Chamfering of damaged area.



Application of fiber patch and adding Sikadur® Blade Repair Resin.



Application movie >  
[wind.sika.com/  
Sikadur® Blade  
Repair Kit](http://wind.sika.com/Sikadur® Blade Repair Kit)



Add fiber patch to build up laminate.



Spreading of resin.



Curing by heater blanket for at least one hour at 80°C.



# FILLERS FOR PROFILING AND SURFACE FINISHING



**SIKA'S FAST SURFACE FILLERS** are approved by leading OEM's and significantly reduce repair downtime.

## SikaForce®-7800

SikaForce®-7800 is a fast curing polyurethane surface filler, specifically developed for re-profiling damaged rotor blade components prior to the application of a top coat.

### ADVANTAGES

- Excellent mixing, application, tooling and sanding properties
- Very good adhesion to fibreglass surfaces
- Non-sag up to 20 mm layer thickness
- Two color coded speed versions available
- Application window from 5°C - 30°C
- Fast sanding time
- Offered in convenient co-axial cartridges for use in a standard caulking gun
- Compatible with all leading top coats

### RECOMMENDED SIKA PRODUCTS

#### SikaForce®-7800 Red

2-component, polyurethane surface filler for use in warmer, ambient conditions up to 30°C.

#### SikaForce®-7800 Blue

2-component, polyurethane surface filler for use in cooler conditions down to 5°C.



Application movie >  
[wind.sika.com/SikaForce-7800-Red](http://wind.sika.com/SikaForce-7800-Red)



Application movie >  
[wind.sika.com/SikaForce-7800-Blue](http://wind.sika.com/SikaForce-7800-Blue)



Damaged coating.



Sanding of surface.



Flushing of SikaForce®-7800 to ensure homogeneous mixing.



Application of SikaForce®-7800 on prepared surface.



Spreading of product.



Sanding of repaired area.



# SIKA WITH YOU



The total product range from **BLADE TO BASE** allows Sika to keep pace with the ever-increasing demands of the wind turbine industry.



Sika's global **TECHNICAL SERVICES** teams are focused on validating Sika materials to the processes, substrates and specification requirements.



Over 25 years of successful **EXPERIENCE** in supplying the renewable energy industries with high performing reliable products and solutions makes Sika one of the leading supply companies in this market sector.



Close **CO-OPERATION** with our customers ensures adequate performance throughout the design, prototyping, validation and application phases.

# SIKA AT A GLANCE

SIKA PROVIDES WATERPROOFING SOLUTIONS FOR MORE THAN

**100 YEARS**

THE FIRST PRODUCT – SIKA®-1 – IS STILL ON THE MARKET

EVERY YEAR SIKA SUPPLIES ENOUGH ROOF MEMBRANES TO COVER THE

**WHOLE OF BRISBANE**

MORE THAN

**30 %**

INTERIOR NOISE REDUCTION IN VEHICLES THANKS TO SIKA'S ACOUSTIC SOLUTIONS

USING SIKA'S LONG-LASTING WINDOW INSTALLATION SEALANTS, MORE THAN

**1 MILLION**

WINDOW FRAMES ARE SEALED EACH YEAR HELPING TO SAVE MORE THAN

**10,000**

TANKER LOADS OF HEATING OIL OVER THEIR COMPLETE LIFETIME

SIKA'S CLEANROOM FLOORING SYSTEMS RELEASE

**1,000 TIMES LESS EMISSIONS**

THAN STANDARD LOW VOC SYSTEMS

WITH

**100 AWARDS**

IN 18 YEARS, SIKA IS THE COMPANY WITH THE MOST CONCRETE REPAIR PROJECTS AWARDED WORLDWIDE

THANKS TO SIKA'S RANGE OF WATER REDUCERS OVER

**25,000 MILLION LITERS OF WATER**

ARE SAVED ANNUALLY IN CONCRETE PRODUCTION

IN OVER 80 COUNTRIES, MORE THAN

**10,000 ROOFING CONTRACTORS**

ARE TRAINED AND CERTIFIED BY SIKA

**50 %**

OF ALL CARS PRODUCED WORLDWIDE USE SIKA PRODUCTS



## CONCRETE

Concrete admixtures can improve the sustainability of concrete in many different ways. The addition of special admixtures, such as stabilizing or water reducing admixtures enables the use of alternative and recycled materials, such as recycled aggregates, for the production of good quality concrete. In many cases the energy required to produce certain cement or concrete mixes will be positively impacted with the use of admixtures.

## WATERPROOFING

Sika provides solutions for even the most challenging requirements with its unique waterproofing product portfolio, contributing to efficient, long-lasting infrastructure, be it for drinking water facilities (fulfilling the most stringent drinking water approvals), tunnels, bridges, basements and balconies.

## ROOFING

With over 50 years of history, our roofing solutions are renowned for their durability and premium qualifications. We began providing waterproofing solutions for construction in 1910 and we now supply each year enough roofing membranes to cover the whole area of Manhattan.

## FLOORING & COATING

Resilient systems for industrial and commercial buildings from pharmaceutical, food, public, educational, sport, health care, parking and residential based on synthetic resin and cementitious technologies as well as corrosion and fire protective coatings.

## SEALING & BONDING

Construction is all about bringing building blocks together in a uniform building. Sealing and Bonding focuses on where these building blocks meet. Sika provides durable sealants for waterproofing between building elements for building envelopes, civil engineering and infrastructure applications. Sika's range of products include major technologies ranging from water-based to reactive systems and multi-purpose to highly specialized solutions.

## REFURBISHMENT

In the 21<sup>st</sup> Century, reinforced concrete structures are built to serve the next generations. Most bridges are now designed to last more than 100 – 150 years. Years of research plus decades of practical experience have enabled us to develop fully comprehensive systems and solutions to restore, rehabilitate and protect concrete structures.

## INDUSTRY

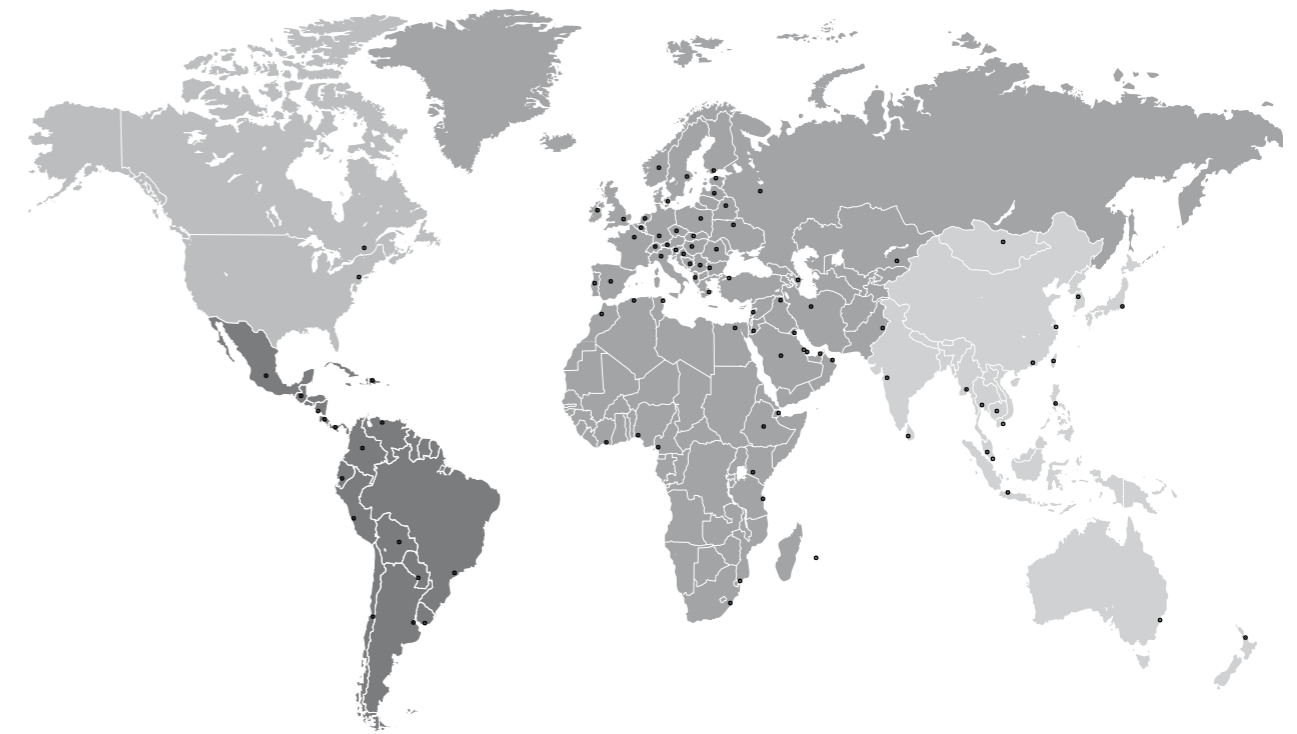
Sika Industry is a leading innovator and supplier of bonding, sealing, damping and reinforcing solutions for industrial markets like automotive, marine, transportation, building components and renewable energy. Our full range of technologies provides increased structural performance while improving production processes.

## BUILDING FINISHING

Sika is a global leader in Building Finishing and provides one of the most comprehensive sets of solutions such as tile adhesives and grouts, systems for under-tile waterproofing and sound reduction, as well as renders and decorative finishes, and Facade Thermal Insulation Systems.



## GLOBAL BUT LOCAL PARTNERSHIP



With 20 **TECHNOLOGY CENTERS** and a skilled staff of engineers and scientists, we are able to deliver a stream of new materials for different specifications to our customers in the wind energy market.

With over 90 local subsidiaries with the aim to make global technology meet **LOCAL EXPERTISE**, Sika transfers know-how locally on a global basis to guarantee local support in selection, validation and application of our products on job sites around the world.



## WE ARE SIKA

Sika is a specialty chemicals company with a leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing and protecting in the building sector and the motor vehicle industry. Sika's product lines feature concrete admixtures, mortars, sealants and adhesives, structural strengthening systems, flooring as well as roofing and waterproofing systems.

### HEAD OFFICE

55 Elizabeth Street  
Wetherill Park, NSW 2164  
P: (02) 9725 1145  
F: (02) 9725 2605

### VICTORIA

33 Fiveways Boulevard  
Keysborough, VIC 3173  
P: (03) 9797 0600  
F: (03) 9797 0666

### NEW SOUTH WALES

122 Newton Road  
Wetherill Park, NSW 2164  
P: (02) 9725 1700  
F: (02) 9756 5001

### SOUTH AUSTRALIA

28 Kenworth Road  
Gepps Cross, SA 5094  
P: (08) 8162 9055  
F: (08) 8162 9009

### QUEENSLAND

30 Parker Court  
Pinkenba, QLD 4008  
P: (07) 3633 9222  
F: (07) 3633 9200

### SOUTH AUSTRALIA

1-2/28 Maxwell Road  
Para Hills West, SA 5096  
P: (08) 8349 4955  
F: (08) 8349 7061

### QUEENSLAND

70 Platinum Street  
Crestmead, QLD 4132  
P: (07) 3489 3000  
F: (07) 3489 3099

### WESTERN AUSTRALIA

61 Bushland Ridge  
Bibra Lake, WA 6163  
P: (08) 9395 5300  
F: (08) 9395 5399