



SIKA SOLUTIONS FOR EFFICIENT AND SUSTAINABLE PRECAST CONCRETE PRODUCTION

APRIL 2021, DR. MARKUS MUELLER, SIKA SERVICES AG



INTERNATIONAL PRESTRESSED
HOLLOWCORE ASSOCIATION

BUILDING TRUST



BUILDING TRUST SINCE 1910

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 motor vehicle industry.



SIKA AT A GLANCE

25,000	EMPLOYEES
100	COUNTRIES
300+	PLANTS WORLDWIDE
6	NEW & EXPANDED PLANTS IN 2020
83	NEW PATENTS IN 2020
1	ACQUISITION IN 2020
7.88 BN	NET SALES IN 2020 (IN CHF)

WE ARE THERE

Our products might not always be visible but the results they achieve bring clear added value to customers and society.

OUR MARKETS

Concrete



Waterproofing



Roofing



Building Finishing



Flooring & Coating



Sealing & Bonding



Refurbishment



Industry



RESEARCH & DEVELOPMENT

THE BACKBONE OF INNOVATIVE SOLUTIONS

More than

1,000

employees are
dedicated to
Research and
Development

Established

21

Technology
Centers world-
wide

More than

600

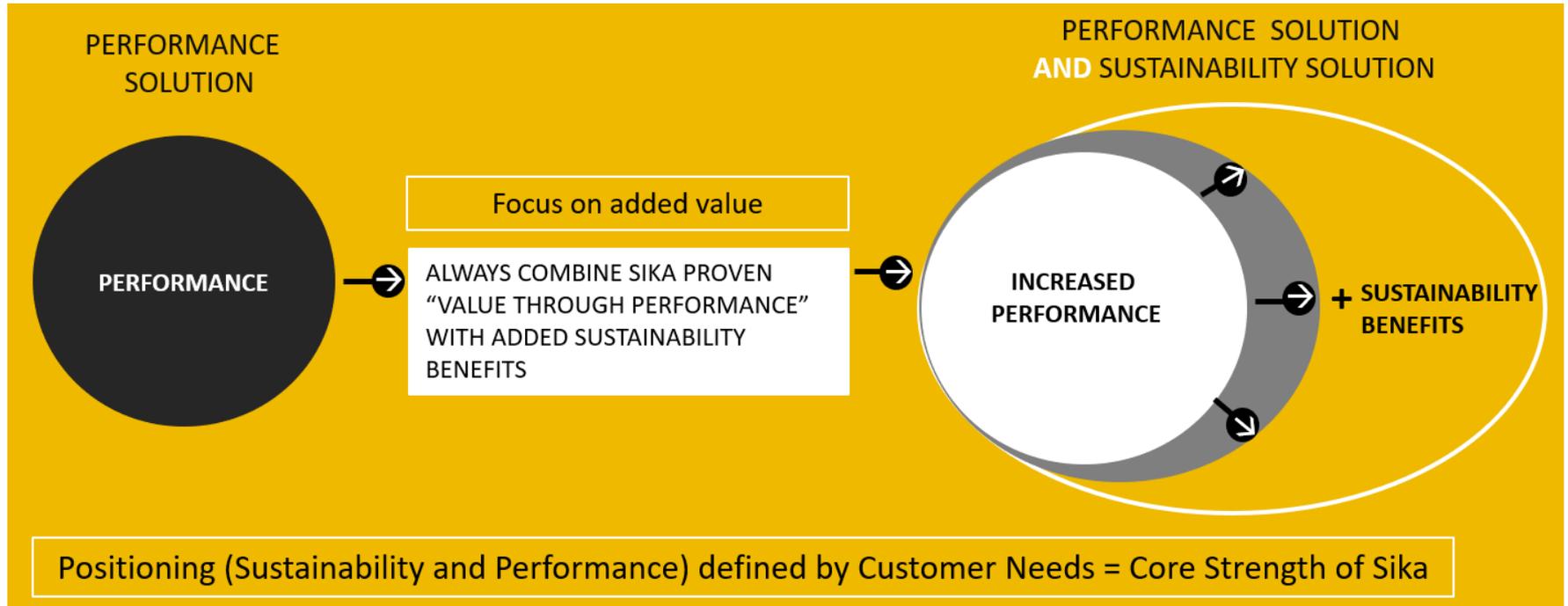
invention
disclosures
since 2015

More than

500

new patents
were filed since
2015

SUSTAINABLE SOLUTION = BETTER PERFORMANCE + SUSTAINABLE BENEFITS





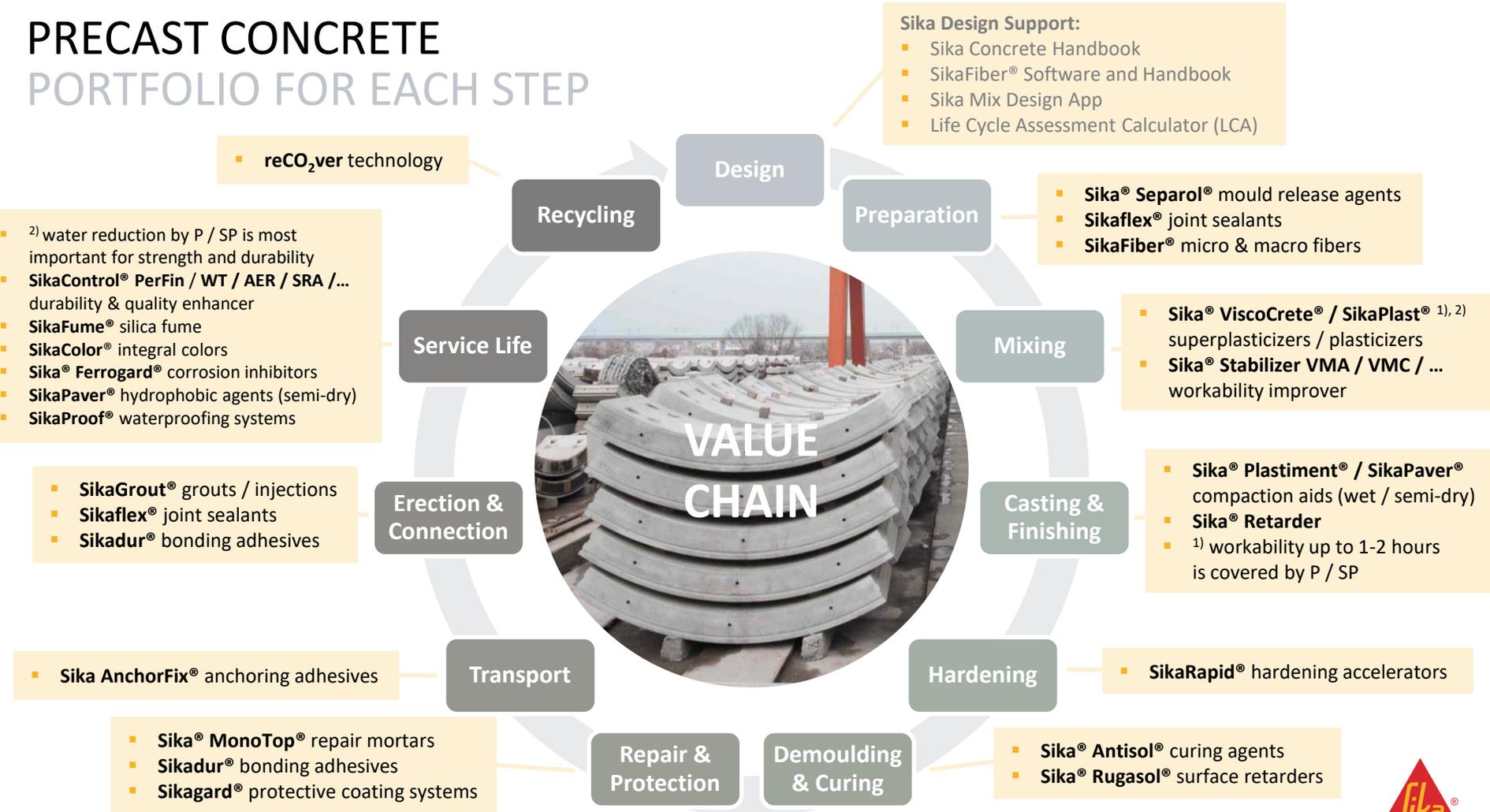
SIKA SOLUTIONS FOR PRECAST CONCRETE

BUILDING TRUST



PRECAST CONCRETE

PORTFOLIO FOR EACH STEP



SOCIETY, ENVIRONMENT & ECONOMY

FUTURE CHALLENGES FOR CONCRETE PRODUCERS



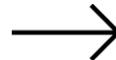
GLOBAL
MEGATRENDS



FUTURE LAWS
& REGULATIONS



CONSTRUCTION
PROBLEMS



FUTURE CHALLENGES

Carbon Neutrality

- Cement production efficiency
- Alternative binder systems
- Clinker reduction in concrete

Resource Efficiency

- Increased recycling rate
- Renewable raw materials
- Enhanced service life

Productivity Increase

- Automation & Digitalization
- Prefabrication
- Modular construction

SIKA'S SUSTAINABLE SOLUTIONS FOR CONCRETE

CARBON NEUTRALITY

→ CEMENT PRODUCTION EFFICIENCY

→ ALTERNATIVE BINDER SYSTEMS

→ CLINKER REDUCTION IN CONCRETE



CEMENT ADDITIVES

- SikaGrind® Activator
- SikaGrind® Optimizer

Limestone
Calcined
Clay
Cement



LC³ ADMIXTURE TECHNOLOGY

- Sika® ViscoCrete® LC3
- SikaGrind® LC3



PCE TECHNOLOGY

- Sika ViscoCrete®
- SikaPlast®

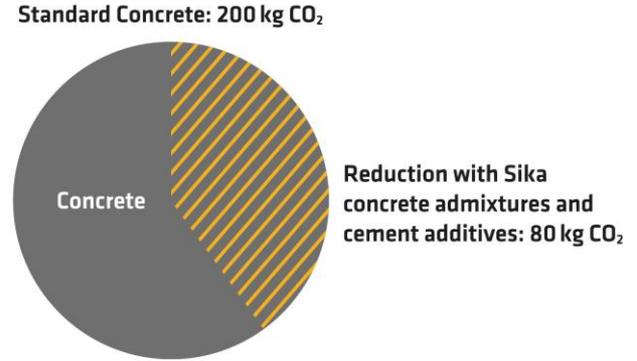
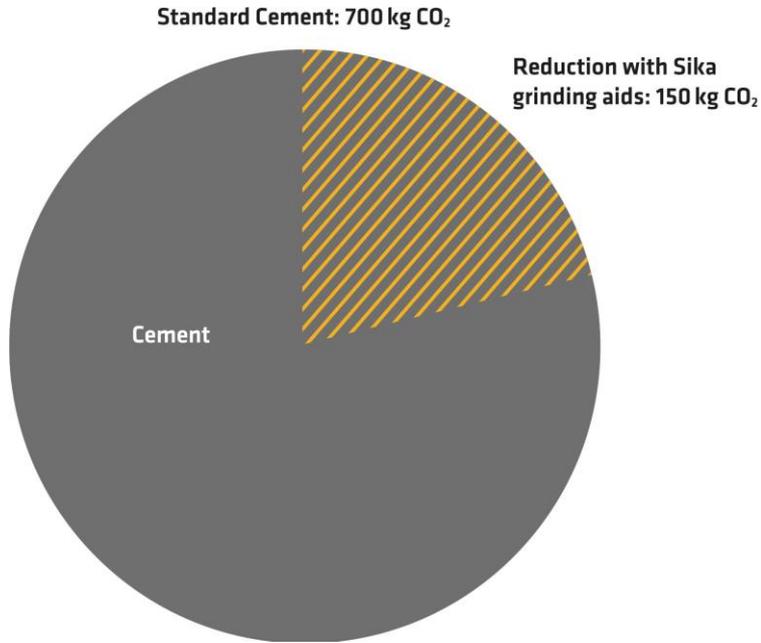


reCO₂ver PROCESS

- New reCO₂ver product line

SIKA'S SUSTAINABLE SOLUTIONS FOR CONCRETE

CARBON NEUTRALITY



SUSTAINABLE SOLUTIONS FOR CONCRETE

RESOURCE EFFICIENCY

→ INCREASED RECYCLING RATE

→ RENEWABLE RAW MATERIALS

→ ENHANCED SERVICE LIFE



SIKA'S CODE CONCEPT

- Sika® ViscoCrete®
- Sika® Stabilizer



DURABILITY ENHANCEMENT

- Sika® ViscoCrete®
- SikaControl®
- SikaFiber®



WATER REDUCTION

- Sika® ViscoCrete®
- SikaPlast®
- Sikament®



BIO BASED RAW MATERIALS

- Sika® ViscoCrete®
- Sika® Separol®

SUSTAINABLE SOLUTIONS FOR CONCRETE

PRODUCTIVITY INCREASE

→ AUTOMATION & DIGITALIZATION

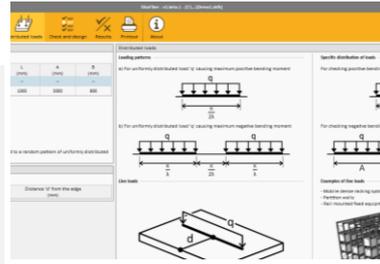
→ PREFABRICATION

→ MODULAR CONSTRUCTION



CONCRETE ADMIXTURES

- Sika® ViscoCrete®
- SikaRapid®
- SikaFiber®



DIGITAL TOOLS

- SikaFiber® Software
- Sika Mix Design App
- Sika Sand App
- Tank Level Management
- CiDRA



MODULAR BUILDING

- One-Stop-Shop for Total Precast



3D CONCRETE PRINTING

- Sikacrete® 3D

PCE – A KEY TECHNOLOGY FOR FUTURE CONCRETE

PRODUCTIVITY INCREASE AND RESOURCE EFFICIENCY

Sika® ViscoCrete® superplasticizer benefits:

- ✓ PCE technology for tailor-made solutions
- ✓ Cost and performance optimized mix designs
- ✓ Energy and water consumption ↓
- ✓ Enabling easy and self-compacting concrete (SCC)
- ✓ Productivity ↑
- ✓ Operational costs ↓
- ✓ Surface quality, strength, durability ↑
- ✓ Enabling slimmer element dimensions (HPC/UHPC)
- ✓ Environmental impact of concrete ↓



Sika is the first company to produce a superplasticizer from **bio-based** monomers and to launch it on the market. Over 85% of the previously crude oil-based raw materials are replaced by raw materials obtained from agricultural by-products.

LC³ – THE FUTURE CEMENT

CARBON NEUTRALITY



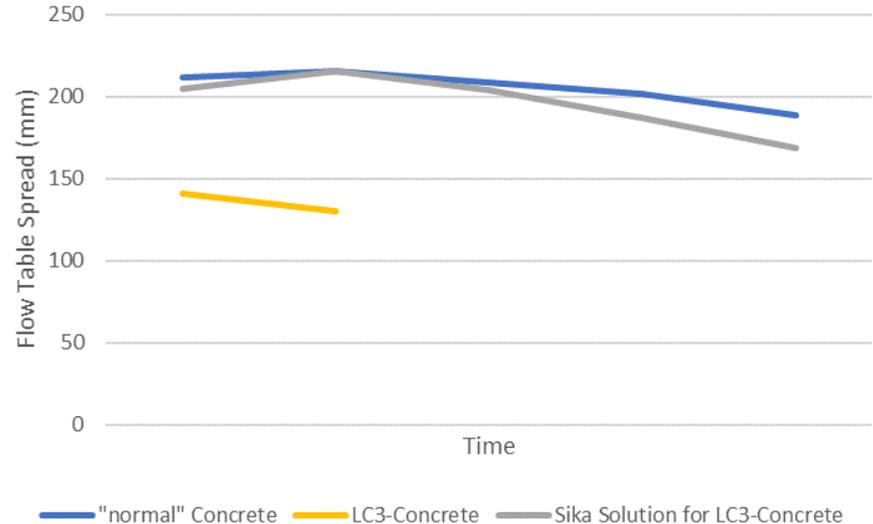
- CO₂ footprint ↓ (vs. OPC)
- Composed of widely abundant materials
- Projected to represent 20... 30% of all cement by 2050!

Sika LC³ concrete admixtures enable

- ✓ **Similar consistency, workability, early and final strength as with OPC**

50% clinker
+ 30% calcinated clay
+ 15% limestone
+ 5% gypsum

→ similar strength performance at 28 days as CEM I 42.5



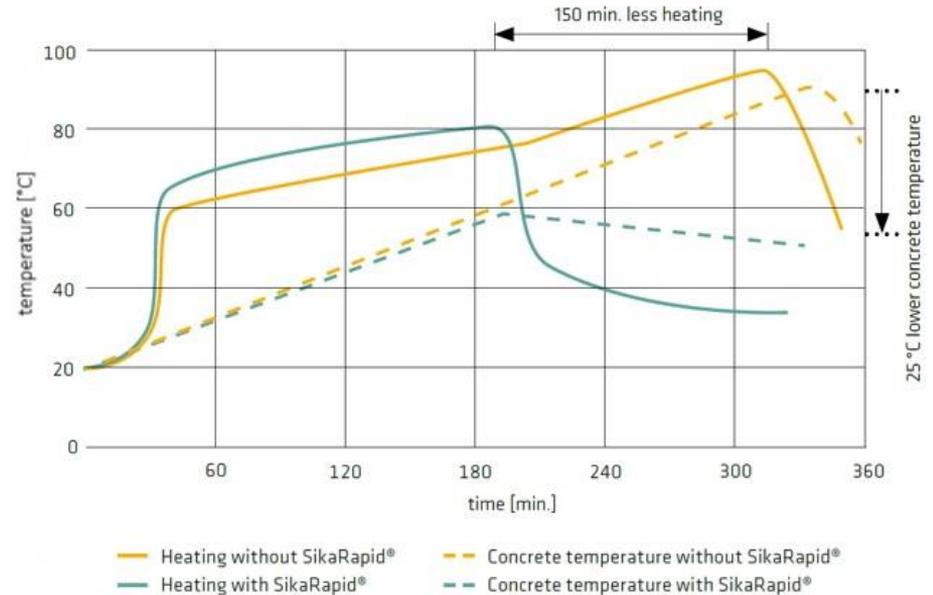
SUSTAINABLE HARDENING ACCELERATION

PRODUCTIVITY INCREASE AND RESOURCE EFFICIENCY

SikaRapid® hardening accelerators benefits:

- ✓ Early strength ↑
- ✓ Heating period ↓
- ✓ Max. concrete temperature ↓
- ✓ Energy consumption ↓
- ✓ Productivity ↑
- ✓ Operational costs ↓
- ✓ OPC (clinker) ↓
- ✓ Durability ↑
- ✓ Carbon footprint ↓

Application example:
Less heating for similar early and final strength

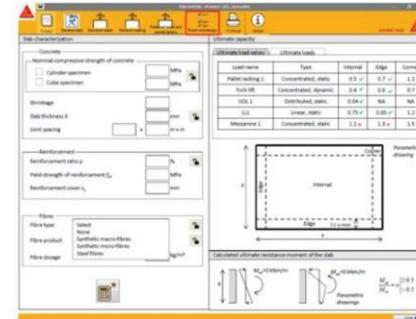


FIBERS FOR CONCRETE REINFORCEMENT

PRODUCTIVITY INCREASE

SikaFiber® polypropylene macro-fiber benefits:

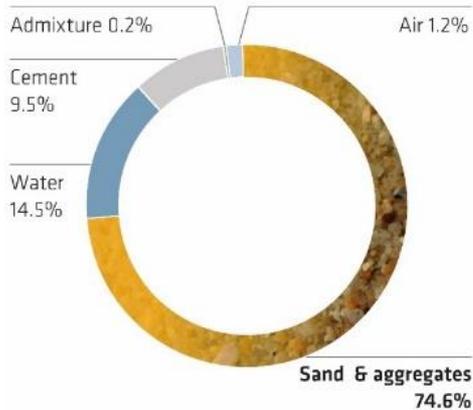
- ✓ Partially or fully replacing bulky steel bar or mesh reinforcement
- ✓ Time and money in the construction process ↓
- ✓ Safety, durability and serviceability of concrete ↑
- ✓ Concrete performance ↑
- ✓ Easy to handle and easy to dose
- ✓ SikaFiber® design software



AGGREGATES - CONCRETE'S ROCK SKELETON

RESOURCE EFFICIENCY

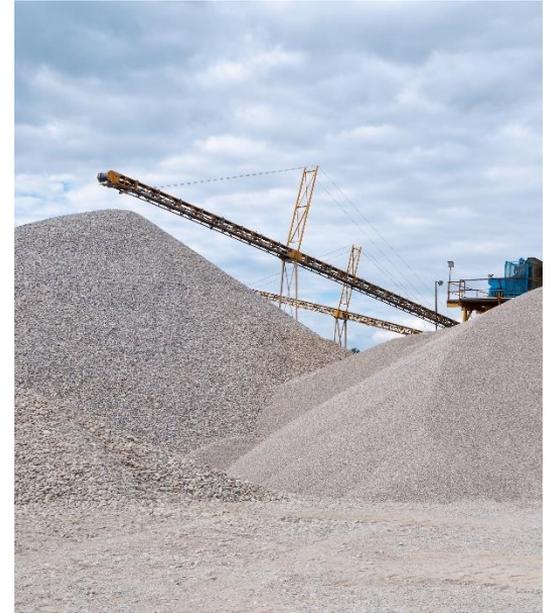
75 % of concrete & mortar consist of aggregates



Aggregates strongly impact concrete quality and applicability.

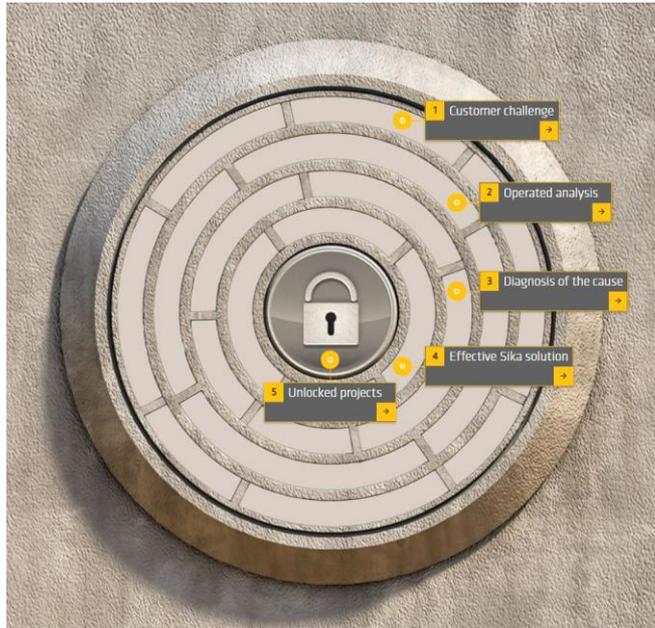
Challenges:

- Low-quality sand
- New sand sources/ replacements
- Recycled aggregates
- ...



SIKA CODE CONCEPT

HOLISTIC CONCEPT TO UNLOCK CONCRETE TREASURES



Technical guide from analysis to customized support & tailored Sika solutions



Property	Product range	Main sand types
Water reduction	ViscoCrete [®] , SikaPlast [®]	All
Slump life	ViscoCrete [®] , SikaPlast [®] , ViscoFlow [®]	All, recycled
Contamination blocker	Sika [®] Stabilizer	Natural, crushed
Anti-bleeding	Sika [®] Stabilizer, opt. mix design	Crushed
Viscosity enhancer	Sika [®] Stabilizer, opt. mix design	Crushed

KEY TAKE AWAY MESSAGE

Megatrends like sustainability and digitalization drive growth in the construction industry

Sika is the right partner!

- ✓ 110+ years experience
- ✓ Innovation leader
- ✓ Addressing the customer challenges
- ✓ Value adding through performance and sustainability solutions
- ✓ Full-range for Precast
- ✓ Globally active, locally integrated





THANK YOU FOR YOUR ATTENTION

CONTACT: MUELLER.MARKUS@CH.SIKA.COM



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