SICast®

Hard as a Diamond

About Us / The Company

SICcast designs, produces and coats parts effected by strong erosion, abrasion and/or corrosion in liquid media based on patented silicon carbide materials.

Additionally, SICcast offers the service of coating or repairing parts already effected by erosion, abrasion and/or corrosion with the SICcast-technology.

The benefits of the SICcast-technology are higher service lives and lower costs compared to new parts.

Index:

How can we help?

- Do you have a problem with erosion, abrasion and/or corrosion?
- Are you looking for a extremely resilient material?
- Would you like to reduce your maintenance costs and increase the lifetime of your components?

SICcast develops customized solutions for you!

Scan the QR Code or go to SICcast.com

Watch the SICcast imagevideo online.

SICcast Mineral Cast

Silicon carbide (SiC) is an artificially produced industrial material with a diamond-like hardness. It is mixed with epoxy resins to create our unique materials.

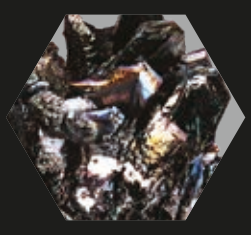
The Components:

SiC:

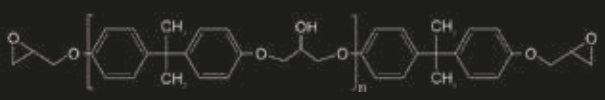
- Synthetic mineral
- Hardness 9.7 Mohs (diamond: 10 Mohs)
- Sized to varying grades
- High density (min. 80%) fill of varying mesh sizes

Epoxy resin:

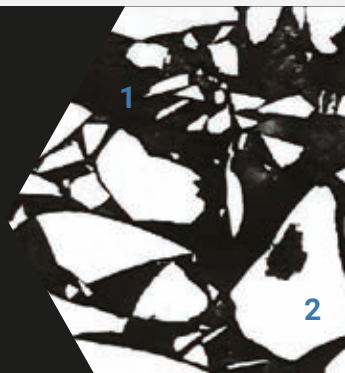
- Epoxy resin: hot or cold curing
- Low shrinkage
- High strength
- High chemical resistance



Silicon carbide



Epoxy resin



The Result:

- A metal-free, anti-magnetic, noise and vibration reducing material with diamond-like hardness.
- Due to the chemical binding of the epoxy resin, this material is ductile, temperature shock and impact resilient.
- Precise castings due to low shrinkage of resin.

Advantages of SICcast:

- High wear resistance due to the high proportion of silicon carbide (more than 80%)
- High chemical resistance pH 0-14 (depending on process conditions)
- High abrasion resistance
- Anti-magnetic, noise-reducing and vibration-damping
- Large parts (up to 8,000 kg)
- Low carbon foot print

1. Epoxy resin
2. SiC grain

Micrograph (500:1)

Comparison with Metal

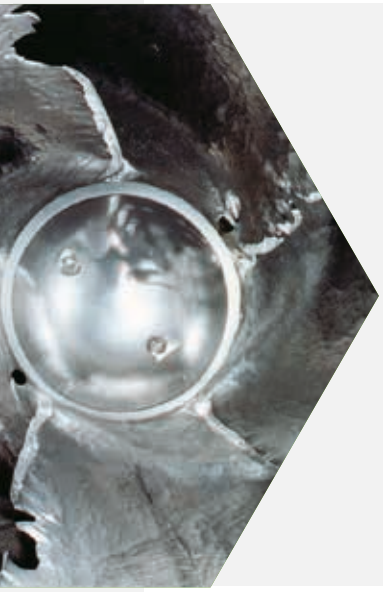
Examples for abrasion and corrosion of pump parts made of stainless steel (left) and SICcast (right) under identical operating conditions (same pump and site).

Suction-side wear plate made of Duplex Stainless Steel

- First indicators of wear after short period
- Outage after 16,000 h of operation because of wear

Suction-side wear plate made of SICcast Mineral Cast

- Even surface
- No wear at edges after 16,000 h of operation

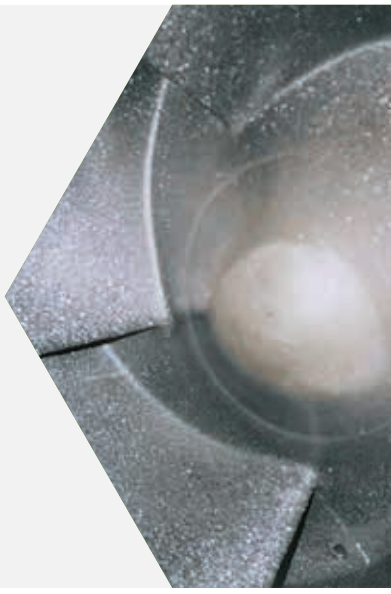


Impeller made of Duplex Stainless Steel

- Heavy wear after 11,000 h of operation

Impeller made of SICcast Mineral Cast

- No wear after 24,000 h of operation



Wear Resistance

Hastelloy

DUPLEX Stainless steel

NI-Hard 4

SICcast®

Corrosion Resistance

Metals are designed to withstand corrosive environments (e.g. Duplex SS) or abrasive environments (e.g. White Irons).

SICcast handles both corrosion and abrasion at the same time.

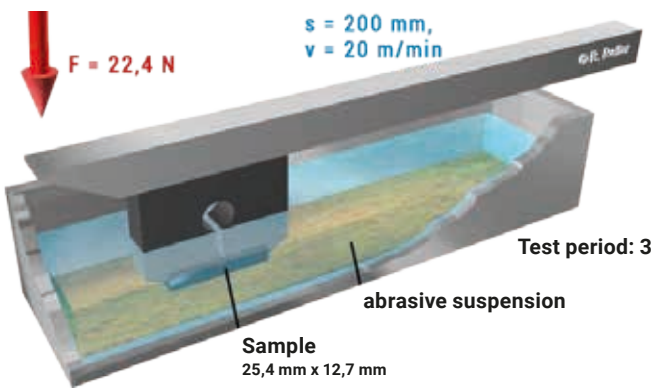
SICcast materials are best suited if you have solids in combination with a corrosive medium (pH value 0-14; depending on process conditions).

	Loss in volume [mm³]
SICcast EP 135	22,66
SIConit	33,10
1.4404	192,22
Alloy 625	152,66
1.4462	140,15
St52	130,38

Miller Wear Test

The purpose of this test method is either to rank the abrasivity of slurries in terms of the wear of a standard reference material or to rank the wear resistance of different materials in relation to a reference slurry.

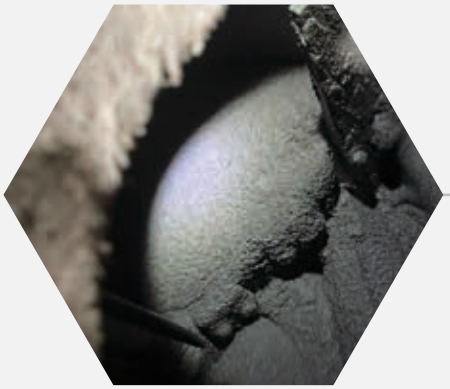
The wear rate is determined by volume loss.



Grafik: TU Clausthal

SICcast EP 135 /
For casted parts

SICcast EP 135 consists of silicon carbide, which can be mixed with a hot-curing epoxy resin (EP) under vacuum and cast in moulds. The temperature-controlled casting process keeps shrinkage very low. Parts from 1 kg to 8,000 kg can be produced with a high accuracy in high-precision casting. Precision tolerances achieved by machinery equipped with diamond tools.



Silicon carbide (SiC) is mixed with epoxy resin (EP) under vacuum.

It is then cast into precise moulds.

The filled moulds are heated as a hardening process.

After the hardening process the fittings are machined with diamond tools.

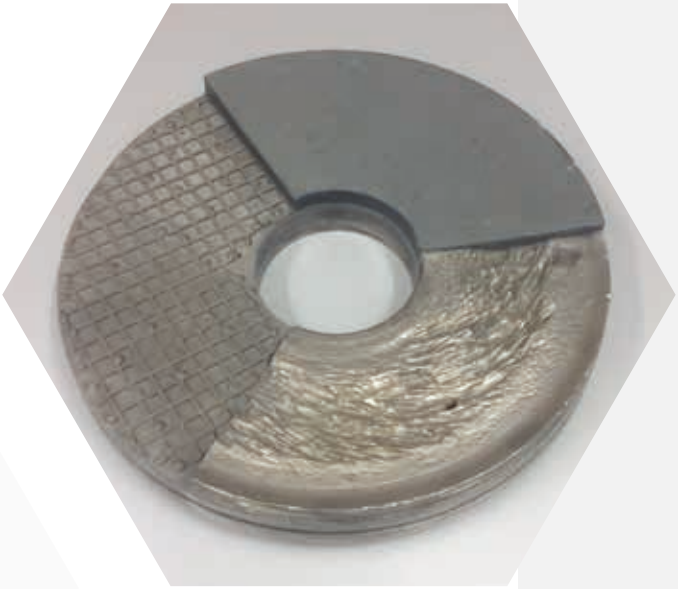
SIConit / For Repair & Protection

The **SIC**onit® spectrum

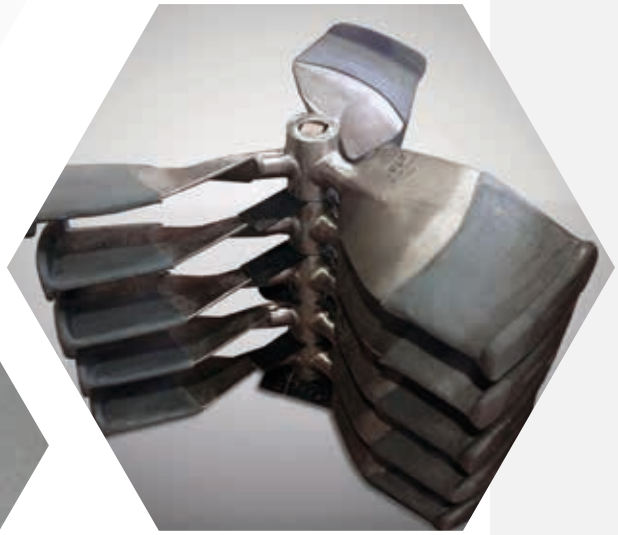
SICcast offers the matching SIConit wear protection for any kind of application.

SIConit is a silicon carbide composite material for repair and protection of surfaces exposed to erosion, abrasion and/or corrosion (pH value 0-14). SIConit can be used under chemically varying operating conditions.

The SIConit composite material consists of a very high share of silicon carbide and cold-curing epoxy resin. SIConit can be used for restoring damaged metal surfaces or as a protective coating.



Highly wear-resistant coating material as protection against corrosion and abrasion.



Fields of Application / Products

For us at SICcast it is of primary importance to reduce your maintenance costs and to increase the service life of components and machines which are subject to abrasion and corrosion.

Our engineers design all components subject to wear, that they can be produced with SICcast materials.

Products:

- Pumps and pump components
- Agitators / Mixers
- Nozzles
- Reducers
- Pipes
- Cyclones
- Tank coatings
- Filters
- Value components

Fields of Application:

- Power Plants
- Waste Incineration
- Flue Gas Desulphurization (FGD)
- Fertilizer
- Waste Water
- Chemical Industry
- Seawater Desalination
- Marine Industry
- Pulp and Paper
- Cement Industry
- Mining
- Mineral Processing
- Maintenance and Repair

Fields of Application / Products: DÜCHTING PUMPEN

Mineral cast pump

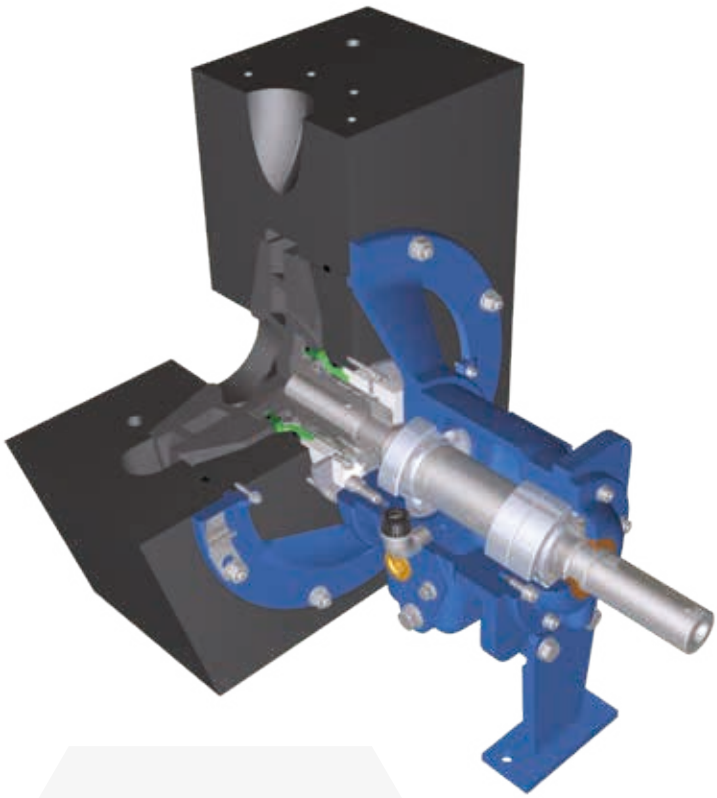
TYPE MC

by DÜCHTING PUMPEN

Fields of Application:

Pumping of abrasive and corrosive liquids.

- Flue Gas Desulphurization
- Incinerators
- Pigment Industry
- Chemical Industry
- Water Treatment
- Seawater Desalination
- Fertilizer Industry / Potash Industry



Technical Data:

Pump Size:	**DN 32 to DN 300** (1 1/4“ to 12“)
max. Pressure:	**10 bar** (150 PSI)
max. Flow:	**1500 m³/h** (6600 gpm)
Total head:	**up to 90 m** (300 ft)
Rotating Speed:	**up to 3600 rpm**

- MC & MCC

Mineral cast pump

TYPE MCC

by DÜCHTING PUMPEN

Fields of Application:

Pumping abrasive and/or corrosive liquids.

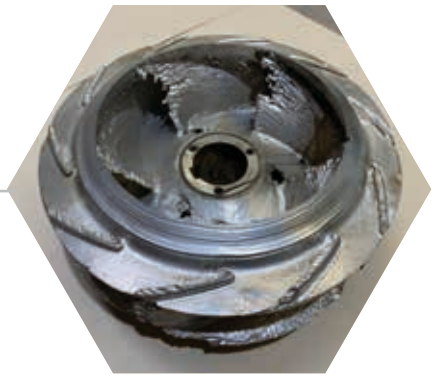
- Flue Gas Desulphurization
- Incinerators
- Water Treatment
- Seawater Desalination

Technical Data:

Pump Size:	**DN 400 to DN 1000** (16“ to 40“)
max. Pressure:	**6 bar** (90 PSI)
max. Flow:	**20000 m³/h** (88000 gpm)
Total head:	**up to 40 m** (130 ft)
Rotating Speed:	**up to 1200 rpm**

Service: Maintenance & Reengineering

Maintenance:



worn-out component of the customer

SIConit Coating

machining

refurbished component ready-to-use

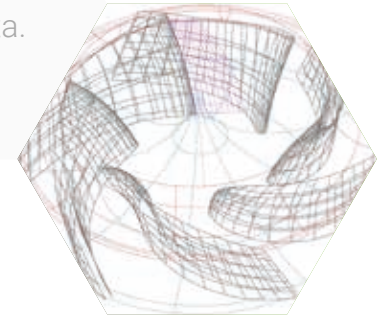
Advantages:

- Retrofitting of existing systems with well-proven and established mineral cast
- Savings 30-50%
- Reduced delivery times

Reengineering:

Your part as an improved version in SICcast material.

Adapt to your technical data.



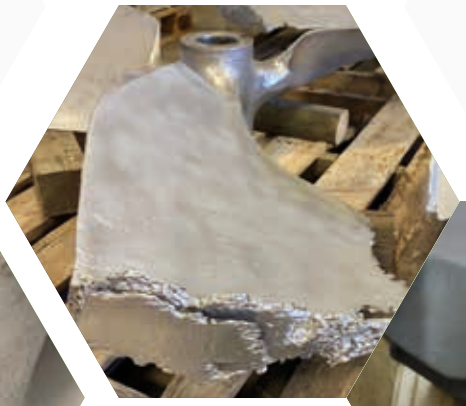
- Increased operating life
- Reconditioning of worn-out and damaged parts
- Guaranteed fitting accuracy / plug-play

To check the feasibility scan the QR Code

References

The SICcast service technologies can be used for a wide range of different parts.



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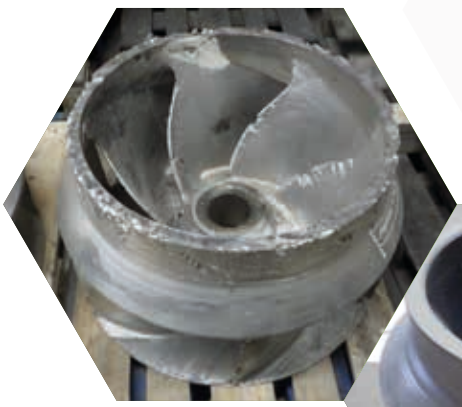
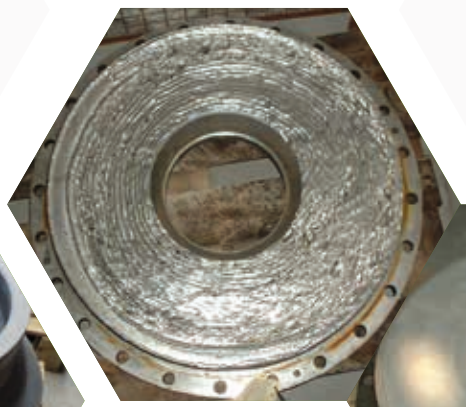
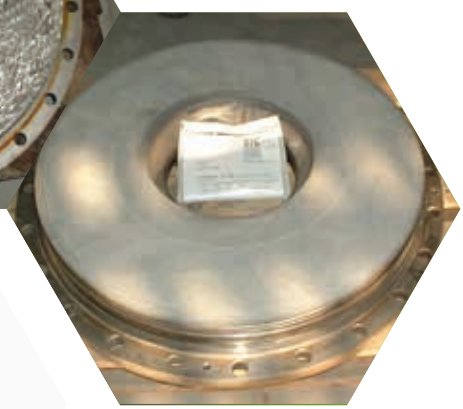
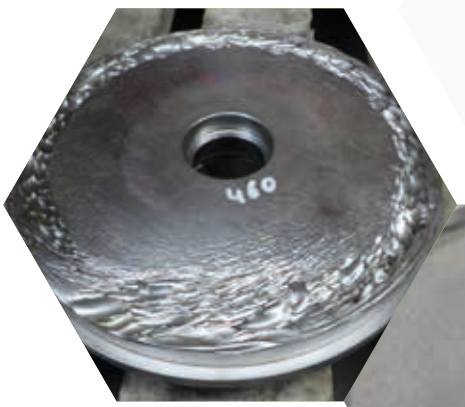


SIGnit®



International / SICcast Franchise

SICcast goes international by passing on its know-how.

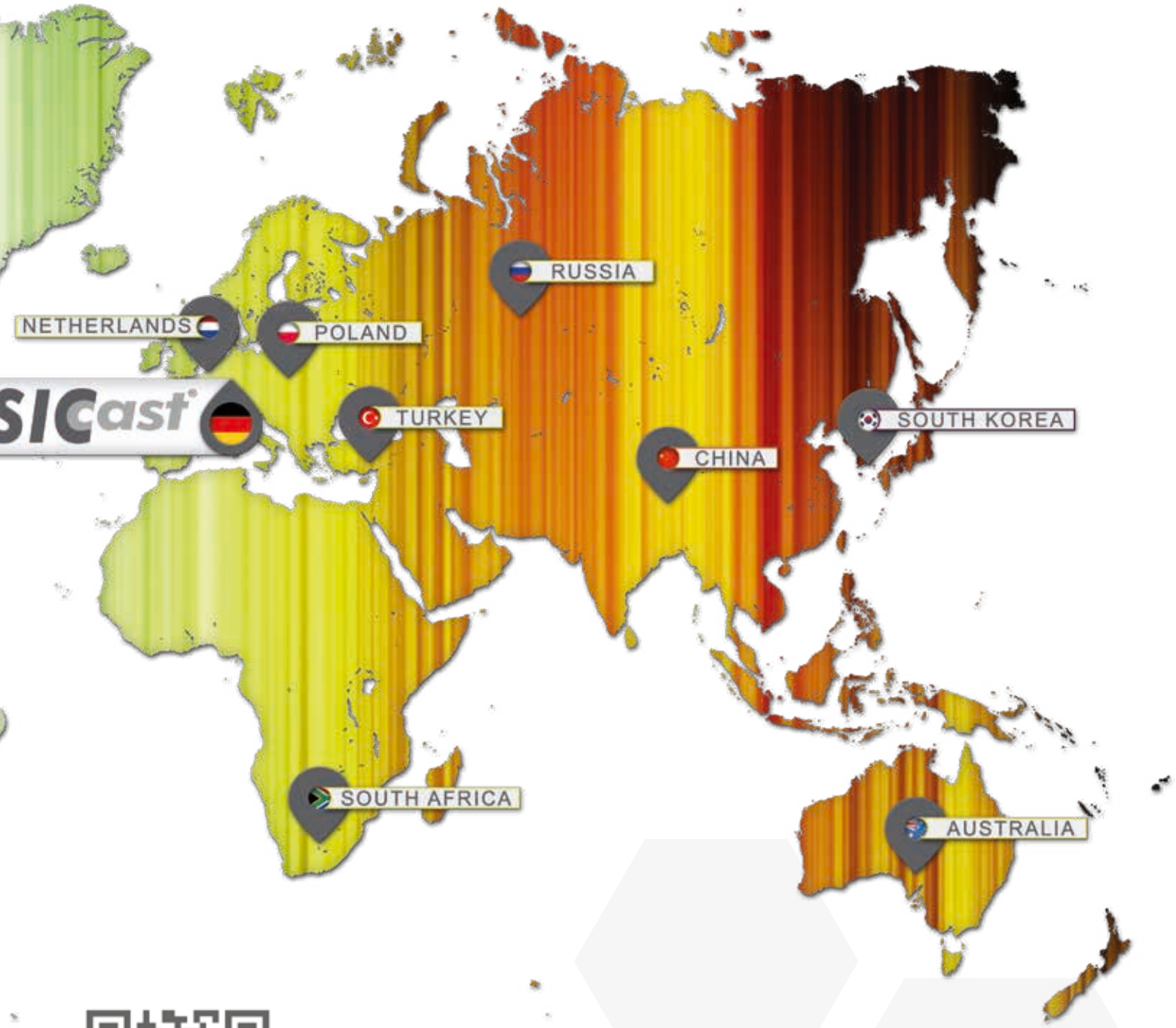
SICcast is establishing a worldwide franchise structure to make the concepts available for the global market.

Our partners are fully trained, source SICcast material and offer the entire successful concept of SICcast to international customers.

Direct contact with the customer guarantees a high degree of confidence and workmanship.

Benefits

- Trainings at the headquarters
- Licensing of franchisees
- Original materials made in Germany



See the list of Franchise-Partners online.

SICcast®

SICcast Mineralguß GmbH & Co. KG
Wilhelm-Düchting-Straße 22
58453 Witten // GERMANY
info@SICcast.com www.SICcast.com

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