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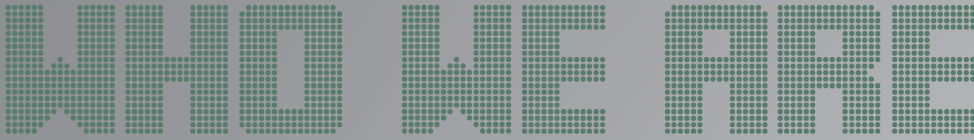
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FROM SILICON CARBIDE POWDER TO WAFERS





Our story began in 2018, when **EBNER**'s dedicated international and industry experienced team of scientists and engineers in Upper Austria embarked on researching and developing silicon carbide (SiC) growth technology. This groundbreaking work led to the founding of **EEMCO** in late 2020 as part of the **EBNER GROUP**'s **ADVANCED MATERIALS** business unit.

Today, we specialize in the development and production of high-quality 200 mm SiC crystals using a proprietary physical vapor transport (PVT) process in dedicated furnaces. We leverage **EBNER**'s extensive knowledge in furnace design and crystal growth methods to continuously develop and refine its manufacturing processes. With Europe's first zero-emission SiC production, powered by Norwegian hydroelectricity, we are committed to a greener future.

In addition, we actively engage in ongoing research and development, collaborating with research departments and universities in Europe to drive innovation and advance our SiC technology:

- **„FastLane“ EU project** “Boosting the European Value Chain for Sustainable Power Electronics”
- **„MaSiC“ IPCEI ME/CT**, “Austrian pilot line for high-quality 200 mm SiC substrates”
- **„ACDC“ Christian Doppler Laboratory**, „Advanced Computational Design of Crystal Growth”



OUR USPS

INTERNATIONAL & INDUSTRY
EXPERIENCED TEAM

FLEXIBLE PROCESS AND
SUPPLY CHAIN

WELL ESTABLISHED NETWORK AND
MARKET KNOWLEDGE

PROPRIETARY FURNACES
FOR HIGHEST
QUALITY AND EFFICIENCY

EUROPEAN PARTNER ENABLING
INDEPENDENCY FROM CHINA & USA

EUROPE'S FIRST ZERO-EMISSION
SiC PRODUCTION



NEWS

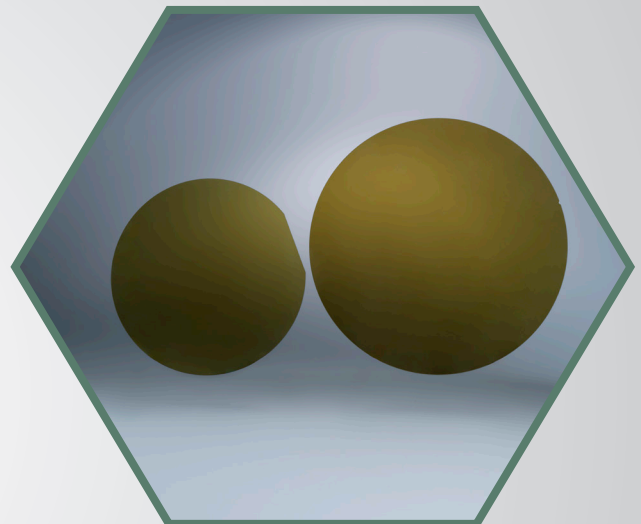
High Power Electronics

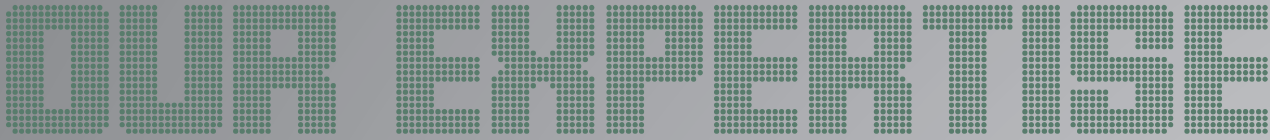
SiC substrates are revolutionizing power electronics with their high efficiency, compact designs, and durability. Key applications include:

- Automotive: Enabling longer-range EVs with faster charging through efficient inverters and chargers.
- Energy: Enhancing renewable energy integration with efficient solar inverters and wind turbine converters.
- Industrial: Improving efficiency and reducing energy consumption in motor drives, rail transportation, and data centres.

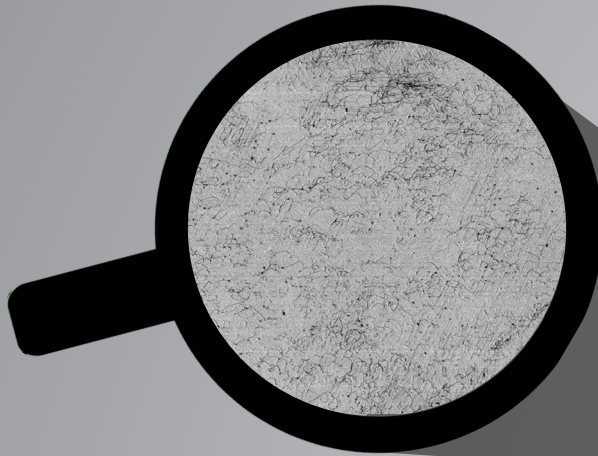
SiC's superior properties make it ideal for various high-power electronics applications, including radiofrequency electronics and high-temperature environments. Its adoption is accelerating the transition towards a greener and more sustainable future.

EEMCO's SiC substrates meet automotive-grade quality standards, ensuring reliability and performance in those demanding applications.





OUR MINIMUM SIZE: 200 MM

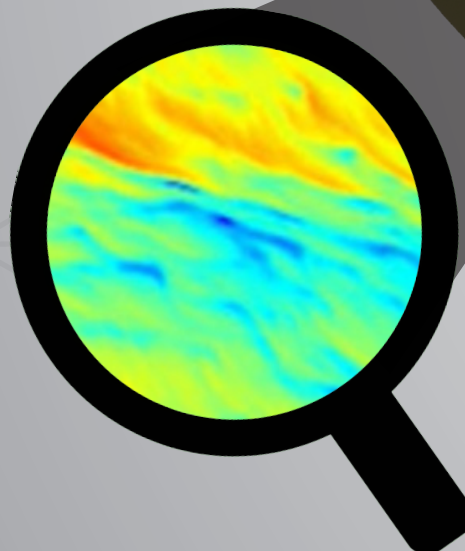


DISLOCATION MAPPING WITH X-RAY TOPOGRAPHY

We use a XRTmicron by Rigaku for detailed X-ray topograms, utilizing $\text{CuK}\alpha$ - and $\text{MoK}\alpha$ -wavelengths and analysing the (0008) diffraction reflex. This precisely identifies and quantifies Threading Screw Dislocations (TSD) and Basal Plane Dislocations (BPD), ensuring minimal defect density for enhanced device performance.

HIGH-ACCURACY METROLOGY FOR SURFACE AND DIMENSIONAL CONTROL

The Sentronics tool enables us to achieve exceptional surface and dimensional precision. White light interferometry measures surface roughness down to Angstroms, critical for optimal epitaxial growth. Spectral coherence detection ensures precise bow, warp, and thickness control.



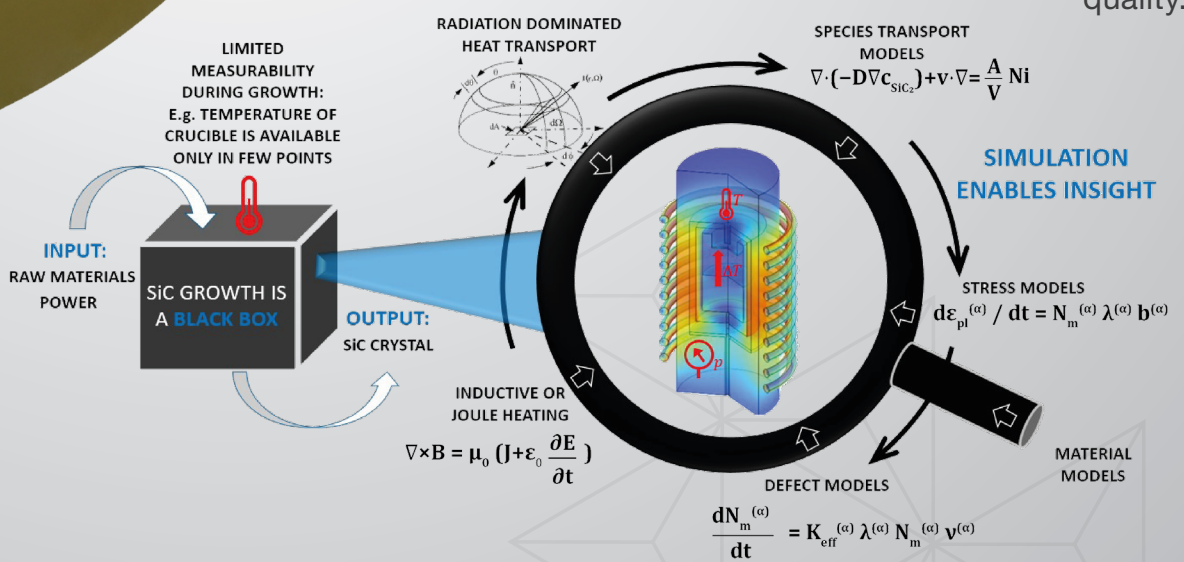


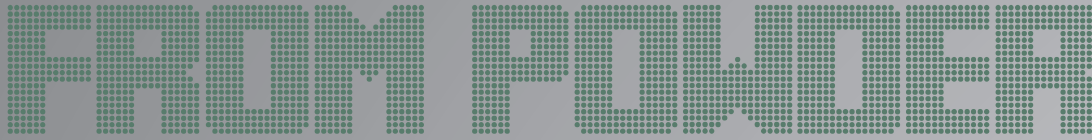
AUTOMATED DEFECT COUNTING WITH KOH ETCHING AND AI

Our process includes KOH etching followed by automated analysis using an Olympus light microscope and our proprietary Artificial Neural Network (ANN) algorithm. This accurately counts and classifies Threading Dislocations (TDs) and BPDs, providing consistent and reliable quality assurance for every SiC ingot and wafer.

SIMULATION-ENHANCED CRYSTAL GROWTH FOR SUPERIOR MATERIAL

EEMCO utilizes advanced data-driven and physics-based simulation, including COMSOL and custom machine learning models, to optimize our SiC crystal growth. This enables us to fine-tune growth recipes and hot zone geometry, leading to reduced stress and fewer defects for consistently superior material quality.

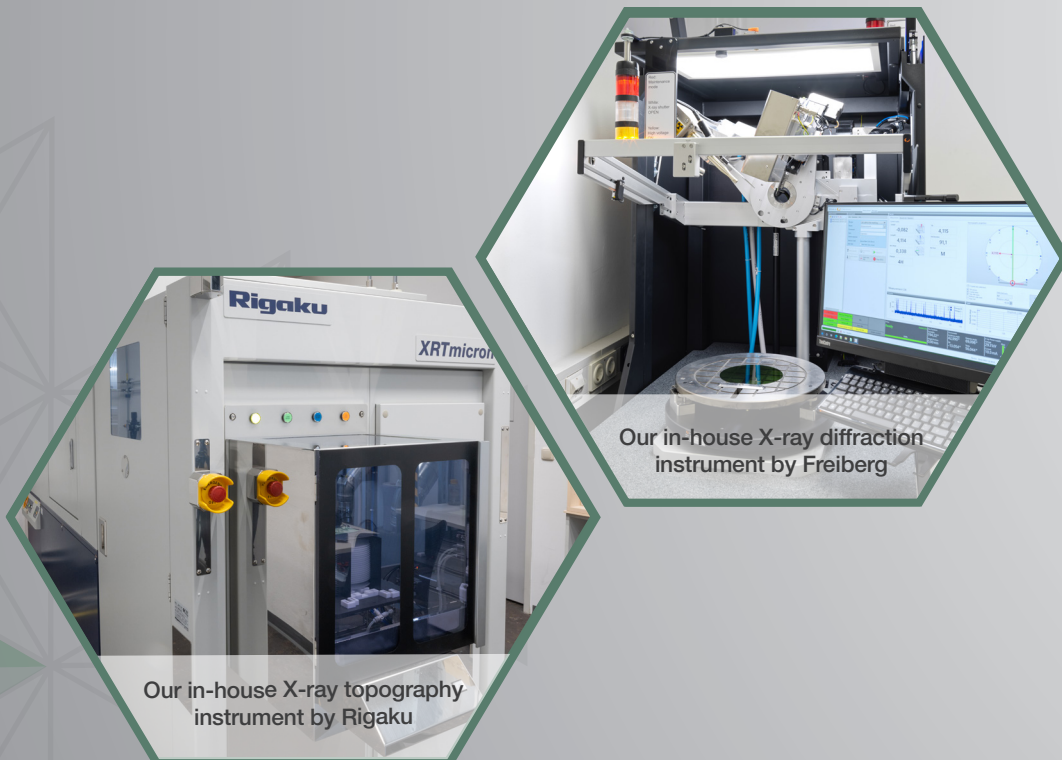




EEMCO's vertical integration ensures superior SiC crystal quality, starting with high-grade SiC powder sourced and recycled by our subsidiary, **SICREATE**. Leveraging **EBNER**'s 75+ years of furnace expertise, we design and manufacture our proprietary SiC growth furnaces, incorporating advanced technologies like digital twins and Industry 5.0 for real-time process optimization and secure data sharing with customers.

Our SiC manufacturing begins with high-quality powder which is sublimated within **EBNER** built furnaces, depositing onto a seed crystal to form a boule. The boule is then ground, wafered, and polished, with quality checks at each stage.

This vertical integration, from powder sourcing to wafer production, combined with European supply and R&D partnerships, enables **EEMCO** to efficiently drive innovation in defect reduction and crystal size expansion beyond 200 mm.



Our in-house X-ray topography instrument by Rigaku

Our in-house X-ray diffraction instrument by Freiberg

OUR MISSION IS TO ESTABLISH A 100 % SUSTAINABLE AND GREEN SiC MANUFACTURING PROCESS, ALIGNING WITH THE GOALS OF THE EUROPEAN CHIPS ACT. SiC IS PIVOTAL FOR THE TRANSITION TO SUSTAINABLE, HIGH-POWER ELECTRONIC DEVICES, AND WE ARE COMMITTED TO BUILDING AN INDEPENDENT AND FULLY EUROPEAN 200 MM SiC SUBSTRATE SUPPLY CHAIN TO DRIVE THE DEVELOPMENT OF NEXT GENERATION SiC POWER ELECTRONICS.

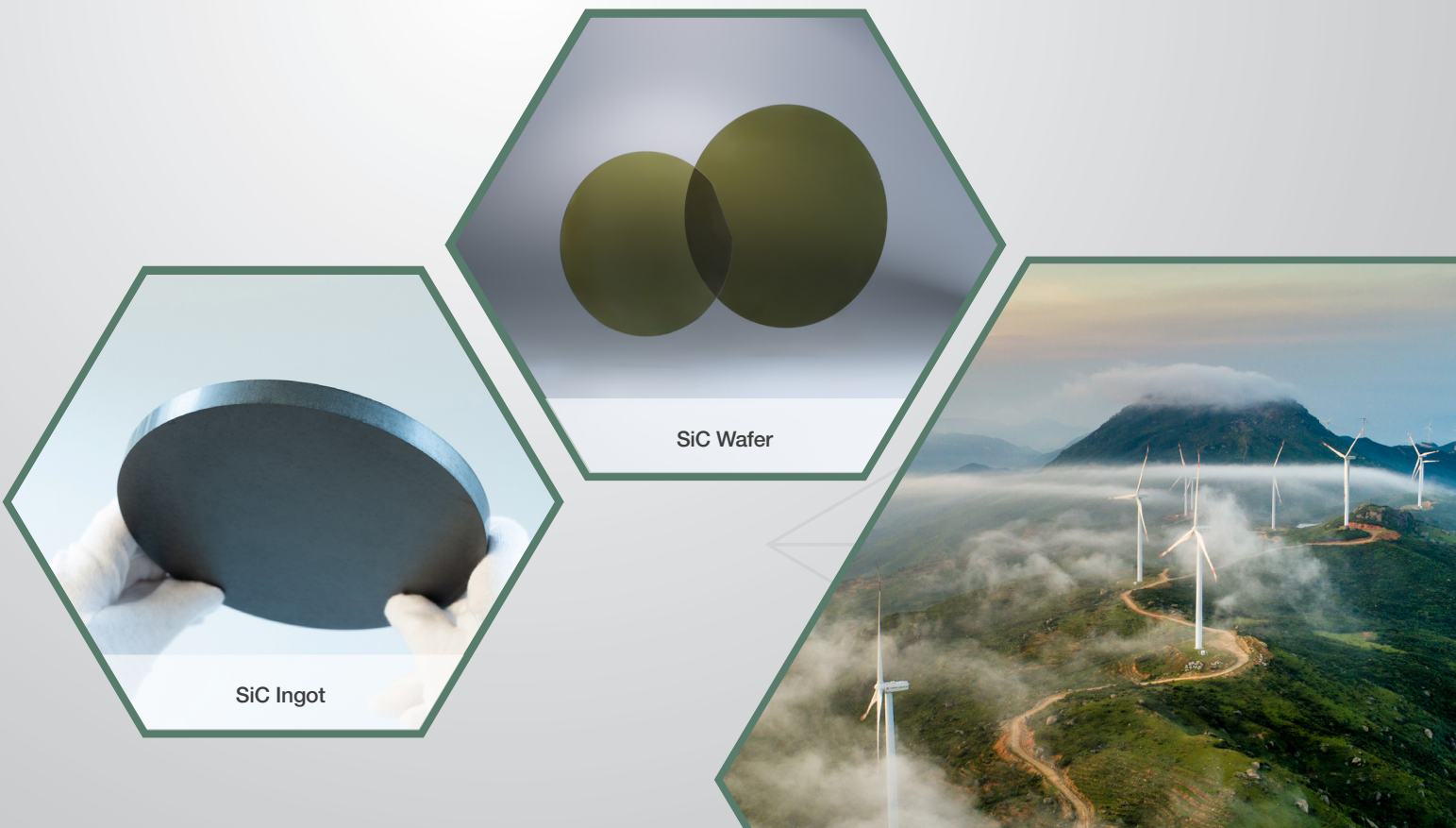
EEMCO IS DEVELOPING 200 MM AND BEYOND SiC TECHNOLOGY TO AUSTRIA, WITH OUR MASS PRODUCTION FACILITY, **ARCTICSIC**, OPERATING IN NORWAY POWERED BY 100 % HYDROELECTRICITY. WE ARE ACTIVELY WORKING TOWARDS COMPLETING A COMPREHENSIVE EUROPEAN SUPPLY CHAIN, ENSURING SUSTAINABLE SiC SUBSTRATE PRODUCTION AND SIGNIFICANTLY REDUCING DEPENDENCY ON THE USA AND CHINA.

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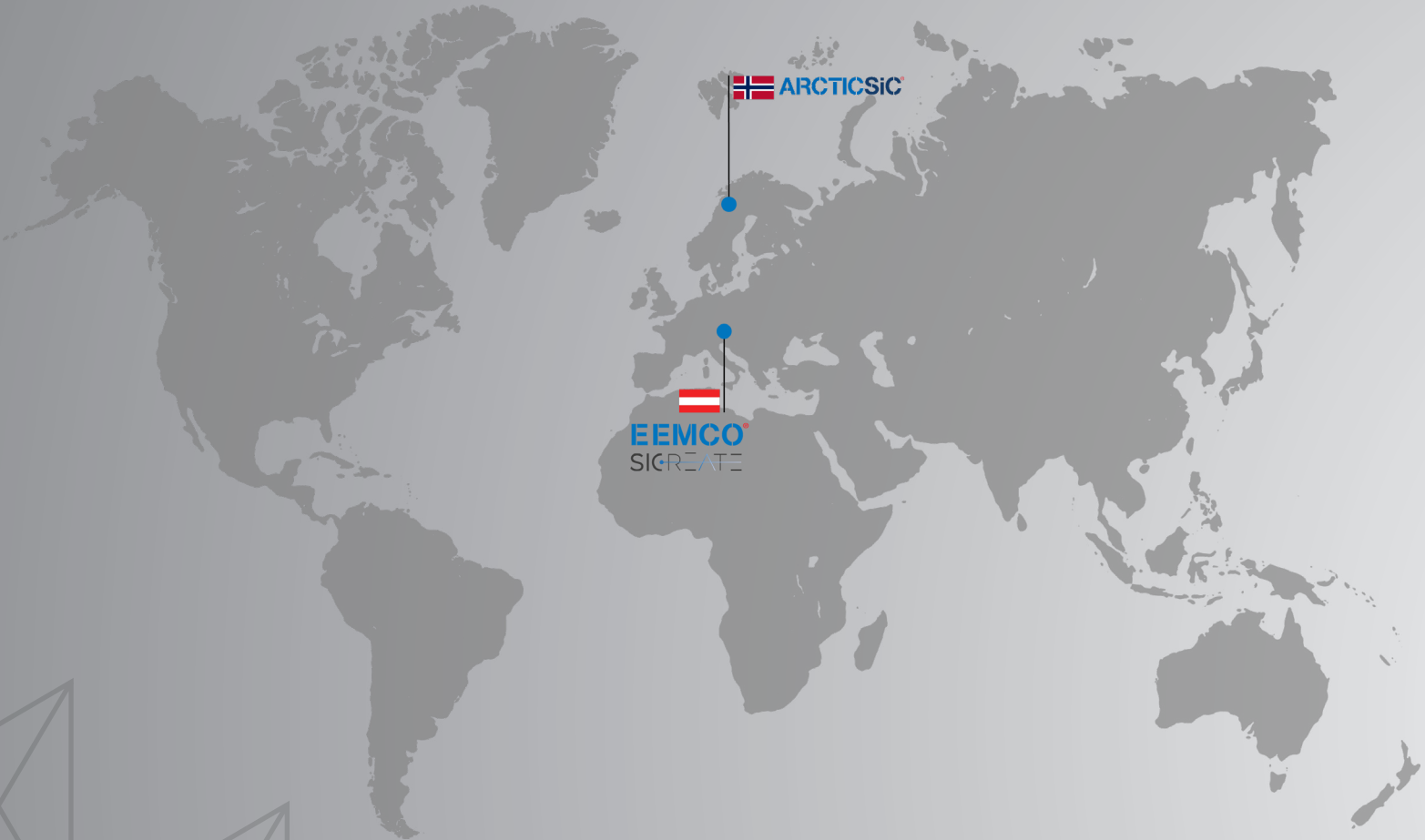
Our mission is to establish a 100 % sustainable and green SiC manufacturing process, aligning with the goals of the European Chips Act. SiC is pivotal for the transition to sustainable, high-power electronic devices, and we are committed to building a independent and fully European 200 mm SiC substrate supply chain to drive the development of next generation SiC power electronics.

EEMCO is developing 200 mm and beyond SiC technology to Austria, with our mass production facility, **ARCTICSIC**, operating in Norway powered by 100 % hydroelectricity. We are actively working towards completing a comprehensive European supply chain, ensuring sustainable SiC substrate production and significantly reducing dependency on the USA and China.



WORLDWIDE
REPRESENTATION
OFFICES

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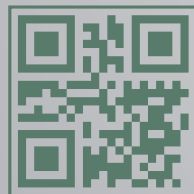
 ARCTICSIC


EEMCO
SIGREATE



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