CellyteX

Innovation Made in Germany

– From fundamental research to industrial implementation –
– Graphene-based material development for infrastructure –

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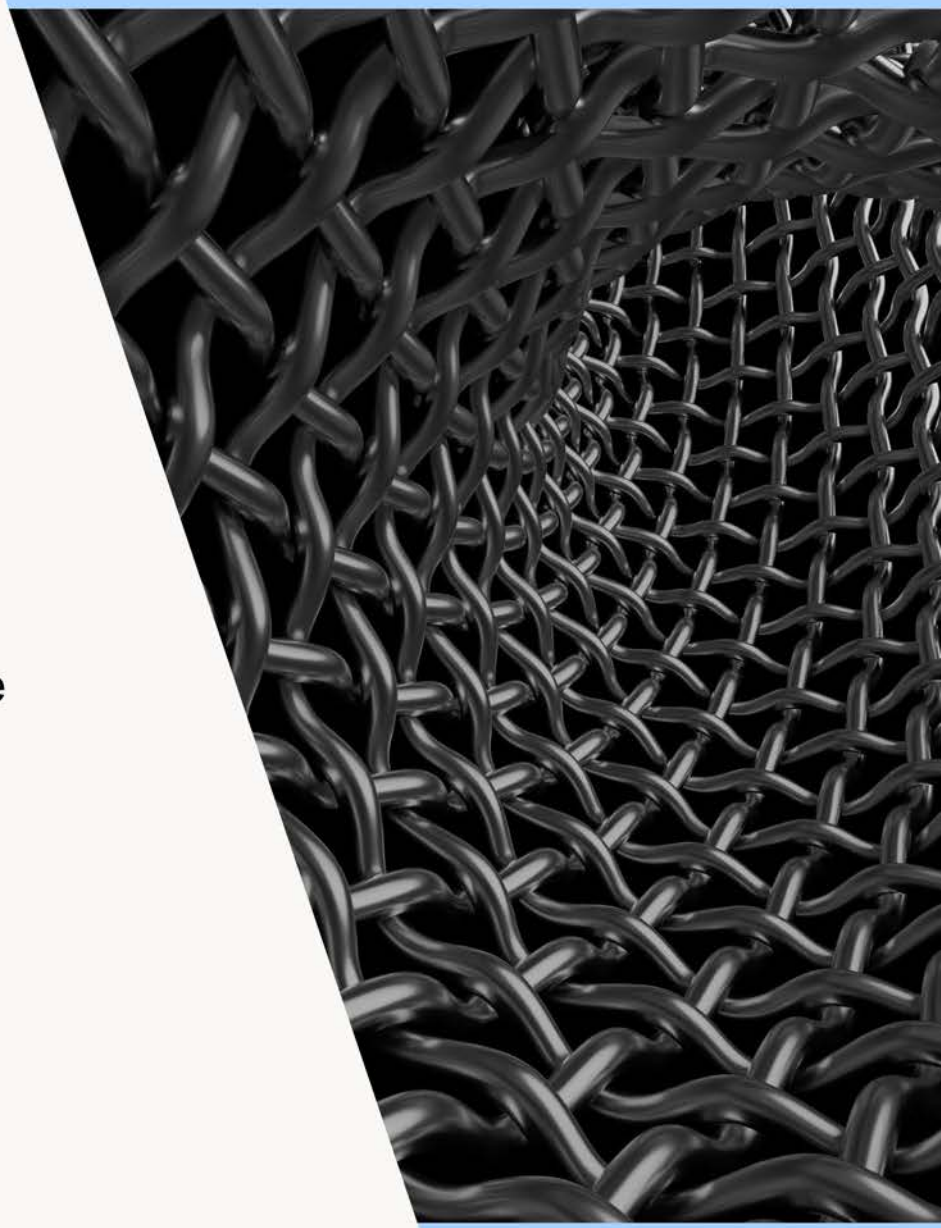

- Company overview & technological foundation
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- Technical maturity level & development status
- Scaling & cooperation
- Next steps & contact

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Company & Core Competence

Graphene dispersions form the technological foundation of all product solutions developed by CellyteX

- In-house research and development department
- Integration of fundamental research, material development, and industrial implementation
- Development and production of functional graphene materials and dispersions
- Use of proprietary, patented manufacturing processes
- Applications with a strong focus on concrete monitoring and energy storage systems

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Research & Partners

Research and development activities are conducted in collaboration with internationally recognized research institutions:

- National University of Singapore
  (Prof. Konstantin Novoselov, Nobel Laureate)
- University of Chemistry and Technology Prague

Objective:
Seamless integration of fundamental research, material development, and industrial implementation.

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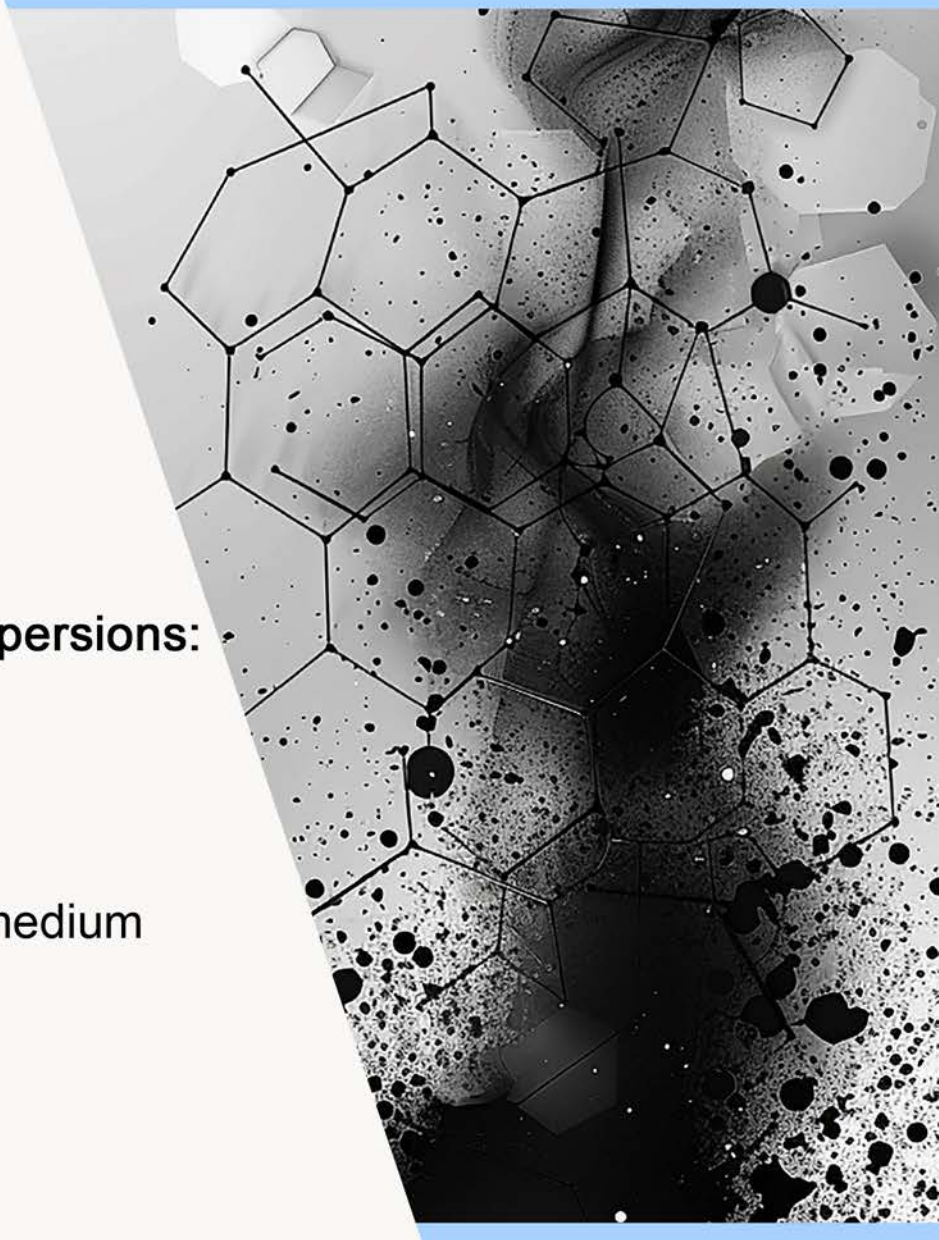
Graphene as a Technology Platform



CellyteX has developed patented processes for the production of homogeneous and stable graphene dispersions:

- In water, oils, silicone fluids, and alcohols
- Controlled layer architecture
- High electrical conductivity
- Proton and ion intercalation depending on the carrier medium
- Adaptable to application-specific requirements
- Scalable for industrial use

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Focus Product: Concrete Monitoring

BasicPrinciple

- Concrete itself functions as the sensor
- Graphene-coated reinforcement fibers (glass or basalt) form a three-dimensional conductive network
- Resistant to the highly alkaline concrete environment

Functionality

Changes in electrical resistance allow conclusions to be drawn regarding crack formation, deformation, or structural failure:

- Electrical resistance measurement within the concrete via reinforcement fibers
- Detection of crack formation, deformation, and structural failure
- Data acquisition via external devices or IoT controllers
- Measurements can also be performed using a standard multimeter

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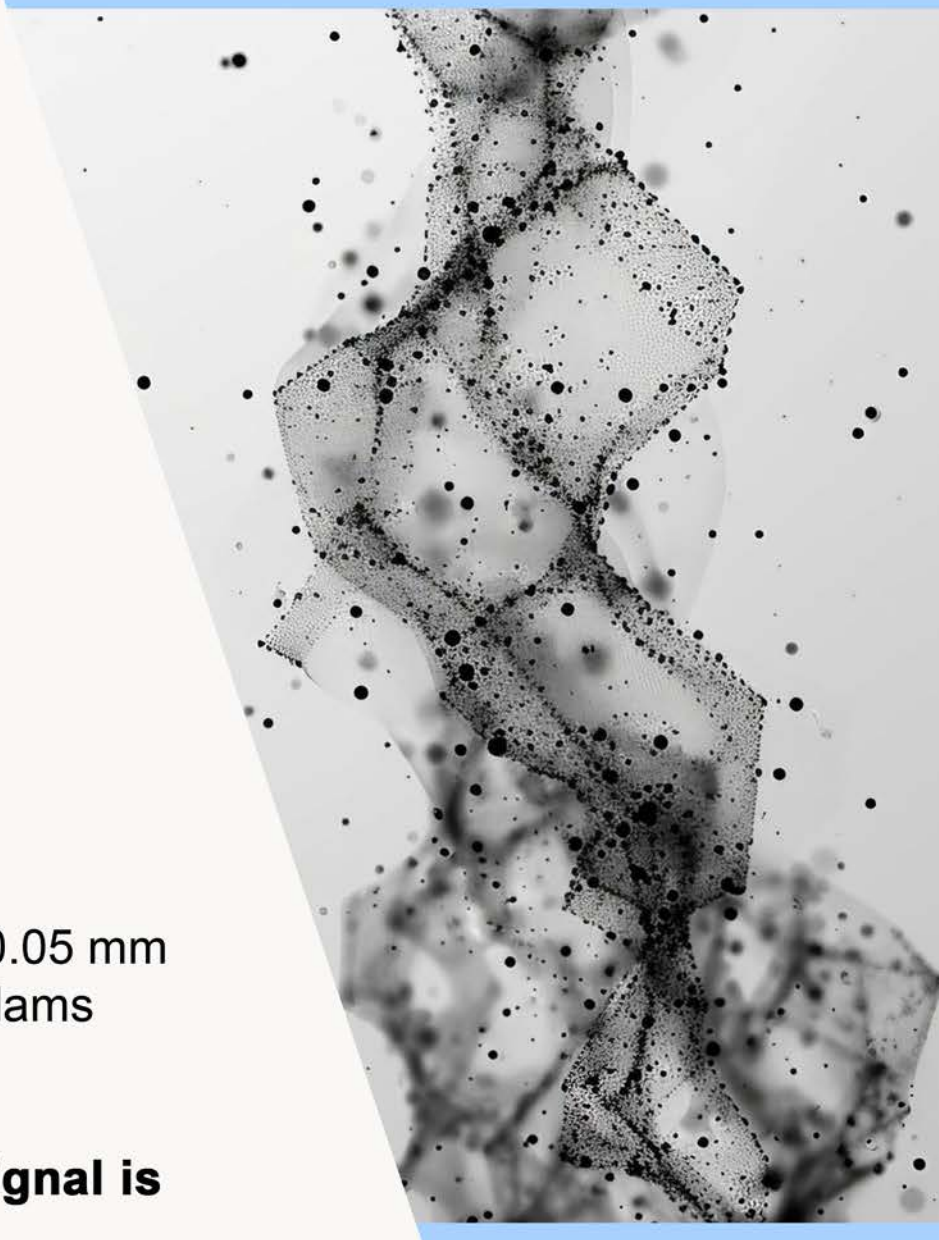
Focus Product: Concrete Monitoring



Test Results

- Electrical resistance without defects: 10–60 kΩ
- Crack width 0.5–1 mm: resistance approx. 2×
- Crack width >1 mm: resistance approx. 3–5×

Advantages

- Fully integrated monitoring within the structure
- Reliable performance in wet, dry, and aged concrete
- Detection and transmission of microcracks down to ±0.05 mm
- Scalable for bridges, tunnels, high-rise buildings, and dams
- Environmentally friendly material composition

In the event of structural failure, an emergency signal is transmitted to the monitoring station.

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Focus Product: Concrete Monitoring

Initial condition

Measurement without cracks

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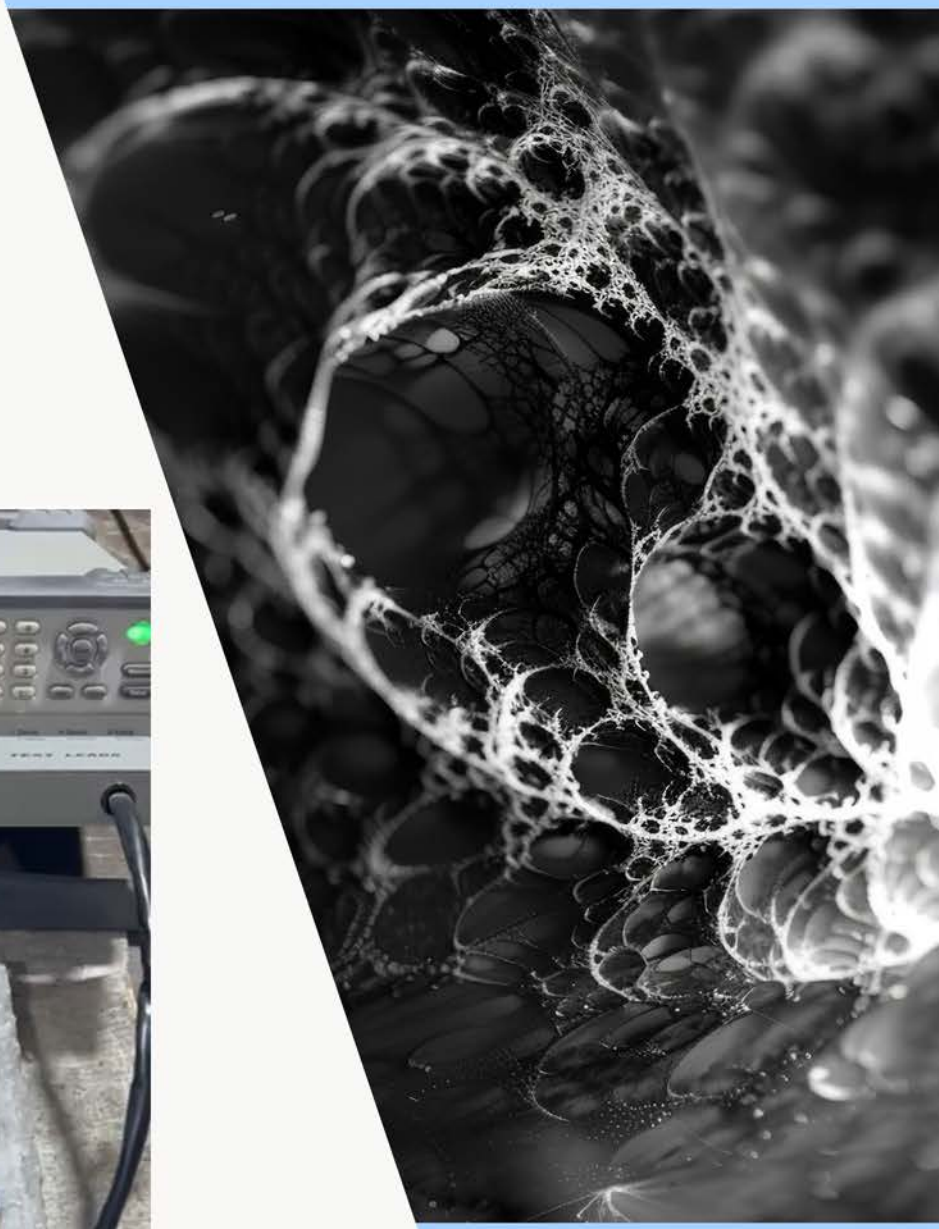
Focus Product: Concrete Monitoring



Generation of cracks
Internal, not visible

Resistance after cracking
Internal, not visible

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Focus Product: Concrete Monitoring

Resistance after severe cracking
Externally visible

Resistance after severe cracking
Externally visible

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Focus Product: Concrete Monitoring

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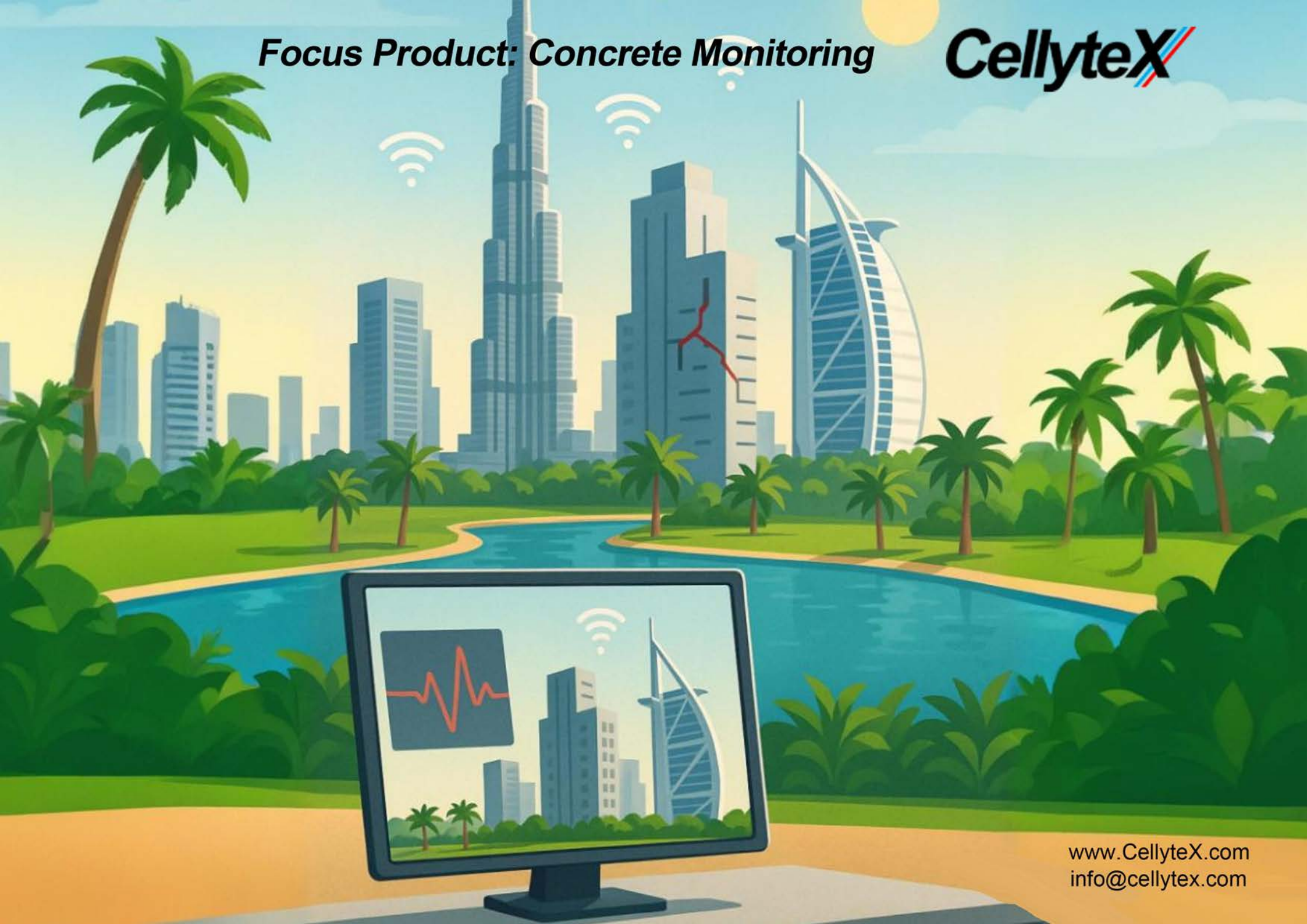

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Focus Product: Energy Storage

Technology

- Graphene-based solid-state electrolytes (current research focus: concrete integration)
- Magnesium-based solid electrolyte as the base material
- Conductive phase consisting of few-layer graphene
- Intercalation of protons and magnesium ions
- Active additives and polymer binders enable integration into electrodes

Technical Data (Prototypes)

- Specific power: approx.20 mW/cm³
- Cell voltage: approx.1.5V
- Capacity: approx.3.5mF
- Degradation after 5,000 cycles: <5%
- High chemical and thermal stabilit

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Focus Product: Energy Storage

Advantages

- Fully inorganic material composition
- No risk of fire or leakage
- Use of cost-efficient and environmentally friendly raw materials
- No toxic or rare elements
- High cycle stability (>10,000 cycles)

Development Status

- Active development and scaling phase
- Development based on a validated graphene platform
- Performance parameters validated on small-format storage systems
- Development focus on large-scale energy storage solutions

Target Applications:
Energy storage systems for wind turbines and photovoltaic installations

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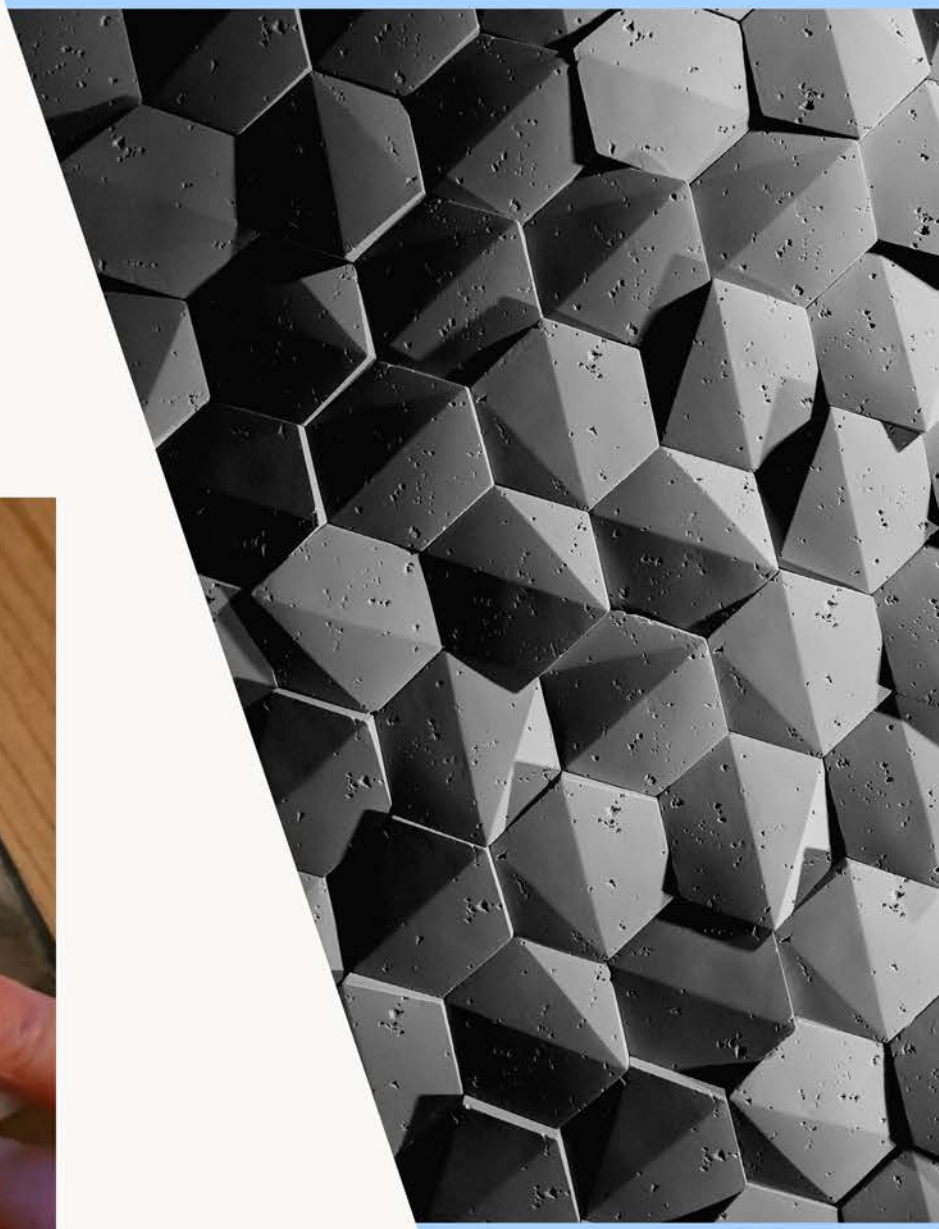
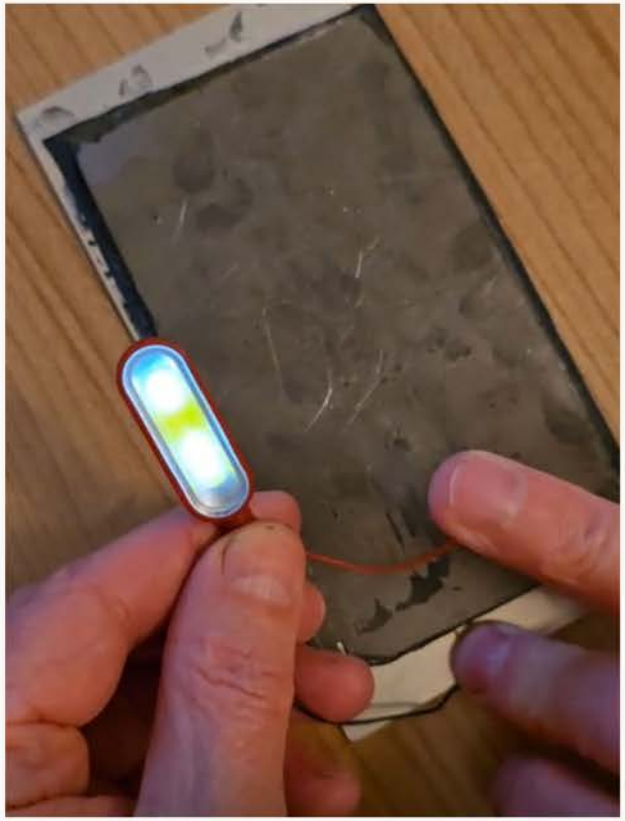
Focus Product: Energy Storage



Power source – storage plate
Concrete-based electrolyte

Power source – storage plate
Concrete-based electrolyte



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Focus Product: Energy Storage

Measurement
1× storage plate – 1.8 V

Measurement
10× storage plates – 19.34 V

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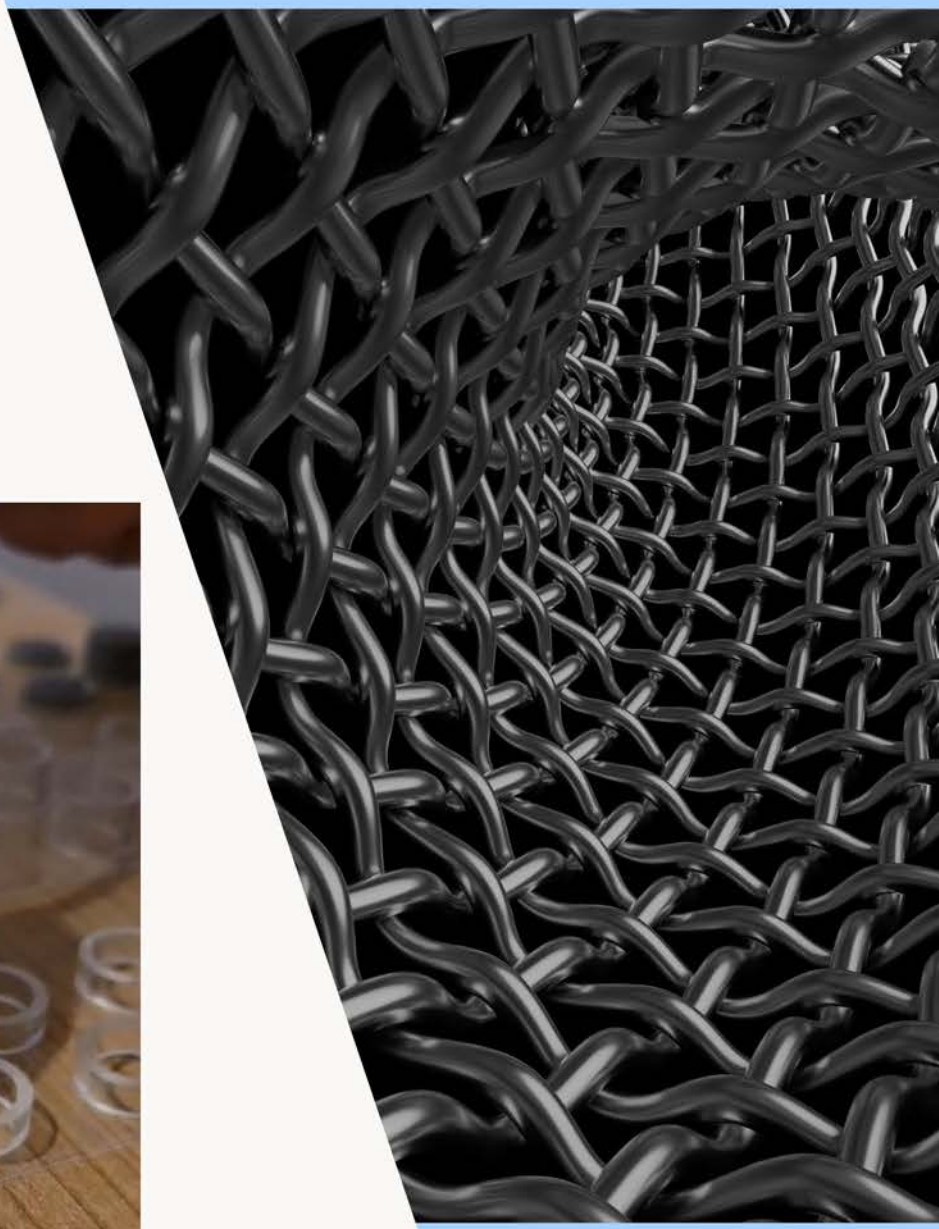

Concrete-based electrolyte

Concrete-based electrolyte

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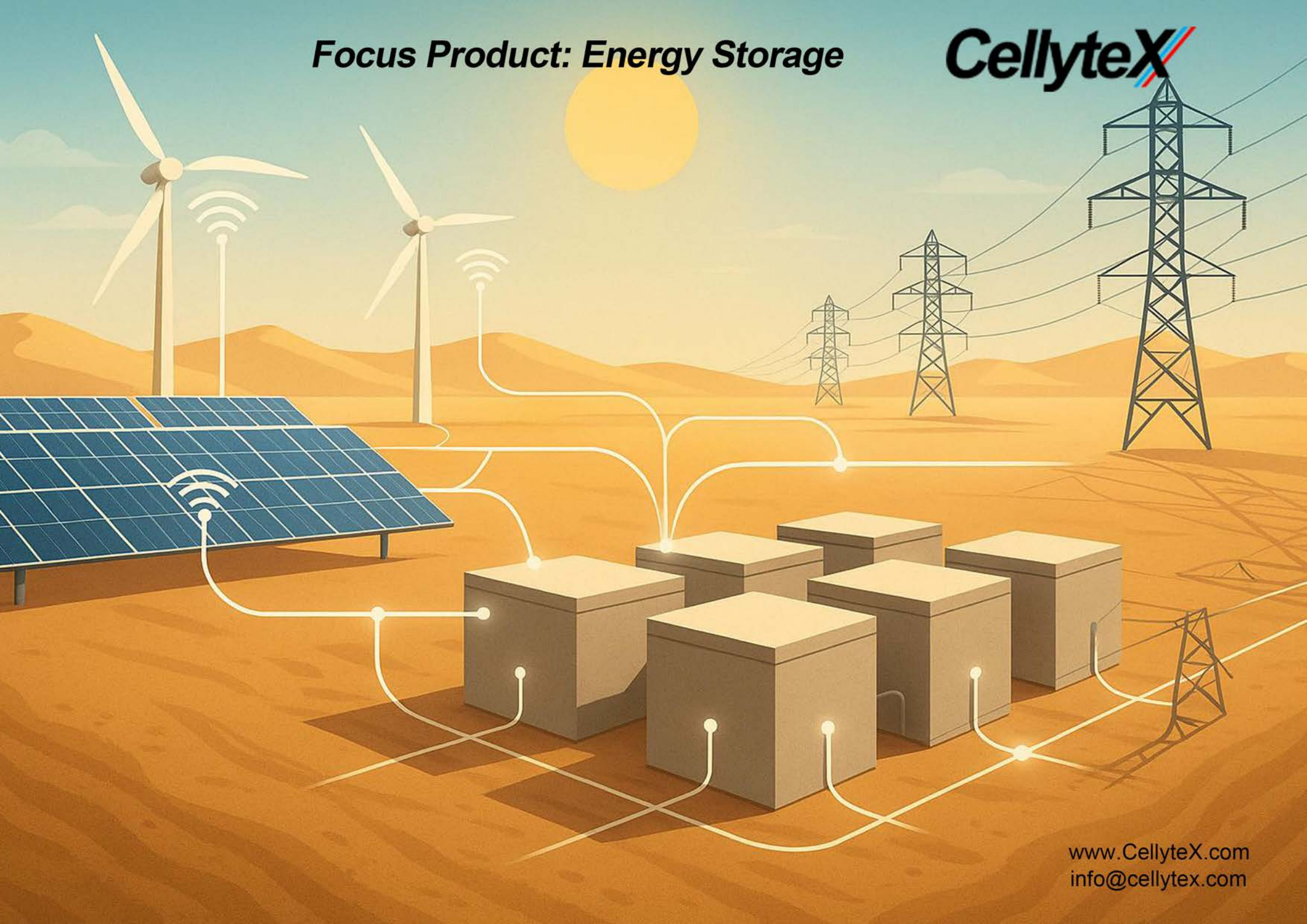

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Next Steps

- Setup and completion of prototypes
- Transfer of prototypes to industry and infrastructure partners
- Execution of technical and application-specific tests
- Implementation of joint pilot projects
- Validation under real-world operating conditions
- Development of a scaling and industrialization roadmap

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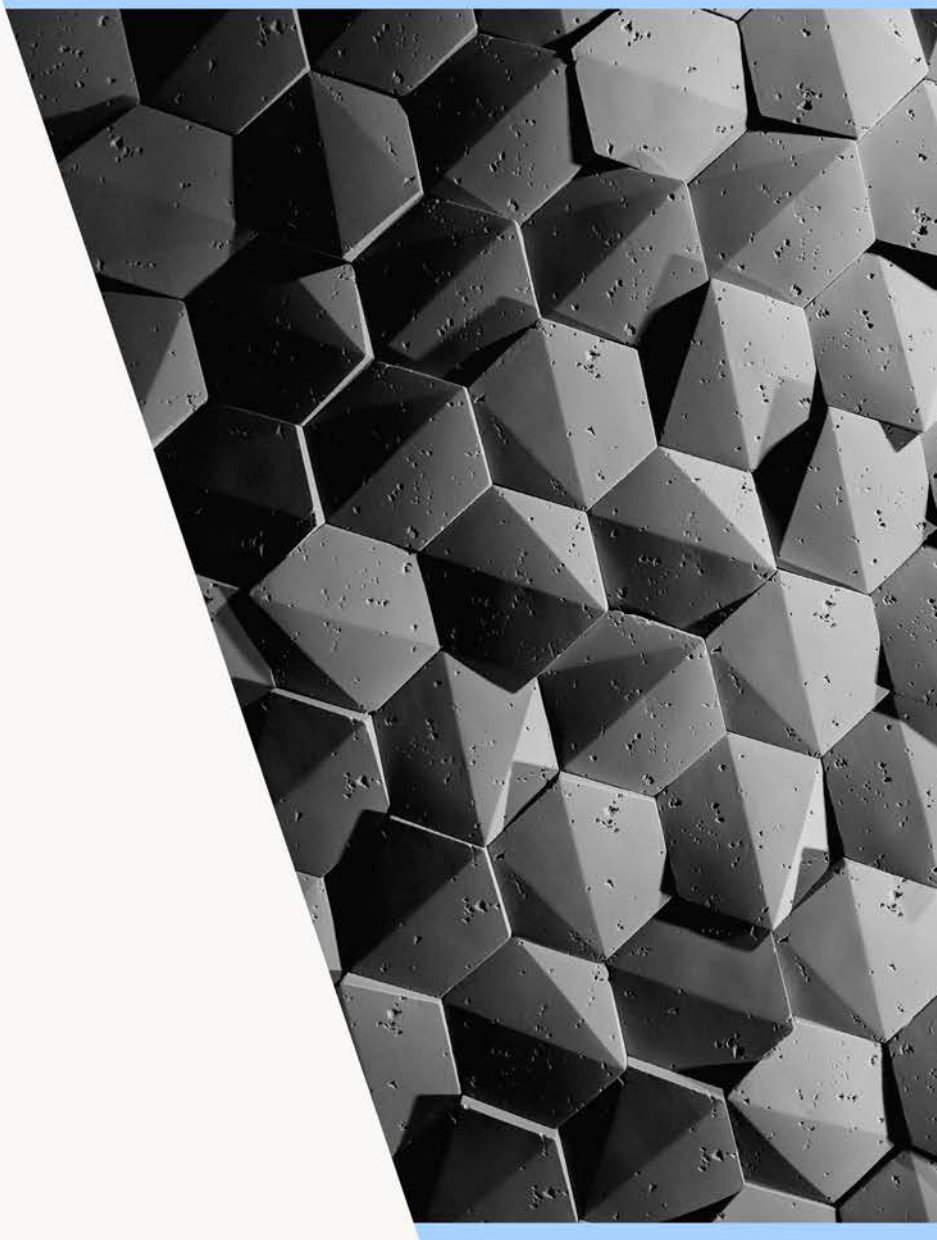
Cooperation Opportunities

- Technology and development partnerships
- Joint pilot and demonstration projects
- Industrialization and scaling collaborations
- Licensing models
- Strategic investments
- Focus on long-term industrial partnerships

We are open to various forms of cooperation with investors, industry, and infrastructure partners.



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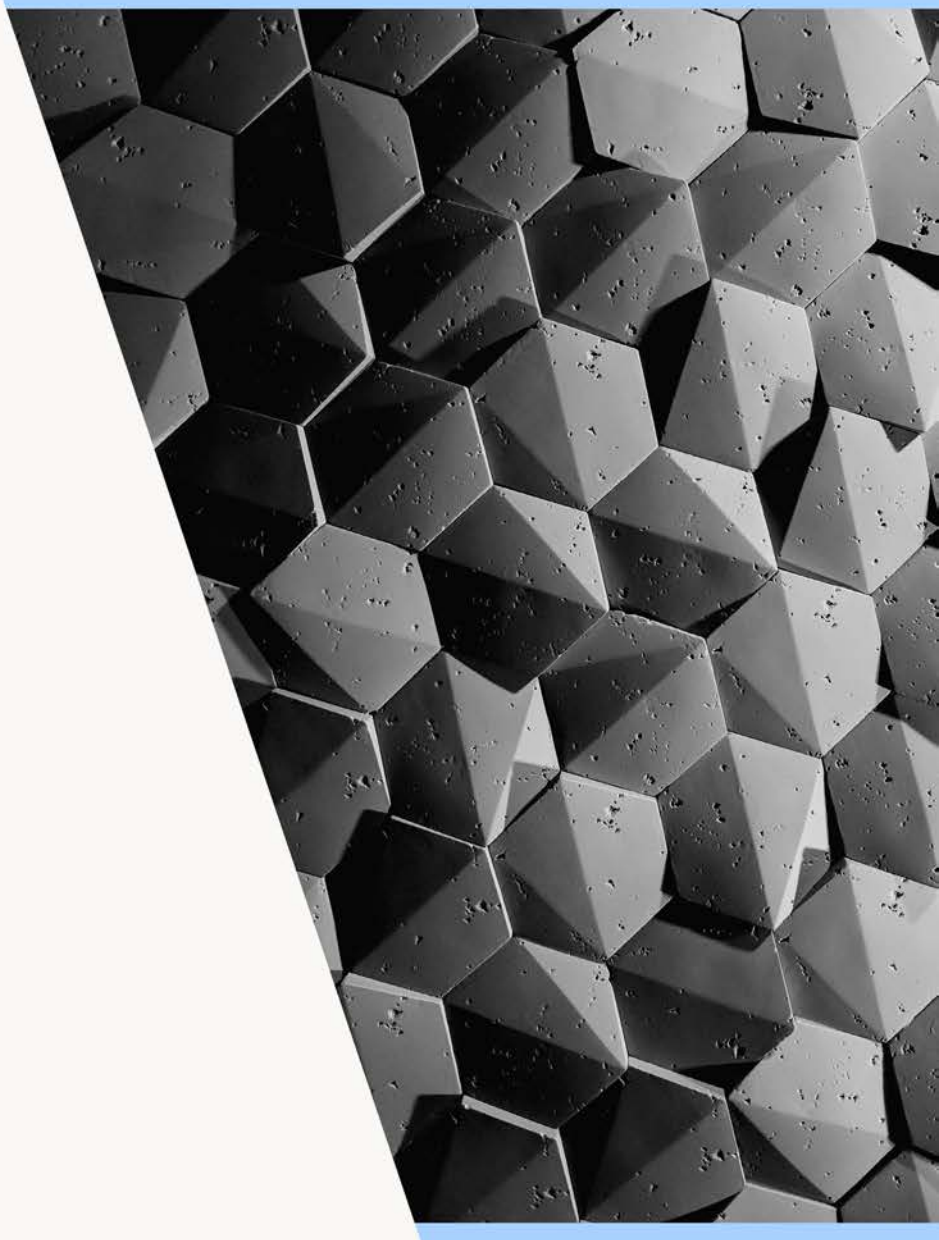

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