Green Stone

1. Public Description

Green Stone is developing an innovative self-healing concrete designed to extend the lifespan of infrastructure while reducing maintenance costs and carbon emissions. This advanced concrete integrates bacteria capsules that activate upon the formation of cracks, producing limestone to seal the damage. This process increases the service life of structures by up to 50%, significantly reducing the need for repairs and cement production. Over time, the concrete strengthens and becomes more durable, offering a sustainable solution for the construction industry.

2. The problem we are addressing

We are addressing the urgent challenge of infrastructure degradation caused by cracking and material fatigue. In Azerbaijan alone, numerous industrial and residential structures face premature deterioration due to frequent maintenance requirements and environmental factors, leading to significant operational and repair costs. Cracking in concrete affects construction worldwide, threatening the longevity and sustainability of buildings and critical infrastructure. Our self-healing concrete solution aims to combat these issues by extending the lifespan of structures, reducing the need for repairs, and promoting environmentally sustainable building practices globally.

3. The solution we are offering

Green Stone offers advanced self-healing concrete capable of automatically repairing cracks and preventing structural degradation. By incorporating bacteria capsules into the concrete mixture during construction, the material activates the self-repair process when cracks form, producing limestone to seal the damage. This innovative feature reduces the need for repairs by 50% and increases the lifespan of structures by up to 30%. Over time, the concrete becomes stronger and more durable, minimizing carbon emissions from cement production and lowering maintenance costs. The self-healing concrete also enhances sustainability in the construction industry, providing long-term environmental benefits.

4. How do capsules work?

The self-healing concrete is easy to use and integrates seamlessly into standard construction processes. It is mixed and poured like conventional concrete, with bacteria capsules embedded during the preparation stage. Once the structure is in place, the self-healing mechanism activates automatically when cracks form, producing limestone to seal them. This process ensures that the concrete remains durable and low-maintenance throughout its service life, even in harsh environmental conditions. By reducing the need for frequent repairs, it provides a cost-effective and sustainable solution for long-term infrastructure projects.

5. Who are our customers?

Our primary customers are construction companies and infrastructure developers, particularly those facing the challenges of frequent maintenance and high repair costs. Green Stone's initial focus is on the Azerbaijani construction market, which has an estimated value of $1 billion. We have already attracted significant interest from several construction firms, eager to implement our self-healing concrete in their projects. Our outreach strategy includes construction expos, online platforms, and targeted marketing through industry partnerships and distributor networks, ensuring a strong presence in both the industrial and residential sectors.

6. Technology and Methodology

Our self-healing concrete is developed using advanced bioengineering techniques, incorporating bacteria that are encapsulated in protective spores. These bacteria remain dormant within the concrete until cracks form, at this point, they activate and produce limestone to repair the damage. The concrete is compatible with all construction environments and enhances structural integrity. Laboratory tests conducted in Azerbaijan demonstrated that structures built with our self-healing concrete had significantly reduced crack formation and required minimal maintenance. In addition to repairing cracks, the bacteria also strengthen the material over time, promoting long-term durability and sustainability.

7. Achievement

Green Stone has already achieved several key milestones in its journey toward revolutionizing the construction industry. We secured a 3,000 AZN initial investment after winning second place at the Green Cohort Hackathon, which fueled our product development and testing. Our innovative solution has garnered recognition from industry experts, and we were selected as one of the top 300 startups in the BAKU ID 2024 competition, securing a $100,000 investment.