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CASE STUDY

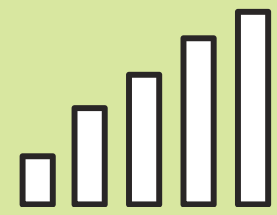
This best practice highlights how Secil Betões is advancing sustainability by implementing green concrete technology.
Through innovative, eco-friendly concrete solutions, Secil Betões reduces environmental impact and sets a precedent for sustainable practices in construction.

Introduction of the company / project and its sustainability-related goals

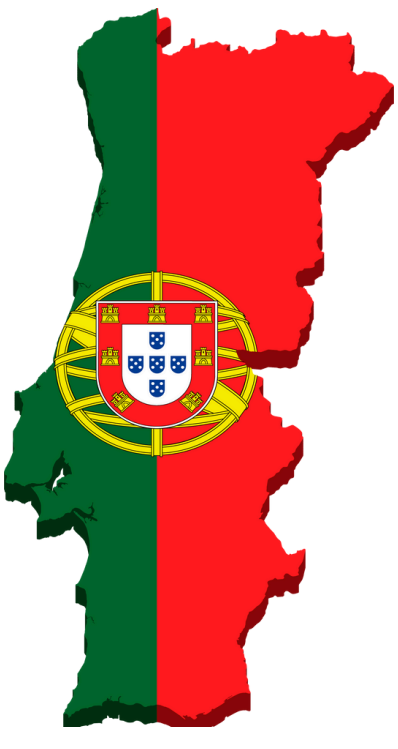
Green Concrete Technology and Materials Used

Environmental benefits

Economic and Social Impact



Interviews & lessons learnt



Secil Betões

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HESTIA

Introduction to Secil Betões and its sustainability- related goals

Secil Betões is a Portuguese company belonging to the Secil Group, specialising in the production and sale of ready-mixed and precast concrete. With a strong national presence, Secil Betões stands out for its commitment to sustainability and innovation in the construction sector.

Secil is a business group founded in Portugal whose activity is based on the production and sale of cement, concrete, aggregates, mortars and hydraulic lime. It also integrates companies that operate in complementary areas in the circular economy, in the use of waste as a source of energy.

Secil Betões aims to integrate **sustainable practices** into all phases of its operation, from production to delivery of the final product. The company invests in technologies that reduce environmental impact, promoting the circular economy and the efficient use of resources.

Commitment to Sustainability

Circular Economy and innovation:

A significant example is the development of **Verdi Zero Concrete**, **the first carbon-neutral concrete produced in Portugal**. This innovative product incorporates recycled waste, reducing the need for virgin raw materials and contributing to lower CO_2 emissions. In addition, the remaining emissions are offset through certified reforestation and renewable energy projects.

Certifications and Recognitions

Secil Betões has received the **Bronze certification from the Concrete Sustainability Council (CSC)** for its Outão plant, recognizing the company's strong commitment to sustainability. The certification evaluated the plant's performance in financial, environmental, social, and economic areas. This achievement reflects Secil's integration of sustainable practices across all levels of management and its alignment with international sustainability standards. The CSC promotes responsible concrete production through a global certification system that highlights the role of cement and concrete in building a more sustainable future.

Future Vision

With clear goals for carbon neutrality by 2050, Secil Betões continues to **invest in innovative solutions** that promote sustainability in the construction sector. The company believes that integrating responsible environmental practices is essential for the development of greener and more resilient infrastructures

LEARN MORE

More details about Secil Group's sustainability initiatives can be found on their official website.

Green Concrete Technology and Materials Used

Innovative technologies and materials at Secil

Secil Betões is committed to advancing sustainable construction through the development of innovative, eco-friendly concrete solutions. These technologies reduce environmental impact while maintaining high performance and durability standards.

Verdi Zero Concrete, with a lower carbon intensity, i**ncludes up to 24% recycled waste,** sourced from landfill materials. By reducing the demand for virgin raw materials, this concrete promotes resource efficiency and supports the circular economy.

Verdi Zero Concrete is available in various strength classes and can be used in both new construction and renovation projects. Despite its sustainable composition, it offers the same mechanical performance and durability as traditional concrete.

Verdi Zero is also a CarbonNeutral® product. Any remaining CO_2 emissions from its production are offset through certified projects by Climate Impact Partners, such as reforestation, wind power, and solar water heating. This makes it a lower-carbon alternative for sustainable construction.

Cork-Based Concrete (Unileve® Cork White Concrete): This lightweight architectural concrete incorporates expanded cork granules, a by-product of the cork industry. The result is a material with improved thermal and acoustic insulation properties, ideal for energy-efficient buildings.

Eco-cork lime: A thermal insulation plaster made from natural hydraulic lime, which naturally absorbs CO_2 during curing. Combined with expanded cork granules, it offers high environmental performance and is a natural alternative for sustainable building envelopes.

Environmental benefits

With Verdi Zero Concrete, Secil Betões redefines concrete by reducing carbon emissions and promoting the circular economy, without compromising on performance.

Environmental Impact

CO_2 Reduction

- 20% fewer emissions than traditional concrete
- Effective even in aggressive environmental classes (XS, XD, XA)
- Certified CarbonNeutral® through:


Afforestation


Wind energy

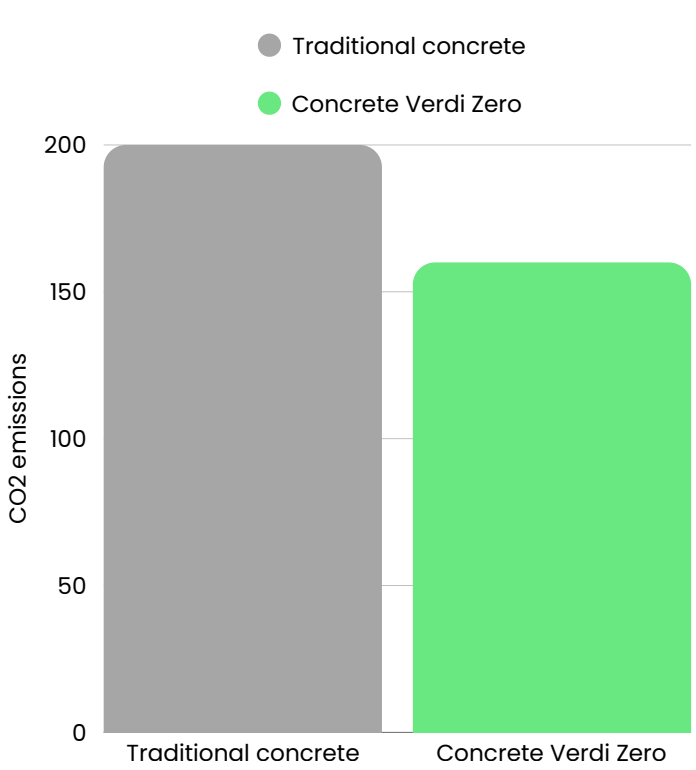

Solar water heating

Circular Economy

- Contains 24% recycled waste from landfills
- Reduces demand for virgin raw materials
- Promotes resource efficiency

CO_2 Emissions Comparison: traditional concrete vs Verdi Zero Concrete

Verdi Zero Concrete shows a **20 % reduction in CO_2** emissions compared to traditional concretes, especially in more aggressive environmental exposure classes (XS, XD and XA).



Verdi Zero Concrete applications & certifications

Versatility

- Ideal for new builds and refurbishments
- Suitable for structural elements in harsh environments (XS, XD, XA)

Green Certifications

- Supports LEED and BREEAM compliance
- Recognized for low environmental impact and sustainable sourcing

Economic and Social Impact

Economic Balance: Costs vs. Benefits

Notes:

- The figures shown are indicative estimates and may vary depending on specific product formulations and production conditions.
- The estimated cost of Traditional Concrete reflects standard raw materials and conventional production processes.
- The estimated cost of Verdi Zero Concrete is slightly higher due to the inclusion of recycled materials and the offsetting of CO_2 emissions through certified sustainability initiatives.

Economic Benefits in short:

- Increase in property value: 80%
- Reduced operating costs: 70%
- Access to tax incentives: 60%

Return on Investment (ROI)

- Environmental Certifications: Verdi Zero Concrete contributes to obtaining environmental certifications such as LEED and BREEAM, which can increase the value of the property and attract environmentally conscious investors.
- Energy Efficiency: The use of recycled waste and the offsetting of CO_2 emissions can result in long-term operational savings due to the reduction of costs associated with waste management and energy consumption.

Social Impact

Secil Betões' Verdi Zero Concrete project is not just about environmental innovation, it also promotes significant changes in the social sphere, by creating jobs and developing skills linked to the ecological transition in construction.

Job creation

The introduction of green technologies has led to the creation of new specialised jobs, especially in the following areas:

- Operation of ecological concrete production equipment.
- Logistics and sustainable transport.
- Environmental monitoring and quality control.

Estimated increase in employment

- Sustainable concrete production | 80%
- Recyclable waste management | 70%
- Engineering and technical innovation | 75%
- Certification and ESG services | 60%

Skills Development

- Secil promotes technical training and internal certifications for employees and partners.
- Partnerships with universities and technology centres encourage research into sustainable concrete and new materials.

Skills Developed

- ✓ Sustainability and the circular economy
- ✓ Low-emission concrete manufacturing techniques
- ✓ Life cycle analysis (LCA)
- ✓ Implementation of certified processes (LEED, BREEAM)

Contribution to the Community

- Reforestation and renewable energy projects associated with carbon offsetting have a direct impact on rural areas, generating employment and local environmental education.
- Promoting sustainable construction contributes to healthier and more resilient cities.

Interviews and lessons learnt

Watch the full interview with Rui Oliveira, Operational Excellence Manager at Secil Betões, on our YouTube channel. He shares how the company is driving sustainability with Verdi Zero, Portugal's first carbon-neutral concrete, and how circular practices and CSC Bronze certification are shaping the future of concrete production.

Lessons learnt

Low-Carbon concrete: using clinker substitution (e.g. with limestone or fly ash), Secil reduced CO_2 emissions from cement production by up to 30%

Alternative Fuels: replacing fossil fuels with biomass and industrial waste (like used tires or RDF) helped cut carbon emissions during the calcination process — without affecting product quality.

Waste as resource: reusing industrial by-products and reintegrating concrete debris, Secil shows how circular economy principles apply even in heavy industry.

Tracking emissions: installing real-time monitoring systems across plants enabled Secil to track CO_2, NOx, and other emissions, critical for regulatory compliance and continuous improvement.

Testing sustainable mixes: developing eco-concrete requires lab testing and performance validation, to ensure durability, strength, and environmental gains align.

Training the construction professionals: to scale sustainable practices, workers need new skills: eco-concrete technologies, carbon footprint literacy, and digital tools like BIM and LCA software are now essential.

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