



# CASE STUDY

**This best practice highlights how BlueFab (Casais Group) is advancing sustainability by implementing green concrete technology.**

**Through innovative, eco-friendly concrete solutions, BlueFab reduces environmental impact and sets a precedent for sustainable practices in construction.**



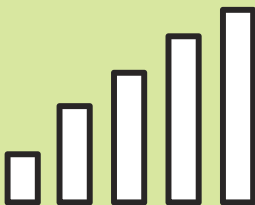
**Introduction of the company and its sustainability- related goals**

**Green Concrete Technology and Materials Used**

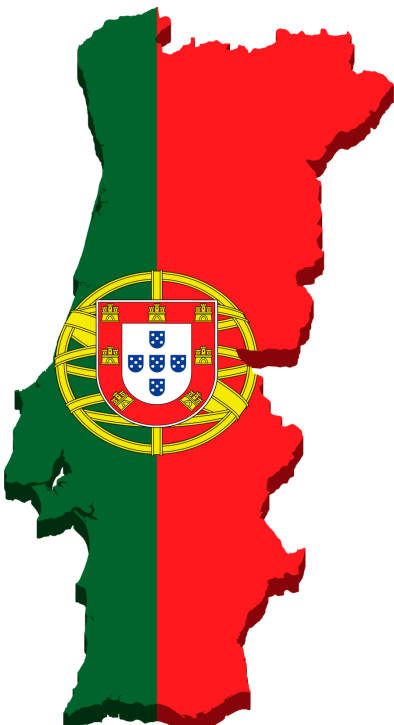


**Environmental benefits**

**Economic and Social Impact**



**Interviews & lessons learnt**



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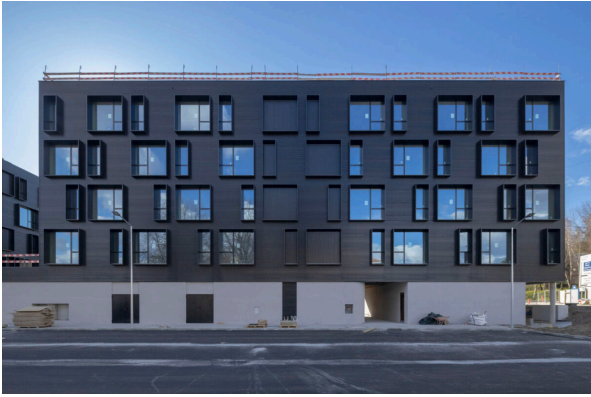


# Introduction to Blufab and its sustainability- related goals

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The company adopts the **CREE concept** (Rational, Efficient and Ecological Construction), which integrates technologies such as engineered wood, hybrid concrete and wood systems, and controlled industrial processes to significantly reduce environmental impacts and increase efficiency in construction.



Hotel B&B Guimarães: This project uses the CREE system to build a hybrid building that stores carbon and incorporates interiors with a circular economy philosophy. It also allows for a 60 per cent reduction in CO<sub>2</sub> emissions and a 70 per cent reduction in waste. Here a [video](#) showing more details about the construction of the building.

## BluFab sustainability objectives



**Carbon Footprint Reduction:** It uses engineered wood and only a third of the concrete compared to traditional buildings, resulting in a reduction of more than 60 per cent in CO<sub>2</sub> emissions.



**Circular Economy:** Develops modular and reusable solutions, allowing up to 50 per cent of materials to be reused at the end of the building's life cycle.



**Operational Efficiency:** Production in a controlled environment reduces material waste by up to 70 per cent, reduces noise pollution by more than 50 per cent and speeds up execution times by around 50 per cent.



**Digital Innovation:** Integrates Building Information Modelling (BIM) to optimise the design and execution of projects, promoting digitalisation and innovation in the sector.

# Green Concrete Technology and Materials Used

## Innovative technologies adopted by Blufab



### Off-site (Modular) Construction

- Production in a controlled industrial environment
- Reduction of waste, deadlines and costs
- Greater precision and quality

### BIM – Building Information Modelling

- Intelligent 3D modelling for planning and execution
- Reduction of errors and rework
- Integration between all project phases



### Digitalisation and automation

- Digital production control
- Sensors and data analysis for energy efficiency
- Integration with sustainable management software

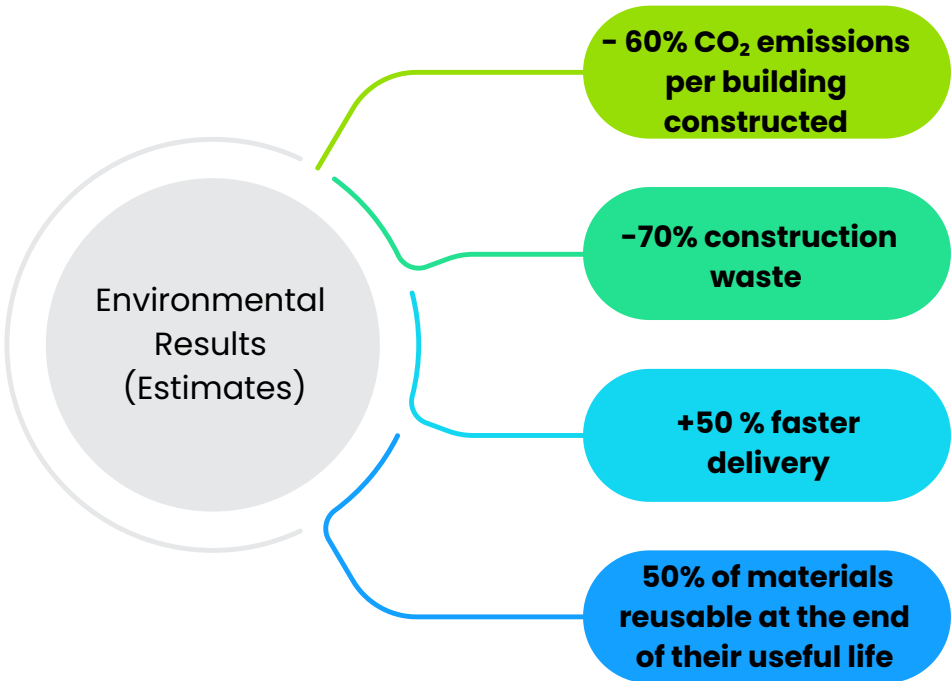


## Materials used and benefits

Material/Technique	Green Benefits
Engineered Wood	Carbon capture, renewable, resistant and with excellent thermal performance
Hybrid Systems (Concrete + Wood)	Reduction of concrete consumption by up to 70 per cent, lower CO <sub>2</sub> emissions
Reusable Modular Elements	Easy to dismantle and reuse, in line with the circular economy
Production with Minimal Waste	Up to 70 per cent less waste compared to traditional construction
Natural Insulation and Energy Efficiency	Reduced energy consumption in the building's operation



# Environmental benefits



Blufab's Environmental Impact in detail:

### Reduction of CO<sub>2</sub> Emissions

Blufab contributes significantly to reducing CO<sub>2</sub> emissions in the construction industry. Although specific data is not publicly disclosed, thanks to the adoption of sustainable materials and efficient industrialised processes, **the company estimates a 60% reduction in CO<sub>2</sub> emissions** per building constructed compared to traditional construction methods.

### Waste Management and Material Reuse

Blufab adopts circular economy principles, **leading to an estimated 70% reduction in construction waste**. Moreover, 50% of materials used are reusable at the end of their lifecycle, contributing to a more sustainable approach to material consumption and end-of-life building management.

### Faster and More Sustainable Delivery

The industrialised and modular approach allows for **50% faster project delivery**, which reduces time on-site, lowers emissions from machinery and logistics, and minimises disruption to the surrounding environment.

The table below summarises the main advantages of sustainable modular construction compared to traditional methods

Indicator	Sustainable Modular Construction	Traditional Construction
CO <sub>2</sub> emissions	Reduced	High
Energy consumption	Optimised	High
Waste Generation	Minimised	High
Construction Time	Accelerated	Long
Operating Costs	Lower	Higher

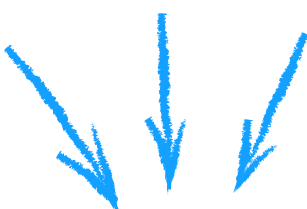


Economic Balance: Costs vs. Benefits

Reduced operating costs

Modular construction allows for a significant reduction in operating costs, especially due to the reduction in construction time and the efficient use of materials.

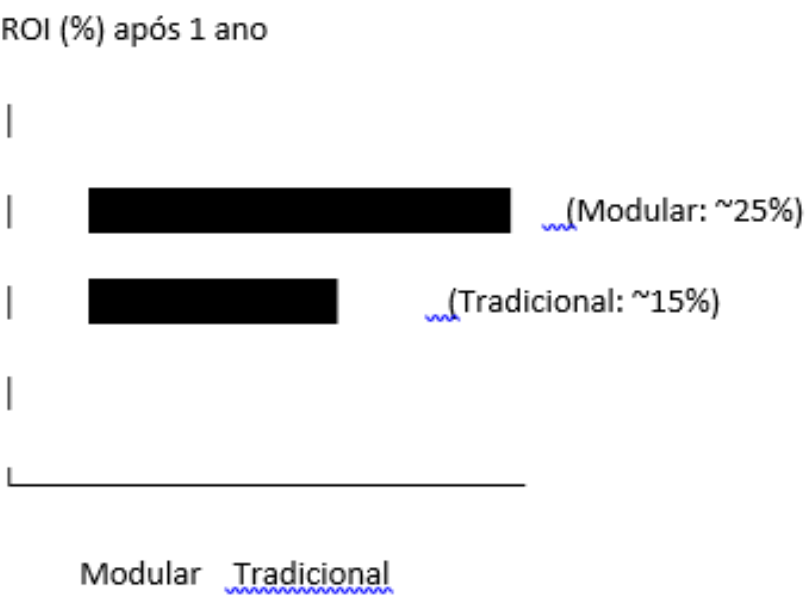
- Construction time: Blufab manages to reduce execution times by up to 50 per cent compared to traditional construction.
- Materials: The use of industrialised solutions reduces material consumption by up to 40%.
- CO<sub>2</sub> emissions: Blufab contributes to a 60 per cent reduction in CO<sub>2</sub> emissions, using engineered wood and only 1/3 of the concrete of a traditional building.



Return on Investment (ROI)

ROI is optimised by reducing operating costs and speeding up construction time, allowing for faster occupancy and revenue generation.

The table shows how in similar projects, modular construction makes it possible to recoup the investment around 6 to 12 months earlier than traditional construction, due to faster start-up (e.g. hotels, residences, schools).



Social impact

Job Creation and Social Inclusion

- Integration of young people into the labour market: Since January 2023, Blufab has integrated around 100 young people through internships and training programmes, helping to reduce youth unemployment and promoting inclusion in the construction sector.
- Partnership with IEFP: In collaboration with the Institute for Employment and Vocational Training (IEFP), Blufab has welcomed 50 female trainees into vocational training programmes, offering them opportunities to develop technical skills and integrate into the labour market.

- Young people integrated since 2023: ~100
- Graduates in partnership with IEFP: 50
- Training programs offered : 5+
- Employees with BIM skills: 30+

Development of Technical Skills

- Training in Modular Construction: Blufab offers specialised training programmes in modular construction, enabling workers to acquire skills in advanced technologies and industrial processes, in line with the needs of today's market.
- Partnership with BUILT CoLAB: In collaboration with BUILT CoLAB, Blufab is developing BIM (Building Information Modelling) support software to optimise modular construction processes, providing more efficiency and precision at every stage of the project.

# Interviews and lessons learnt



You can watch the [full interview](#) with Luís Laranjeira on our YouTube channel, where he explains how Blufab is leading the way in sustainable construction through innovative modular and off-site solutions.

## Lessons learnt



### **Less Concrete, More Wood**

Hybrid systems reduce concrete by 70% — promotes green building.

### **Circular Economy in Practice**

50% of materials are reusable — buildings designed for reuse.

### **Modular Construction**

Faster (50% time saved), less waste (–70%), more precision.

### **Digital Tools (BIM)**

BIM improves planning, avoids errors, supports sustainability goals.

### **Sustainability Pays Off**

Return on investment faster (~25% vs. 15% in traditional).

### **Train for the Future**

Training includes BIM, modular systems, and inclusive programs.



Co-funded by  
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