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CASE STUDY

This best practice highlights how “Laterlite S.p.a.” is advancing sustainability by implementing green technologies.

Through innovative, eco-friendly solutions, “Laterlite S.p.a.” reduces environmental impact and sets a precedent for sustainable practices in construction.



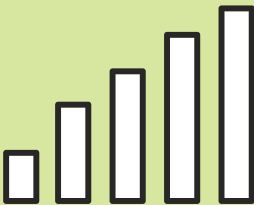
Introduction of the company and its sustainability- related goals

Green Technology and Materials Used



Environmental benefits

Economic and Social Impact



Interviews & lessons learnt

Stabilimenti
produttivi
e depositi.



Laterlite
Le tue soluzioni per costruire
Laterlite S.p.a.

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Introduction to Laterlite and its sustainability- related goals

Laterlite S.p.A., based in Rubbiano (Parma, Italy), is a leading manufacturer of lightweight aggregates and premixed building materials made from expanded clay (Leca®). The company’s **sustainability goals** focus on:

- 

Reducing carbon emissions across all plants
- 

Promoting the circular use of raw materials
- 

Enhancing energy efficiency in both production and product performance
- 

Supporting green building certifications and eco-design principles.

Environmental certifications

Laterlite has obtained the **ANAB-ICEA Certification** for its expanded clay-based products, confirming their compliance with eco-friendly construction standards.

- The certification ensures that:
- Raw materials are extracted with low impact on habitats and natural resources.
 - Products are safe for human health and the environment, with low radioactivity levels.
 - Production processes are energy-efficient and have low emissions.



N° EDIL.2009_002

Ed.05 Rev.00

Allegato I

Prodotti certificati in conformità allo Standard ANAB dei Materiali per la Bioedilizia:
MAT_BIOEDIL.01 Ed.00 Rev.05

Nome Commerciale	Descrizione
LECA -TERMOLITE - LARGES	Argilla espansa per sottofondi, coperture, riempimenti, alleggerimenti ed isolamenti
PAVILECA	Argilla espansa speciale per sottofondi di pavimenti a secco
LECAPIU'	Argilla speciale per sottofondi di pavimenti sensibili all'umidità
LECA TERMOPIU'	Argilla espansa antiriscaldamento per vespai isolati contro terra
AGRILECA	Argilla espansa a pH specifico per giardini pensili, ortofororivismo e idroponica
LECADRAIN	Premiscelato leggero in argilla espansa per strati drenanti di giardini pensili
LECACEM MINI	Premiscelato leggero ed isolante per strati di isolamento ed alleggerimento di sottofondi, pendenze e coperture
LECACEM CLASSIC	Premiscelato leggero ed isolante per strati di isolamento ed alleggerimento di sottofondi
LECACEM MAXI	Premiscelato leggero ed isolante per strati di isolamento ed alleggerimento di sottofondi, riempimenti, strati drenanti e isolanti contro terra
LECAMIX FAST	Massetto premiscelato leggero ed isolante
LECAMIX FACILE	Premiscelato leggero ed isolante per massetti, sottofondi e coperture
LECAMIX FORTE	Massetto premiscelato leggero ed isolante a ritiro ed asciugatura controllati
MASSETTO CentroStorico	Massetto leggero premiscelato per bassi spessori
SOTTOFONDO CentroStorico – Term6	Sottofondo leggero premiscelato
MALTA LECA M10 TERMICO-SISMICA	Malta termoisolante premiscelata per murature portanti armate, ordinarie e di tamponamento
MALTA LECA M5 SUPERTERMICA	Malta termoisolante premiscelata per murature di tamponamento e portanti

Prodotti certificati in conformità allo Standard ANAB dei Materiali per la Bioedilizia:
MAT_BIOEDIL.03 Ed.00 Rev.03

Nome Commerciale	Descrizione
TERMOINTONACO LATERLITE	Malta termoisolante per intonaci interni ed esterni a base di calce idraulica naturale

Data di emissione
1 Gennaio 2025

Data di revisione

Data di scadenza
31 Dicembre 2028



Il Legale Rappresentante
Paolo Fumaca
ICEA - Istituto per la Certificazione Etica ed Ambientale
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Certificato di Conformità

Istituto per la Certificazione
Etica ed Ambientale
certifica che
Laterlite s.p.a.
si è uniformata alle prescrizioni generali e particolari dello
Standard ANAB dei Materiali per la Bioedilizia
(MAT_BIOEDIL.01 Ed.00 Rev.05, MAT_BIOEDIL.03 Ed.00 Rev.03)
Il certificato copre i seguenti prodotti
Prodotti a base di argilla espansa
< Allegato I>

	Indicatori
Risorse minerali	Attività estrattive con un impatto ridotto sugli habitat e sulle risorse naturali. I prodotti ed i loro componenti non sono pericolosi per la salute umana.
Salute umana	I prodotti presentano un Indice di Radioattività (I) inferiore al valore di controllo.
Qualità dell'ecosistema	I prodotti ed i loro componenti non sono pericolosi per l'ambiente. Processo produttivo con ridotto consumo energetico, minori emissioni in atmosfera.

Logo e
Indicazioni di
conformità:

MATERIALI PER LA BIOEDILIZIA
Conformi ai requisiti del
MAT_BIOEDIL.01 Ed.00 Rev.05 e
MAT_BIOEDIL.03 Ed.00 Rev.03


CERTIFICATO PER LA
Data di scadenza
31 Dicembre 2028

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ANAB-ICEA Certification (Bioarchitecture Materials)

The certified product line includes:

- Lightweight aggregates for dry screeds, subfloors, thermal insulation, and drainage layers
- Eco-friendly premixed screeds and mortars
- Natural lime-based thermal plaster for interior and exterior use

This certification supports Laterlite’s commitment to green building and circular economy principles, and is valid from January 1, 2025, to December 31, 2028.

Laterlite’s lightweight expanded clay aggregates offer a range of environmental and performance advantages.

Key highlights include:

- Made from 100% natural clay, expanded at ~1200°C
- No harmful substances, non-toxic, fire-resistant, recyclable
- High insulation performance (thermal and acoustic)
- Produced using energy from waste (exhausted emulsions)
- Internal recycling of dusts, sludges, and water within the production process
- CO₂ emissions reduced through heat recovery and co-incineration strategies
- Durability over 50 years, often matching the lifespan of the building

Technologies and Materials Used

Core Technology: Expanded Clay Aggregate (Leca®)



At the heart of Laterlite's sustainable construction approach is Leca® – Lightweight Expanded Clay Aggregate, a material created from natural clay fired in rotary kilns at ~1200°C. This process forms round granules with:

- a honeycomb-like internal structure for insulation,
- and a hard ceramic outer shell for mechanical strength and durability.

This structure gives the material exceptional thermal, acoustic, and structural performance, with reduced weight and environmental load.

Production Process: Energy-Efficient and Circular

The Leca® production process is designed for low environmental impact, integrating:

- Use of renewable energy (solar photovoltaic systems)
- Heat recovery systems
- Internal recycling of production by-products (dust, sludge, water)
- Use of alternative fuels, such as exhausted emulsions and biomass, replacing fossil fuels

This approach minimizes CO₂ emissions and contributes to circular economy principles, especially in the Rubbiano plant, authorized as a co-incinerator.



Sustainable Binders and Pre-mixed Systems

In addition to aggregates, Laterlite manufactures eco-friendly pre-mixed products using:

- Natural hydraulic lime, pozzolanic cements, and geobinders
- Ready-to-use screeds, mortars, and plasters that are:

* Lightweight

* High-performance

* Compliant with CAM, EPD-certified, and suitable for LEED/BREEAM/Itaca credits

Performance Characteristics

- High load-bearing capacity in lightweight structures
- Excellent sound insulation (especially in dry floors and slabs)
- Fire resistance: Euroclass A1 (non-combustible)
- Low thermal conductivity: improves energy efficiency of buildings
- Durability: +50 years; fully recyclable and reusable after demolition

CentroStorico: Sustainable Innovation for Heritage Renovation



Laterlite actively supports the extensive and vital market of **building renovation and the restoration** of the existing architectural heritage, offering a wide range of certified, high-performance, and sustainable systems designed to ensure both technical excellence and environmental responsibility.



The CentroStorico line from Laterlite translates sustainability principles into real-world solutions for the renovation of the built environment.

It promotes the preservation of existing structures and the responsible use of resources, achieving this through:

- retaining and enhancing the existing building asset, reducing the need for demolition and new construction,
- employing natural binders and lightweight aggregates that are compatible with historic materials,
- minimizing weight, embodied energy, and material consumption,
- improving installation efficiency and reducing on-site environmental impact,
- enhancing building performance, comfort, and durability,
- supporting longer service life and resource efficiency over time.

These sustainability principles are embodied in Laterlite's integrated range of technical systems:

- Static and seismic strengthening of floor slabs with lightweight structural concretes and CentroStorico Connectors (Leca division), achieving up to 40% weight reduction and a significant decrease in environmental impact.
- Lightweight blocks for internal partitions, such as Lecablocco Tramezza Lecalite (Lecasistemi division), combining thermal and acoustic performance with efficient material use.
- Eco-efficient plasters and screeds (Gras Calce and Leca divisions), enhancing energy efficiency, moisture regulation, and durability.
- Advanced structural reinforcement systems — FRCM, CRM, and FRC composites (Ruregold division) — delivering high mechanical strength with minimal material input and low embodied carbon.

Restoration of the Torrione degli Spagnoli, Carpi



Torrione degli Spagnoli di Carpi



Laterlite supported the restoration of the Torrione degli Spagnoli, a historic 15th-century tower in Carpi damaged by the 2012 earthquake, by supplying **Sottofondo CentroStorico Calce**, a lightweight, insulating, and durable pre-mixed floor screed based on natural hydraulic lime (NHL 3.5) and **Leca® expanded clay**.

The material's lightweight nature (700 kg/m^3), thermal insulation ($\lambda = 0.19 \text{ W/mK}$), and rapid drying made it ideal for restoring the curvature of vaulted ceilings, while preserving the historical and artistic integrity of the building. Around 210 m^3 have been applied in vault fillings and insulation layers on floors.

Technologies and Materials Used

Laterlite BIM Library – Overview

01. Manuali e brochure

02. Schede tecniche

03. Certificati

04. Particolari CAD

05. Software di calcolo per il consolidamento dei solai

06. Oggetti BIM (Building Information Modeling)

07. Video

08. Dichiarazioni di prestazione (DOP)

09. Archivio storico DOP

10. Schede di sicurezza

FILTRA PER ...

Prodotti

Applicazioni

Vespai isolati contro terra su platea con Leca TermoPiù



06. OGGETTI BIM (BUILDING INFORMATION MODELING)

BIM Vespai isolati contro terra

Scarica

Terracce e balconi rifacimento del massetto di finitura



06. OGGETTI BIM (BUILDING INFORMATION MODELING)

BIM Terracce e balconi

Scarica

Sottofondi a secco su solai in laterocemento



06. OGGETTI BIM (BUILDING INFORMATION MODELING)

BIM Sottofondi a secco

Scarica

Pavimenti radianti sottofondo biestrato



06. OGGETTI BIM (BUILDING INFORMATION MODELING)

BIM Pavimenti radianti

Scarica

Divisori orizzontali interpiano sottofondo biestrato



06. OGGETTI BIM (BUILDING INFORMATION MODELING)

BIM Divisori orizzontali interpiano

Scarica

Coperture praticabili tetto caldo



06. OGGETTI BIM (BUILDING INFORMATION MODELING)

BIM Coperture praticabili

Scarica

Laterlite provides a complete BIM library to support designers, contractors and BIM managers in modelling lightweight screeds, blocks and geotechnical solutions.

All objects are parametric, easy to place and optimised for use in large federated models.

Each family includes embedded technical data such as density, thermal and acoustic performance, mechanical properties and standard layer configurations.

The geometry is intentionally clean and lightweight to ensure smooth workflows without overloading project files.

Uniform naming rules and classification codes simplify coordination and guarantee consistency across disciplines.

The BIM objects enable fast quantity take-off, supporting cost estimation and specification writing directly from the model.

Designers can easily adapt thickness, materials and performance parameters to match project requirements.

Objects integrate seamlessly with structural, architectural and MEP models, ensuring clear intersections and correct visibility settings.

Laterlite BIM content supports every project phase: concept modelling, detailed design, coordination, tender documentation and as-built records.

Available formats include Revit families and accompanying technical documents.

The library helps maintain accurate digital models throughout the building lifecycle, facilitating maintenance and future interventions.

Screenshots of the BIM library page, Revit object previews and parameter windows are recommended as supporting images.

Environmental benefits

Sustainable production and resource efficiency

Laterlite adopts **environmentally conscious production methods** that promote resource optimization and emission reduction. Across its factories, fossil fuels have been replaced , while a significant share of electrical energy is sourced from solar photovoltaics or self-generated power.

Continuous investment in production optimization ensures no emissions into soil or water, and maintains very low atmospheric emissions, supported by advanced filtration and waste recovery systems.



Environmental benefits



Energy Use

Lowered via photovoltaics, plus heat recovery in production



GHG Emissions

Minimized by low-carbon fuels, efficient kilns, and process optimization



Water & Soil Safety

Zero discharge of pollutants; fully contained wastewater and dust recycling (44.000 mc virgin water, 80.000 mc reuse water)



Circular Material Use

Leca® is recyclable, modular, with long durability and low life-cycle environmental impact



Thermo-Acoustic Comfort

Enhances building energy efficiency and indoor air quality

- The use of alternative fuels, combined with heat recovery systems, significantly reduces CO₂ emissions per unit of production.
- Solar photovoltaic installations in multiple sites further cut primary energy demand, contributing to a lower carbon footprint

- Thermal inertia of Leca® reduces heating/cooling demand in buildings, stabilizing internal temperatures and lowering HVAC energy use over time.
- Its porosity and breathability help regulate indoor humidity and air quality by allowing vapor diffusion, improving occupant comfort naturally.
- As a lightweight, durable, recyclable material with high reuse potential, Leca® supports circular economy principles and minimizes waste at end-of-life stages.



Validated LEED Contributions & Regulatory Compliance

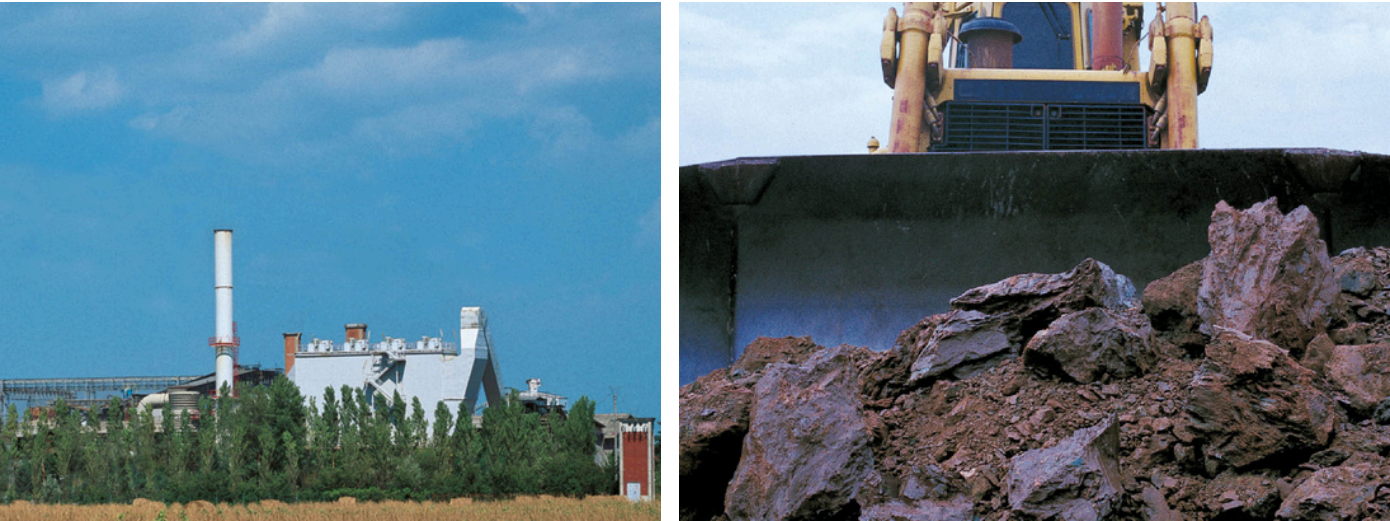
- Laterlite's full product line supports LEED certification credits, a recognition from the Green Building Council Italia, of which the company is a member since 2013
- All relevant products also comply with CAM, EPD, and ANAB-ICEA standards (covered in previous sections).

Traditional Concrete vs Lightweight Concrete (with Expanded Clay Aggregates)

Feature	Traditional Concrete (Normal-Weight)	Lightweight Concrete (with Expanded Clay Aggregates)
Density / Dead Load	Typically around 2,300-2,500 kg/m³ (or ~145-155 lb / ft³) in many cases. (For Construction Pros)	Reduced density: e.g., structural lightweight mixes can be 25-35 % lighter (density maybe ~1,400-1,800 kg/m³) when using lightweight aggregates such as expanded clay. (laterlite.it)
Structural Implications	Higher dead load → larger foundations, more structural material (cement, steel) may be needed.	Lower dead load allows smaller structural members, thinner slabs, reduced foundation size and often less reinforcing steel. (For Construction Pros)
Thermal / Insulation Performance	Standard concrete has higher thermal conductivity, less insulating capacity.	Using expanded clay aggregates gives improved insulating properties (lower thermal conductivity), good for energy performance. (laterlite.it)
Durability / Performance	Well-proven performance, but heavier mass, more material, more embodied energy.	Lightweight concrete can achieve comparable performance (when designed properly) and offers additional benefits: improved internal curing, lower micro-cracking, better durability in some cases. (For Construction Pros)
Sustainability / Material Efficiency	More material per unit structural area; higher transport loads, higher embodied carbon.	Less material for same functional area, lighter transport loads, possibility to reduce other structural materials (cement, reinforcement) which contributes to lower environmental footprint. (For Construction Pros)
Trade-offs / Considerations	Widely used, familiar, predictable in mix and performance.	Needs careful mix design: lightweight aggregates are often more porous, may absorb water, can have somewhat lower compressive strength if not optimized. (SciELO)

Economic and Social Impact

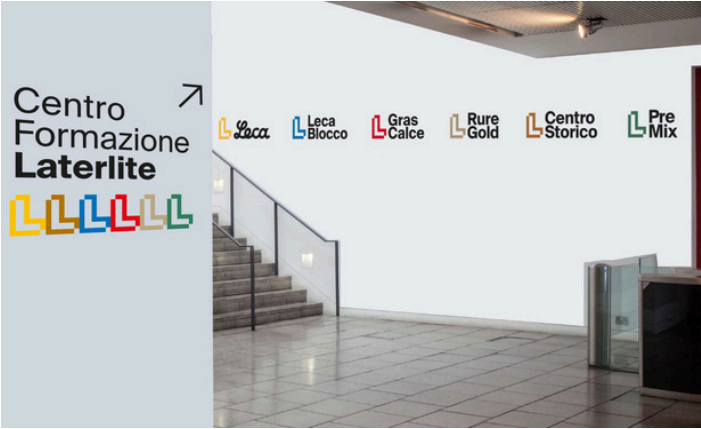
Energy Transition and Operational Savings



- Laterlite significantly reduces operating costs through:
- On-site solar photovoltaic installations, used to power production plants and reduce dependency on grid energy.
 - Efficient production processes (e.g. heat recovery, biomass fuel), which yield lower energy consumption and contribute to Cost of Goods Sold reductions.

Together, these technologies strengthen the company’s economic sustainability by lowering long-term operational expenditure and improving profitability while reinforcing environmental performance.

Local Economic Contribution and Employment



Skills Development and Training

- Laterlite invests in training professionals—engineers, contractors, and architects—on the use of low-impact materials (e.g. Leca®) and sustainable construction techniques.
- This ensures knowledge transfer and increases the capacity of the local construction industry to adopt green building practices aligned with CAM, LEED, BREEAM, and Itaca standards.



Economic Benefits for the Construction Ecosystem

- Laterlite’s lightweight materials and ready-mix products deliver:
- Lower transport and structural costs due to reduced weight of materials.
 - Faster installation times on-site, improving productivity and reducing labor costs.
 - These translate into competitive pricing and value gains for general contractors, developers, and end-users.

Do you want to learn more directly from a Laterlite representative?

Watch the interview [here](#)!



Lessons Learnt

The Hestia project demonstrated how sustainable building materials can be effectively integrated into real-world construction without compromising structural quality or performance.

Laterlite's lightweight solutions proved to be versatile, cost-effective, and environmentally beneficial, especially when paired with existing timber or concrete structures.

The use of expanded clay aggregate (Leca®) and compatible screed systems showed that:

- Durability and thermal performance can be improved without increasing weight or complexity.
- Installation processes are simplified, reducing construction time and waste.
- Green certifications (LEED, CAM) are achievable using standard Laterlite systems.

Moreover, the project highlighted the value of local production and technical training, which facilitated a smoother deployment and stronger stakeholder engagement.

Key takeaways

- Eco-friendly materials can support structural and energy performance simultaneously.
- Lightweight systems reduce not only transport and structural costs, but also the project's environmental footprint.
- Success depends on early integration of sustainability goals into design and construction planning.



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