



Our contribution
to a sustainable
habitat



Safe
& forever
circular

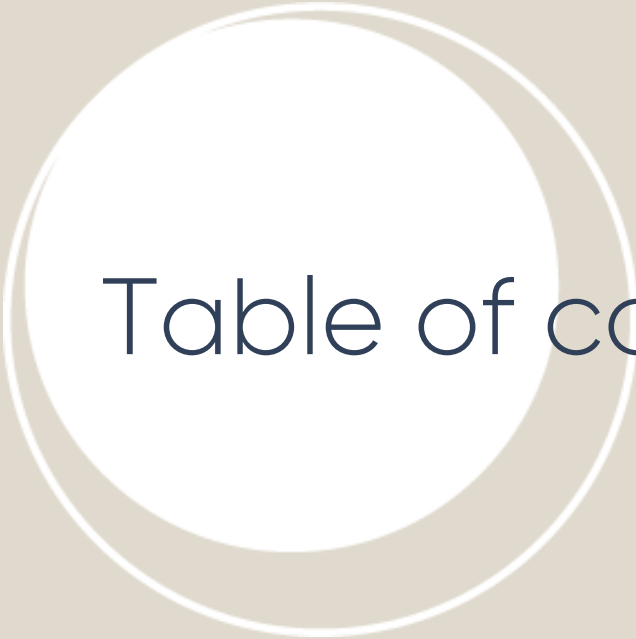


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The construction industry's impact on the environment



Buildings have a huge impact on the environment: today it represents a third of energy consumption and GHG (Greenhouse Gas) emissions.

This is not only true for systems using energy during operational use (e.g. heating and cooling) but also for all materials throughout every stage of the life cycle including deconstruction of the building. In summary, if we want to reach the Paris Agreement of 2°C: > We need to optimize energy efficiency > To switch from fossil to renewable energy supply > And finally reduce the embodied carbon of the construction materials.

33%

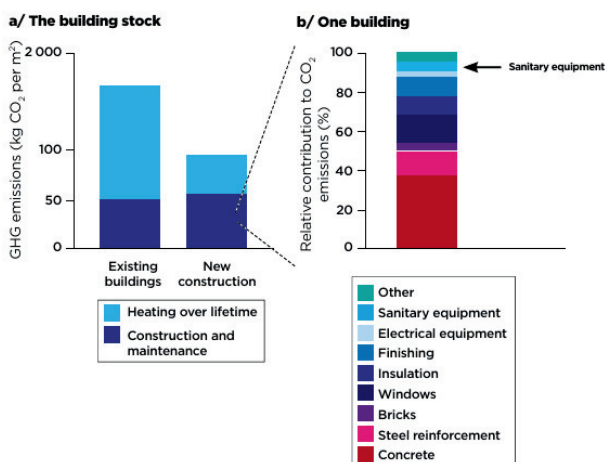
of energy consumption

39%

Of greenhouse gas emissions

CO2 contribution at building level

To have a better idea of how a building impacts the environment, we can have a look at its CO2 emissions. Two recent studies from 2020 have made interesting analyses, explaining the contribution of each part of the construction.



1st study

It is highlighted that the most contributive part is the structure made in concrete, among the most widely used materials: it represents about 40% of the CO₂ emissions for new construction. Owing to their large-scale use, production of cement and concrete results in substantial emission of greenhouse gases and places strain on the availability of natural resources, such as water. At the same time, calculations show that sanitary equipment (including drainage systems) represents a relative contribution of about 5%.

The challenge: to reduce the carbon emissions over the WHOLE BUILDINGS LIFE CYCLE



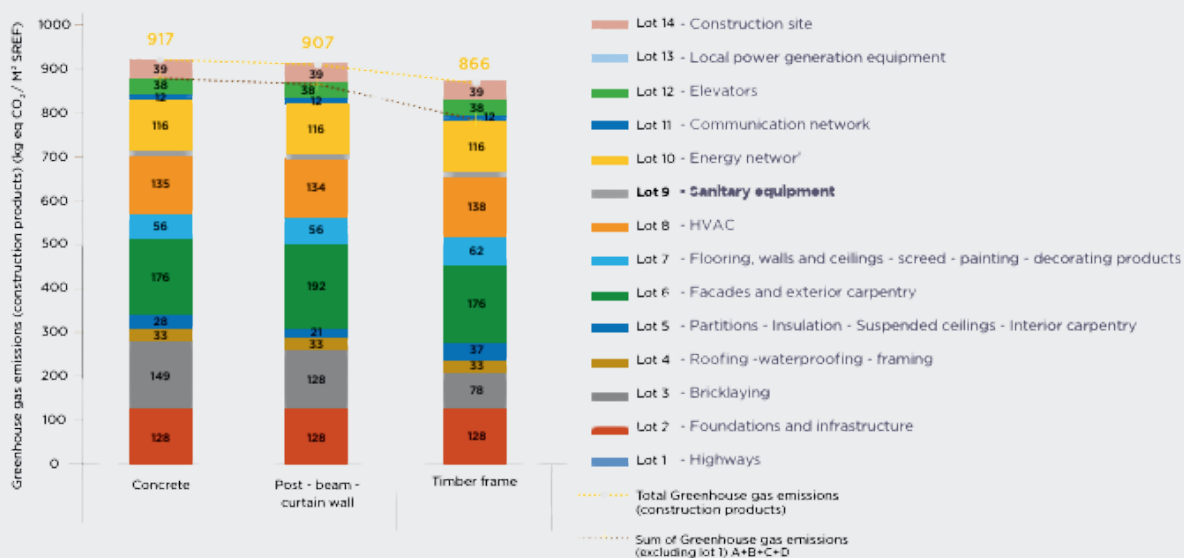


2nd study

Life cycle analysis, commissioned by several building trade associations, made in France for a 4 storey office building (ca. 4000m²) in concrete, with external insulation:

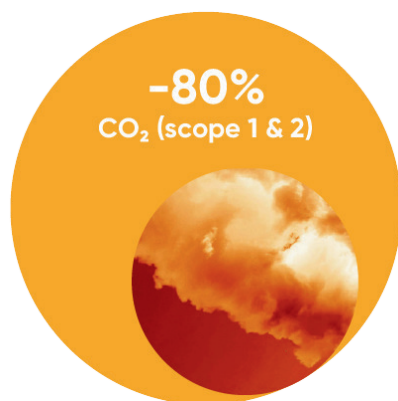
- Results: contribution between 30% and 50% for the concrete (foundation and structure).
- Sanitary equipment (calculated with standard values which are disadvantageous compared to verified values from manufacturers) represents less than 5% of the total emissions.

Greenhouse gas emissions (construction products) static in kg eq CO₂ / m² SU (Surface Unit)



Committed to reducing our impact on the environment

Our 2030 objectives vs 2017



Some key actions to achieve our targets:

- **Innovation:** The Agilium® range launched in 2023 enable a reduction of CO₂ emissions by 30% compared with the standard range
- **Production:** An electric power furnace is in project for 2028-2030 at our Bayard-sur-Marne plant
- **Purchasing:** Maintain our green electricity supply in our Telford plant where there is already an electric furnace

AT THE HEART OF THE CIRCULAR ECONOMY, PAM BUILDING'S DNA IS IN THE RECYCLING OF WASTE METAL

Our products are made up of 99% recycled materials (mostly ferrous metal scrap), which can be recycled over and over again.

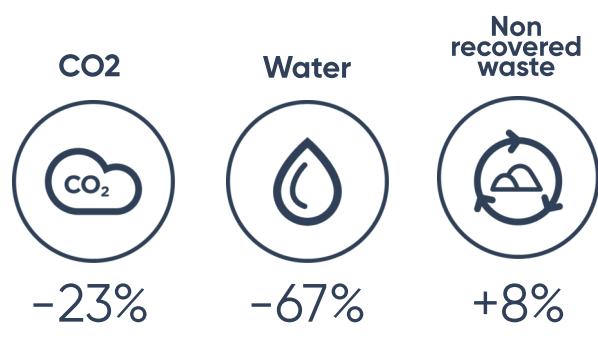
Durable, reliable and long-lasting, cast iron has a bright future ahead of it as a simple and sustainable system approach that gives your building project an intelligent reuse of materials. In a year, we recycle the equivalent of 18 000 cars on average.



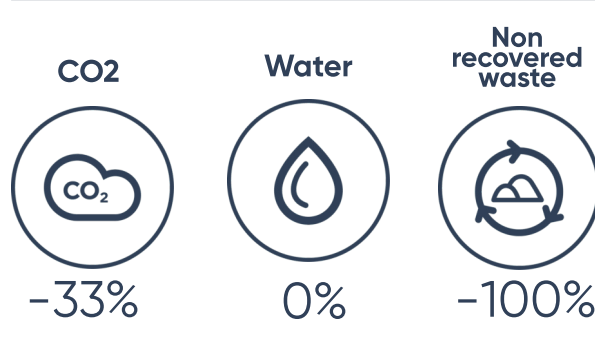
Preserving resources in our plants

CO2 – Water – Waste Management

Bayard-sur-Marne



Telford



Focus on Water The Recovery Basin

The project involved waterproofing the lagoons and water recovery basins, installing a pipe to transfer water to the casting machines, and evacuating soil to an approved center.

This initiative both **reduces site water consumption by up to 50%** and helps preserve the environment and groundwater quality.

Focus on Waste

In 2024, **99%** of our waste was recovered, reflecting our strong commitment to circular economy principles. Compared to 2017, **we have already reduced our total waste by 50%**. We continue to improve our waste management by collaborating with local organizations such as Valobat, aiming for even greater reductions in the years to come.

Focus on CO2 100% renewable power sourcing

Our plant in Telford made the choice to contract with the supplier SmartestEnergy in 2015, procuring us **100% renewable electricity** for our electric furnace.



Our management system for Quality, Energy, and Environment

Plants in the metallurgical industry call for greater vigilance and strict compliance with instructions, as the risks of serious accidents are particularly high.

The comprehensive approach adopted led us to obtain first the ISO 14001 and 50001 certifications for our plants but also BES 6001 for Telford's site.



ISO 14001 addresses environmental management, guiding organizations to minimize their environmental impact, comply with regulations, and continually improve their environmental performance³.



ISO 50001 targets energy management, providing a framework for organizations to enhance energy efficiency, reduce consumption, and lower costs through a systematic approach



BES 6001 is a certification for responsible sourcing of construction products. It provides a framework for managing the entire supply chain, from raw material extraction to final product delivery. The standard focuses on three main areas: organizational management, supply chain management, and sustainable development

Safe Products

Understanding REACH

A European Regulation for Chemical Safety

REACH (Registration, Evaluation, Authorization, and Restriction of Chemicals) is a European regulation (EC 1907/2006) aimed at protecting human health and the environment by identifying the properties of chemical substances.

It involves four processes: registration, evaluation, authorization, and restriction.

Manufacturers and importers must gather and register information on their chemicals in a central database at the European Chemicals Agency (ECHA). If risks cannot be managed, authorities can restrict substance use. The regulation also promotes substituting dangerous chemicals with safer alternatives when possible. Companies must identify and manage risks associated with their substances in the EU.



None of the substances in the Authorization List, Restriction List and Substance of Very High Concern (SVHC) Candidate List are intentionally included in pipes in amounts greater than 1000 ppm w/w.

Ask us our REACH declarations for our products

Life Cycle Assessment

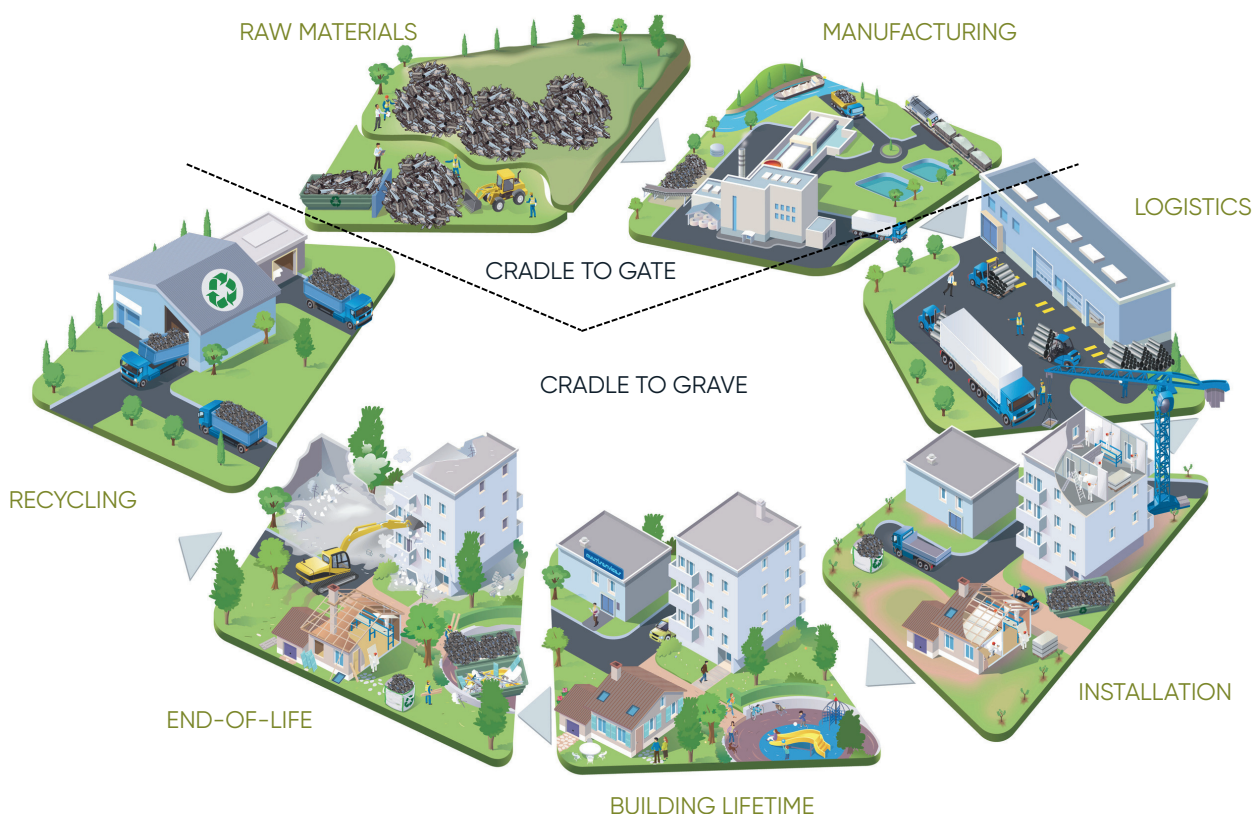
A rigorous tool to assess the environmental impacts of our products

Understanding the environmental performances of construction products is a growing expectation for professionals in the building chain.

We strongly believe that Life Cycle Assessment is the most reliable tool available to assess the green credentials of construction products and enables companies to communicate credible, fact-based information about their products to consumers. It is also a powerful tool for enhancing the environmental features of our products.

LCA is a methodology based on specific standards ISO 14040 and ISO 14044:

- Multi-criteria tool: consumption of natural resources, air, ground and water emissions, waste generation, warming potential, ...
- Multi-step tool: "cradle to gate" or "cradle to grave".



At Pam Building, we have chosen the cradle to grave approach :

It defines the system boundaries of the study. The assessment starts from the extraction of raw material and continues through to end-of-life including all the intermediary stages: Transportation of raw material to the plant, Manufacturing process, Distribution, Installation and use.

Environmental Product Declaration

Pam Building is the 1st EPD provider for DRAINAGE SYSTEMS in CAST IRON.

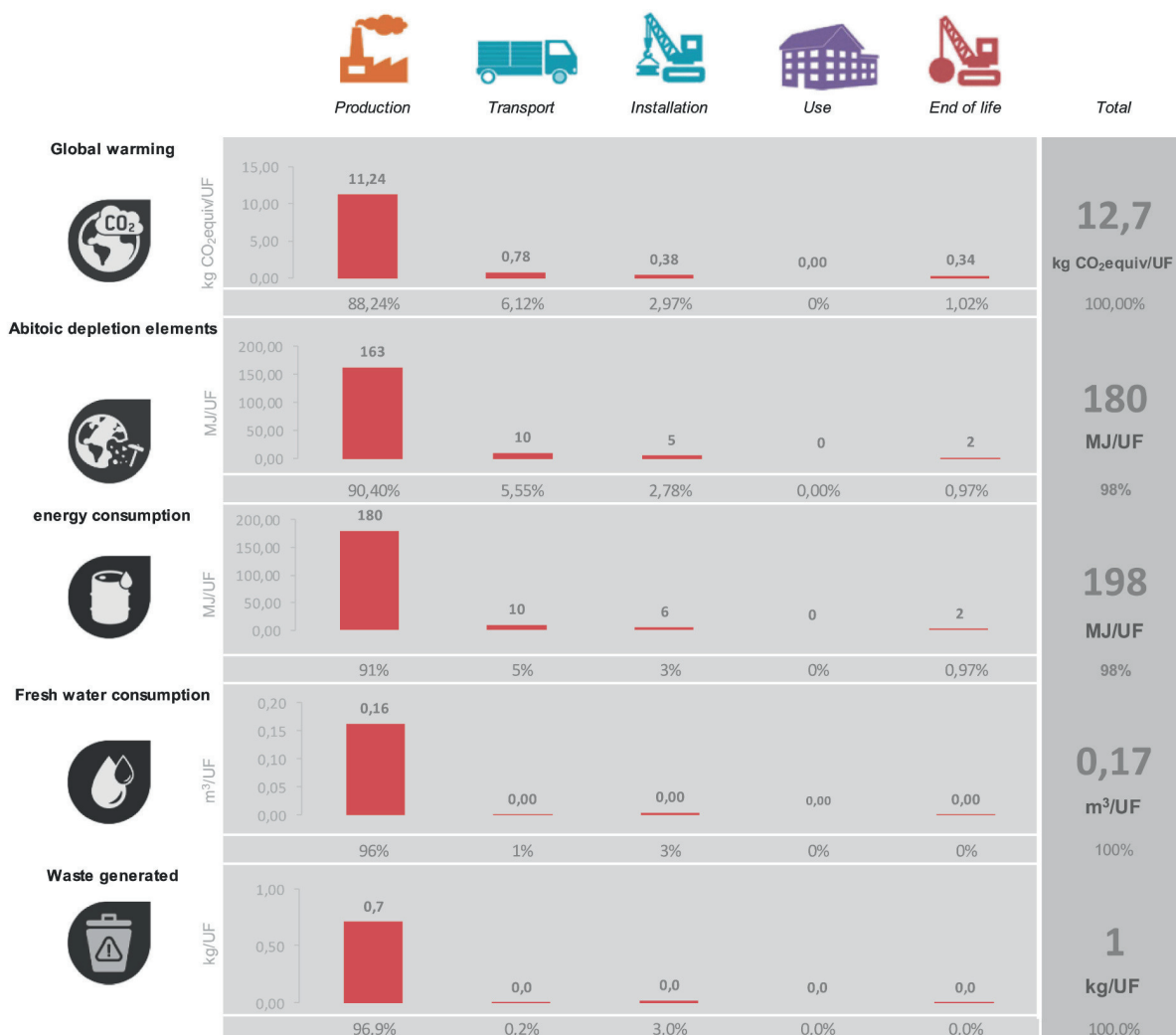
The results of an LCA are presented as an **Environmental Product Declaration (EPD)**, based on ISO 25930 and EN 15804 standards, and administered by local program operators.

Verified by an independent third party, EPDs ensure quality and reliability. We are committed to verified EPDs and have produced them for our **S and Plus ranges**, available on the Environdec platform: www.environdec.com.

Overview of environmental footprint of the functional unit

1 m of S pipe system for collection and drainage of waste water, sewage and rainwater in buildings, based on 70 years of lifetime.

The complete EPD is available on the international Environdec platform (registration number S-P-02013).



Circular Economy

Recyclability, a cast iron asset

The preservation of natural resources is a major societal challenge, especially for the construction sector, which consumes significant raw materials and energy. Pam Building drainage systems offer a responsible and sustainable choice, respecting both natural resources and people.



In a year, we recycle the equivalent of **18,000 cars** on average.

Recycling Cast Iron

Pam Building's molten iron is produced by recycling cast iron and ferrous products. Unlike plastics, **it can be completely and systematically recycled** at the end of its life. Our drainage solutions maintain their properties even after recycling.

Our products are made up of 99% recycled materials (mostly ferrous metal scrap), which can be recycled over and over again.



First-Class Product Life Cycle

Our products boast environmentally-friendly logistics, long-lasting functionality (**up to 70 years** without compromising mechanical properties), low maintenance costs, and commercially beneficial recycling.

Cast iron pipe systems are designed with modular, removable components. Their mechanical assemblies are reversible, allowing for changes and reuse, reducing waste.



Efficient Recycling Channel

We have an organized recycling channel with a collector network and recovery stream. **We source scrap locally** (<125 km from the plant) to reduce economic and transport costs. Following ISO 14021:1999 and LEED V4 criteria, we provide recycled content declarations for our products.

Our solutions contribute to green building labels

The building sector has significant potential to preserve the environment and enhance life comfort and wellbeing. Sustainable buildings address the three sustainability pillars (People, Planet, Profit) throughout their lifecycle. They improve comfort, minimize resource consumption, reduce environmental footprints, and enhance financial viability.

Buildings and construction have the largest share in global resource use and pollution emissions. Demand for sustainable buildings is rising, evidenced by the growth of building **ecolabels** worldwide. In 2023, **7.23 million square meters** were certified by GBC members.

Standards and regulations are increasingly adopting a **lifecycle approach**, considering the entire building lifecycle from raw material extraction to deconstruction and recycling. The building industry is moving towards more sustainable construction, with many professionals anticipating a significant portion of their future work to be "green." Organizations like the World Green Building Council (WGBC) are accelerating this shift globally, with over 100 countries involved.

BREEAM®

HQE®
THE WAY TO PROGRESS



WORLD GREEN BUILDING COUNCIL



LEED® Certification

Leadership in Energy and Environmental Design

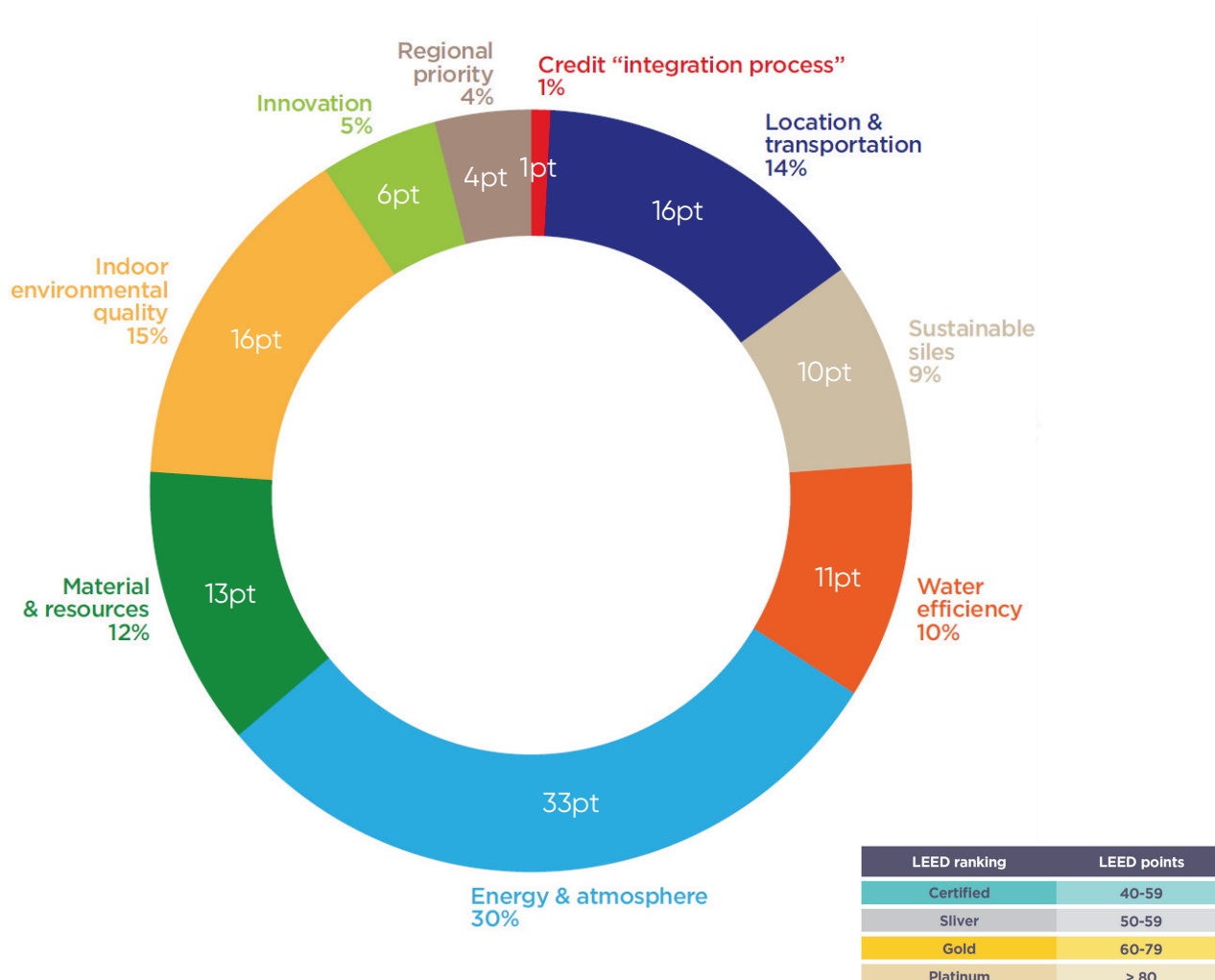


Leadership in Energy and Environmental Design (LEED) is an American green building certification program.

To be LEED certified, building projects have to meet certain prerequisites and earn points to achieve different levels of certification. The prerequisites and credits differ for each rating system, depending on the type of building (office, school, home ...) and the type of project (new, renovation...).

LEED® certification evaluates the entire lifecycle of a green building, covering eight issues: **Integrative Process, Location and Transportation, Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Innovation, and Regional Priority.**

LEED points are awarded on a 110-point scale, with a minimum of 40 points required for certification. Higher levels of compliance lead to different rankings.



LEED® Certification

Pam Building contribution to LEED certification - V4.1 - BD + C (Building Design & construction)



LEED CATEGORIES		UP TO		CONTRIBUTION
INTEGRATIVE PROCESS	Integrative process	1 point	☐	1- We developed a digital tool to support the design phase of the project and deliver a pre-study. 2- BIM Object for our products are at your disposal.
SUSTAINABLE SITES	Heat Island Reduction	2 points	☐	Option 1 - High-reflectance roof and vegetated roof: Our systems are compatible with green roof solutions and roofs using high-reflectance materials.
WATER EFFICIENCY	Outdoor water use reduction	3 points	☐	Option 2 - Reduced irrigation: Pam Building's systems help to harvest rainwater thanks to its pipes for rainwater application. It contributes to the option by providing an alternative water source.
	Indoor water use reduction	7 points	☐	Thanks to its systems compatible with water tanks, we could contribute to reuse reclaimed water.
ENERGY	Indoor water use reduction	Required	☒	Contribution for ELIXAIR product for this criteria: the Pam Building's EAHX contributes to the energy performance of the building for summer and winter comfort by limiting the energy needs for air conditioning and heating in the building.
	Optimize energy performance	18 points	☒	Contribution for ELIXAIR product for this criteria: Earth to air heat exchanger system permits to heat or cool air in buildings. It's a passive system and doesn't need any energy to operate. It also helps to reduce the energy needs for air conditioning and heating.
MATERIALS & RESOURCES	Construction and demolition waste management planning	Required	☒	We are committed to circular economy. It offers pipes that are 100% recyclable, which contributes to divert waste on construction or deconstruction jobsites. It's not only in theory as the recycling channel for cast iron is existing already on the market. We also have the possibility to recover pipes for reusing. To close the loop, our pipes are produced with 99% recycled content. This asset is more related to the following criteria: Building product disclosure and optimization - Sourcing or raw materials criteria.
	Building life-cycle impact reduction	5 points	☐	Option 4 - We performed 2 Life Cycle Assessments (LCAs) cradle-to-grave for Global market covering S and I Plus ranges, which help to contribute to the option 4 'Whole-building life-cycle assessment'.
	Building product disclosure and optimization Environmental Product Declarations	1 point	☐	Option 1 - Pam Building is the first cast-iron building pipe manufacturer to perform Life Cycle Assessments (LCAs), and provide a third party verified, cradle-to-grave, compliant with EN 15804 and ISO 14025 EPD. It's product specific Type III EPD and covers S and Plus range. It will help you to gather 20 different EPD from different manufacturers.
	Building product disclosure and optimization - Sourcing of raw materials	1 point	☒	Our products are recycled at the end of their life through the cast iron recycled channel. Material reuse - Due to a long-lasting performance of our products, material reuse is theoretically possible. Recycled content - Recycled cast-iron is considered to be a secondary aggregate and pipes are made of 99% of recycled cast iron, all from post-consumer supply. Sourcing - Raw material sourcing is not further than 160 km (100 miles).
	Building product disclosure and optimization - Material ingredients	1 point	☐	Option 1 - Material Ingredient Reporting: Pam Building has the internal knowledge to disclose an HPD on-demand, we rather contribute to the option 2. Option 2 - Material Ingredient Optimization International Alternative Compliance Path - REACH Optimization: None of the substances in the Authorization List-Annex XIV, Restriction List-Annex XVII and Substance of Very High Concern (SVHC) Candidate List are intentionally included in our products in amounts greater than 1000 ppm w/w.
	Construction and demolition waste management	2 points	☐	Option 1 - When there are some construction or deconstruction waste on jobsite, it's directly recycled by the recycling channel that already exist for cast iron. It's part of the diverted waste targeted in this criteria. Option 2 - Waste generation on jobsite are close to zero - 5%. It's part of a onsite waste minimization design strategy.
INDOOR ENVIRONMENTAL QUALITY	Acoustic performance	Acoustic Performance	☒	Acoustic tests prove that our drainage solutions in cast iron attenuate noises happening in buildings thanks to its exceptional acoustic performance. These tests allow to enter the ranges of the prerequisites of the table listed in the criteria.
INNOVATION	Innovation	5 points	☒	The pre-assembly workshop in UK helps to minimize the work runtimes onsite and ease the installation and handling.

BREEAM® Certification

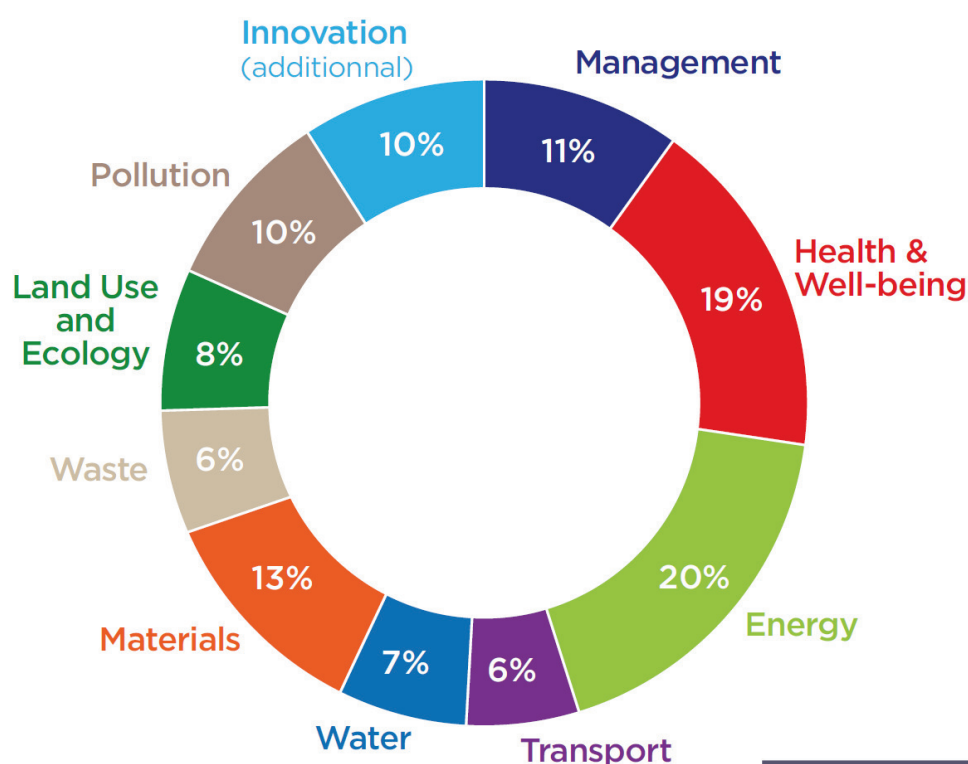
Building Research Establishment's Environmental Assessment Method



BREEAM® is the world's longest-established method for assessing, rating, and certifying building sustainability. It is an international standard that can be locally adapted. **The assessment evaluates procurement, design, construction, and operation** against performance benchmarks across various categories, including energy, ecology, and health & wellbeing.

Developments score points (credits) within each category, determining their final rating.

BREEAM® International New Construction 2016 includes 10 assessment categories: **management, health & wellbeing, energy, transport, water, materials, waste, land use & ecology, pollution, and innovation**. Projects can achieve up to 140 credits, with innovation offering up to 10 bonus credits. A minimum of 30% is required for certification, with higher levels leading to different rankings (Pass, Good, Very Good, Excellent, Outstanding).



BREEAM rating	% Score
Unclassified	< 30 %
Pass	≥ 30 %
Good	≥ 45 %
Very good	≥ 55 %
Excellent	≥ 70 %
Outstanding	≥ 85 %

BREEAM® Certification

Pam Building contribution to BREEAM® certification – 2016 International New Construction



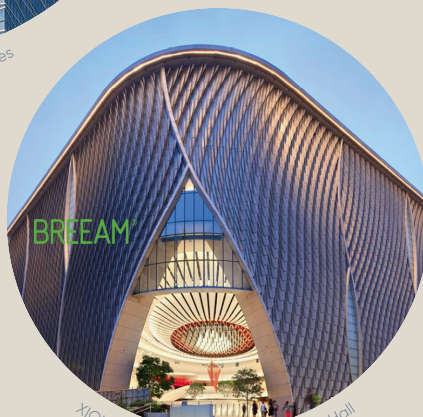
CATEGORIES		UP TO		CONTRIBUTION	
HEALTH & WELL-BEING	HEA05	Acoustic Performance	5 credits	●	Acoustic tests prove that Pam Building's solutions attenuate noises happening in buildings thanks to its exceptional acoustic performance. These tests allow to enter the ranges of the prerequisites of the table listed in the criteria.
	ENE01	Reduction of energy use and carbon emissions	15 credits	●	Contribution for ELIXAIR product for this criteria: our EAHX contributes to the energy performance of the building for summer and winter comfort by limiting the energy needs for air conditioning and heating in the building. It helps to reduce operational energy demand, primary energy consumption and CO2 emissions.
ENERGY	ENE04	Low carbon design	3 credits	●	Contribution for ELIXAIR product for this criteria: EAHX system offers by Pam Building permits to heat or cool air in buildings. It's a passive system and doesn't need any energy to operate. It helps to reduce the overall building energy demand.
	MAT01	Life cycle impacts	6 credits	●	Pam Building is the first cast iron building pipe manufacturer to perform Life Cycle Assessments (LCAs), and provide a third party verified, cradle-to-grave, complied with EN 15804 and ISO 14025 EPD. It's product specific Type III EPD and covers S and Plus ranges. Its will provide you LCA indicators of one of the building elements. You could complete an additional credit by providing our EPD.
MATERIALS	MAT03	Responsible sourcing of construction products	4 credits	○	Responsible sourcing of construction products: 100% of our plants are certified ISO 14001. Telford's plant got also the BES6001. These two schemes are recognised by BREEAM® methodology and will ensure a more responsibly sourced materials.
	MAT06	Material efficiency	1 credit	○	Due to a long-lasting performance of our products, material reuse is theoretically possible. Recycled cast-iron is considered to be a secondary aggregate and pipes are made of 99% of recycled cast iron, all from post-consumer supply. Waste generation for our drainage solutions on jobsite are close to zero, around 5%.
WASTE	WST01	Construction waste management	3 credits	●	In order to contribute to resources efficiency, cast iron waste are recycled waste which help to divert waste from landfill, and not only in theory as the channel already exist.
	WST05	Adaption to climate change	1 credit	○	By delivering solutions compatible for rainwater harvesting, high reflectance and vegetated roofs, Pam Building provides a solution to adapt to climate change.
	POL03	surface water run-off	5 credits	○	Our systems helps to harvest rainwater thanks to its pipes for rainwater application. It contributes to reduce the discharge of rainfall to public sewers, and provide an alternative water source for irrigation
INNOVATION	INN01	Innovation	10 credits	●	The pre-assembly workshop in UK helps to minimize the work runtimes onsite and ease the installation and handling.



Saint-Gobain Tower – France Offices



Tanjong Pagar Center – (Guoco Tower) Singapore – Offices



XiQU Center – Hong Kong | Concert Hall



42 Maslak – Turkey | Offices



Palladium Tower – Turkey | Offices + shopping mall



Akasya – Turkey | Residence + shopping mall

& OTHER REFERENCES

FRANCE & UK

HIGH RISE BUILDING

- ERIA Tower, France ,BREEAM®/HQE
- Trinity Tower, France, HQE exceptionnel/BREEAM® excellent
- Victoria Square redevelopment, UK, BREEAM® very good

NON RESIDENTIAL

- HCA Hospital Birmingham, UK, BREEAM® very good
- National Children's hospital Dublin, Ireland, BREEAM® excellent
- 21 Moorfields London, UK, BREEAM® outstanding
- Origine building, France, E+C-/BREEAM®/LEED®/ WELL

TURKEY

HIGH RISE BUILDING

- Nidakule Goztepe, Istanbul, LEED® Gold
- Prokon-Ekon Merkez Binasi, Ankara, LEED® Platinum
- Is GYO & Sisecam Tuzla, Istanbul, LEED® Gold

RESIDENTIAL

- Soyak Soho, Istanbul, LEED® Gold

NON RESIDENTIAL

- Kartal Lutfi Kirdar Hastanesi, Istanbul, LEED® Gold
- Emaar Square AVM, Istanbul, LEED® Gold
- Piri Resi Universitesi Tuzla, Istanbul, BREEAM® Very Good

APAC

HIGH RISE BUILDING

- Thamrin 9 Tower 1, Indonesia, Green Mark Platinum
- Grosvenor Hong-Kong, LEED® Gold Renovation

NON RESIDENTIAL

- The Jewel Changi, Singapore, Green Mark Gold Plus
- Ocean Park Marriott Hotel, Hong-Kong, BREEAM® Plus Gold



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