

Our contribution to Green Building certificates - BREEAM



thyssenkrupp



The international market for green construction projects is growing steadily, together with an increasing trend for green building rating systems.

The reduction in energy consumption (linked to greenhouse gas emissions), the business benefits (including about 8% savings in operating costs and 7% increase in building asset value) and the health and well-being of occupants, are the most important reasons behind the sustainability-building certification trend.

Our commitment is to help make cities the best places to live with innovative and sustainable passenger transportation systems. For us, sustainability is not a buzzword limited to energy efficiency. It is holistic, encompassing a “zero accidents” goal for our employees and subcontractors, as well as building an equal opportunity culture in our industry.

Our approach builds on five essentials:

- **Safety:** This is the foundation for all our mobility solutions, as well as every action undertaken by our employees and subcontractors
- **Society:** Improving the quality of life of people around the world through our products and services

- **Employees:** We strive to empower our people in an environment of mutual trust and respect
- **Partners:** Whether with customers or suppliers – trust, transparency, mutual respect and shared benefits are the cornerstones of our relationships
- **Climate:** How can we reduce the carbon footprint along our supply chain? How can our products contribute to making buildings and cities more energy efficient? These are the questions that drive our self-reflection and answer the essential: How we can leave the world a better place?



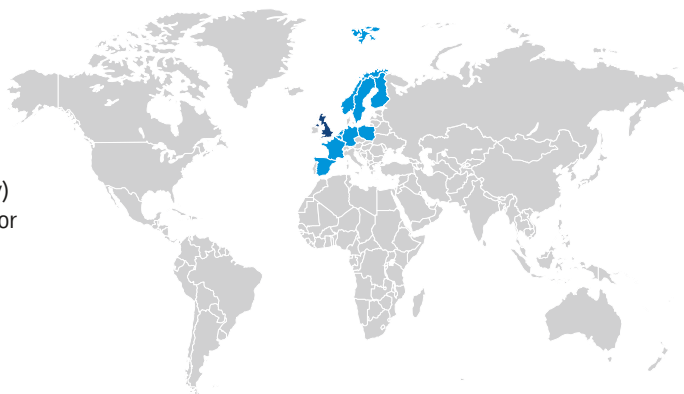
Our promise: Our elevators, escalators and moving walks contribute to greener and more sustainable buildings and help to achieve better performance in different green building rating systems.

The following pages serve as a guide to show you which categories our products contribute to earning points in, within the framework of BREEAM certification.

What is BREEAM?

First launched in the UK by BRE in 1990, BREEAM (Building Research Establishment Environmental Assessment Methodology) is one of the world's leading sustainability assessment methods for masterplanning projects, infrastructure and buildings.

It recognizes and reflects the value in higher performing assets across the built environment life cycle, from design and construction through to operation and refurbishment.



■ Top 1 ■ Top 10

Over 22,000 certified assessments* in more than 90 countries.

95% of BREEAM certified projects are in Europe.

* Data source: <https://tools.breeam.com/projects/explore/index.jsp>

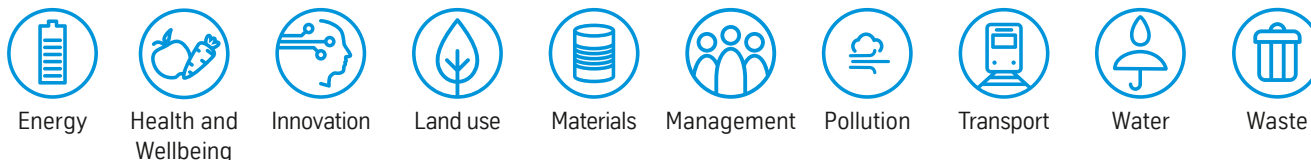
BREEAM's standards.

According to the development type or life cycle stage, there are different technical standards for a proper assessment:

- **Communities:** For masterplanning projects
- **Infrastructure:** For civil engineering & public realm
- **New construction:** For homes and commercial buildings
- **In-Use:** For commercial buildings
- **Refurbishment & Fit-Out:** For homes and commercial buildings

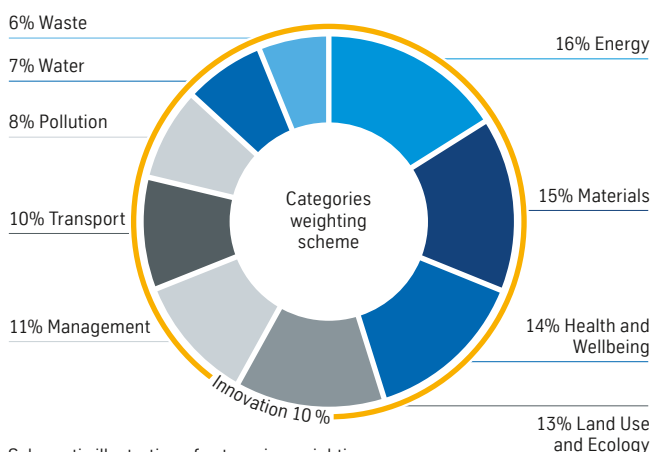
BREEAM's categories and performance rating.

BREEAM measures sustainable value in a series of categories:



The category score is calculated according to the number of credits achieved and its category weighting. Once the development has been fully assessed, the final performance rating is determined by the sum of the weighted category scores.

A certified rating reflects the performance achieved by a project and its stakeholders, as measured against the standard and its benchmarks. The BREEAM ratings range from Unclassified to Pass, Good, Very Good, Excellent to Outstanding and are reflected in a series of stars on the BREEAM certificate.



Schematic illustration of categories weighting according to BREEAM UK New Construction 2018

Unclassified:	Below 30 from a total of 109 credits
Pass:	30 - 44 credits
Good:	45 - 54 credits
Very Good:	55 - 69 credits
Excellent:	70 - 84 credits
Outstanding:	over 85 credits



You can find further information here: www.breeam.com

BREEAM credits for elevators and escalators.

The content in this document is based on the BREEAM New Construction International Scheme 2016.

Additional versions are available for the UK.

Energy consumption.

(one credit)



Category	Assessment criteria and definition	Our product's contribution
Energy Ene 06: energy-efficient transportation systems	Energy consumption One credit is achieved when all evaluation criteria (a, b and c) are met for the elevators, escalators or moving walks (transport types) specified in the project:	Our project team will support you with the analysis and documentation required for the energy consumption assessment criteria.
	a) An analysis of the transport demand and usage patterns for the building has been carried out to determine the optimum number and size of lifts, escalators or moving walks.	In addition to the specifications defined for the elevators in the building, our project team will reevaluate the building traffic needs and develop a thorough traffic analysis to advise you on the optimal mobility solutions.
	b) The energy consumption has been estimated in accordance with ISO/DIS 25745 energy performance of lifts, escalators and moving walks; Part 2: Energy calculation and classification for lifts (elevators) or Part 3: Energy calculation and classification for escalators and moving walks, for one of the following:	We will provide you with an energy consumption comparison of different system configurations (e.g. hydraulic, traction, MRL) or system strategies 'fit for purpose' (offering alternative energy-saving options like standby, sleep mode, destination control systems, etc.) before finally recommending the most suitable and long-term reliable solution for your specific project.
	b.i) at least two types of systems (for each transport type required); OR	
	b.ii) an arrangement of systems (e.g. for lifts, hydraulic, traction, machine room-less lift); OR	
	b.iii) a system strategy which is 'fit for purpose'.	
	c) The use of regenerative drives should only be considered where it produces an energy saving greater than the additional standby energy used to support the drives. Regenerative drives will typically be appropriate for lifts with high travel and high-intensity use.	
	d) The transport system with the lowest energy consumption is specified.	



Energy-efficient features.

(one credit)

Category	Assessment criteria and definition	Our product's contribution
Energy Ene 06: energy-efficient transportation systems	Energy-efficient features - Elevators Once the credit for the energy consumption assessment is achieved, one additional credit can be obtained by specifying (for each elevator), among the following energy-efficient features, the three that maximize energy savings:	Our project team will provide you with a thorough energy calculation comparison to advise you on the three energy-efficient features most suitable for the elevators in your project.
	a) The lifts operate in standby status during off-peak periods.	The standby feature is standard in all thyssenkrupp elevators. If the elevator is idle for a prescribed length of time, the power to the car lighting is switched off. The energy consumption for the controller, inverter, ventilation fan and users displays (car & landing) are also managed under an advanced standby option*.
	b) The lift car lighting and display lighting provide an average lamp efficiency (across all fittings in the car) of >55 lamp lumens/circuit Watt.	Low-voltage LED lighting dramatically reduces energy consumption (up to 80%) without compromising style or visibility. Additionally, LED lights contain no mercury and have a lifespan of up to 10 years. thyssenkrupp elevators features LED technology for cabin, shaft and fixtures lighting to ensure the BREEAM lighting requirements with the minimum power consumption.
	c) The lift uses a drive controller capable of variable speed, variable-voltage, and variable-frequency (VVVF) control of the drive motor.	Our elevator systems include VVVF (Variable Voltage Variable Frequency) drives to provide smooth acceleration and deceleration, thus reducing the peak starting current in comparison with hydraulic and tractions systems. The VVVF drives offer excellent speed control and reduced noise levels.
	d) Where the use of regenerative drives is demonstrated to save energy, they are specified.	We will recommend the regenerative energy drive option in cases where the positive energy-savings impact can be proved along the complete elevator lifespan. We advise checking whether it is possible and permitted to use the recovered energy and discuss whether or not the use of regeneration technology will lead to higher standby consumption. Typical application is for highrise elevators where our state-of-the-art regenerative drives enable the system to work with high efficiency.

*Consult specific conditions for advanced standby options in TWIN

Energy-efficient features.

(one credit)



Category	Assessment criteria and definition	Our product's contribution
Energy Ene 06: energy-efficient transportation systems	Energy-efficient features - Escalators and moving walks Once the credit for the energy consumption assessment is achieved, one additional credit can be obtained by specifying at least one of the following options for each escalator or moving walk:	Our project team will advise you on the most suitable energy efficient features for the escalators in your project.
	<p>a) A load-sensing device that synchronises motor output to passenger demand through a variable speed drive.</p> <p>b) A passenger-sensing device for automated operation (auto walk), so the escalator operates in auto start mode when there is no passenger demand.</p>	<p>Our escalator series features energy control (via a voltage frequency converter) that saves energy by reducing speeds when no passengers are being carried. The speed is controlled by a light barrier in the skirt or a radar sensor. As soon as a passenger walks through the light barrier or the radar sensor, the escalator switches from idling to nominal speed. This solution presents an alternative to conventional intermittent operation.</p> <p>Equipped with a radar sensor seamlessly integrated inside the handrail inlet cover, or an external light barrier that detects approaching passengers and starts the escalator. This ensures that the escalators move into operating speed in time before a user steps on, as required by EN 115.</p> <p>Our escalator series can help to improve your building's carbon footprint by giving you the choice of different operating modes, thereby delivering significant energy savings:</p> <ul style="list-style-type: none"> • Continuous operation (save up to 15%) • Slow speed operation (save up to 60%) • Intermittent operation (save up to 95%) • Slow speed stop operation (save up to 90%) <p>Additionally, other energy-efficient features of our escalators and moving walks include:</p> <ul style="list-style-type: none"> • State-of-the-art LED technology which lasts longer than conventional lighting and is up to 80% more energy-efficient than halogen lighting. • Regenerative drives allow recovery of energy generated when escalators transport loads in a downwards direction. This recovered energy can be fed back either into the building or into the electrical grid, depending on the configuration and local regulations.



Where only either elevators, escalators or moving walks are present, only one credit is available for the energy-efficient features credit. Where both elevators and escalators or moving walks are present, then two credits are available.



Environmental Product Declarations (EPD).

(one credit)

Category	Assessment criteria and definition	Our product's contribution
Materials	<p>Environmental Product Declaration (EPD) One credit can be achieved where a minimum set of products specified are covered by verified EPDs.</p> <p>An EPD is an independently verified environmental label, according to the requirements of ISO 14025.</p>	<p>We are committed to promoting transparency regarding the mobility solution's environmental impact, including energy consumption, potential environmental impact and life cycle results.</p>
	<p>To encourage availability of robust and comparable data on the impacts of construction products by rewarding the specification of products with environmental products declarations (EPDs).</p>	
Mat 01: Life cycle impacts		<p>We achieved the first ever EPD® for an elevator, registered and published in the International EPD® System in 2017. Since then, most of our elevator systems, e.g. synergy and evolution, have obtained an EPD. Our escalators and moving walks can contribute based on their LCA (Life Cycle Assessment) reports, which include third party critical review.</p>

Land Use, Water, Pollution and Transport categories specifically do not apply to elevators or escalators.

Our mobility solutions may contribute to additional credits in Innovation, Health and Wellbeing, Materials and Management categories, although these are not specific to elevators and escalators.



The information in this document is generic, for specific project consult your thyssenkrupp Elevator project team.

BREEAM references with our products.

1

Río 2 Shopping Center
Madrid, Spain
Architect:
Champman Taylor
BREEAM certificate in
process

9 elevators
34 escalators



2



2

Majunga Tower,
Paris, France
Architect: Jean-Paul
Viguier et Associés
BREEAM Excellent
certificate

8 elevators
18 high speed elevators



3

Agbar Tower,
Barcelona, Spain
Architect: Jean Nouvel,
B720 Arquitectos
BREEAM Gold certificate

3 elevators
9 high speed elevators



4

Trinity Tower,
Paris, France
Architect: Cro&Co
Architecture
VINCI Construction
BREEAM Excellent
certificate

[Photo credit L. Zylberman]

5 elevators
1 hydraulic elevator
2 high speed elevators
8 TWIN
2 escalators



About us.

thyssenkrupp Elevator designs and delivers innovative passenger transportation solutions that make cities the best ever places to live.

thyssenkrupp Elevator has over 50,000 highly qualified employees. They develop, manufacture, install, maintain and modernize:

- Passenger and freight elevators
- Escalators and moving walks
- Passenger boarding bridges
- Stair and platform lifts

Our pioneering systems transport people safely and efficiently in many of the world's landmark buildings – from major airports, train stations and shopping malls to the largest office towers and most luxurious hotels, where some of them achieved a Green Building Certificate. We also provide tailored service solutions to customers in 100 countries, ensuring sustainable working

for all our products. We are committed to achieving the highest standards in all our processes and operations with regard to health, safety, environmental protection and the responsible use of energy and resources. Therefore, most of our operations are certified in accordance with the following international standards:

- Lift Directive 214/33/EU, Annex VI, Module E: Quality Assurance for Safety Components
- Lift Directive 214/33/EU, Annex XI, Module H1: Full Quality Assurance for Lifts
- UNE EN ISO 9001: Quality Management System
- UNE EN ISO 14001: Environmental Management System
- UNE EN ISO 50001: Energy Management Systems
- ISO 45001: Occupational Health and Safety Management System



Contact

thyssenkrupp Liften Ascenseurs N.V.-S.A.
Avenue de la Métrologielaan 10
1130 Brussel, Belgium
P: +32 2 247 35 11
F: +32 2 247 35 00
www.thyssenkrupp-elevator.com/be/