

# How KONE Contributes to BREEAM Certification

KONE is helping combat climate change and contribute to the development of next-generation green buildings with its eco-efficient People Flow® solutions for BREEAM-rated and net zero energy buildings. Our expertise in eco-efficiency also allows us to provide in-depth analyses of traffic patterns, energy consumption, and the potential carbon footprint reduction for the entire operational lifespan of our solutions.

## HOW KONE SUPPORTS ITS CUSTOMERS

- Providing detailed information about BREEAM certification programs
- Helping reduce on-site energy consumption and overall building carbon footprint
- Helping them meet applicable BREEAM requirements for sustainable materials

KONE elevators, escalators, and autowalks can generate BREEAM credits, which can help the building achieve the best possible rating. We can also help our customers achieve additional BREEAM credits in other categories by complying with the requirements. See Additional BREEAM categories relevant to KONE on page 3.



### Southmead Hospital Bristol, UK

- **Building type:** Medical
- **Elevators:** 41
- **Special solutions:** KONE E-Link™ monitoring system
- **Architects:** BDP Architect
- **Construction company:** Carillion plc
- **Construction completed:** 2014

#### Additional information:

The new 800-bed super-hospital will concentrate on acute services, and will provide world-class healthcare to over 500,000 people in the area.

The hospital will reach a BREEAM rating of "excellent" once it is completed.

## BREEAM Credits for Elevators and Escalators / Autowalks

Based on the BREEAM International New Construction Scheme 2013.

Category	Credit	Credits available
<b>Energy</b>	Ene 06 Energy efficient transportation systems	2

One credit Achieved when all assessment (a. b. & c.) criteria are fulfilled:

Category	Credit	Assessment criteria	How KONE contributes or complies	Documentation required
<b>Energy</b>	<b>Ene 06: Energy efficient transportation systems</b>	a. Analysis of the transportation demand and usage patterns conducted. As a result the optimum number and size of elevators, escalators, and/or autowalks is determined. (Include the possibility for using counterbalancing ratio)	At the design/tender stage, KONE will normally have access to a consultant's specification that clearly defines the elevator requirements for the project. However, we will determine the optimal people flow strategy for the building by running a detailed traffic analysis.	<b>YES</b>
		b. The energy consumption has been estimated for one of the following: <ul style="list-style-type: none"> <li>i. At least two types of system: Comparison between two types of models, e.g. KONE MonoSpace® 500 and MonoSpace® 700.</li> <li>ii. An arrangement of systems (e.g. for elevators, hydraulic, traction, MRL): Present the same elevator model with different options e.g. with and without regenerative drive or different lighting.</li> <li>iii. A system strategy 'fit for purpose': Offer other energy-saving possibilities e.g. standby, destination control system.</li> </ul>	We offer energy-saving calculation comparisons between hydraulic, traction, and KONE EcoDisc® hoisting technologies.  The eco-efficient KONE EcoDisc hoisting machine can be used in all our elevator models.  KONE regenerative drives are high-speed, high-capacity drives that offer maximum performance. The range covers all types of applications and building types. KONE regenerative drives are designed to work with KONE EcoDisc hoisting machines.	
		c. The elevator/escalator/moving walk system/ strategy with the lowest energy consumption is specified.		

**Two credits** On fulfillment of the first credit, the second credit can be achieved by fulfilling additional criteria for energy-efficient features for elevators, escalators, and autowalks as described below.

Category	Credit	Assessment Criteria	How KONE contributes or complies	Documentation required
		<b>ELEVATORS</b> Choose three (that offer the greatest energy savings)	KONE provides BREEAM energy calculations that use the elevator specification details to identify which three of the four options specified below best meet the needs of the customer's project.	
<b>Energy</b>	<b>Ene 06: Energy efficient transportation systems</b>	a. The elevators operate in a Standby condition during off-peak periods. For example, the power side of the elevator controller and other operating equipment such as elevator car lighting, user displays and ventilation fans switch off when the elevator has been idle for a prescribed length of time.	KONE elevators can include a range of standby solutions that enable substantial energy savings, including car light/fan saving mode and signalization dimming.  Our advanced standby options include corridor illumination control and solar-powered lighting options.	<b>YES</b>
		b. The elevator car uses energy-efficient lighting and display lighting, i.e. an average lamp efficacy, across all fittings in the car, of > 55 lamp lumens/circuit watt and lighting switches off after the elevator has been idle for a prescribed length of time	Selected LED lights for KONE elevator cars fulfill BREEAM criteria.	
		c. The elevator uses a drive controller capable of variable-speed, variable-voltage, variable-frequency (VVVF) control of the drive motor.	As a result of the variable frequency drives used in our solutions, the peak starting current is lower compared to hydraulic and traction units, which means reduced energy consumption and fuses with lower ratings.	
		d. The elevator has a regenerative drive unit so that any energy generated by a traction elevator (due to running up loaded to less than the counterbalancing ratio or running down loaded to more than the counter balancing ratio) or by an hydraulic elevator (due to running down) is returned back to the electricity utility supplier or used elsewhere in the building.	The KONE regenerative drive can recover up to 35% of the total energy used by an elevator and make it available for immediate reuse in the building to power, for example, lighting, heating, and other elevators.	

Category	Credit	Assessment Criteria	How KONE contributes or complies	Documentation required
		<b>ESCALATORS/MOVING WALKS</b> Each escalator and/or autowalk complies with either of the following		
<b>Energy</b>	<b>Ene 06: Energy efficient transportation systems</b>	<p>a. It is fitted with a load sensing device that synchronizes motor output to passenger demand through a variable speed drive.</p> <p>b. It is fitted with a passenger sensing device for automated operation, so the escalator operates in stand-by mode when there is no passenger demand.</p>	<p>KONE escalators feature various operational modes. Eco-efficient operation – slowing down or stopping the escalator, or increasing the efficiency of the motor when traffic volume is low – can cut energy consumption by up to 50%.</p> <p>Stand-by operation slows down the escalator when it is empty, further reducing energy consumption and lengthening equipment lifetime.</p> <p>Other eco-efficient features of KONE escalators and autowalks include:</p> <ul style="list-style-type: none"> <li>■ A lubrication-free step chain that saves oil, reduces chain wear, and decreases fire risk.</li> <li>■ Regenerative solutions that recover the surplus energy released when the escalator is in operation, saving up to 7,100 kWh per year.</li> <li>■ LED lighting that reduces energy consumption by up to 80% compared to halogen lights.</li> <li>■ The KONE Direct Drive that consumes up to 20% less energy than a conventional worm gear drive.</li> </ul>	<b>YES</b>

## Additional BREEAM categories relevant to KONE

Based on the BREEAM International New Construction Scheme 2013.

The following categories are related to KONE in the way that we can help our customers achieve credits in the categories by complying with the requirements. Some of the categories require documentation from KONE.

Category	Credit	Assessment Criteria	Documentation required / other comments
<b>Energy</b>	<b>Ene 01: Energy efficiency</b>	To recognize and encourage buildings that minimize their operational energy consumption through good design.	<b>NO:</b> The energy efficiency issues specific to elevators and escalators are included in Ene 06
	<b>Ene 02: Energy monitoring</b>	<p>The following major energy consuming systems (where present) are monitored using either a Building Energy Management System (BEMS) or separate accessible energy sub-meters with a pulsed output to enable future connection to a BEMS:</p> <p>a. Space heating</p> <p>b. Domestic hot water</p> <p>c. Humidification</p> <p>d. Cooling</p> <p>e. Fans (major)</p> <p>f. Lighting</p> <p>g. Small power (lighting and small power can be on the same sub-meter where supplies are taken at each floor/department)</p> <p>h. Other major energy consuming items where appropriate which include transportation systems (e.g. elevators and escalators)</p>	Documentation is not usually required from KONE. In some building types, such as high-rise buildings, the energy consumption of elevators and escalators may be significant.

Category	Credit	Assessment Criteria	Documentation required / other comments
<b>Health &amp; wellbeing</b>	<b>Hea 02: Indoor air quality</b>	<p>The internal finishes of elevators, regardless of whether they are installed on-site or at the factory, will impact on VOC (Volatile organic compound) emissions.</p> <p>VOC emission levels of products and absence of harmful substances need to be specified.</p>	<p><b>YES:</b> Safety data sheet (SDS), E1 formaldehyde certificate, certificate to prove absence of carcinogenic and sensitive substances, as well as cleaning instructions for surface materials.</p> <p>By specifying low-VOC finishes such as decorative paints, adhesives, wood finishes, and flooring materials – including wood and laminate flooring – KONE takes into account the environmental impacts of its products.</p> <p>The following documentation is required for paints and finishes used in elevators and escalators:</p> <ul style="list-style-type: none"> <li>■ Safety data sheet including the VOC concentration (g/liter) for all decorative paints used in products. Decorative paints include only architectural and base paints, and exclude paints used for special technical applications.</li> <li>■ Formaldehyde class E1 certificate for wood-based products (including wood and laminate flooring).</li> <li>■ Certificate to prove absence of carcinogenic and sensitive substances in flooring adhesives.</li> </ul>
<b>Materials</b>	<b>Mat 01: Life cycle impacts</b>	Elevators are one of the building elements that can be optionally added to the calculation. Reporting for this is optional and can be offered to customers.	<b>YES:</b> Environmental Product Declarations (EPDs) are available for most KONE elevator and escalator models, based on LCA (Life Cycle Assessment) reports.
	<b>Mat 03: Responsible sourcing of materials PREREQUISITE</b>	Key building elements including fittings scrutinized: includes stair case, windows (frame and glazing units), doors (internal and external), floor finishes and any other significant fitting or finish present.	<p><b>YES:</b> Prerequisite mandatory documentation required from KONE, although elevators and escalators cannot generate Mat 03 credits.</p> <p>For KONE this concerns timber products that remain in the building, specifically the prerequisite for legally harvested wood.</p> <p>KONE can provide written confirmation such as FSC or PEFC certificates for the wood used in its products.</p>
	<b>Mat 05: Designing for robustness/ Designing for durability and resilience</b>	Requirement for achieving credits from Mat 05 is that there is appropriate protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, elevators, stairs, doors etc.).	<p><b>NO:</b> This is usually the architect's responsibility.</p> <p>For KONE this means that the materials inside the elevator need to be resistant to wear and tear.</p>
<b>Management</b>	<b>Man 03: Construction site impacts / Responsible construction practices</b>	Confirmation that all site timber used on the project is 'legally harvested and legally traded timber' according to the relevant definitions within BREEAM issue Mat 03 Responsible sourcing of materials. (see above in section Mat 03 for requirements for legally harvested and legally traded timber)	<b>YES:</b> For KONE this means site timber used during elevator installation, for example for shaft protection, to form the shell for casting, and for installation support materials.
	<b>Man 04: Stakeholder participation</b>	To design, plan and deliver accessible functional and inclusive buildings in consultation with current and future building users and other stakeholders.	<b>NO:</b> Elevators are part of an inclusive and accessible design strategy.
<b>Waste</b>	<b>Wst 01: Construction waste management</b>	To promote resource efficiency via the effective and appropriate management of construction waste.	<b>YES:</b> KONE may be required to provide documentation on the waste management plan (reduction, reuse, recycling, and energy recovery).

For further information visit [www.breeam.org](http://www.breeam.org).