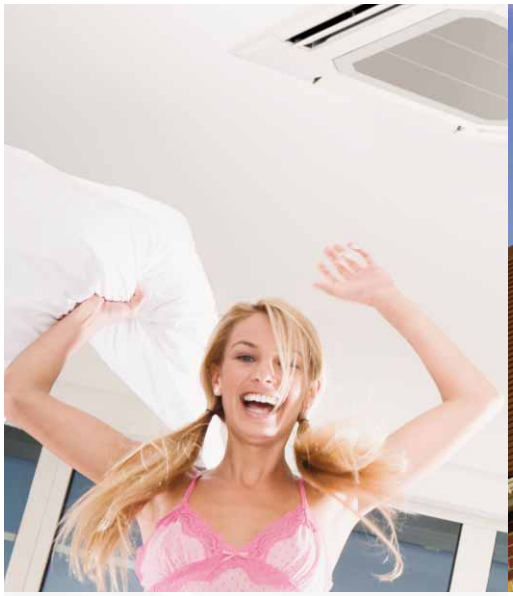




Information Guide:

BREEAM

Issue 22

CPD CERTIFIED
Construction CPD Certification Service

MITSUBISHI ELECTRIC
AIR CONDITIONING SYSTEMS

Information Guide:

BREEAM

This is an independent guide produced by Mitsubishi Electric to enhance the knowledge of its customers and provide a view of the key issues facing our industry today. The guide accompanies a series of seminars, all of which are CPD accredited.

The changing face of construction in the 21st Century demands that designers, specifiers and suppliers work as teams to create better buildings - or occupants and the environment.

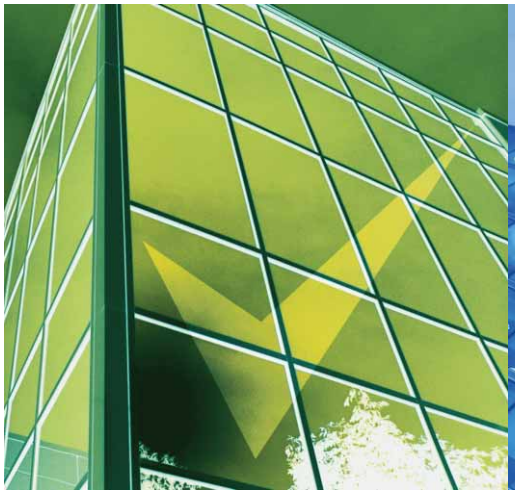
Mitsubishi Electric aims to be a part of this by encouraging employees and customers to work together to increase their knowledge of the latest technology, legislation and markets.

Contents

BREEAM – recognising sustainability

The BRE Environmental Assessment Method is one of the best known schemes for the assessment and certification of sustainable buildings.

Its labels, from PASS to OUTSTANDING (a level added in 2008), are recognised by engineers, architects and clients alike, which makes BREEAM a very useful tool for construction teams looking to find a way to define and measure the sustainability of their projects.



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BREEAM was developed in the early 1990s by BRE and ECD (now part of consulting engineers Faber Maunsell). **The first version of BREEAM was designed for offices, but the scheme now covers a range of buildings including industrial units, courts, prisons, schools and supermarkets. If a building does not fit into one of the defined categories, the BREEAM Bespoke tool can be used.**

As well as the building assessment system, there is also a group of BREEAM Tools which provide information on the environmental impact of construction materials over the whole life cycle of the product. There is also a Green Guide which includes data on the environmental impacts of over 250 elemental specifications for roofs, walls and floors.

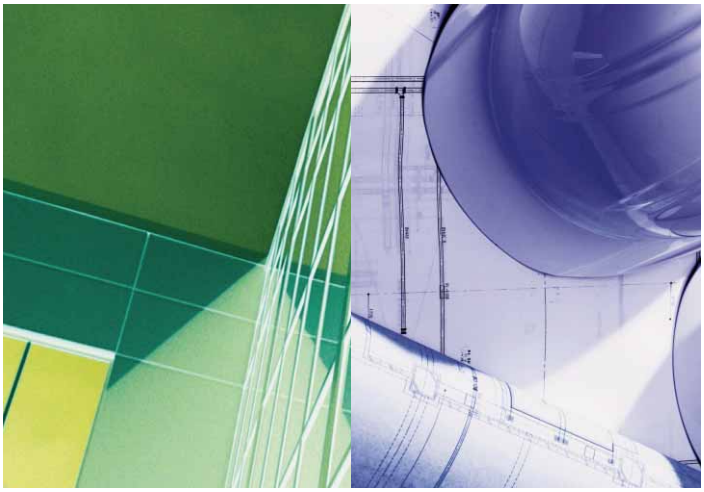
Although many clients are adopting BREEAM standards voluntarily, a number of key organisations require BREEAM assessments for all their buildings. For example, all new developments on English Partnerships land must achieve **VERY GOOD** or **EXCELLENT** ratings. The Office of Government Commerce requires **EXCELLENT** ratings. It is also a condition of capital funding from Government that new build and refurbishment projects for schools achieve **VERY GOOD** or **EXCELLENT** ratings.

An initial BREEAM assessment is generally carried out early in the design stage of a new building or a refurbishment project, and can therefore have a significant impact on the materials, products and methods used in construction. In a recent update of BREEAM launched in August 2008, the rating allocated at the design stage is now subject to verification at completion of the building. This was previously voluntary, but the requirements that a building performs as designed are now much more stringent.

The benefits of a BREEAM rated building include lower embodied and operational impacts as well as higher quality build, and better user satisfaction in the long-term.

There is also an opportunity to use BREEAM in existing buildings, where policies and procedures for the operation of the building are considered, as well as building fabric and layout.

The fact that BREEAM is a widely recognised standard makes it invaluable for developers looking for a marketing edge. Although a BREEAM assessment is an added cost at the design stage, the certification is regarded by many as offering a good return on investment at a time when clients are becoming more aware of the need to demonstrate sustainable credentials. BREEAM has also been shown to improve the predictability of costs and delivery.



BREEAM - assessment in action

BREEAM is delivered by licensed assessors, who have been trained and accredited by BRE. Ideally, an assessor should be involved in the project as early as possible, even as early as the concept design stage. BREEAM is principally targeted at the design stage of construction, so any products or sustainable techniques need to be organised from the start.

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AIR CONDITIONING SYSTEMS

All versions of BREEAM, whatever building type is under analysis, involve close examination of eight areas of the construction project:

- Management
- Health and Well-being
- Energy
- Transport
- Water
- Material and Waste
- Land use and Ecology
- Pollution

Credits or points are awarded for each of these criteria according to performance. Minimum standards have to be met in order for any rating to be given. A set of environmental weightings then enables the credits to be added together to produce a single overall score. The building is then rated and certified overall as:

UNCLASSIFIED <30
PASS ≥30
GOOD ≥45
V GOOD ≥55
EXCELLENT ≥70
OUTSTANDING ≥85

Obviously, energy use and carbon emissions are key considerations for sustainable buildings. The CO_2 emitted from the operation of buildings in the UK accounts for over 50% of the total UK CO_2 emissions. If CO_2 from the manufacturing, transportation of construction materials and transport of people, are included this figure increases to 75% of the total UK CO_2 emissions.

BREEAM also takes into consideration the wider environmental impacts of a building. An assessor will look at factors such as location of the development - is it close to public transport or will occupants be obliged to travel by car? What are the facilities for cyclists? And will occupants be helped with travel plans to reduce their car use?

There are also land-use issues, relating to preservation of undeveloped land. Credit is given to projects which use brownfield sites, or which can re-use a contaminated site. Ecological enhancements for wildlife for example, are also recognised as important. The BREEAM assessor will also look to make the best use of the building footprint.

Water use in buildings is of growing concern, particularly in the heavily populated South East of England. BREEAM award credits to projects which demonstrate water saving such as use of low flush toilets, leak detection systems and water metering.

Use of materials with low embodied energy, or recycled materials is also encouraged. There are also credits where part of an existing building can be re-used, for example on refurbishment projects.

Occupants have the biggest impact on how much energy a building uses over its lifetime. BREEAM rewards good building management and encourages best practice commissioning along with effective operating manuals which are used by building managers rather than tucked away in a filing cabinet. Assessors will offer advice on developing long term targets for energy management in the building, and encourage top level management to see them implemented.

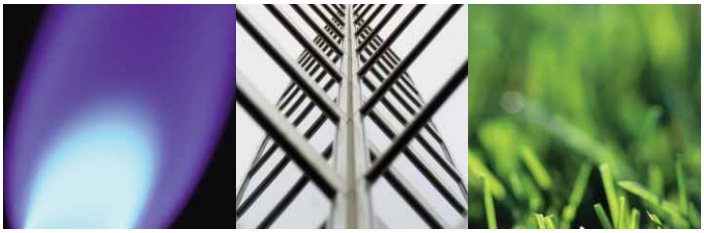
The Green Guide is an important element of the BREEAM assessment scheme, and is a vital tool for anyone involved in a project that is targeting a BREEAM rating. The Green Guide is a document which gives the relative performance of various building elements, using a common methodology.

BRE works with the Construction Products Association (CPA) which coordinates manufacturers' inputs to the Green Guide. The products it examines are used in a number of building elements such as walls, floors and roofs. The impact of each product over a lifetime of 60 is assessed. The Guide is based on ISO life cycle assessment methods, which examine the environmental impact of products from extraction to end of life. There are thirteen criteria for each product including global warming, water consumption and resource extraction. These are used to give each product EcoPoints.

BRE points out that using the Green Guide to specify a product based on a single characteristic (for example, recycled content) is a mistake. The embodied impacts of products analysed in the Green Guide are only part of the overall sustainability of a building as measured by BREEAM.

On average we spend 90% of our time in buildings, therefore the internal environment of the buildings in which we live, work and play has proved to be a major contributor to our quality of life BREEAM therefore awards credits where the environment is designed to maximise occupant control; for example in the following areas:

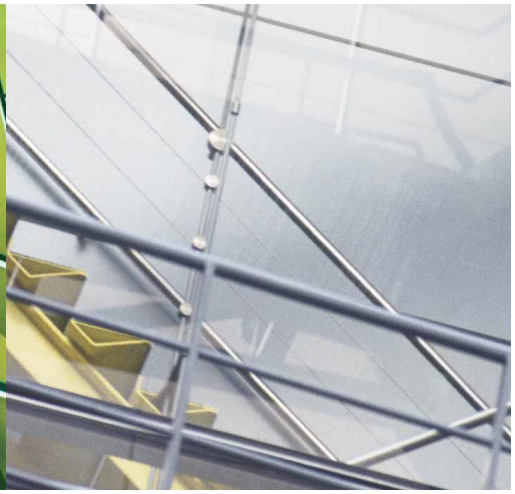
- Heating
- Lighting
- Air quality
- Noise



Looking forward - **a Code for Sustainable Buildings**

The UK Government has continued to push the targets for carbon reduction in buildings ever higher. The latest targets are all new buildings should be zero carbon by 2019, with public buildings reaching this target by 2018 and schools by 2016. One of the key questions arising from these targets is should BREEAM be updated or even replaced to give the construction industry a better framework for achieving these zero carbon ambitions?





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This is one question that the UK Green Building Council (UKGBC) has recently set out to address in an industry-wide consultation which will run until February 2009. The UKGBC was established in 2007 by the Government to act as a single organisation concerned with sustainable buildings. The UKGBC is a membership body, and includes businesses from across the construction industry, as well as Government agencies and academic institutions.

Speaking at the launch of this consultation, UKGBC chief executive Paul King commented: "We will be exploring what the industry needs in order to meet some very ambitious targets and deliver high quality, high value sustainable buildings. The group will consider how a Code can provide a clear, robust and holistic benchmark for what constitutes a 'sustainable building'."

The idea of a Code acting as a benchmark is important, since buildings are effectively a traded commodity. The availability of an industry-wide code would be very helpful to the property sector. Although BREEAM does provide this to an extent, one of the issues some designers have with the existing standards is that they do not consider the 'outcomes' of a building. For example, a school could achieve an **EXCELLENT** rating, but the learning outcomes for occupants may not be up to the standards required.

BRE is working on the consultation with the UKGBC, and if a Code for Sustainable Buildings is developed, it seems likely that BREEAM will form the basis for its development. The Code for Sustainable Homes (CfSH) which has already been launched was based on BRE's EcoHomes scheme.

In the most recent update of BREEAM, launched this year, a number of changes have been made which indicate a move towards a scheme which has some of the elements of the CfSH. For example, the CfSH sets minimum standards for various elements of domestic building performance (for example carbon emissions), which previous versions of BREEAM did not require. These have now been introduced to BREEAM 2008. Perhaps more importantly, the verification of the rating at completion stage is no longer voluntary - ensuring that the building performs as it was designed.

Further **information**

You can find more information on the topic of BREEAM and related issues at the following websites:

www.breeam.org
Official website of the BREEAM family of tools, with advice on training and latest updates.

www.greenbooklive.com
Official website of the Green Book, giving details on the environmental impacts of various construction products.

www.ukgbc.org
Website of the UK Green Building Council which covers various aspects of sustainable building in the UK, and also has news of development of the Code for Sustainable Buildings.

www.decc.gov.uk
Website of the newly formed Department of Energy and Climate Change. At the end of 2008, this site was still being populated with content. It will eventually be a good source of information on the UK Government's energy and environmental policies.

If you missed the CPD seminar on **BREEAM**, you can call your Mitsubishi Electric Regional sales office to arrange an in-house presentation of this information.

Please call one of the numbers below:

London North East & East Anglia	**01707 282480**
London North West	**01707 282480**
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London South East	**01689 881030**
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