



UVC's direct & indirect contribution to LEED® and BREAM®

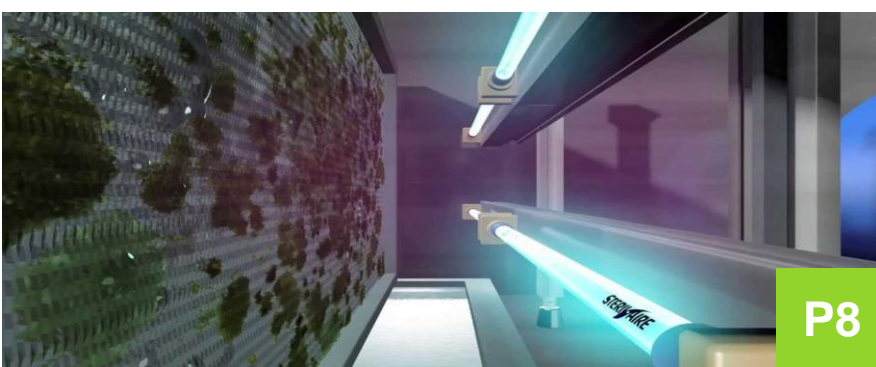
E-CO, Creating healthier environments

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LEED V4
Interior Design
& construction

Getting the credit you deserve

Clarification about our contribution to earning points

While many E-CO products will help contribute to point acquisition, it is important to note that LEED is a project certification system and that no products can be LEED certified or guarantee the acquisition of LEED points.

The charts below outlines E-CO's direct and indirect contributions to a project's pursuit of LEED Certification across the ID+C rating system.

Clarification about our contribution to earning points

LEED, or Leadership in Energy & Environmental Design, is transforming the way we think about how our buildings and communities are designed, constructed, maintained and operated across the globe. Comprehensive and flexible, LEED is a green building tool that addresses the entire building lifecycle recognizing best-in-class building strategies.

At its core, LEED is a program that provides third-party verification of green buildings. Building projects satisfy prerequisites and earn

points to achieve different levels of certification.

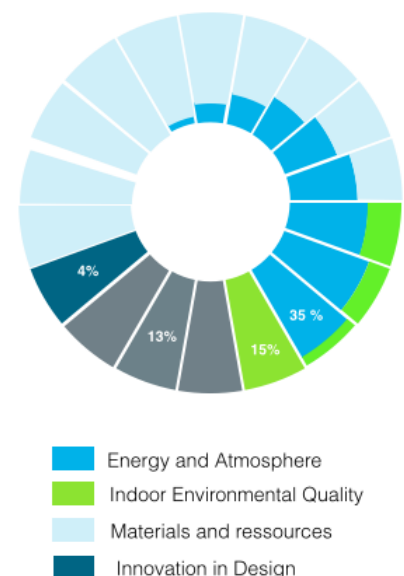
Prerequisites and credits differ for each rating system, and teams choose the best fit for the project.

LEED rating systems generally have 100 base points plus six Innovation in Design points and four Regional Priority points, for a total of 110 points (LEED for Homes is based on a 125-point scale, plus 11 Innovation in Design points).





Each credit is allocated points based on the environmental impacts and

human benefits of the building-related impacts that it addresses. Projects achieve certification if they earn points according to

the following levels: Certified (40 – 49), Silver (50-59), Gold (60-79) and Platinum (80+ points).






LEED V4 Interior Design & construction

WEc1	Direct /indirect	Water Efficiency
Up to 12 points		<p>The intent of this credit is to reduce indoor water consumption.</p> <p>Project teams are required to further reduce fixture and fitting water use from the calculated baseline in WE Prerequisite. Additional potable water savings can be earned above the prerequisite level using alternative water sources. The condensate water from coils treated by UVC is so clean that some users collect and pump it into the cooling tower as make-up water or use it for irrigation.</p>
1 extra point		<p>Regional Priority Credits</p> <p>RP Credits incentivise the achievement of credits that address geographically specific environmental priorities. The incentive to achieve the credits is in the form of a bonus point. If an RP Credit is earned, then a bonus point is awarded to the project's total points*.</p> <p>If projects in the UK achieve 8 points under this credit, then they'll get an extra point.</p>
EAc3		Optimise energy performance HVAC
Up to 25 points		<p>Project teams must achieve increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic harms associated with excessive energy use</p> <p>UVC equipment reduces the growth of bacteria, mould, and algae on coils and drain pans, keeping coils clean and free from deposits improves heat transfer and can contribute to overall IAQ*.</p>
1 extra point		<p>Regional Priority Credits</p> <p>If projects in London achieve 12 credits under EAc3 then they'll get an extra point.</p>

* To find more about Regional Priority Credits and how these can affect your project, please go to <http://www.usgbc.org/rpc>





** This credit is aim at building materials but UVC solutions meet the intent of the credit. Project teams pursuing this credit should apply for a formal enquiry to USGBC (credit interpretation ruling). Please also note ID#695 made on 01/21/2004.

**LEED V4
Interior Design
& construction**

MRc2	Direct /indirect	Interiors life-cycle impact reduction
Option 3 2 points		<p>The intent of this credit is to encourage adaptive reuse and optimize the environmental performance of products and materials.</p> <p>Project teams must use at least three strategies among 7 proposed. Our products helps you achieve the 4th strategy: <i>«Include in at least one major component or systems purchase contract a clause specifying sub-contractor, vendor, or on site take back system».</i></p>
1 extra point		<p>Regional Priority Credits</p> <p>If projects in London achieve 2 points under this credit, then they'll get an extra point.</p>
IEQc2		Low-emitting materials
Up to 3 points		<p>Project teams are required to reduce concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.</p> <p>Germicidal UVC solutions can:</p> <ul style="list-style-type: none"> • Kill 99% of airborne bacteria, viruses and allergens as they pass through the HVAC system and neutralise odours. • Prevent the spread of infectious diseases caused by bacteria and viruses. • UVC light also breaks down airborne volatile organic compounds (VOCs)*.

* This credit is aim at building materials but UVC solutions meet the intent of the credit. Project teams pursuing this credit should apply for a formal enquiry to USGBC (credit interpretation ruling).

**LEED V4
Interior Design
& construction**

IEQc5	Direct /indirect	Thermal Comfort
1 point		<p>To promote occupants' productivity, comfort, and well-being by providing quality thermal comfort.</p> <p>Project teams must meet the requirements of ASHRAE Standard 55–2010 or design HVAC systems and the building envelope to meet the requirements of the applicable standard: ISO 7730:2005 / EN 15251:2007.</p>
1 extra point		<p>Regional Priority Credits</p> <p>If projects in the UK achieve 12 credits under EAc3 then they'll get an extra point.</p>
IDc1		Innovation in Design
1 point		<p>The intent of this credit is to encourage projects to achieve exceptional or innovative performance.</p> <p>Innovation in Design points are awarded to LEED projects that develop new solutions, employ new technologies, educate, or realise exemplary performance in another area. UVC solutions have all ready been awarded with an ID Credit.</p>
IDc2		Innovation in Design
1 point		<p>To encourage the team integration required by a LEED project and to streamline the application and certification process.</p> <p>At least one principal participant of the project team must be a LEED Accredited Professional (AP) with a specialty appropriate for the project.</p>



Our contribution to LEED



ACCREDITED
SUPPLIER

About E-CO

Our mission is to produce innovative, technological solutions, backed by science, that enhance our customer's image, save money and create a better environment to live, work and breathe.

We are the leader in high-intensity ultraviolet germicidal solutions for HVAC (Heating, ventilation and air conditioning).

We help you implement green and efficient Steril-Aire™ UVC technology for HVAC systems across your building/facilities, to deliver cleaner indoor air, free of bacteria, viruses and mould, while reducing your HVAC energy cost by 20%.

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Water Efficiency

WEc1

Reduce indoor water consumption

The condensate water from coils treated by UVC is so clean that some users collect and pump it into the cooling tower as make-up water or use it for irrigation.

RPC

Regional Priority Credit

If projects in the UK achieve 8 points under this credit, then they'll get an extra point.

EAc3

Optimise energy performance HVAC

UVC equipment reduces the growth of bacteria, mould, and algae on coils and drain pans, keeping coils clean and free from deposits improves heat transfer and can contribute to overall IAQ.

RPC

Regional Priority Credit

If projects in the UK achieve 12 credits under EAc3 then they will get an extra point.

Energy and Atmosphere

Materials and Resources

MRC2

Low-emitting materials

[4th Strategy option 3] Include in at least one major component or systems purchase contract a clause specifying sub-contractor, vendor, or on site take back system

IEQc2

Interiors life-cycle impact reduction

Our products help to reduce concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.

IEQc5

Thermal Comfort

Our products can help you promote occupants' productivity, comfort, and well-being by providing quality thermal comfort.

Indoor Air Quality

Innovation in design

IDc1

Innovation in Design

A LEED Innovation Point Awarded for UVC Lights in Air Handlers.

LEED Professional

IDc2

In the UK, our LEED Accredited Professionals are available to identify and support credit applications

BREEAM UK Refurbishment and Fit-Out

Getting BREEAM to work for you

BREEAM (BRE Environmental Assessment Method) is the world's foremost environmental assessment method and rating system for buildings, with 250,000 buildings with certified BREEAM assessment ratings and over a million registered for assessment since it was first launched in 1990.

BREEAM addresses wide-ranging environmental and sustainability issues and enables developers and designers to prove the environmental credentials of their buildings to planners and clients. It: Uses a straightforward scoring system that is transparent, easy to understand and supported by evidence-based research

Has a positive influence on the design, construction and management of buildings
Sets and maintains a robust technical standard with rigorous quality assurance and certification
In parallel, BRE Global has developed an Environmental Profiles Methodology to be able to compare materials that go into the buildings.

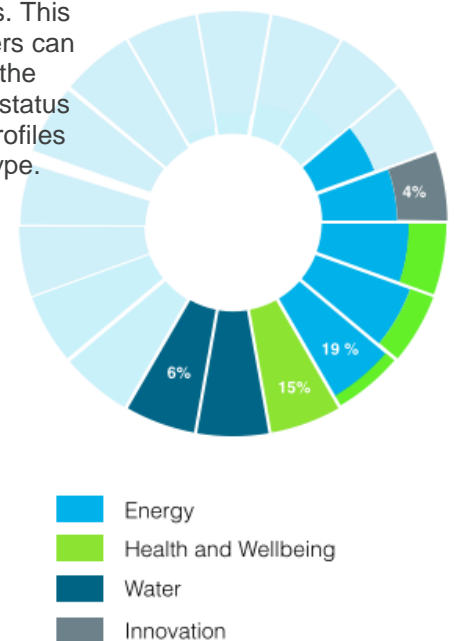
The Environmental Profiles Methodology is a standardised method of identifying and assessing the environmental effects associated with building materials over their life cycle - that is their extraction, processing, use and maintenance and their eventual disposal. Environmental Profiles allow designers to demand

reliable and comparable environmental information about competing building materials, and give suppliers the opportunity to present credible environmental information about their products. This means that designers can have confidence in the "level playing field" status of Environmental Profiles for every material type.

Clarification about our contribution to earning points

While many E-CO products will help contribute to point acquisition, it is important to note that BREEAM is a project certification system and that no products can be BREEAM certified or guarantee the acquisition of BREEAM points.

The charts below outlines E-CO's direct and indirect contributions to a project's pursuit of BREEAM Certification.



**BREEAM UK
Refurbishment
and Fit-Out**

HEA2	Direct /indirect	Indoor Air Quality
Up to 4 credits (Minimizing sources of air pollution)		<p>The intent of this credit is to recognise and encourage a healthy internal environment through the specification and installation of appropriate ventilation, equipment and finishes.</p> <p>Germicidal UVC solutions can:</p> <ul style="list-style-type: none"> Kill 99% of airborne bacteria, viruses and allergens as they pass through the HVAC system and neutralise odours. Prevent the spread of infectious diseases caused by bacteria and viruses. UVC light also breaks down airborne volatile organic compounds (VOCs)*.
HEA4		Thermal Comfort
Up to 4 credits (Minimising sources of air pollution)		<p>The intent of this credit is to ensure that appropriate thermal comfort levels are achieved through design, and controls are selected to maintain a thermally comfortable environment for occupants within the building.</p> <p>Our products reduce energy consumption used by the fan, chiller and chiller pump by continuously cleaning the coils and drain pan, in doing so they promote occupants' productivity, comfort, and well-being by providing quality thermal comfort.</p>
ENE1		Reduction of energy use and carbon emissions
Up to 15 points (Option 1) and 12 (option 2)		<p>The intent of this credit is to recognise and encourage refurbishment and fit-out projects that reduce operational energy demand, primary energy consumption and carbon emissions.</p> <p>UVC equipment reduces the growth of bacteria, mould, and algae on coils and drain pans, keeping coils clean and free from deposits improves heat transfer and can contribute to overall IAQ.</p>

* To find more about Regional Priority Credits and how these can affect your project, please go to <http://www.usgbc.org/rpc>

** This credit is aimed at building materials but UVC solutions meet the intent of the credit. Project teams pursuing this credit should apply for a formal enquiry to USGBC (credit interpretation ruling). Please also note ID#695 made on 01/21/2004.

**BREEAM UK
Refurbishment
and Fit-Out**

WAT1

Direct
/indirect

Water Efficiency

**Up to 5
points**



The intent of this credit is to reduce the consumption of potable water for sanitary use in existing buildings from all sources through the use of water efficient components and water recycling systems.

Reclaimed clean, coil condensate can be used for cooling tower make-up water, landscape irrigation or grey water flushing, thereby reducing overall water consumption.

The reclamation process can also realise energy savings by mixing the chilled make-up water with the warmer water for the tower. Not only is the water already chilled — requiring less energy — but also distilled and clean with high output Steril-Aire UVC germicidal energy.

Inn1

Innovation

**Up to 10
points**



The intent of this credit is to support innovation within the construction industry through the recognition of sustainability related benefits which are not rewarded by standard BREEAM issues.

Innovation credits are awarded to projects using new technology, design, construction, operation, maintenance or demolition method or process that can be shown to improve the sustainability performance of a building and is of demonstrable benefit to the wider industry in a manner that is not covered elsewhere in BREEAM.

Our products can help you demonstrate exemplary performance by meeting defined exemplary level performance criteria in the following BREEAM assessment issues: Hea 02 Indoor air quality, Ene 01 Reduction of energy use and carbon emissions, and Wat 01 Water consumption.



Our contribution to BREEAM



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Health and Wellbeing

HEA2

Indoor Air Quality

Our products help to reducing concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment. UVC light kills any virus, bacteria or fungal pathogens.

HEA4

Thermal Comfort

Our products reduce energy consumption used by the fan, chiller and chiller pump by continuously cleaning the coils and drain pan, in doing so they promote occupants' productivity, comfort, and well-being by providing quality thermal comfort.

ENE1

Reduction of energy use and carbon

UVC equipment reduces the growth of bacteria, mould, and algae on coils and drain pans, keeping coils clean and free from deposits improves heat transfer and can contribute to overall IAQ.

WAT1

Water consumption

The condensate water from coils treated by UVC is so clean that some users collect and pump it into the cooling tower as make-up water or use it for irrigation.

Energy

Water

Other Benefits

Innovation

Water £



Flush Out



Innovation



Energy £



Filtration



Comfort



IAQ



Management



Productivity



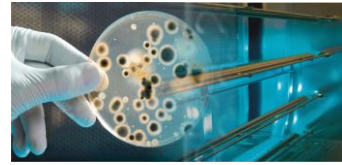
Inn1

Innovation

Our products help you to support innovation within the construction industry through the recognition of sustainability related benefits which are not rewarded by standard BREEAM issues.

LEED V4
Interior Design
& construction

BREEAM UK
Refurbishment
and Fit-Out



Other benefits not taken into account by LEED or BREEAM.

In the absence of a standardised and internationally recognised definition, Green Buildings are often characterized by obtaining an environmental certification from a private law entity.

Green Building certifications attest to the acknowledgement of environmental considerations during the different phases of conception, construction and use of a building but not of the intrinsic quality or the real performance of the latter.

They are management tools and not measures of performance. They are all inspired by the ISO 14000 system and notably the ISO 14050 standard.

Indoor Air Quality

Indoor air quality in Green Building means employing building materials, maintenance products and practices and operating strategies that provide acceptable indoor air quality to building occupants.

Today the use of dynamic air cleaners, utilising ultra-violet germicidal irradiation (UVGI), as equivalent to MERV 13 static filtration media is not recognised. The basis for rejection seems to rest solely on the fact that rating systems reference standards such as ASHRAE 52.2, which standardise best practice but not innovation. In reality dynamic filtration exceeds the standard of compliance and technology changes more quickly than building codes.

Please note that ASHRAE 52 sub-committee is in the process of reviewing testing methods for electronic filters, and is likely to issue an addendum to ASHRAE 52.2 in the near future. This will have an impact on the contribution of our products to the LEED rating system.

Filtration and Maintenance

Filters were originally conceived to protect heating and cooling equipment—for example, to prevent large particles from clogging the air passages of coils. Filters also enhance indoor air quality but need to be changed regularly. This incurs maintenance costs and requires physical intervention. UVC can help you reduce the replacement cycles of your filtration media. Also, the use of UVC as a non-invasive cleaning method versus current practice of manual cleaning that damages heat exchanger plates means that HVAC components last longer.



* Penn State University's Department of Aerobiological Engineering performed one such research study. Many other health organizations including the Centers for Disease Control, and The Lancet medical journal support these findings.

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