

MARKCLIMATE.COM

Specialist in climate control
since 1945

GUIDE TO LEED

CLIMATE SOLUTIONS FOR SUSTAINABLE BUILDINGS



mark[®]
CLIMATE TECHNOLOGY
FEELS BETTER, WORKS BETTER.

WHAT IS LEED?

LEED (Leadership in Energy and Environmental Design) is the most widely used green building rating system in the world. The LEED certification is developed by the U.S. Green Building Council (USGBC) and is a globally recognized symbol of sustainability achievement and leadership. Available for virtually all building types, LEED provides a framework for healthy, highly efficient, and cost-saving green buildings.

Projects pursuing LEED certification earn credits for various green building strategies across several categories. Based on the number of credits achieved, a project earns one of four LEED rating levels: Certified, Silver, Gold or Platinum.



Certified
40-49 credits



Silver
50-59 credits



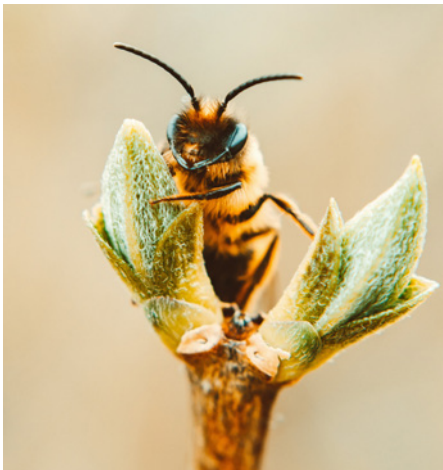
Gold
60-79 credits



Platinum
80+ credits

The products and associated credits presented in this brochure have been weighted and assessed by independent engineering firm Encon, using the LEED guidelines.

WHY LEED?



More than just a certification

A LEED certification gives an extra dimension to a building. But how come?

Low running costs

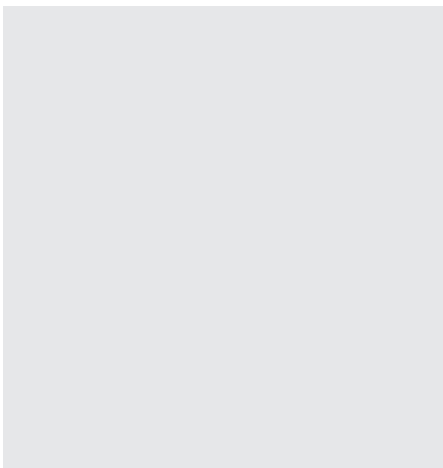
Because water and energy consumption has been carefully considered before and during construction, you are assured of an energy-efficient building that will benefit you for years to come.

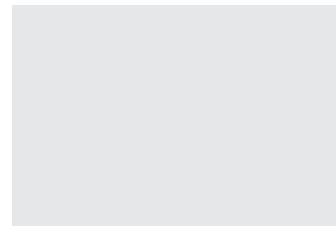
Increased well-being and productivity

Thanks to correctly selected climate control systems, you have invested in an optimal indoor climate. This translates directly to the performance and health of the people who work in the building.

Investment in the future

A LEED certificate is also a great marketing tool. By investing in a sustainable building, you are also investing in your corporate image and thus your future. An employer that profiles itself as sustainable strengthens its position in the market.





MARK'S SUSTAINABLE MISSION

Mark Climate Technology has been focusing on the climate control of large buildings since 1945. Under the name of "Ingenieursbureau Gebroeders Van der Mark NV", the company started with the production and sale of bending machines and coal-fired air heaters. From the mid-1950s, the Van der Mark brothers increasingly focused on heating large buildings. For this purpose they built hanging gas-fired air heaters themselves. This is how the GS series was created: a unique system that is still leading in the European heating market to this day.

This ingenuity still characterizes Mark. Mark Climate Technology now supplies a leading range in the field of heating, cooling and ventilation. This means that customers can rely on one supplier for their complete climate control system.

Mark continues to develop, including in the field of sustainability and circularity. A good example is our Eurovent-certified Mark Airstream heat recovery unit. This appliance with a **heat recovery efficiency of 90%** now ensures optimal air quality in many buildings. With the aid of a heat pump, the appliance can also heat and cool without using natural gas.

In addition to our Airstream heat recovery unit, Mark Climate Technology has 7 other products in the product range that contribute in a sustainable way to a pleasant indoor climate. For certification method LEED, the products of Mark Climate Technology can score up to **11 credits** for your sustainability assessment.





The Mark products not only create a pleasant indoor climate, they can also contribute up to **11 credits** in your LEED assessment. The products mentioned in this brochure, corresponding LEED credits and substantiation have been assessed and drawn up by the independent engineering firm Encon.

Category	Parameters	max. credits	MARK Products							
			A	B	C	D	E	F	G	H
Energy & Atmosphere (EA)	Enhanced Commissioning	6	2	2	2	2	2	2	2	2
	Optimize Energy Performance	18	2	2	2	2	2	2	1	1
Materials & Resources (MR)	Building Life-Cycle Impact Reduction	5	1	1	1	1	1	1	1	1
Regional Priority (RP)	Credit Regional Priority	4	1	1	1	1	1	1	1	1
Indoor Environmental Quality (EQ)	Enhanced Indoor Air Quality Strategies	2	1	-	-	-	-	-	1	1
	Indoor Air Quality Assessment	2	2	-	-	-	-	2	2	-
	Thermal Comfort	1	1	1	1	1	1	1	1	1
	Acoustic Performance	1	1	1	1	1	1	1	1	-
TOTAL			11	8	8	8	8	10	10	7

A = Airstream CFX/HWX
 B = GS+
 C = Tanner MDA/MBA

D = Infra / Infra Line
 E = Infra Aqua Design
 F = Ecofan W

G = MDV Blue
 H = Demand-driven control

MARK LEED-PRODUCTS



AIRSTREAM CFX/HWX

The Mark Airstream heat recovery unit is available in various configurations with air flows from 600 - 45,000 m³/h. The unit has an efficiency of up to 90%.



GS+

The Mark GS + is a high efficiency modulating air heater. Due to the extensive capacity range from 13,6 to 142,2 kW, the GS + can be used in many situations.



TANNER MDA/MBA

The Mark Tanner water-supplied suspended air heaters have a wide application range for both industry and utility.



INFRA

The Mark INFRA / INFRA LINE is a gas-fired black tube heater that heats with long-wave infrared radiation.



INFRA AQUA DESIGN

Mark INFRA AQUA DESIGN is a water-supplied radiant panel. Due to the short warm-up time and the lower room temperature, high energy savings can be realized.



ECOFAN W

Mark Ecofans W recirculation fans are recommended together with any air heater. This provides optimal comfort and a good and fast heat distribution in the room.



MDV BLUE

The MDV BLUE EC roof fan guarantees very low power consumption in combination with excellent performance. Available with air flows from 300 m³/h to 15,000 m³/h.



DEMAND-DRIVEN CONTROL

A high quality unit can only work optimally in combination with an effective control. Mark can provide your building with a demand-driven control.

ENERGY & ATMOSPHERE

Enhanced Commissioning (6 credits)

Aim

To further support the design, construction, and eventual operation of a project that meets the owner's project requirements for energy, water, indoor environmental quality, and durability.



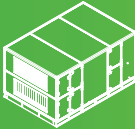




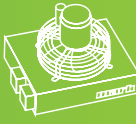


Parameters

Option 1: Enhanced systems commissioning

- Enhanced commissioning: ASHRAE Guideline 0-2005 and ASHRAE Guideline 1.1-2007
- OR Enhanced and Monitoring-Based Commissioning
- AND Develop monitoring-based procedures and identify points to be measured and evaluated to assess performance of energy- and water-consuming systems

AND/OR Option 2: Envelope commissioning

- Fulfill the requirements in EA Prerequisite as they apply to the building's thermal envelope in addition to mechanical and electrical systems and assemblies
- Commissioning process activities for the building's thermal envelope: ASHRAE Guideline 0-2005 and the NIBS Guideline 3-2012

Product								
	AIR-STREAM	GS+	TANNER	INFRA	INFRA AQUA DESIGN	ECOFAN W	MDV BLUE	DEMAND-DRIVEN CONTROL
Credits	2	2	2	2	2	2	2	2
Suitability	+++	+++	+++	+++	+++	+++	+++	+++



OUR CONTRIBUTION



The contribution of Mark Climate Technology

Our advisors are happy to help you use energy as efficiently as possible.

Mark's warranty system is just a bit smarter than that of most suppliers. It is precisely tailored to the wishes of the customer. After all, you don't want a climate control system, you want your building to have a certain temperature and air quality. And Mark gives a guarantee on that.

Would you like to meet us? In a non-binding advice, we look at the perfect solution for climate control for you. We are happy to come to your project for this. Mark's consultants can use an energy analysis or a transmission loss calculation to show exactly which system is most appropriate for your project. We guarantee that our advice leads to the desired temperature in your building. That's Mark's assurance.



ENERGY & ATMOSPHERE

Optimize Energy Performance
(18 points)

Aim

To achieve increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.

Parameters

Option 1: Whole-building energy simulation

- Analyze efficiency measures during design process and energy simulation
- Follow the criteria in Prerequisite to demonstrate a percentage improvement in the proposed building performance rating compared with the baseline

Option 2: Prescriptive compliance: ASHRAE
Advanced Energy Design Guide



OUR CONTRIBUTION

The contribution of Mark Climate Technology

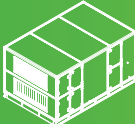




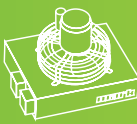


Devices can be regulated and controlled in various ways. Each individual will have his own ideas and requirements. Mark has thus developed a range of options from standard to projectspecific.

Our range includes various types of thermostats, speed controllers, packaged digital controllers and full custom made power and control panels, enabling the user to control a single unit or multiple units. Much is also possible with regard to the applied scheme. For example on the basis of a day and night room temperature monitoring or on room and inlet temperature.

New in our range are the thermostats and controllers controlled via Internet (web-based). This allows remote connection with the thermostat via a web browser or mobile app. For example, you can operate or change the thermostat anywhere in the world with a telephone, tablet or laptop / PC.

Mark has its own electrical engineering and manufacturing department and is therefore able to offer a solution for any control requirement. Our engineers would be pleased to advise you. Simply contact them to discuss the options within our range of control equipment.



Product	 AIR-STREAM	 GS+	 TANNER	 INFRA	 INFRA AQUA DESIGN	 ECOFAN W	 MDV BLUE	 DEMAND-DRIVEN CONTROL
Credits	2	2	2	2	2	1	1	-
Suitability	+++	+++	+++	+++	+++	+++	+++	-

MATERIALS & RESOURCES

Building Life-Cycle Impact Reduction (5 credits)

Aim

To encourage adaptive reuse and optimize the environmental performance of products and materials.

Parameters

Demonstrate reduced environmental effects by reusing existing building resources or demonstrating a reduction in materials use through LCA: 4 options:

Option 1: Historic building reuse

Maintain existing building structure, envelope, and interior nonstructural elements of a historic building or contributing building in a historic district.

Option 2: Renovation of abandoned or blighted building

Maintain at least 50%, by surface area, of the existing building structure, enclosure, and interior structural elements.

Option 3: Building and material reuse

Reuse or salvage building materials from off site or on site as a percentage of the surface area. Include structural elements, enclosure materials and permanently installed interior elements.

Option 4: Whole-building life-cycle assessment

Conduct a LCA of the project's structure and enclosure that demonstrates a minimum of 10% reduction, compared with a baseline building, in at least three of the six impact categories: global warming potential, depletion of ozone layer, acidification, eutrophication, formation of ozone, depletion of nonrenewable energy resources.



OUR CONTRIBUTION

The contribution of Mark Climate Technology

Circularity is one of the spearheads of our company. Mark Climate Technology thinks carefully about what ecological footprint Mark's products leave behind. Already during the design, consideration is given to how the products and / or raw materials thereof can be reused and how loss of value can be minimized.

For example, our devices are usually modular in construction. This makes it possible to replace parts if necessary, extending the life of the appliance. And is a device at the end of its technical and economic life? Then we can rejuvenate the appliance by means of Retrofit or renovation. Mark Climate Technology designs and produces the products as efficiently as possible and also involves the suppliers in this.

Mark consciously chooses materials with a low environmental impact for its products. Many of our products consist largely of steel; this is completely recyclable.

We also try to create as little waste as possible when transporting our appliances. No unnecessary boxes or plastic packaging are used. In addition, the devices are shipped on FSC wood pallets.



Product	AIR-STREAM	GS+	TANNER	INFRA	INFRA AQUA DESIGN	ECOFAN W	MDV BLUE	DEMAND-DRIVEN CONTROL
Credits	1	1	1	1	1	1	1	1
Suitability	+++	+++	+++	+++	+++	+++	+++	+++

INDOOR ENVIRONMENTAL QUALITY

Enhanced indoor air quality strategies
(2 credits)



Aim

To promote occupants' comfort, well-being, and productivity by improving indoor air quality.

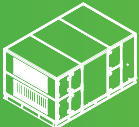




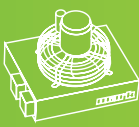


Parameters

Option 1: Enhanced IAQ strategies

- Install permanent entryway systems
- Interior cross-contamination prevention
- Filtration

Option 2: Additional enhanced IAQ strategies

- Exterior contamination prevention
- Increased ventilation
- Carbon dioxide monitoring or additional source control and monitoring

Product	 AIR-STREAM	 GS+	 TANNER	 INFRA	 INFRA AQUA DESIGN	 ECOFAN W	 MDV BLUE	 DEMAND-DRIVEN CONTROL
Credits	1	-	-	-	-	-	-	1
Suitability	+++	-	-	-	-	-	-	+++



OUR CONTRIBUTION



The contribution of Mark Climate Technology

Increasingly high demands are being placed on the air quality in buildings. Multiple ventilation is often needed in order to comply with these demands. A great deal of energy is lost when standard ventilation equipment is used. To counter the loss of energy, Mark has included a heat recovery unit, the AIRSTREAM, in its product range. The unit has an efficiency upto 90%. This means that 90% of the energy expelled is supplied to the fresh intake air. This high-efficiency means that in many cases no after-heating is required.

We distinguish an AIRSTREAM with counter flow plate exchanger (CFX) and heat wheel (HWX). The heat recovery unit is available for both indoor and outdoor installation and can optionally be equipped with pre and post heaters, cooling batteries, heat pumps and indirect adiabatic cooling. The Mark AIRSTREAM is certified according to EUROVENT and RLT Richtlinie-01.

In addition to the Mark AIRSTREAM heat recovery unit, other ventilation solutions are available, such as the MDV BLUE roof fan. We are happy to help you find the perfect solution for your building.



INDOOR ENVIRONMENTAL QUALITY

Indoor air quality assessment
(2 credits)

Aim

To establish better quality indoor air in the building after construction and during occupancy.

Parameters

Option 1: Flush-out

- Before occupancy
- During occupancy

Option 2: Air testing

OUR CONTRIBUTION

The contribution of Mark Climate Technology

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Product	AIR-STREAM	GS+	TANNER	INFRA	INFRA AQUA DESIGN	ECOFAN W	MDV BLUE	DEMAND-DRIVEN CONTROL
Credits	2	-	-	-	-	2	2	-
Suitability	+++	-	-	-	-	+++	+++	-

INDOOR ENVIRONMENTAL QUALITY

Thermal comfort (1 credit)



Aim

To promote occupants' productivity, comfort, and well-being by providing quality thermal comfort.

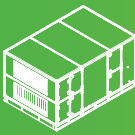




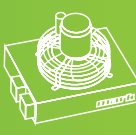


Parameters

Thermal Comfort Design

- Option 1: ASHRAE STANDARD 55-2010
- Option 2: ISO AND CEN STANDARDS

Thermal Comfort Control

Thermal comfort controls allow occupants, to adjust one of the following in their local environment: temperature, air speed, and humidity.

Product								
Product	AIR-STREAM	GS+	TANNER	INFRA	INFRA AQUA DESIGN	ECOFAN W	MDV BLUE	DEMAND-DRIVEN CONTROL
Credits	1	1	1	1	1	1	1	1
Suitability	+++	+++	+++	+++	+++	+++	+++	+++



OUR CONTRIBUTION

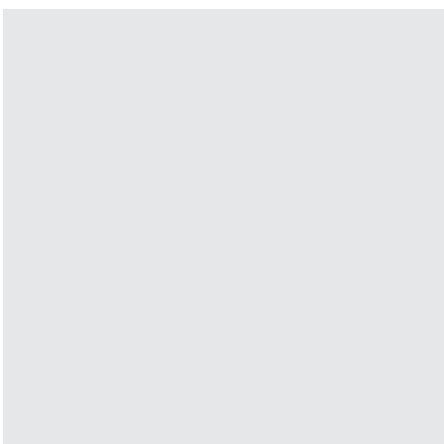


The contribution of Mark Climate Technology

The products of Mark Climate Technology each provide a pleasant indoor climate in their own way. Each product also has its own application.

Mark's consultants can use an energy analysis or a transmission loss calculation to show exactly which system is most appropriate for your project. We guarantee that our advice leads to the desired temperature in your building.

If you combine Mark's products with a demand-driven control, the indoor climate will be optimized even further. Consider, for example, a regulation based on CO₂, presence, moisture and temperature.



INDOOR ENVIRONMENTAL QUALITY

Acoustic Performance (1 credit)

Aim

To provide (work)spaces that promote occupants wellbeing, productivity, and communications through effective acoustic design.

Parameters

- Minimize the effect on building occupants of site exterior noise produced by road traffic, aircraft flyovers, railroads, etc.
- Interior noise – Acoustical finishes
- Meet local applicable codes or 2010 FGI Guidelines and 2010 SV Guidelines



OUR CONTRIBUTION

The contribution of Mark Climate Technology






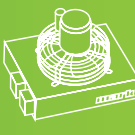


The acoustics in a building determine its quality of life. We take this into account when developing our products. Take our radiant heating systems, for example. Mark Climate Technology has a series of gas-fired radiators (Infra / Infra Line) and a series of water-supplied radiant panels (Infra Aqua Design).

Our radiant heaters are equipped with a tube register that is heated by the heat medium. As a result, the tube will give off its heat in the form of radiant heat. This heat can best be compared to the sun. The radiant heat is completely harmless and gives a very comfortable feeling.

There is no use of fans or other moving parts, so no air is blown into the room. Therefore people inside will not be bothered by air displacement or dust swirls. In addition, the radiant heaters work completely silently.

The Mark Infra Aqua Design radiant panels can optionally be supplied in a perforated version for optimal room damping.



Product								
Credits	1	1	1	1	1	1	1	-
Suitability	+++	+++	+++	+++	+++	+++	+++	-

REGIONAL PRIORITY

(4 credits)



Aim

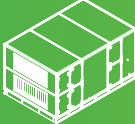




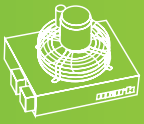


To provide an incentive for achievement of credits that address geographically-specific environmental, social equity and public health priorities.

Parameters

- LEED 2009: RP credit zones were identified by ZIP code
- LEED v4: RP credit zones were created using a geographic information systems (GIS)-based program

Bonus points for existing credits:

- Applicable credits depend on project country
- Required point thresholds

Product	 AIR-STREAM	 GS+	 TANNER	 INFRA	 INFRA AQUA DESIGN	 ECOFAN W	 MDV BLUE	 DEMAND- DRIVEN CONTROL
Credits	1	1	1	1	1	1	1	1
Suitability	+++	+++	+++	+++	+++	+++	+++	+++



OUR CONTRIBUTION



The contribution of Mark Climate Technology

Mark controls the entire chain; from innovation and design to production, maintenance and service. This makes Mark the only party in the market able to deliver custom solutions. Our consultants are happy to help you to deal with problem as efficiently as possible.

Our consultants have an in-depth knowledge of our complete product range and the associated technologies. They are happy to work with you to find the perfect solution for an optimal indoor climate. Whether it concerns high efficiency air heaters, water-fed radiant panels, air handling units or one of the many other solutions.

Mark has proven itself for 75 years as a reliable partner for consultants, installers and end users.



DC ZEEWOLDE

A pleasant indoor climate for new distribution center in Zeewolde

On behalf of vanPanhuis in Hoogeveen (NL), Mark Climate Technology supplied the climate systems for the newly built distribution center in Zeewolde. The building of approximately 18,000 m² has received the BREEAM rating **VERY GOOD (***)**.

Four GS+ high efficiency gas-fired air heaters provide the distribution halls with heating. This condensing unit provides an efficiency greater than 106% (lower value). Heat is generated via a modulating (5:1) premixburner which results in very low gas consumption.

Ten pieces of ECOFAN W recirculation fans have been installed in combination with the high

efficiency air heaters. A combination of these products provides optimum comfort and good heat distribution within the room. The ECOFAN W transports the warm blanket under the roof to the occupied area. As a result, the room heats up more quickly, and gas consumption can in some cases be reduced by up to 30%.

Two Mark AIRSTREAM HWX heat recovery units placed on the roof provide the heat recovery and ventilation of the office spaces. This Eurovent-certified AIRSTREAM heat recovery unit fully complies to the latest requirements of the ErP regulation for ventilation products. The units are also supplied Plug & Play as standard.



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MARK CLIMATE TECHNOLOGY

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A PLEASANT INDOOR CLIMATE

Mark Climate Technology is happy to advise you on a pleasant indoor climate for your building. With free advice (also on site) and a wide product range, we can provide each customer with a tailor-made service.