The LEED™ Green Building Rating System

Growing awareness and concern with the environmental and health impacts of buildings in Canada has led to widespread demand for a common method of independently certifying the merits of a given building. In response to this demand, the Canada Green Building Council (CaGBC) has adapted several rigorous Canadian green rating systems based on the U.S. Green Building Council's LEED® (*Leadership in Energy and Environmental Design*) system. The aim has been to create rating tools that both recognize high health, energy and environmental performance, while being practical and easy to apply in Canadian (and American) building projects.

The first LEED rating system adapted for Canada-wide use was the LEED® Canada for New Construction and Major Renovations version 1.0, launched in December 2004. In 2009, the USGBC re-launched its suite of rating systems and aligned LEED for New Construction and Major Renovations (NC) and LEED for Core and Shell Development (CS) into one reference guide. The CaGBC is following suit and re-launching LEED Canada NC 2009 and LEED Canada CS 2009, merged not only in one reference guide but also in this rating system document for ease of use.

Prerequisites and credits in the LEED Canada for New Construction and Major Renovations 2009 and in the LEED Canada for Core and Shell Development 2009 address seven topics:

- Sustainable Sites (SS)
- Water Efficiency (WE)
- Energy and Atmosphere (EA)
- Materials and Resources (MR)
- Indoor Environmental Quality (IEQ)
- Innovation in Design (ID)
- Regional Priority (RP)

LEED Canada for New Construction and Major Renovations 2009 and LEED Canada for Core and Shell Development 2009 certifications are awarded according to the following scale:

Certified	***40 – 49 points***
Silver	***50 – 59 points***
Gold	***60 – 79 points***
Platinum	***80 points and above***

A complete explanation of the LEED credit weightings system is available on the USGBC website, at www.usgbc.org.

The **LEED® Canada NC** rating system applies to new construction and major renovations of commercial and institutional buildings, i.e., buildings regulated by Part 3 of the National Building Code. It also applies to retail, mid- and high-rise multi-unit residential buildings (MURBs), public assembly buildings, manufacturing plants, and other types of buildings.

LEED® Canada for Core and Shell (CS) is a derivative of *LEED Canada NC* and applies to buildings where less than 50% of the building area will be fit-up to *LEED Canada NC* requirements prior to certification.

APPLICABLE TO ALL LEED® CERTIFICATON

Matrix*Air*™ solar air heating and power systems are applicable to all levels of LEED® certification providing up to 10 LEED® points within the Energy and Atmosphere (EA), Materials and Resources (MR) and Indoor Environmental Quality (IEQ) areas.

Matrix*Air*™ solar air heating systems are increasingly specified by architects and engineers for their aesthetic, and efficient means of producing ventilation air for new or existing Commercial, Industrial or Institutional applications in cold climates around the world due to their simplicity, ease of installation, long life, design flexibility and overall effectiveness in delivering low cost space and fresh air heating.

Matrix*Air*™ solar air heating systems are amongst the most cost efficient renewable power and heat products due to their remarkably high solar energy efficiency. Our systems are certified under both CSA Performance (CSA378.2) and SRCC (OG100) specifications.

Schlüter® Systems Canada - 6100 m² building located in Ste-Anne-de-Bellevue, QC- LEED® Gold certification

Following are the ways in which Matrix*Air*™ solar heat and power systems will produce LEED® points for your project:

Energy & Atmosphere:

OPTIMIZE ENERGY PERFORMANCE – CREDIT 1

Matrix*Air*™ systems typically will yield from 1 – 3 LEED® points resulting from the reduced building energy load.

	NC	CS
Credit	EA Credit 1	EA Credit 1
Points	1-19 points	3-21 points

INTENT

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

Model National Energy Code for Buildings (MNECB)

Demonstrate a percentage cost improvement in the proposed building performance rating compared with the reference building performance rating. Calculate the reference building performance according to the Model National Energy Code for Buildings 1997 (MNECB) using a computer simulation model for the whole building project. The minimum energy cost savings percentage for each point threshold is as follows:

NEW BUILDINGS	EXISTING BUILDING RENOVATIONS	POINTS FOR NC	POINTS FOR CS
25%	21%	1	3
27%	23%	2	4
28%	25%	3	5
30%	27%	4	6
32%	28%	5	7
33%	30%	6	8
35%	32%	7	9
37%	33%	8	10
39%	35%	9	11
40%	37%	10	12
42%	39%	11	13
44%	40%	12	14
45%	42%	13	15
47%	44%	14	16
49%	45%	15	17
50%	47%	16	18
52%	49%	17	19

ON-SITE RENEWABLE ENERGY – CREDIT 2

Matrix*Air*™ systems can provide up to seven LEED® points in this category. Depending on the application MatrixAir™ solar heating and power systems will offset upwards of 25% of buildings total energy load.

	NC	CS
Credit	EA Credit 2	EA Credit 2
Points	1-7 points	2, 4 points

Thermal heating accounts for over 30% of the CO2 emissions in Canada, making it one of our largest single sources of GHG. According to the C.D. Howe Institute's February 2009 report entitled "*Going Green for Less: Cost-Effective Alternative Energy Sources*", the lowest cost option possible to governments is from unglazed solar air heating technologies. Our solar air heating systems very cost effectively heat ventilation and indoor air, which also happens to be the largest – but typically overlooked - usage of energy in our climate.

INTENT

To encourage and recognize increasing levels of on-site renewable energy self-supply to reduce environmental and economic impacts associated with fossil fuel energy use.

REQUIREMENTS: NC & CS

Use on-site renewable energy systems to offset building energy cost. Calculate project performance by expressing the energy produced by the renewable systems as a percentage of the building's annual energy cost and use the table below to determine the number of points achieved.

For projects pursuing Option 1 in EA Credit 1; Optimize Energy Performance, use the building annual energy cost calculated in EA Credit 1. For projects pursuing EA Credit 1 prescriptive paths use the U.S. Department of Energy's (DOE) Commercial Buildings Energy Consumption Survey (CBECS) database to determine the estimated electricity use.

The minimum renewable energy percentage for each point threshold is as follows:

NEW CONSTRUCTION:

PERCENTAGE RENEWABLE ENERGY	POINTS
1%	1
3%	2
5%	3
7%	4
9%	5
11%	6
13%	7

CORE AND SHELL:

PERCENTAGE RENEWABLE ENERGY	POINTS
0.5%	2
1%	4

Materials and Resources

RECYCLED CONTENT – CREDIT 4

Matrix*Air*™ systems typically earn up to 2 LEED® points in this category.

	NC	CS
Credit	MR Credit 4	MR Credit 4
Points	1-2 points	1-2 points

INTENT

To increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials.

REQUIREMENTS: NC & CS

Use materials with recycled content such that the sum of post-consumer recycled content plus 1/2 of the pre-consumer content constitutes at least 10% or 20%, based on cost, of the total value of the materials in the project. The minimum percentage recycled for each point threshold is as follows:

RECYCLED CONTENT	POINTS
10%	1
20%	2

Indoor Environment Quality

INCREASED VENTILATION – CREDIT 2

LEED rewards buildings that proactively improve the indoor environment. Matrix*Air*™ solar air heating systems very cost effectively facilitates any buildings ability to meet the minimum 30% increase in fresh air ventilation prescribed by ASHRAE to earn an additional 1 LEED® point.

	NC	CS
Credit	IEQ Credit 2	IEQ Credit 2
Points	1 point	1 point

INTENT

To provide additional outdoor air ventilation to improve indoor air quality (IAQ) and promote occupant comfort, well-being and productivity.

REQUIREMENTS: NC & CS

FOR MECHANICALLY VENTILATED SPACES (NON-RESIDENTIAL)

Increase breathing zone outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum rates required by ASHRAE Standard 62.1-2007- Ventilation for Acceptable Indoor Air Quality (with errata but without addenda) as determined by IEQ Prerequisite 1: Minimum Indoor Air Quality Performance (below).

MINIMUM INDOOR AIR QUALITY PERFORMANCE

	NC	CS
Prerequisite	IEQ Prerequisite 1	IEQ Prerequisite 1
Points	Required	Required

INTENT
To establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants.

REQUIREMENTS: NC & CS
Meet the minimum requirements of Sections 4 through 7 of ASHRAE 62.1-2007, Ventilation for Acceptable Indoor Air Quality (with errata but without addenda).

FOR MECHANICALLY VENTILATED SPACES
Mechanical ventilation systems must be designed using the ventilation rate procedure or the applicable local code, whichever is more stringent.

CS ADDITIONAL REQUIREMENT:
Mechanical ventilation systems installed during core and shell construction must be capable of meeting projected ventilation levels based on anticipated future tenant requirements.

80-unit “Bord de l’eau” project in Old Longueil, Quebec - LEED® Canada for Home Certification

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