

Simply GREEN

Petra Vladykova, Swegon AB, Swegon Air Academy, Sweden

May 15, 2013

Chalmers Energy Conference 2013



Swegon Air Academy

“Swegon Air Academy is a platform for objective information and knowledge conveyance in the indoor climate and air handling fields.”

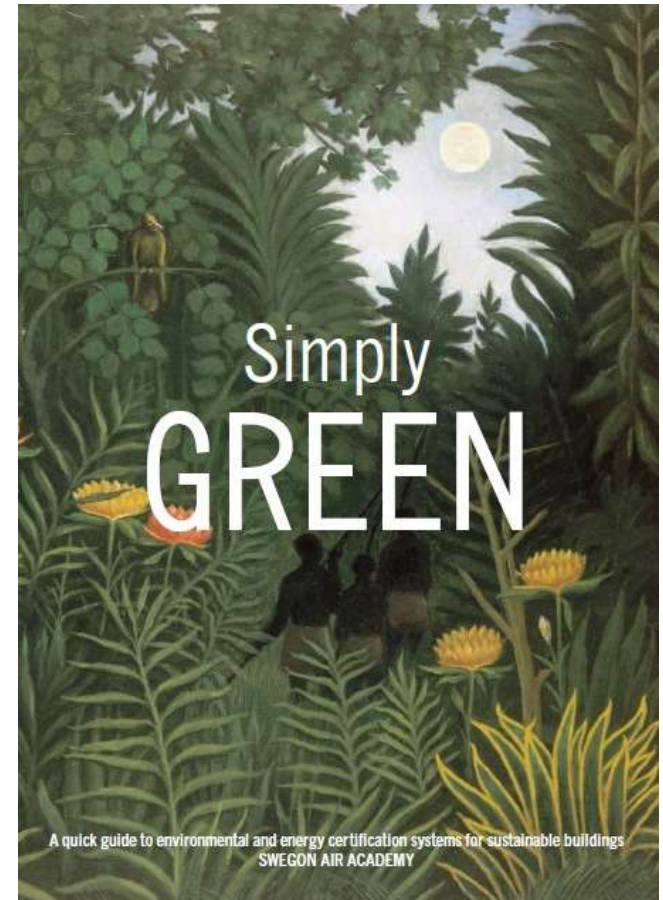
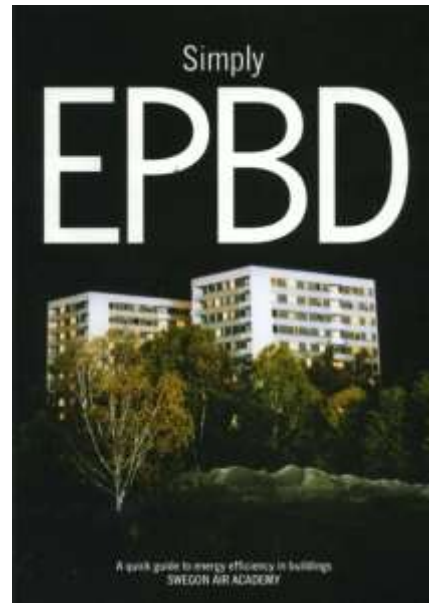
- Continuous seminar program
- ASHRAE/REHVA Guidebook and Eurovent on Ecodesign
- Project iSERVcmb
- Articles and books
- Website with membership values
- Ventilation, energy, and indoor air quality

Books

AIR

Simply EPBD

Simply GREEN...



Certification systems

Environmental

- BREEAM
- LEED
- DGNB
- Green Star
- Miljöbyggnad
- *HQE*
- *CASBEE, IGBC*

Energy-based

- GreenBuilding
- Minergie
- Passivhus
- *Energy Star, Effinergie*



Why to certify?

Stronger environmental brand → "environmentally friendly premises" strengthens a company's external image (study, 80%)

Ensure good indoor environment → users more satisfied (study)

Energy efficiency → energy systems mean low energy cost, environmental systems (don't) mean low energy cost (study)

"Guaranteed" building quality → Systems do not guarantee building quality system, but "ought to be built with more care?"

More tenants and higher occupancy rates → 5 - 10% higher occupancy rate. Some customers demanding (studies)

Increased financial value of a building → 5 - 35% in USA (study). 3-9% in Europe & USA (faster sales in one study)

Why to certify?

Higher rents → 0-6% (one study showed 17%)

Improved borrowing conditions and reduced tax → In some countries provide better mortgage terms. Also available systems in some countries tax credit

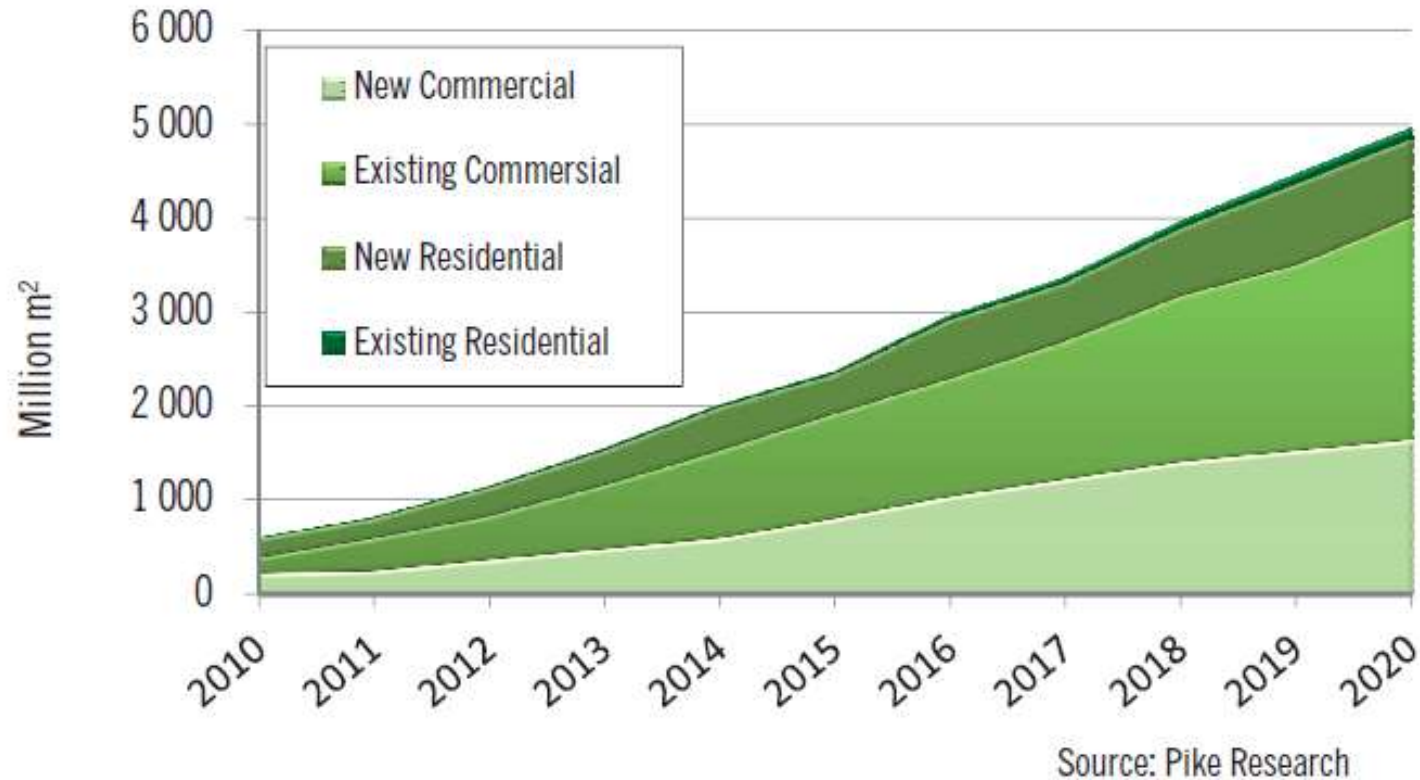
Increased attractiveness → “Positive feeling“ (hard to measure)

Simplified comparison of buildings (decision support for management) → “Commitment that all our buildings to be at least silver“

Meets requirements for building permits → Some cities/regions require classification

Improved use of resources → Environmental footprint

Certification - an occasional fly?



Shortly, a self-evident part of the building process!

Approach in a book

General →

Start year, number of buildings, etc.

What is assessed? →

Building types, different systems, etc.

What is expected? →

(e.g., LEED) → “points”, etc.

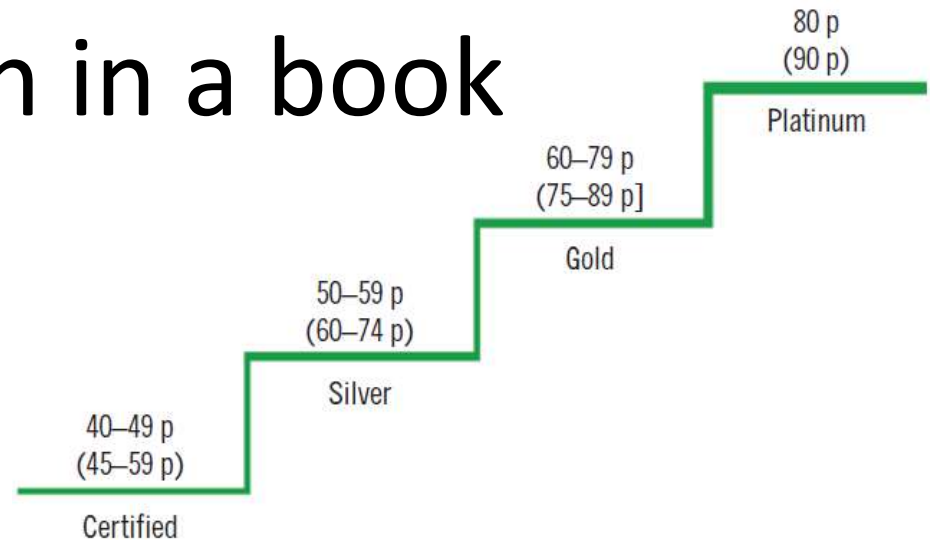


Sustainable sites <ul style="list-style-type: none"> • Site selection • Alternative transportation • Stormwater design 	Water efficiency <ul style="list-style-type: none"> • Water efficient landscaping • Innovative wastewater technologies • Water use reduction
Indoor environmental quality <ul style="list-style-type: none"> • Indoor air quality • Low-emitting materials • Lighting • Thermal comfort • Daylight and views 	Materials and Resources <ul style="list-style-type: none"> • Construction waste management • Materials reuse • Regional materials • Sustainable purchasing
Energy and Atmosphere <ul style="list-style-type: none"> • Optimize energy performance • On site renewable energy • Green power • Energy-efficient building systems 	
Innovation in Design <ul style="list-style-type: none"> • LEED Accredited Professional • Innovation in design • Exemplary performance 	Regional priority <ul style="list-style-type: none"> • Regional priority
Locations & Linkages (LEED for Homes) <ul style="list-style-type: none"> • Existing infrastructure • Site selection 	Awareness & Education (LEED for Homes) <ul style="list-style-type: none"> • Education of the home owner or tenant • Education of Building Manager

Approach in a book

Ratings and requirements →

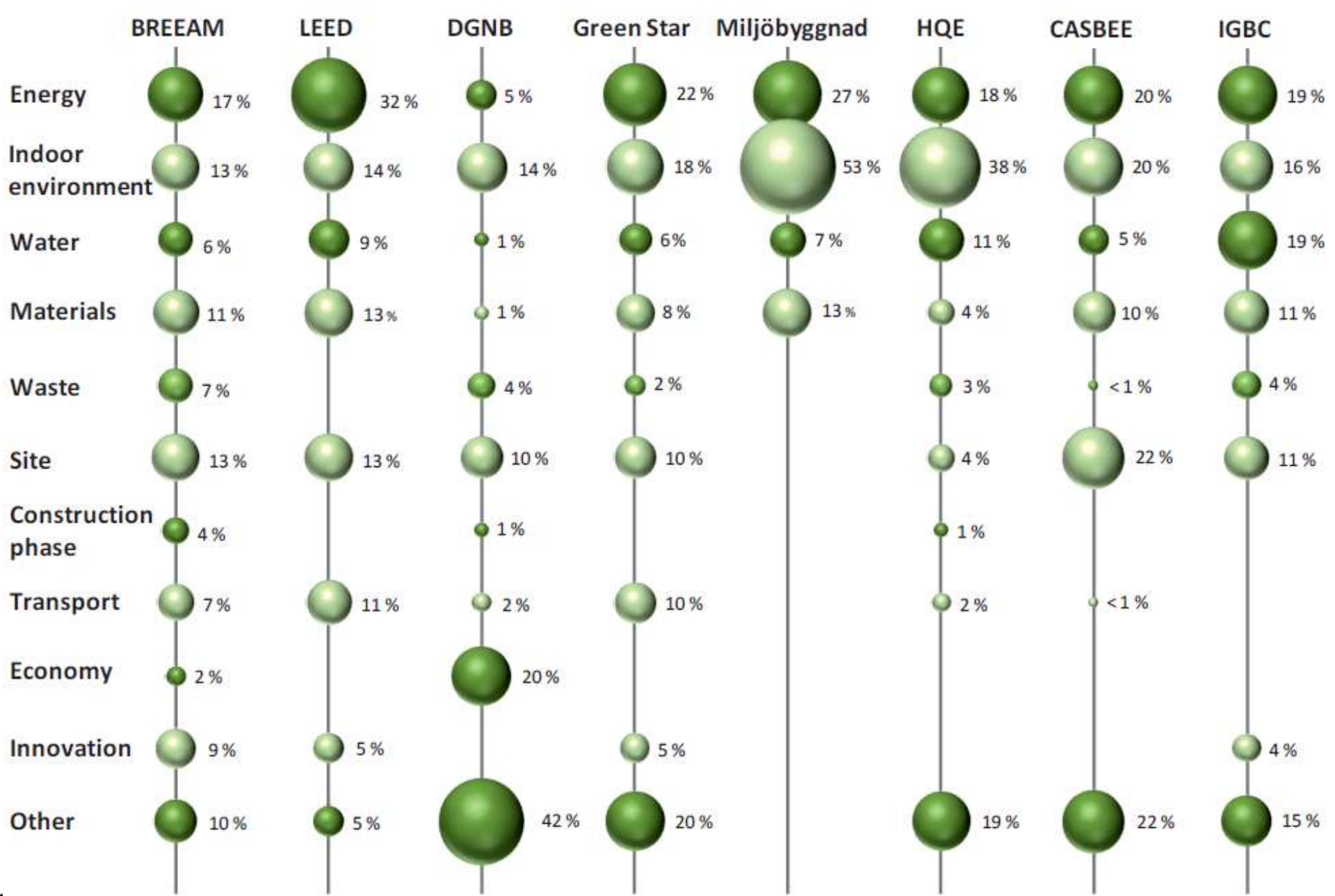
(e.g., LEED) Rating limits, requirements, weighting, and final rating, etc.



Categories	Possible Points	Points achieved
Sustainable sites	26	15
Water efficiency	10	5
Energy and Atmosphere	35	21
Materials and Resources	14	8
Indoor Environmental Quality	15	10
Innovation in Design	6	4
Regional Priority	4	2
Total	110	65
Rating		GOLD

TABLE 6.1	General		Types of buildings	Phases		Geographical spread	Type of certification system	Number of rating steps
BREEAM	Country of origin	Great Britain	All including neighbourhoods	New construction	Yes	Worldwide	Environmental	5
	Year launched	1990		Refurbishment	Yes			
	Certified buildings	200		Management	Yes			
LEED	Country of origin	USA	All, in principle, including neighbourhoods	New construction	Yes	Worldwide	Environmental	4
	Year launched	2000		Refurbishment	Yes			
	Certified buildings	32,2		Management	Yes			
DGNB	Country of origin	Germany	All, in principle, including neighbourhoods ¹	New construction	Yes	Germany, parts of Europe. China, Brazil and Thailand	Environmental	3
	Year launched	2009		Refurbishment	Yes ²			
	Certified buildings	224		Management	Yes ³			
Green Star	Country of origin	Australia	All including neighbourhoods	New construction	Yes	Australia, New Zealand and South Africa	Environmental	3 ⁴
	Year launched	2002		Refurbishment	Yes			
	Certified buildings	400		Management	Yes			
Miljöbyggnad	Country of origin	Sweden	Houses, apartment blocks and most non-residential buildings	New construction	Yes	Sweden	Environmental	4
	Year launched	2009		Refurbishment	Yes			
	Certified buildings	34		Management	Yes			
HQE	Country of origin	France	Houses Non-residential buildings	New construction	Yes	France, Belgium, Germany, Great Britain, Italy, Luxemburg, Morocco, Algeria, Brazil	Environmental	5
	Year launched	2004		Refurbishment	Yes			
	Certified buildings	7,2		Management	Yes			
GreenBuilding	Country of origin	EU	Non-residential buildings	New construction	Yes	Europé	Energy	1
	Year launched	2005		Refurbishment	Yes			
	Certified buildings	600		Management	Yes			
Minergie	Country of origin	Switzerland	Houses Non-residential buildings	New construction	Yes	Switzerland and neighbouring countries, Luxemburg	Energy	1 ⁵
	Year launched	1998		Refurbishment	Yes			
	Certified buildings	24		Management	No			
Passive House	Country of origin	Germany	Houses Non-residential buildings	New construction	Yes	Worldwide	Energy	1
	Year launched	1998		Refurbishment	Yes			
	Certified buildings	4,400 ⁶		Management	No			
CASBEE	Country of origin	Japan	Houses Non-residential Neighbourhoods	New construction	Yes	Japan	Environmental	5
	Year launched	2002		Refurbishment	Yes			
	Certified buildings	216		Management	Yes			
IGBC	Country of origin	India	Houses Non-residential ⁷ Neighbourhoods ⁷	New construction	Yes	India	Environmental	4
	Year launched	2007		Refurbishment	Yes ⁸			
	Certified buildings	17		Management	Yes ⁹			
ENERGY STAR	Country of origin	USA	Houses Non-residential	New construction	Yes	USA	Energy	1
	Year launched	1999-10		Refurbishment	Yes			
	Certified buildings	18		Management	No			
Effinergie	Country of origin	France	Houses Non-residential	New construction	Yes	France	Energy	1
	Year launched	2007		Refurbishment	Yes			
	Certified buildings	16,925		Management	No			

TABLE 6.2	BREEAM	LEED	DGNB 11	Green Star	Miljöbyggnad 28	HQE 12	Green Building	Minergie	Passiv haus	CASBEE	ENERGY STAR	IGBC	Effinergie
Energy performance	17%	32%	5%	22%	27%	18%	100%	100%	100%	20%	100%	19%	100%
Power demand (heating/cooling)	X	X	X ¹³	X	X	X	X	X	X	X	X	X	X
Type of energy (environmental perspective)	X	X		X	X	X		X ¹⁴	X			X	
Indoor environment	13%	14%	14%	18%	53%	38%		X ¹⁵		20%		16%	
Air quality	X	X	X	X	X	X		X ¹⁵	X	X		X	
Thermal comfort	X	X	X	X	X	X		X ¹⁵		X			
Daylight	X	X	X		X	X		X ¹⁵		X		X	
Lighting	X	X	X	X		X		X ¹⁵	X	X			
Acoustics/noise	X		X		X	X				X			
Water	6%	9%	1%	6%	6%	11%				5%		19%	
Use	X	X	X	X		X				X		X	
Quality	X			X ¹⁶	X ^{16,17}	X							
Reuse/recycling	X	X		X		X				X		X	
Rainwater	X	X		X						X		X	
Materials	11%	13%	1%	8%	13%	4%				10%		11%	
Recycling	X	X	X	X		X				X		X	
Environmental aspects	X	X	X		X	X				X			
Origin	X	X				X				X		X	
Waste	7%	X ¹⁸	4%	2%		3%				<1%		4%	
Waste management	X	X	X	X		X						X	
Site	13%	13%	10% ¹⁹	10%		4%				20%		11%	
Choice of site 20	X	X	X	X		X				X		X	
Light pollution	X	X				X				X			
Noise	X		X			X							
Ecology	X	X		X		X							
Heat islands		X									X	X	
Construction phase	4%	X ¹⁸	1%			1%							
Total effect of building site	X	X	X										
Transport	7%	11%	~3% ²¹	10%		2%				~1%			
Commuting	X	X	X	X									
Pedestrian & cycle access.	X		X	X									
Economy	2%	X ²²	20%										
LCC	X	X	X										
Innovation	9%	5%		5%								4%	
Innovation, new technologies	X	X		X								X	
Other	10%	~5%	~42%	20%		19%				22%		15%	
Example	Safety	Engaging a LEED AP ²³	GHP ²⁴	Emissions		O&M ²⁵				Accessibility		Charging batterydriven vehicles	
	Pollutants	Pollutants	Safety	Commissioning		Ease of cleaning				Service		Guest car parking	
	Commissioning	Commissioning	Aesthetics	Development		EMF ²⁶				Safety		IGBC AP ²⁷	



Quotes

“Energy classification system seem to be more popular, especially with clients who want to give priority to high energy performance rather than low environmental impact and ecological well-being.”

“Environmental certification has had a beneficial impact/consequences on design and construction over the past decade (valuable source of technological innovation and design, linking design and engineering and construction fields together, and put user’s well-being in a spotlight).”

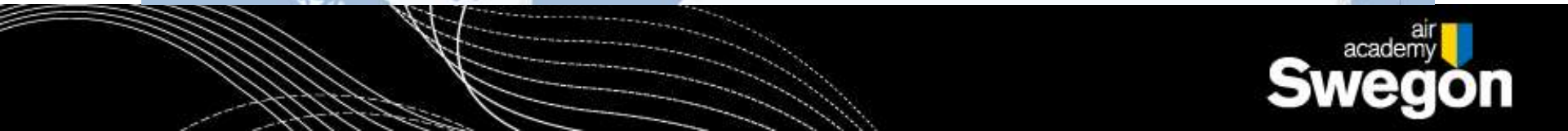
Reception

Interest to be included...

- ***ASHRAE bEQ energy labelling*** and ***ASHRAE Standard 189.1***, developed in collaboration with USGBC and being viewed as a potentially superior alternative to LEED
- ***Lebanese ARZ Building Rating System*** (developed by Lebanese Green Building Council)

Responses...

- Swedish criteria for Minienergie, Passivhus and zero-energy house (FEBY12)
- iPHA (International Passive House Association)



General information

- Simply GREEN in Swedish and English languages
- Formats of paperback and iBOOK/eBook
- Order via website in Swegon Air Academy Bookstore
- Special price for Swegon Air Academy members
- For more information www.swegonairacademy.com

Thank you. Questions?

petra.vladykova@swegon.se, www.swegonairacademy.com

