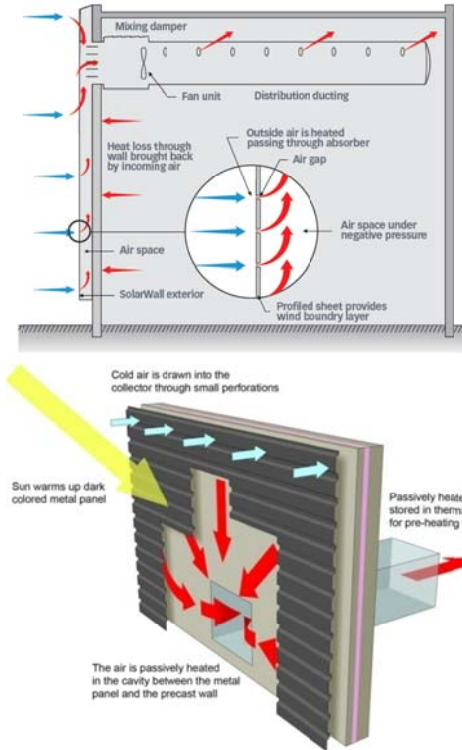**Example name:** *Greater Toronto Airport Authority, Ontario, Canada*

Template completed by: *Constantinos Vassiliades, vassiliades.constantinos@ucy.ac.cy*	*Photographs*

For installations

BISTS Location: *Toronto, Ontario, Canada, 43°42'N 79°24'W*
Climate Type: *Dfa*
Building Use: *Training center*

Level of BISTS integration
3. Adding to the architectural image

√   New Build
O   Refurbishment
O   Other: ……………………
tick all that apply

Type of BISTS:

~~Active~~/Passive/~~Hybrid~~
delete as appropriate

Function(s):
√   Air heating
O   Water heating
O   Combi-system
O   Cooling/ventilation/shading
O   PV/T
O   linked to another system
         (e.g., heat pump)
O   Other: ………………………
tick all that apply

Building element:

√   Facade
O   Roof
O   Other: ……………………..
tick all that apply

Drawings/Sketches/Cross-sections

BISTS characteristics:

The SolarWall system is one of the defining features of the new Fire and Emergency Services Training Institute at Toronto Pearson International Airport. The Architect Carol Kleinfeldt of KMA won the 2007 Solar Thermal Project of the Year Award from the Canadian Solar Industry for innovative building design with the technology of SolarWall.

Stage of Development: Responsible: *Company.*

O   Idea/Patent   …………………………………..
O   Prototype   …………………………………..
O   Demonstration   …………………………………..
O   Integral building element   …………………………………..
√   Commercially available   SolarWall
tick all that apply

BISTS description and context

It is basically a second shell which is mounted on the outer walls of the building, and heats the air and then leads it inside the building.
The "All - black" system is integrated on the front facade of the building. The perforated solar investment is about 240 m² and delivers between 3800 - 6800 cfm (6460 – 11560 m³ / h) of heated air. An additional 250 m² of non perforated metal cladding was installed in the wall just behind the SolarWall system to match the front. The SolarWall system contributed, so the building could win the LEED points in categories EAc1 (Energy Efficiency) and MRc4 (Recycled Content).

System viability

For example….Economic viability (capital and running costs), maintenance, embodied energy, environmental impact and sustainability, wider social contexts

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Modelling and simulation tools developed/used

For example….new modules/types created for established simulation programs, stand-alone modelling, use of generalised codes, model outcomes, validation and accuracy. Design tools developed

BISTS Performance data

Based on:
O   Estimation
O   Detailed simulation
CANMET's monitoring report.
O   Measurement/testing
O   Long-term monitoring
tick all that apply

Performance parameters

For integrated systems:
key performance indicators -

Solar savings fraction: %
Light transmittance: %
Solar transmittance:%
Total solar energy transmittance: %:
Solar heat gain factor: %
Building fabric U-values: W/m^{2}K
Noise, fire, etc ratings
Other:

For separate collectors:
performance rating coefficients -
(EN12975, a0,a1,a2), ASHRAE, etc

Other:

Graphs for collector efficiency, seasonal energy gains, diurnal/seasonal solar fraction, etc.

Additional information:

Sources and references:

http://solarwall.com/media/download_gallery/SolarWallLEED_Sellsheet.pdf
http://solarwall.com/media/download_gallery/SolarWall_SellSheet.pdf
http://solarwall.com/media/download_gallery/cases/GreaterTorontoAirportAuthorityY07_SolarWallCaseStudy.pdf
http://inhabitat.com/green-roofed-training-center-achieves-leed-silver/

INSTRUCTIONS

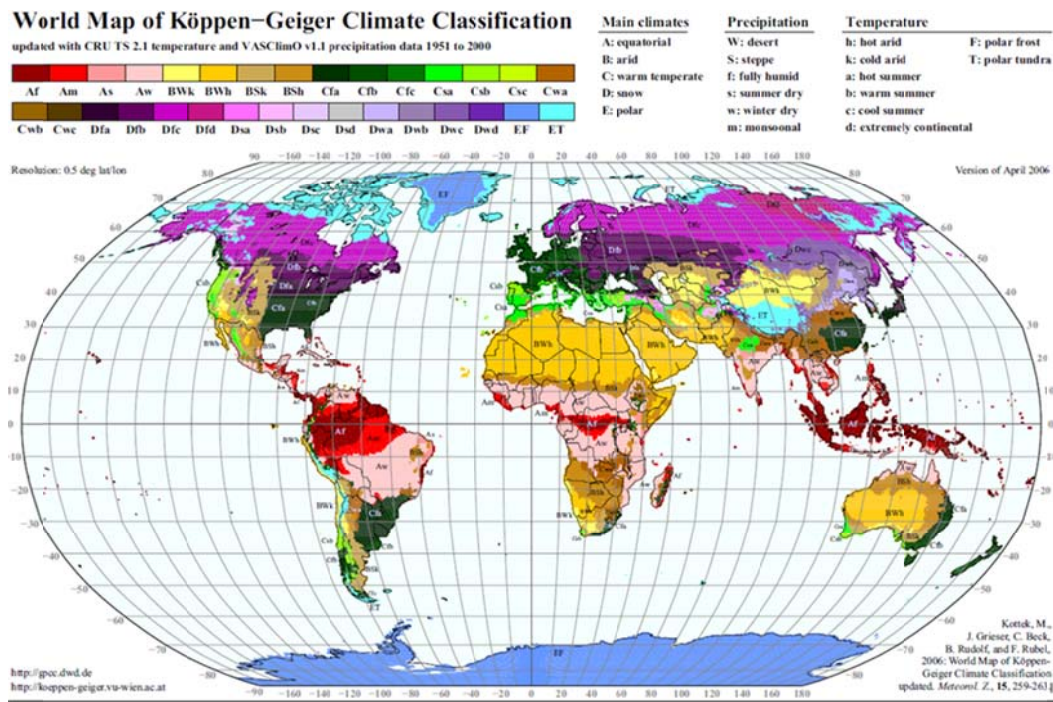Please fill in as much information as possible.

Tick where appropriate.

Text in red is suggested guidance. Insertinformation in provided space, removing red text as appropriate

If possible, use metric values.

If necessary, supply additional information on separate sheets

Reference listing

Köppen climate classification

(Kottek, M.,J. Grieser, C. Beck,B. Rudolf, and F. Rubel,2006: World Map of Köppen-Geiger Climate Classificationupdated. Meteorol. Z., 15, 259-263.)

Reijenga classification

The integration of PV systems in architecture can be divided into five categories:

1. Applied invisibly
2. Added to the design
3. Adding to the architectural image
4. Determining architectural image
5. Leading to new architectural concepts.

(Reijenga, TH and Kaan, HF. (2011) PV in Architecture, in Handbook of Photovoltaic Science and Engineering, Second Edition (eds A. Luque and S. Hegedus), John Wiley & Sons Ltd, Chichester, UK)

Rush classification

The architectural/visual expression of building services systems are identified as:

Level 1. Not visible, no change
Level 2. Visible, no change
Level 3. Visible, surface change
Level 4. Visible, with size or shape change
Level 5. Visible, with location or orientation change

(Rush, RD. (1986) The Building systems integration handbook Wiley, New York, USA)

Collector test standards

BS EN 12975-2 2006 'Thermal solar systems and components solar collectors - Part 2 test methods'
ASHRAE Standard 93-2010 'Methods of Testing to Determine the Thermal Performance of Solar Collectors'
ASHRAE Standard 95-1987 'Methods of Testing to Determine the Thermal Performance of Solar Domestic Water Heating Systems'