Example name: *Fred Douglas Place, Manitoba, Canada*

Template completed by:
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Photographs

For installations

BISTS Location: *Winnipeg, Manitoba, Canada, 49°53'58"N 97°08'21"W*
Climate Type: *Dfb*
Building Use: *Residential*

Level of BISTS integration
2. Added to the design

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

Type of BISTS:

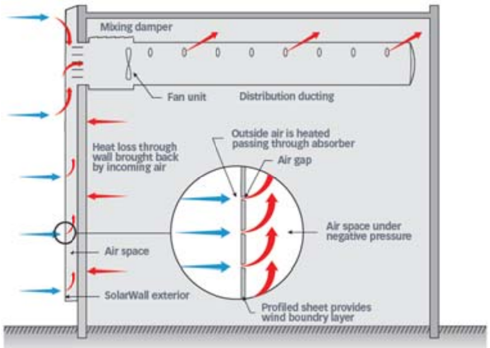
~~Active~~/Passive/~~Hybrid~~
delete as appropriate

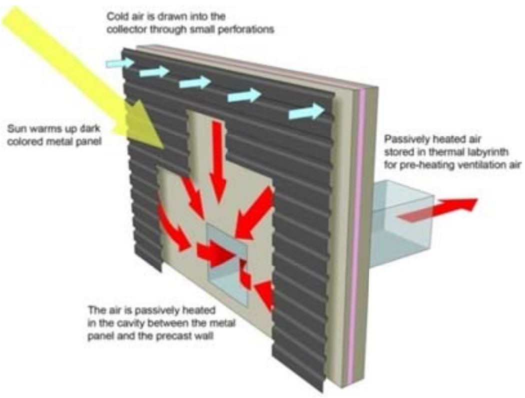
Function(s):
√ Air heating
O Water heating
O Combi-system
O Cooling/ventilation/shading
O PV/T
O linked to another system (e.g., heat pump)
O Other: ………………………
tick all that apply

Building element:

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

Drawings/Sketches/Cross-sections





BISTS characteristics:

Fred Douglas Place is a complex of apartments which has a big required volume of ventilation air during the long and cold winters of Winnipeg. The heating of this air by conventional means is expensive, and this is why they used the SolarWall system. This is a benefit for old high-rise buildings, because the system can work both for protection from the rain, and as a solar ventilation system.

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 design is consisted of 6 columns (5 facing south and one facing west) integrated on the tall building between the windows. The system is Metro Brown (matching the windows) and extends to 330.27 m² at 14 floors.

System viability

The overall system is sized to heat 17000 cfm of fresh air and is expected to save 228 MWh (820 GJ) of natural gas and hold over 40 tons of CO_2 (per year) from the atmosphere. It is also expected to save over $ 9150 a year in heating costs. The system, is expected to be depreciated in 7.7 years.

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

<table>
<tr>
<td>
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:
</td>
<td>Graphs for collector efficiency, seasonal energy gains, diurnal/seasonal solar fraction, etc.</td>
</tr>
<tr>
<td colspan="2">Additional information:</td>
</tr>
<tr>
<td colspan="2">Sources and references:

http://solarwall.com/media/download_gallery/SolarWall_SellSheet.pdf
http://solarwall.com/media/download_gallery/cases/FredDouglas_SolarWallCaseStudy_Y09.pdf</td>
</tr>
</table>

INSTRUCTIONS

Please fill in as much information as possible.

Tick where appropriate.

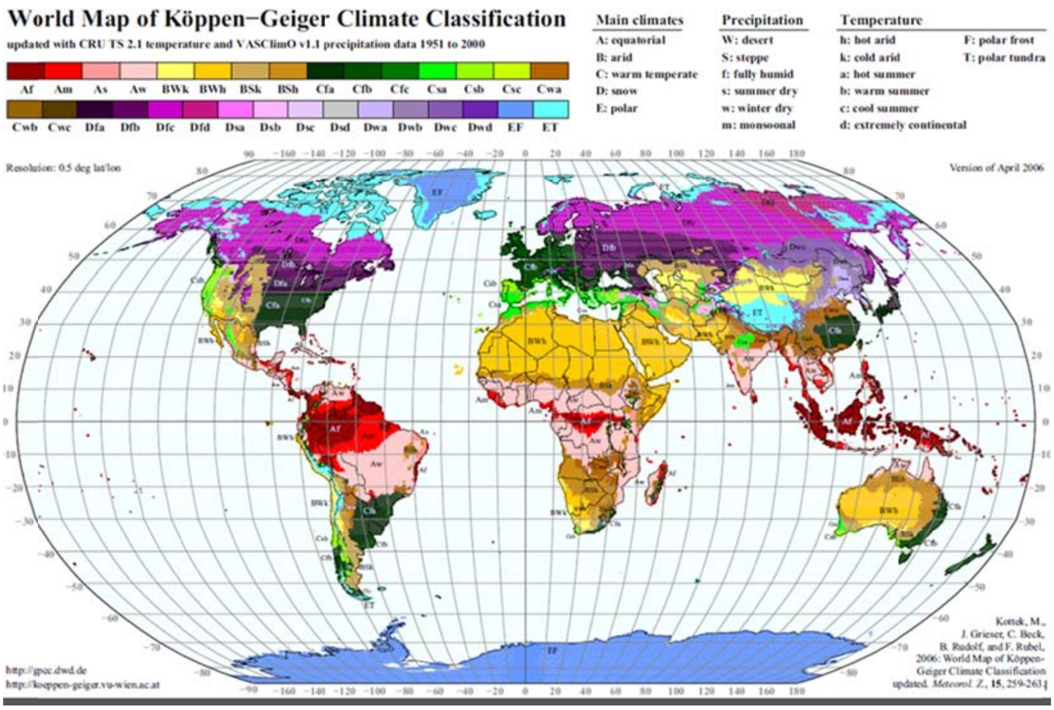
Text in red is suggested guidance. Insertinformation in provided space, removing red text as appropriate

If possible, use metric values.

If necessary, supply additional information on separate sheets

<u>Reference listing</u>

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'