Example name: *Health Canada, Ontario, Canada*

Template completed by:
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Photographs

For installations

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

Level of BISTS integration
3. Adding to the architectural image

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

Type of BISTS:

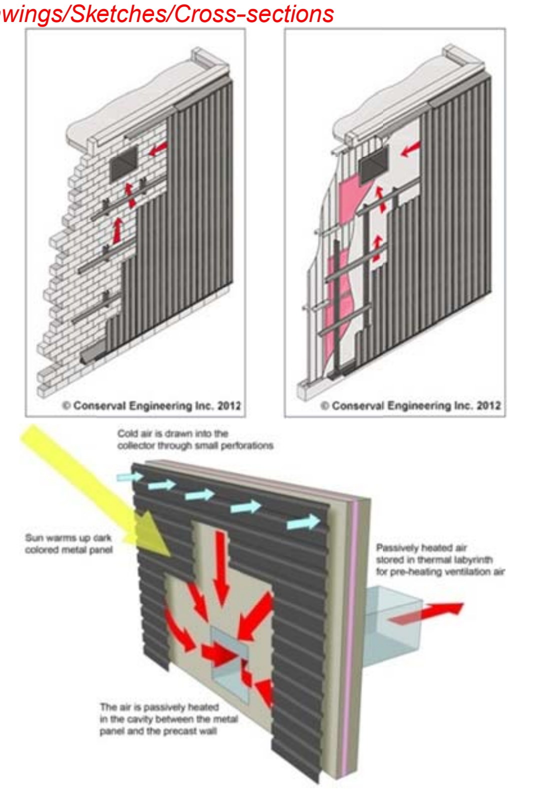
~~Active~~/Passive/~~Hybrid~~
delete as appropriate

Function(s):
√ Air heating
O Water heating
O Combi-system
O Cooling/ventilation/shading
O PV/T
√ 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:
After running various simulations, was determined that the southern and the eastern walls of the building would be the most advantageous for saving energy and money. Consequently, Health Canada chose these two walls to install the SolarWall system.
The workshops require a large volume of ventilation and heating air which can be very costly. 185 m² of SolarWall panels are installed in the upper part of the building, over the existing brickwork. The system is designed so the panels are curved around the building, creating a visually appealing facade. Bronze panels were selected to align the system with the overall look of the rest of the building.

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 SolarWall system is connected to the existing air intake system on the east wall to supply 14000 cfm of ventilation air. This preheated air is passed to the building through the HVAC system, and then is distributed with conventional methods in all of the various laboratories.

System viability

The facility replaces 12300 m³ of natural gas per year, saves 390 GJ of energy per year and the savings in CO_2 is about 23 tonnes / year.

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/m²K* *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/SolarWall_SellSheet.pdf http://solarwall.com/media/download_gallery/cases/HealthCanada_Y04_SolarWallCaseStudy.pdf	

INSTRUCTIONS

Please fill in as much information as possible.

Tick where appropriate.

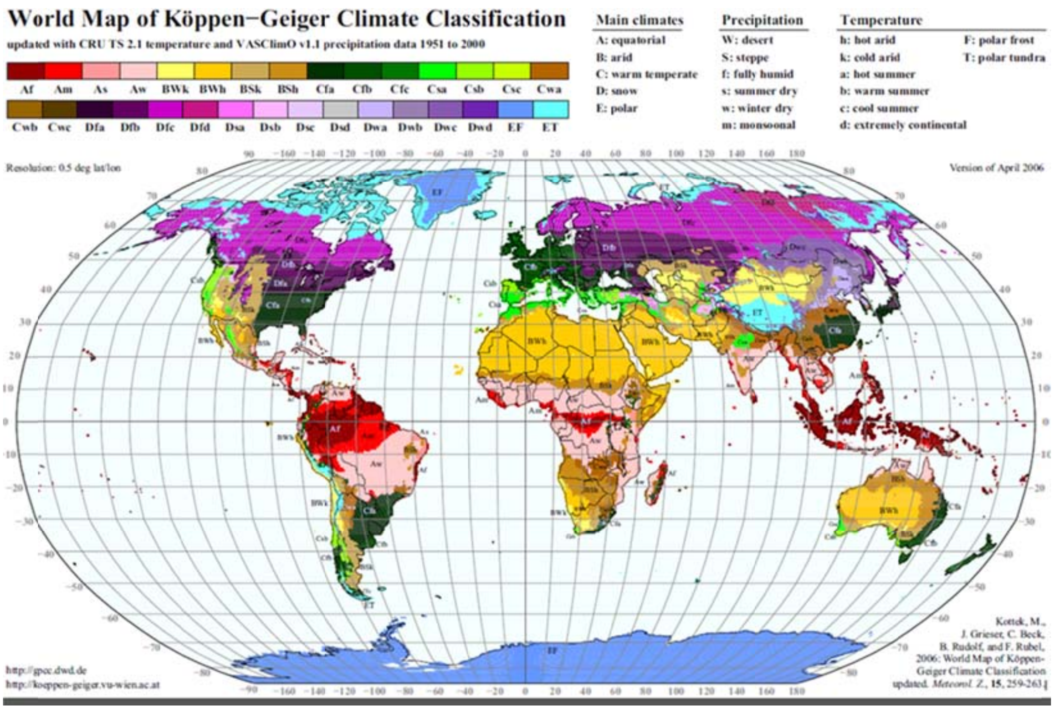
Text in red is suggested guidance. Insertinformation in provided space, removing red text as appropriate

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'