Example name: ***St Louis County's Hibbing Courthouse Annex, MN, USA***

Template completed by:
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For installations

BISTS Location: *St Louis County, Minnesota, USA, 47.58°N 92.46°W*
Climate Type: *Dfb*
Building Use: *Public Building*

Level of BISTS integration
3. Adding to the architectural image

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

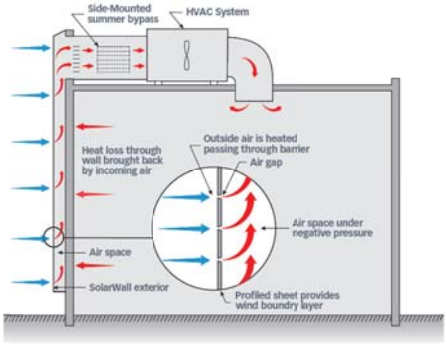
Photographs

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

Drawings/Sketches/Cross-sections



Building element:

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

BISTS characteristics:
The Conserval Engineering, in collaboration with the Architectural Resources Inc, developed a solution that integrates 115 m² SolarWall panels on the renovated building. The metal panels were used at two levels, for preheating the air used for ventilation of the office space, reducing both energy costs and emissions of CO_2. When the building reopened could boast that it had a long list of environmentally friendly energy improvements, with one of them being the SolarWall solar 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.

System viability

The system saves about $ 3,100 per year (in gas prices of 2007), and will provide a hedge against the escalation of energy prices. The system will also displace more than 16 tonnes of CO_2 per year, and will produce more than 202 MBtu (213 GJ) of energy per 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/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/SolarWall_SellSheet.pdf* *http://solarwall.com/media/download_gallery/Hibbing-SolarWallCase.pdf*	

INSTRUCTIONS

Please fill in as much information as possible.

Tick where appropriate.

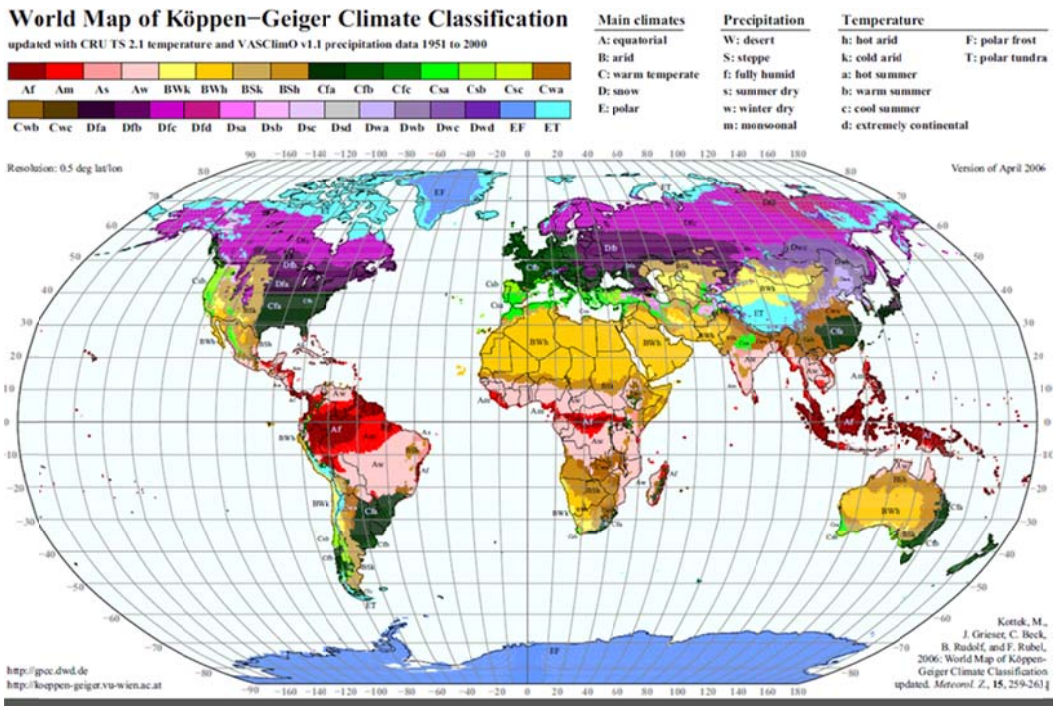
Text in red is suggested guidance. Insertinformation in provided space, removing red text as appropriate

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'