Example name: *The Research Support Facility*

Template completed by:
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Photographs

For installations

BISTS Location: *Golden, Colorado, USA, +39°45'19.95", -105°13'15.96"*
Climate Type: *Dfc*
Building Use: *Research Facilities*
Level of BISTS integration
2. Added to the design

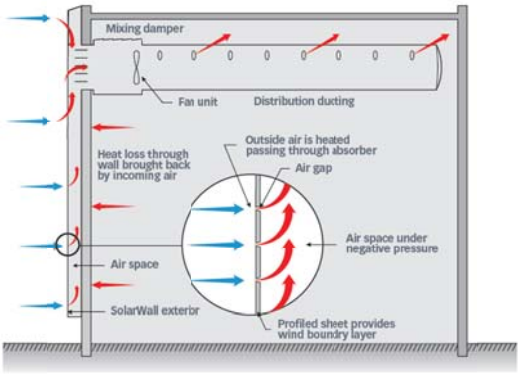
√ New Build
O Refurbishment
O Other: ……
tick all that apply

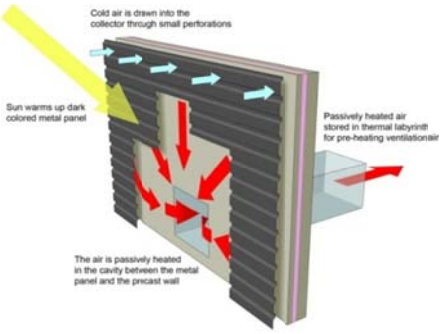
Type of BISTS:

~~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

Drawings/Sketches/Cross-sections





Building element:

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

BISTS characteristics:

Two SolarWall Building Integrated Solar Thermal System is integrated on the south facade of the building. The anthracite-colored solar panels, cover over 802.68 m² and preheat the fresh air vent using the sun, thus reduce heating costs and greenhouse gas emissions. The system is fabricated on-site.

Stage of Development:Responsible: *Company.*

O	Idea/Patent	……..
O	Prototype	……..
O	Demonstration	……..
O	Integral building element	……..
√	Commercially available	*SolarWall by Conserval Engineering.*

tick all that apply

BISTS description and context

The Research Support Facility (RSF) is a very important building which has taken the assessment LEED Platinum, is the first Zero Energy Building (ZEB) of its kind and is a showcase for high performance sustainable design. Designed to use 50% less energy than a standard office building, incorporates a number of green innovations such as the solar air heating system.

System viability

The SolarWall system at the RSF is projected to deliver over 238 MWh (856 GJ) of thermal energy each year. The estimated reductions in GHG emissions is over 53 tones of CO2 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 *Specify software(s) used* 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://www.archdaily.com/148060/
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/NREL-RSF_SolarWallCaseStudy_Y10.pdf
http://www.nrel.gov/sustainable_nrel/rsf.html
http://solarwall.com/en/products/solarwall-air-heating/how-solarwall-works.php

INSTRUCTIONS

Please fill in as much information as possible.

Tick where appropriate.

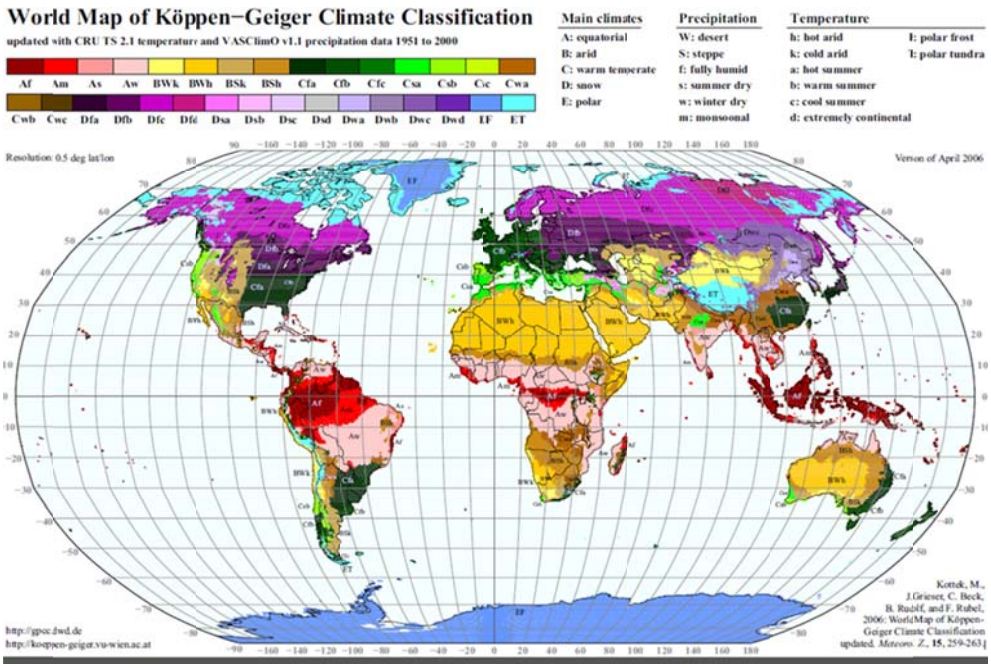
Text in red is suggested guidance. Insertinformation in provided space, removing red text as appropriate

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'