

**Example name: Jenni**

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**For installations**

BISTS Location: *Switzerland*  
 Climate Type: Cfb  
 Building Use: *residential*,

Level of BISTS integration 3

- OX New Build  
 O Refurbishment  
 O Other: .....



**Type of BISTS:**

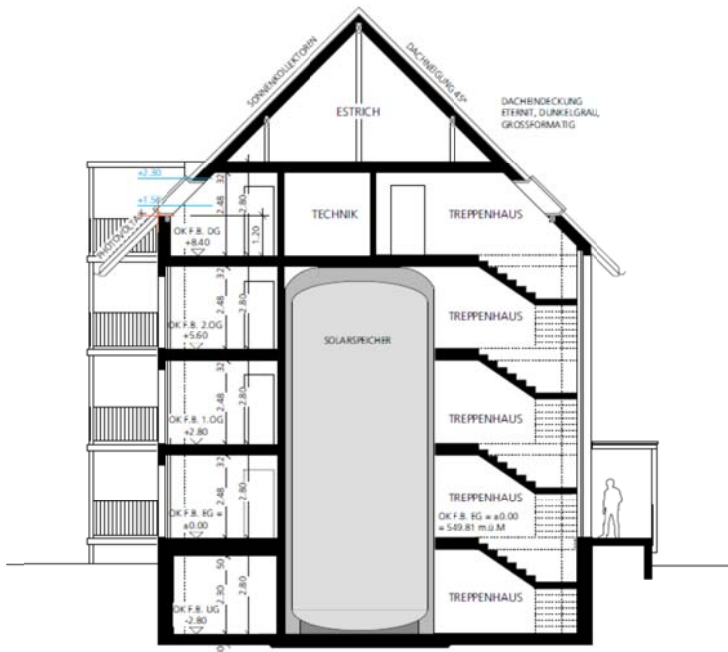
Active/Passive/Hybrid  
~~delete as appropriate~~

**Function(s):**

- O Air heating  
 OX Water heating  
 OX Combi-system  
 O Cooling/ventilation/shading  
 O PV/T  
 O linked to another system  
 (e.g., heat pump)  
 O Other: .....

**Building element:**

- O Facade  
 OX Roof  
 O Other: .....



**BISTS characteristics:**

*For example.....Collection area....m<sup>2</sup>, Orientation/inclination, Energy output, Contribution to building load, Material/colour/texture, Pre-fabricated off-site? Structural load, Other*

**Stage of Development:**

**Responsible:** *Research institute, Company, etc.*

|                                  |                           |                                |
|----------------------------------|---------------------------|--------------------------------|
| <input type="radio"/>            | Idea/Patent               | .....                          |
| <input type="radio"/>            | Prototype                 | .....                          |
| <input type="radio"/>            | Demonstration             | .....                          |
| <input checked="" type="radio"/> | Integral building element | www.Hartmann-Energietechnik.de |
| <input checked="" type="radio"/> | Commercially available    | .....                          |

**BISTS description and context**

Collector surface: 276m<sup>2</sup>  
 Storage Volume: 205m<sup>3</sup>  
 Constructed area 1.344m<sup>2</sup> / 5.170m<sup>3</sup>  
 Heating load @-8°C: 10-12 kW

**System viability**

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

## 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:

- ☐ Estimation
- ☐ Detailed simulation
- Specify software(s) used*
- ☒ Measurement/testing
- ☒ Long-term monitoring

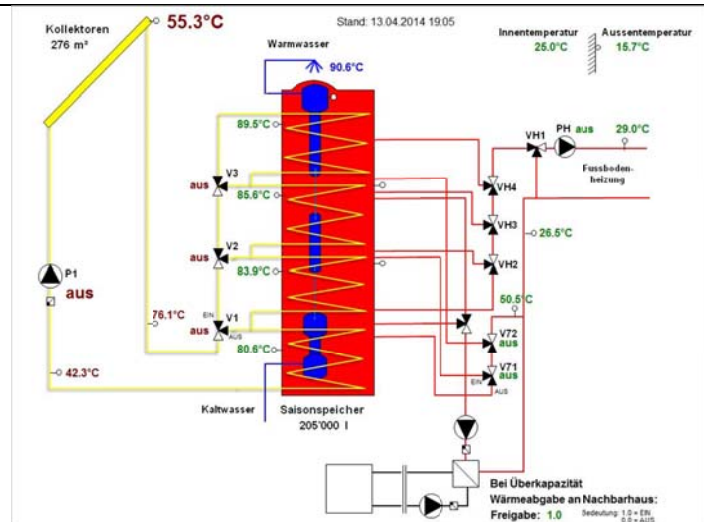
## Performance parameters

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:  $W/m^2K$*   
*Noise, fire, etc ratings*  
*Other:*

For separate collectors:  
performance rating coefficients -  
(EN12975,  $a_0, a_1, a_2$ ), ASHRAE, etc

Other:



### Additional information:

### Sources and references:

<http://www.jenni.ch/>

## INSTRUCTIONS

Please fill in as much information as possible.

Tick where appropriate.

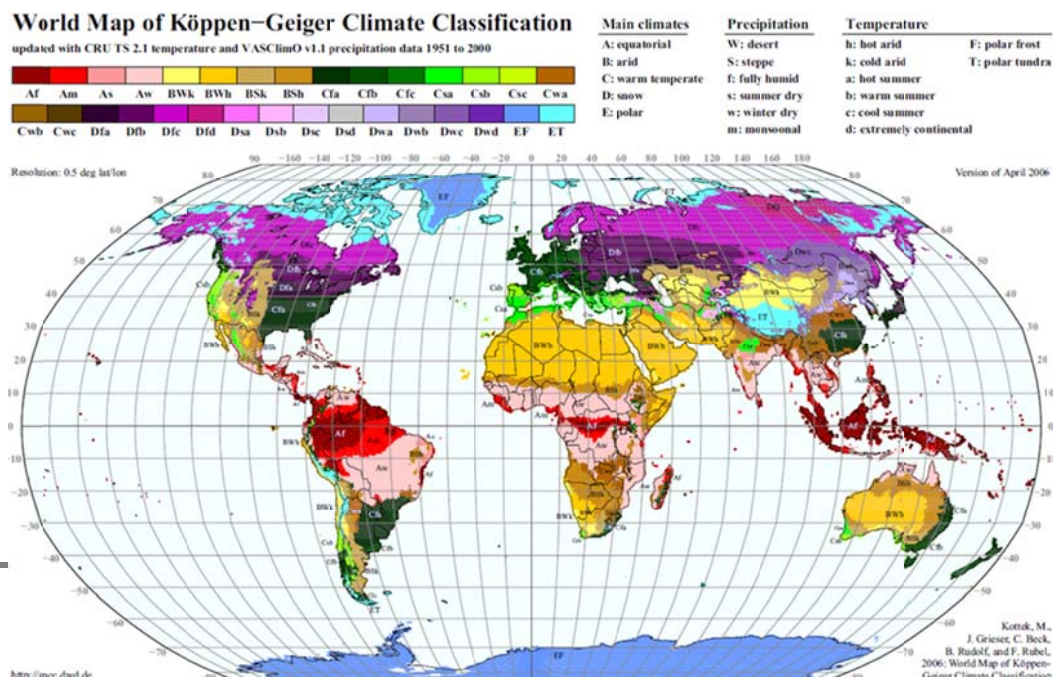
Text in red is suggested guidance. Insert information in provided space, removing red text as appropriate

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 Classification updated. 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'