

## Example name: Eco-Nok roof integrated solar water heater

Template completed by:  
Dr Mervyn Smyth, Uni of Ulster,  
m.smyth1@ulster.ac.uk

### For installations

BISTS Location: Holland, 52N, 4E  
Climate Type: Cfb  
Building Use: residential

Level of BISTS integration  
Rush level 3 / Reijenga level 3

- ☒ New Build  
☐ Refurbishment  
☐ Other: .....

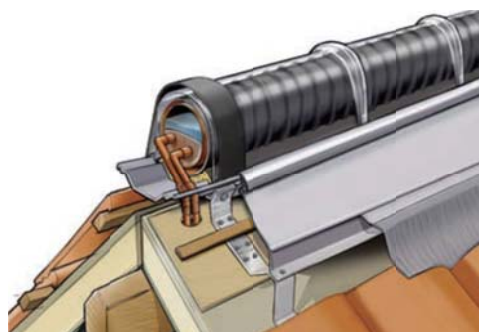
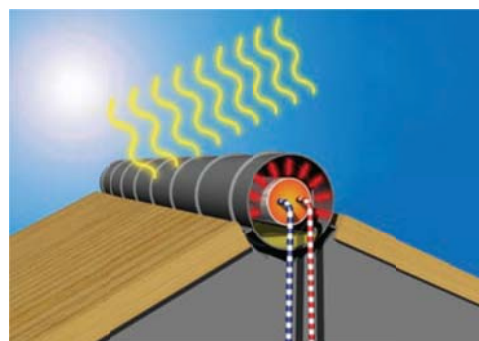


### Type of BISTS:

Active/Passive/Hybrid

Function(s):

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



### Building element:

- ☐ Facade  
☒ Roof  
☐ Other: .....

### BISTS characteristics:

The Eco-Nok is an integral roof mounted ICS solar water heating collector available in connected modules. Each module has a water content of 26 litres, is 1.5m long with a diameter of 270mm and module width of 332mm. Each module weighs 18kg empty and 44kg filled. The effective collection area per module is 0.36 m<sup>2</sup> and 1.03 m<sup>2</sup> for a typical 3 module unit. Annual energy collection for a 3 module installed along the apex ridge in Holland is 2.1GJ.

Stage of Development:		Responsible:
<input checked="" type="radio"/>	Idea/Patent	Henk de Beijer, De Beijer RTB BV
<input type="radio"/>	Prototype	.....
<input type="radio"/>	Demonstration	.....
<input checked="" type="radio"/>	Integral building element	Inventum B.V.
<input checked="" type="radio"/>	Commercially available	Inventum B.V.
<b>BISTS description and context</b>		
<p>The Eco-Nok uses unique, patented ICS technology based on heat pipe operation and is typically mounted in the apex ridge of pitched roof. Several modules may be linked together and can directly pre-heat feed water to the HWC or indirectly via a pumped circuit to the HWC heating coil.</p> <p>The Eco-Nok is CE certified by TNO and can provide up to 50% annual savings on hot water energy consumption according to the Dynamic System Testing (DST) method for a typical Dutch household equating to around 125 and 250 m<sup>3</sup> per year in natural gas.</p> <p>The unit is manufactured in Holland: Absorber material, copper; Storage tank material, stainless steel RVS (AISI 316L); Absorbing layer, Spectrally selective low coating; Liquid Evaporation, demineralized water; Casing materials, HDPE (high density polyethylene); Aperture cover material, PETG; Insulation material, 40mm thick EPP.</p>		
<b>System viability</b>		
<p>Eco-Nok Solar water heaters are manufactured to the highest quality standards such as ISO 9001 and is protected against freezing (up to -30°C) and over-heating (100°C). The unit cost is Euro 420 with a family sized system costing up to Euro 3000 fully installed.</p>		
<b>Modelling and simulation tools developed/used</b>		
Not available		

**BISTS Examples****BISTS Performance data**

Based on:

- ☐ Estimation
- ☐ Detailed simulation
- ☒ Measurement/testing
- ☐ Long-term monitoring

**Performance parameters**

For integrated systems:  
key performance indicators -

For separate collectors:  
performance rating coefficients -

Other:

**Additional information:****Sources and references:**