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BRITISH BOARD OF AGRÉMENT TEST REPORT No 44692 (Issue 2)

Determination of the change in heat flow through an uninsulated wall incorporating a *Radflek* sheet radiator reflector panel

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Summary

This report describes the determination of the change in heat flow arising from the use of a *Radflek sheet* reflective radiator panel inserted between a radiator and uninsulated walls.

The product reduced the heat flow by approximately 45% through the section of wall directly behind the radiator (approx 0.7m²).

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Date: 15 February 2010

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Date: 15 February 2010

On behalf of the British Board of Agrément

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Client:	Lucid Thinking King's Scholars House 230 Victoria Bridge Road London SW1V 1AU
Job No:	T144692 and T144897
Work period:	June and August 2009

1 INTRODUCTION

This report describes the determination of the change in heat flow arising from the use of a *Radflek sheet* reflective radiator panel inserted between a radiator and an uninsulated wall.

2 SPECIMEN

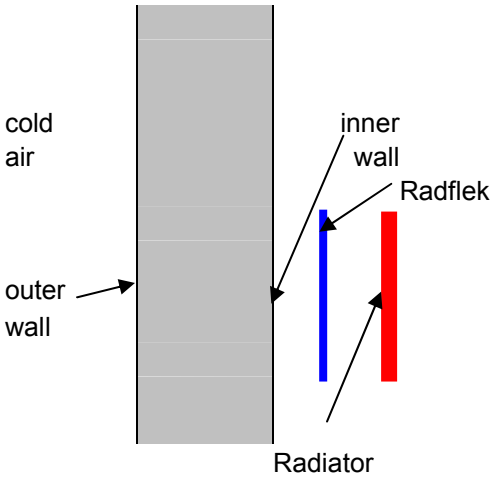
The specimen was supplied by the client and described as *Radflek sheet,* a radiator reflector panel, made from 'Eco-brite' a coated reflective film laminated to both sides of a polyethylene core.

The specimen comprised a reflective sheet and slide on clips and was fitted by the BBA following the instruction leaflet provided by the Client.

3 APPARATUS

The apparatus comprised the cold box section of a guarded hot box apparatus, test walls of nominal U values 1.1 W/m^{2}K and 2.2 W/m^{2}K and an electric radiator as shown in figure 1. The surface temperatures were recorded with a measurement uncertainty estimated as ± 0.3K at a 95% confidence level.

Figure 1 Test arrangement



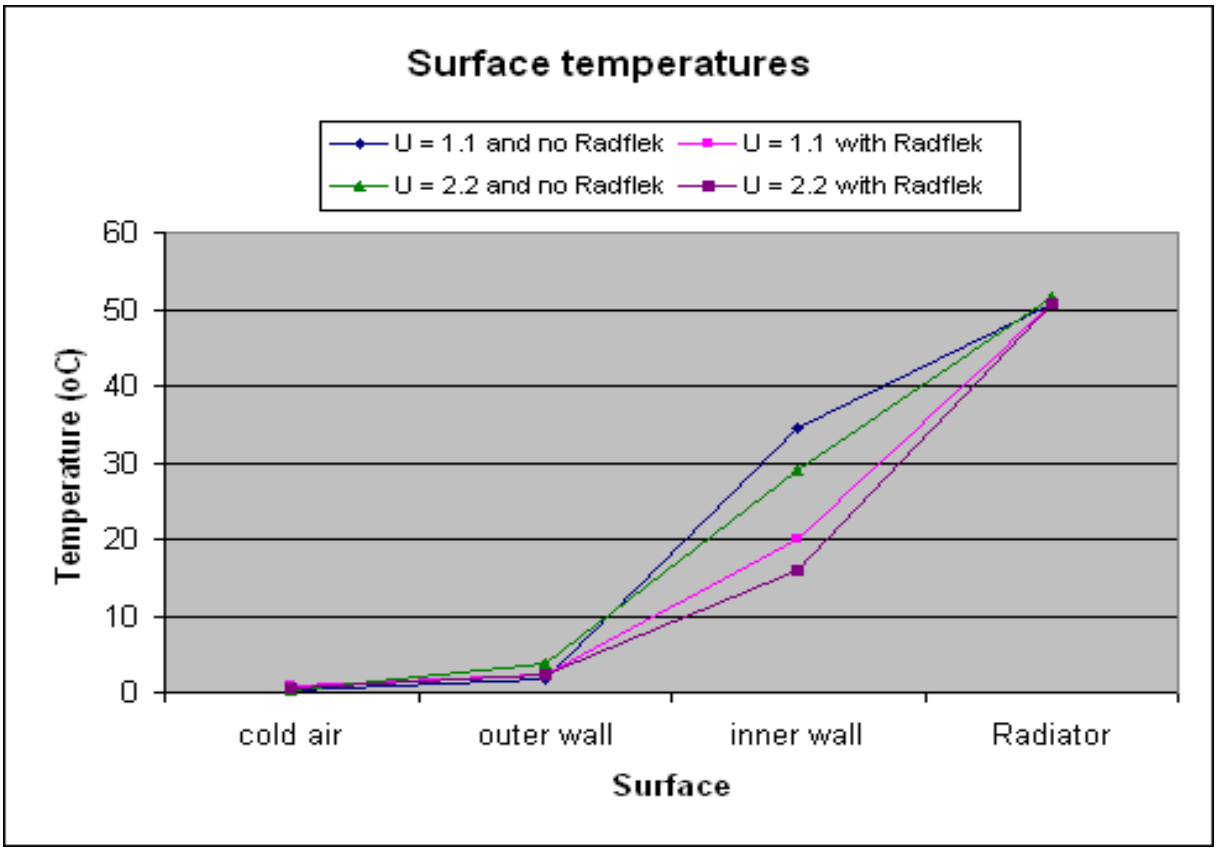
See Annex A for visual and a thermo graphic images of the test wall with a U value ~1.1 W/m^{2}K with and without the Radflek sheet in place.

4 MEASUREMENTS

Tests were carried out with and without the Radflek Sheet with the radiator ~80 mm from the wall. The surface temperatures were measured until they were stable and varying randomly for > 10 hours, see Table 1.

Table 1 *Surface temperatures (^{o}C) measured under steady state conditions*

Wall U value (W/m^2K)	1.1 No Radflek	1.1 Radflek	2.2 No Radflek	2.2 Radflek
cold air	0.2	1	0.2	0.5
outer wall	1.8	2.2	3.8	2.4
inner wall	34.5	19.9	29	15.9
Radiator	50.7	50.8	51.5	50.8



5 CALCULATIONS

The effect on heat flow through the wall can be calculated and standardised for a one degree temperature difference between the outdoor temperature and the radiator temperature. For the first test in Table 1:

Temperature difference across the wall	34.5 – 1.8	=	32.7^{o}C
Thermal resistance of the wall	1/(1.096 – 0.17)	=	0.742 m^2K/W
Heat flow	32.7 / 0.742	=	44.07 W/m^2
Temperature difference, radiator to cold air	50.7 -0.2	=	50.5K
Heat flow adjusted for a 1K temperature difference	44.07 / 50.7	=	0.872 W/m^2

Table 2 Heat flow rates for a 1K temperature difference (W/m^2)

	Wall U value (W/m^2K)	
	1.1	2.2
without Radflek	0.872	1.747
with Radflek	0.479	0.954
Difference	0.393	0.792
heat flow reduction %	45.1%	45.4%

6 CONCLUSIONS

The product has the effect of reducing the temperature seen by the wall and the relative independence of the reduction in heat flow from the walls U value is supportive of the adopted methodology.

The 45% reduction in heat flow through the part of the wall behind the radiator is appropriate for uninsulated walls, for example solid brick walls with U values ~2.09 W/m^2K and uninsualted brick cavity walls with U values ~ 1.55 W/m^2K.

7 REPORT CONDITIONS

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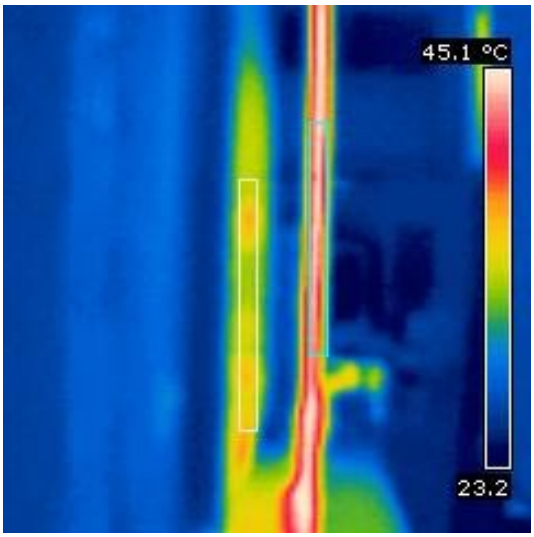
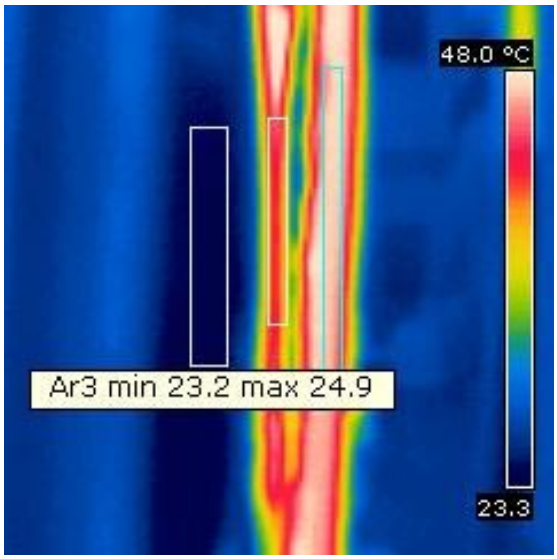
Appendix A

Test wall U value ~1.1 W/m^{2}K without Radflek shield fitted

Thermal Image	Photo Image
	

Test wall U value ~1.1 W/m^{2}K with Radflek Shield in place

Thermal Image	Photo Image
	

The report is Issue 2 due to the product name being incorrect in Issue 1.

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