

CASE STUDY
Trial of Thermoshield Ceramic Coating at
Decanters by the Bay Winery
08 March 2008

Overview

Decanters by the Bay is a wine merchant who leases a Council owned building. The building is double brick with a metal roof. The site was chosen to trial the Thermoshield coating as it has no existing mechanical heating or cooling, zero insulation and no external shading. It was felt, therefore, that this site would be able to give a clear indication of the efficiency of the product.

During operating hours the building has large double doors that are usually left open, with the exception of very hot days when they are closed.

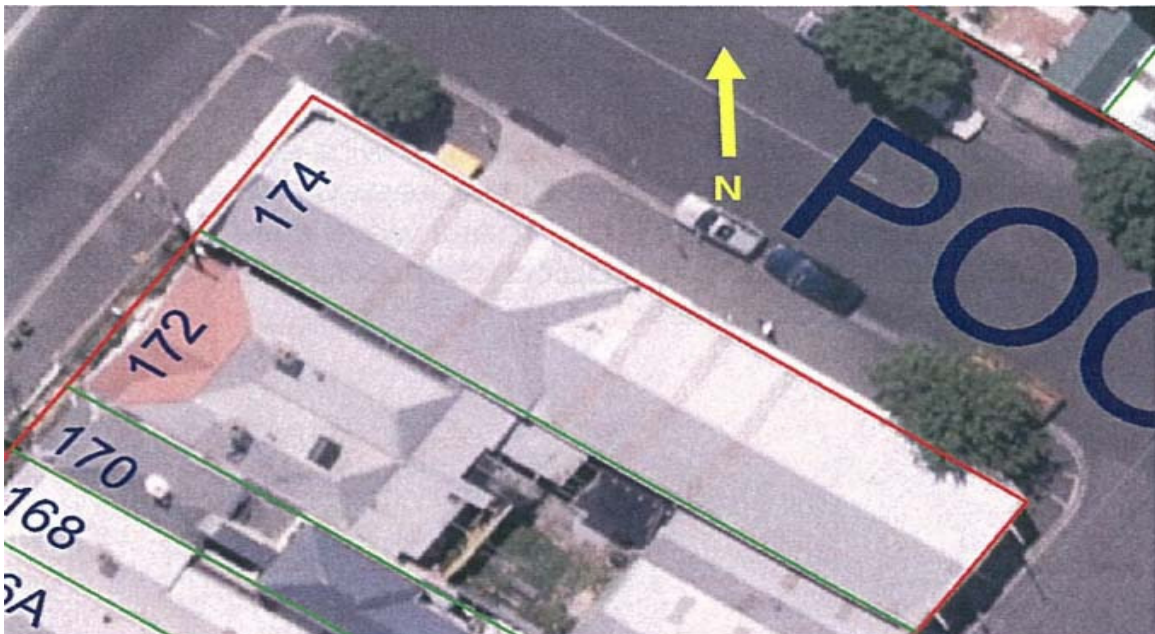
Application of the Thermoshield coating

On 07 March two coats of the coating were applied to the roof and the north facing wall of the building. During the weekend that the coating was applied, the doors to the store were kept closed and the ambient external temperature was well above 30 degrees, giving the opportunity to measure the effectiveness of Thermoshield.

Data Collection

Council placed three thermochrons at the site, two inside the building and one on the northern external wall. These thermochrons took temperature measurements every 15 minutes in the 5 weeks leading up to the application of Thermoshield coating and for a short time after application of the coating.

Aerial view of the site



Results

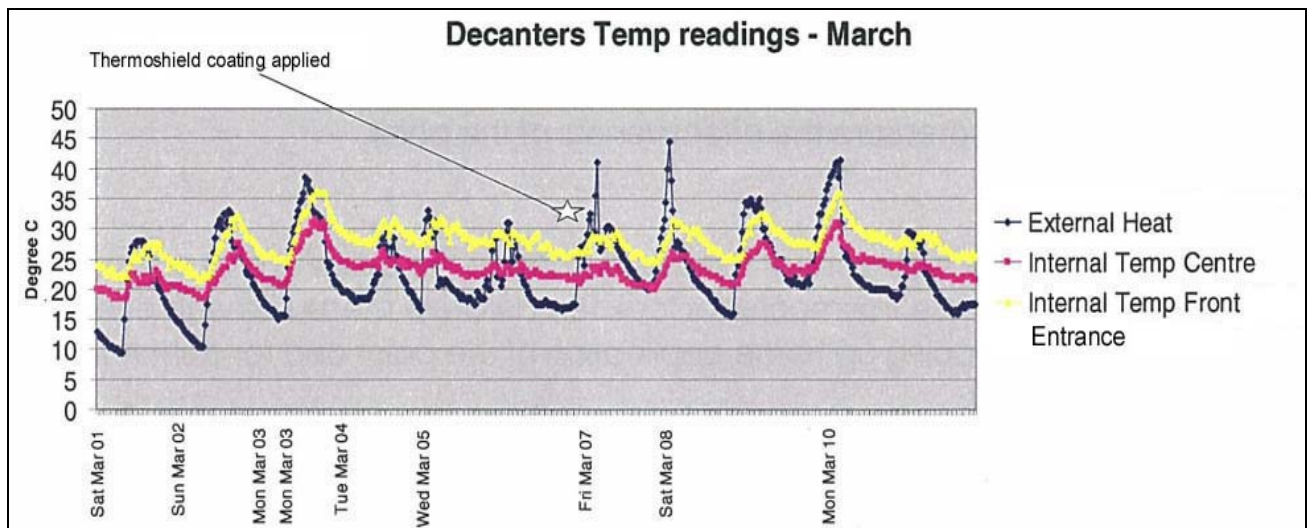
The thermochrons measurements are displayed in the graph below. Prior to the application of Thermoshield coating, the internal and external temperatures showed a strong correlation. This was expected due to the nature of the site. On the weekend following the application a marked deviation between the internal and external temperatures was recorded, showing that there had been a reduction in heat transference into the building.

Analysis of the figures shows that when the temperature peaked at 44.5 degrees Celsius on Saturday March 8th 2008, the internal temperature was only 30 degrees. This indicates that 32% of the heat was prevented from entering the building. In comparison, before the application of Thermoshield coating 80-90% of extreme heat was being transferred into the building. An improvement in the realm of 50-60%.

Staff at *Decanters* also reported that:

- the building felt cooler ;
- the northern face of the building was much cooler to touch than usual, and
- they did not lose any bottles of wine from heat expansion, which would normally be the case on hot days.

Following the extreme temperature of the weekend of March 08 2008 the data below indicates that Thermoshield coating was less effective at the entrance due to the doors of the building being open on these days, reducing the effectiveness of the coating.



CONCLUSION

The evidence of the trial indicated that the application of Thermoshield coating was effective in stopping heat transfer when temperatures climbed above 30 degrees Celsius. At lower temperatures the effectiveness was not as pronounced, but there were still some benefits. Had this site had mechanical cooling in place it would have reduced the energy needed to cool the site during peak load times.