resourceSmart

FirstRate5
house energy rating software

FirstRate5 presents opportunities for cost savings that Assessors can pass on to builders and home owners.

Research findings[1] have concluded that savings of between $1,500 and $2,800 can be made for houses in Victoria rated using the most up to date energy rating software available – second generation House Energy Rating Software (HERS), FirstRate5.

While this research looked primarily at one feature, the ability to disconnect sub-floor from the attic space, it was found that savings are possible for all new homes when using FirstRate5.

Significant building cost savings clearly justify any additional assessment time that might be required compared with FirstRate 4.

FirstRate5 features

This second-generation product offers a far more sophisticated simulation as there have been a number of improvements to the rating methodology. These include:

Climate data

- More representative data selected for each climate enables more accurate modelling.

Climate allocation

- With 11 climate zones for Victoria rather than five, Melbourne has been divided into three zones with more coastal climates and inland climates now allocated to Mildura or Ballarat, rather than Mildura, Canberra or Wagga. Because the new Victorian climate zones have lower cooling loads than those they replace, this generally means a reduction in costs as it is usually more expensive to reduce cooling loads.

Thermostat settings

- Heating settings have been reduced from 21 to 20ºC. Cooling settings are slightly higher.

Modelling of subfloors

- Improvements in the modelling of reflective air spaces, with heat flow up and down modelled more accurately.
- Disconnecting the sub-floor airspace by utilising a blocked wall cavity connection improves thermal performance.

Cross ventilation

- Air movement through each room is modelled directly as is the impact of air movement on human comfort.
- Less shading is needed for houses designed to have good cross ventilation.

FirstRate5 potentially allows for substantial building fabric compliance cost savings. For cases in Melbourne and Ballarat savings, were found to be from $1,800 to $2,500, while in Mildura and Wodonga savings ranged from $1,500 to $2,800.

Challenges

Proposed changes by the Aust Building Codes Board to the Building Code of Australia (2009) will see first generation software (eg. FirstRate 4) removed from regulatory use in Victoria and replaced by second generation software (such as FirstRate5) as of 1 May 2009. Therefore it's vital for assessors to begin training in the new tool as soon as possible.

While quick and easy-to-use when compared to some other second generation tools, FirstRate5 assessments will still take time to complete. However once builders and home owners understand how much they can benefit, demand for these assessments will increase.

[1] *Report on the effect of reduced subfloor ventilation on the energy rating of houses in Victorian Climates.* Tony Isaacs Consulting, March 2008.

Innovation

Second generation rating tools such as FirstRate5, with its unique user-interface features, provide more sophisticated and transparent results for assessors, builders and clients.

More detailed assessment also allows for a smarter approach to building design and construction, impacting the home owners quality of life. As financial returns increase for the client, the use of material resources and other environmental impacts will decrease.

The case study research demonstrates how second generation HERS (FirstRate5, AccuRate & BERsPro) allow for improved financial savings in comparison to first generation HERS (FirstRate 4, NatHERS, BERs).

While the case study investigated a series of four houses on raised timber sub-floors; the increased sophistication of FirstRate5 means the benefits can be applied to most new homes.

The following marginal cost rates were used in the research as a basis to calculate the difference in cost of building fabric compliance for 5 Star.

Item	Cost / M2
Foil floor insulation	$6.79
R2.0 subfloor wall insulation	$8.48
Wall Insulation R2.0	$8.48
Ceiling Insulation R4.0	$9.49
R2.0 floor insulation	$11.19
Double Glazing	$65.00
External Blinds	$75.00
Low e coated double glazing	$80.00

Source: TABLE 2 UNIT COST RATES, T. Isaacs p 13

Key features of the case study

The case study examined a series of four houses (small, medium, large, two-storey) on raised timber sub-floors and rated them with both first and second generation energy rating tools, (NatHERS and AccuRate respectively). While NatHERS and AccuRate were used for the calculations of this study, the results are applicable to all Second Generation software programs, including FirstRate5.

This case study also specifically investigated the improved thermal performance for raised timber sub-floors utilising a blocked wall cavity connection. The aim of this was to determine how this affects what is needed to achieve 5 stars and therefore the cost of compliance. The research findings clearly showed that disconnecting the sub floor space from the wall/roof space by utilising a 'flashing' across the wall cavity, at either the floor level or the roof level, dramatically improved the thermal performance.

Cost savings calculated were as follows:

House - Location	Size NCFA m2	Savings using NatHERS and sub-floor disconnected from wall	Savings using Accurate and sub-floor disconnected from wall
Small Melbourne, Ballarat	102.6	$500.00	$2,200.00
Small Wodonga, Mildura		$500.00	$2,700.00
Medium Melbourne, Ballarat	142.1	$1,600.00	$2,500.00
Medium Wodonga, Mildura		$1,900.00	$2,500.00
Large Melbourne, Ballarat	174.6	$1,300.00	$1,800.00
Large Wodonga, Mildura		$1,300.00	$1,500.00
2 Storey Melbourne, Ballarat	183.8	$400.00	$1,900.00
2 Storey Wodonga, Mildura		$2,300.00	$2,800.00

The cost savings above were typically based on the ability to reduce floor insulation, window glazing requirements or window shading – more detail is provided in the full case study which is available at http://www.sustainability.vic.gov.au/www/html/1491-energy-rating-with-firstrate.asp

Impact

The case study has revealed huge potential savings on the cost of a new home. A Melbourne builder building one home a month stands to save up to $30, 000 a year. Reduction in the cost of compliance has the potential to save regional Victorian builders and home owners even more.

With housing affordability a bigger issue than ever, this will be welcomed. The savings far outweigh the additional time/cost of ratings using FirstRate5.

Further information

FirstRate5 software demonstration
http://www.sustainability.vic.gov.au/www/html/1795-firstrate-software-updates.asp

FirstRate5 training providers
http://www.sustainability.vic.gov.au/www/html/1794-firstrate-training-providers.asp

Purchase FirstRate5
http://www.sustainability.vic.gov.au/www/html/2457-buy-now.asp

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