

Ember Screen Protection for Evaporative Air-conditioners

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Bush fire ember attack of evaporative air conditioners is a major causal factor for home loss in bush fire prone areas of Western Australia. The dry wood fibre or cellulose filter pads of evaporative air conditioners have caught fire, from air borne embers, and subsequently collapsed into the roof cavity and caused rapid spread of fire through the roof space and initiated simultaneous fire seats in a number of rooms. There have been approximately 35 houses in WA that have been impacted in this manner and sadly many houses have been totally destroyed. In an endeavour to develop methods for the mitigation of this problem, a student from the School of Mechanical, Materials and Mechatronics Engineering at the University of Western Australia carried out research sponsored by the Fire and Emergency Services Authority of Western Australia.

The study investigated the use of ember screens that prevent embers reaching the filter pads whilst not inhibiting the effective operation of the air conditioner. Subsequent testing indicated that unprotected filter pads caught fire within a few minutes of being exposed to ember attack whilst filter pads protected by mesh screens remained unscathed to sustained ember attack. These studies also confirmed that protective screens could be used without impinging the effective operation of evaporative air conditioners.

To facilitate effective community engagement and promote adoption of these screens and mitigation measures, a reference group involving the evaporative air-conditioning industry, insurance, local government and building regulators has been established to develop mitigation measures to reduce the vulnerability of evaporative air-conditioners from ember attack during bushfires.

Key Words

Ember attack, evaporative air conditioners, house fire, bushfire