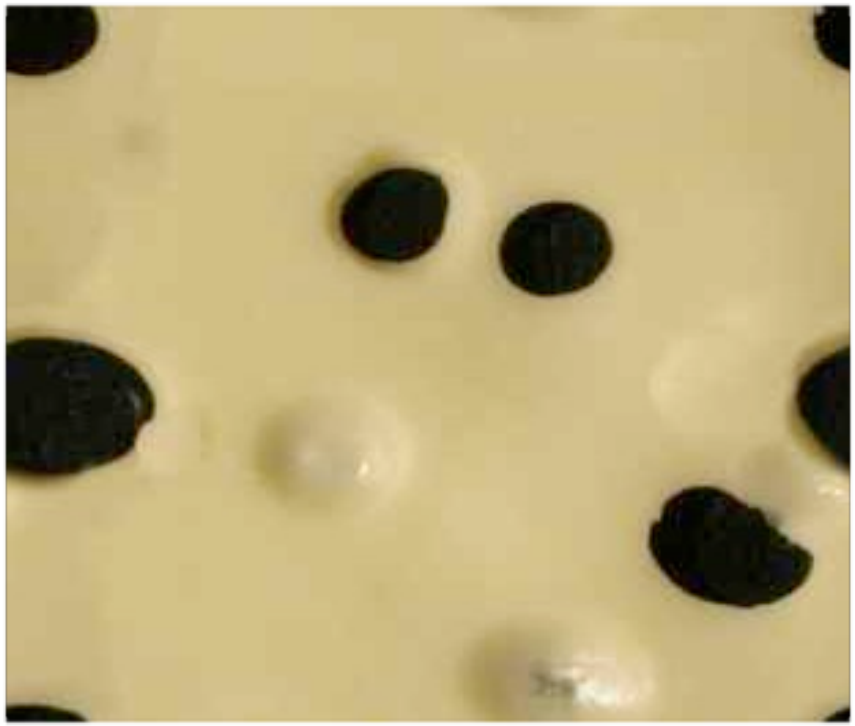
The Recessed Lighting Problem

Turning our Insulation into
SWISS CHEESE



We Risk our Safety and Home

Presented by: John Konstantakopoulos

Benefits of Recessed Lighting

- Bright Light output
- Hides blemishes in poor ceilings
- Provides a nice modern look
- Great light fitting for low ceilings
- Perfect feature lighting
- Dimmable lighting

Major Problems With...

Ventilated Fittings

1. Gimble Fittings
2. Flouro recessed fittings

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- ✓ Draughts
- ✓ Thermal bridging

Non Ventilated Fittings

1. Fixed Head Fittings

=

- ✓ Thermal Bridging
- ✓ Harder Installation

Recessed Lighting Problems Broken Down

Climatic Inefficiencies

- Convection currents
- Heated air pressure from warm living area
- Expansion of heated air in the loft area
- Excessive air drop, from a cooler loft area
- Draughts spread into the living area

Safety

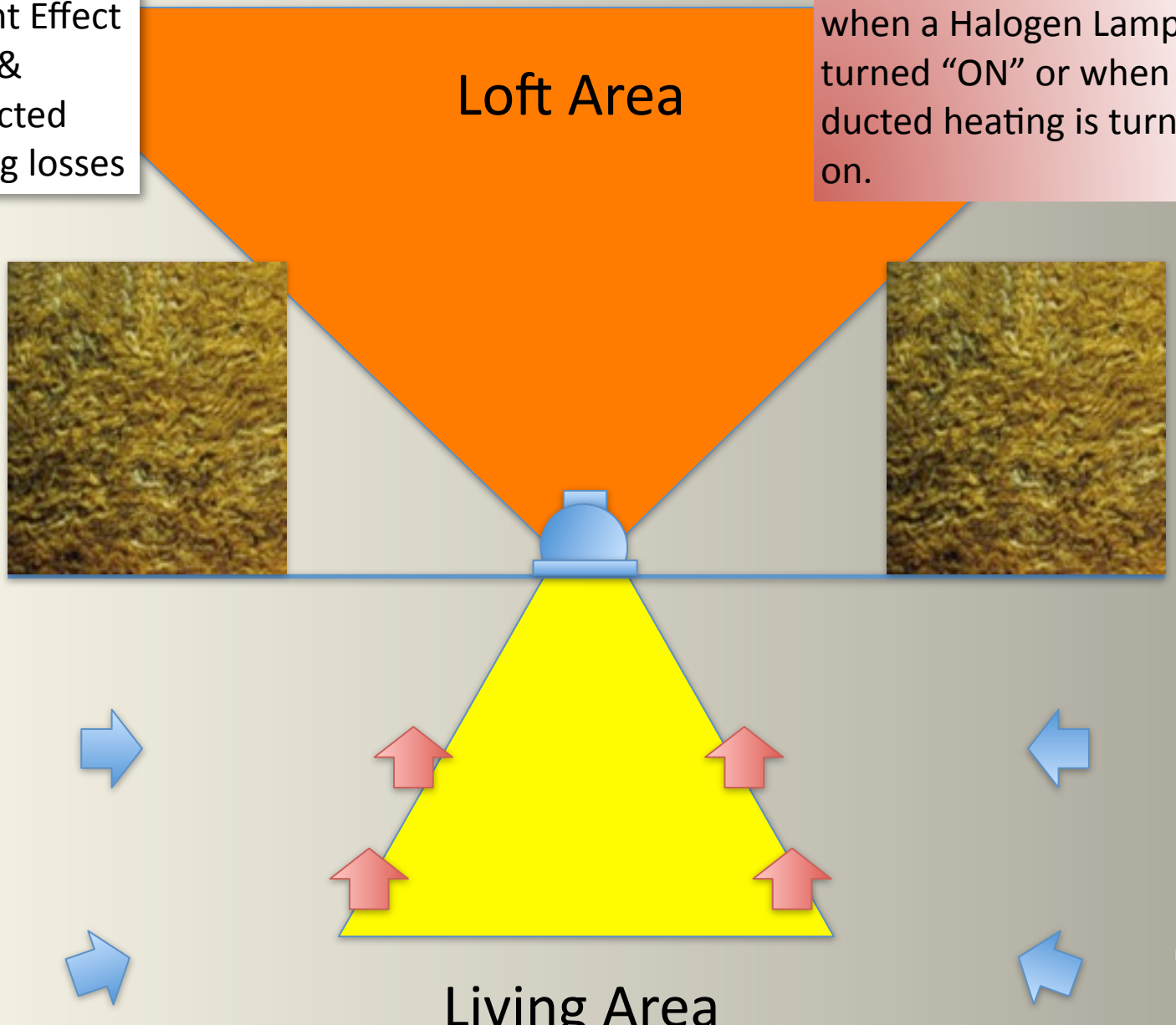
- Exposure to fire damage

Lighting Inefficiencies

- Inefficient energy consumption for lighting
- Can create bright spots directly under fittings

Convection Current Effect & Ducted Heating losses

This effect is triggered when a Halogen Lamp is turned “ON” or when ducted heating is turned on.



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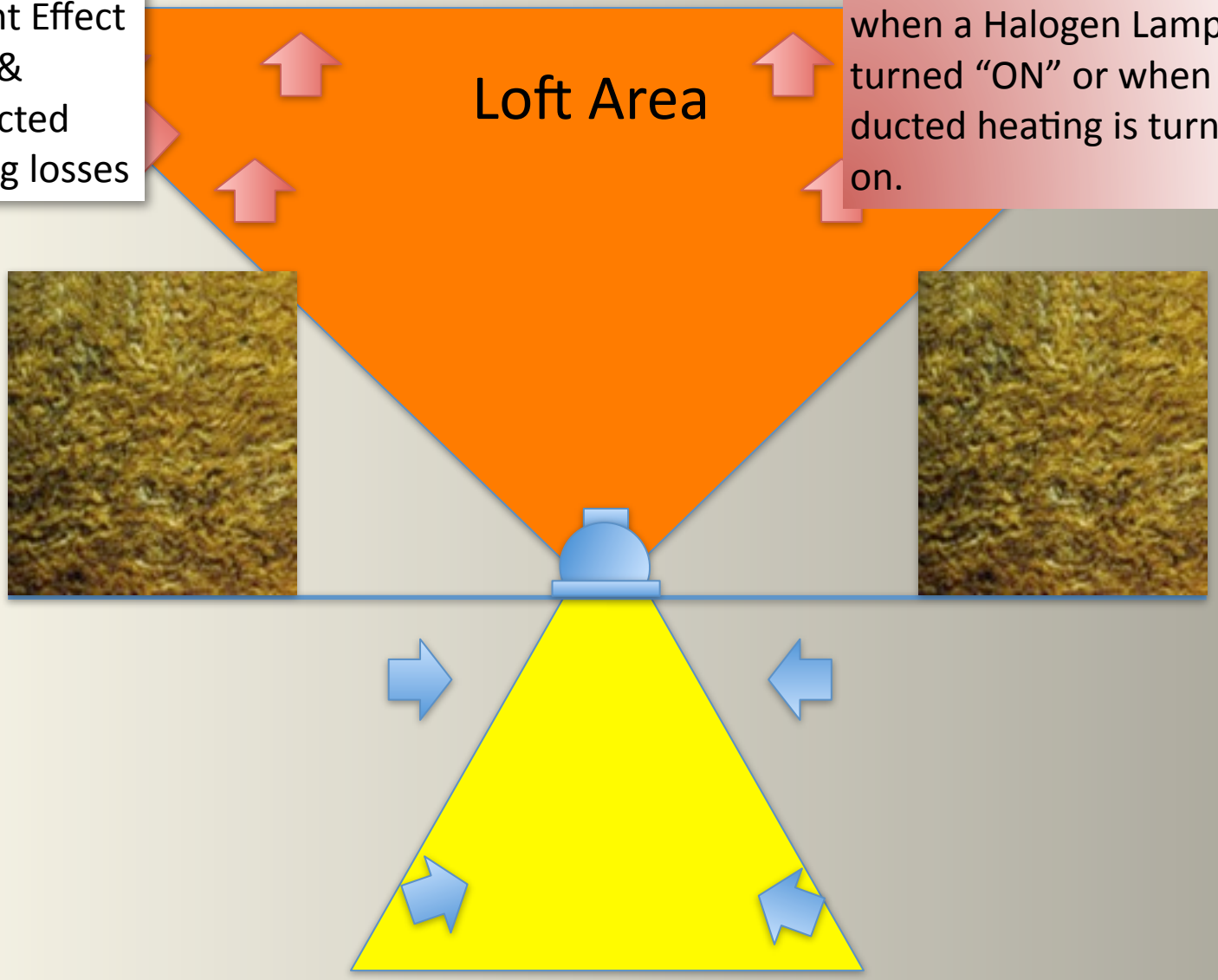

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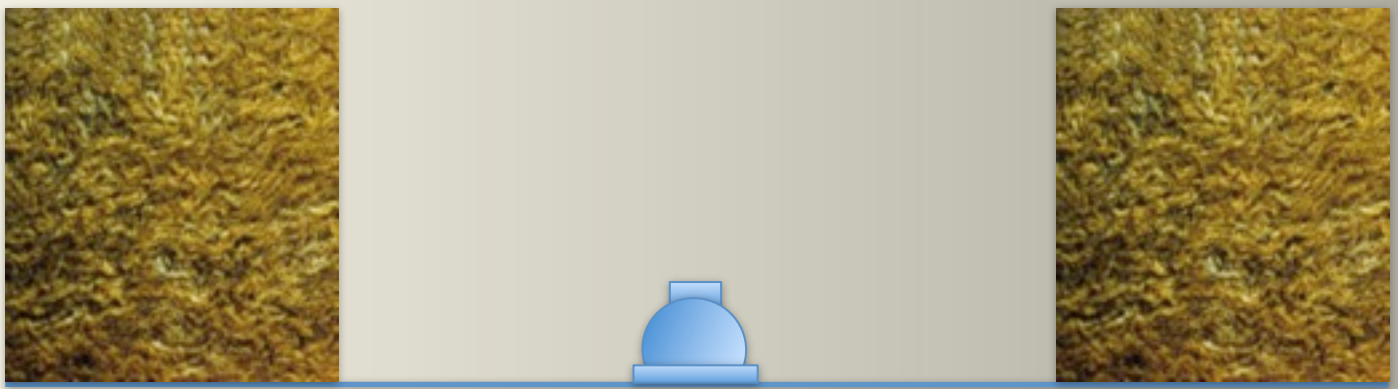
Expansion of Heat

Loft Area

Dark concrete roof tiles is the biggest culprit of this effect, because it absorbs heat and creates a pocket of hot air in your loft area.



34˚ Day in Melbourne, Low wind

Living Area

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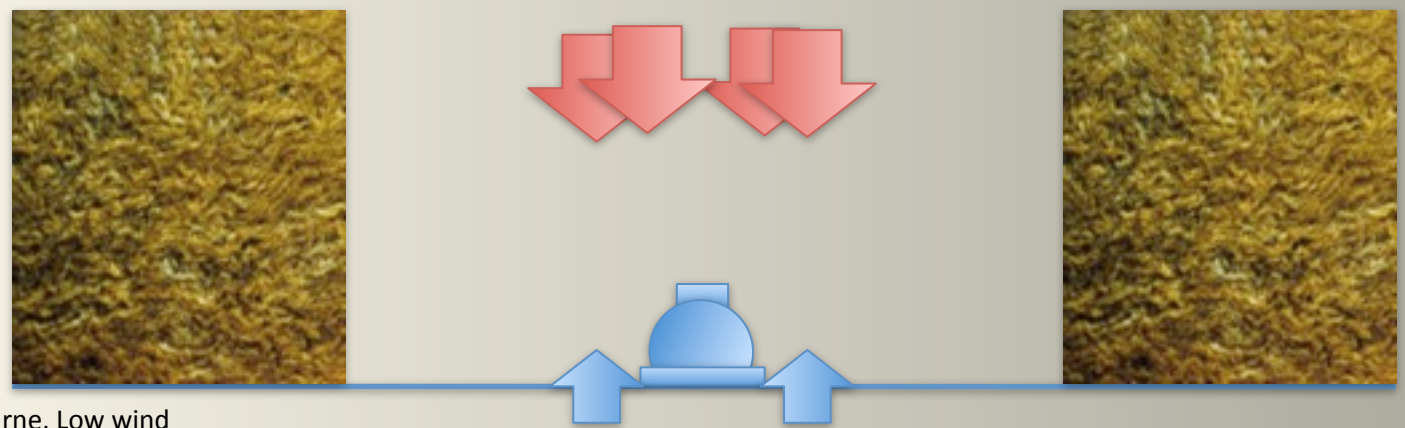

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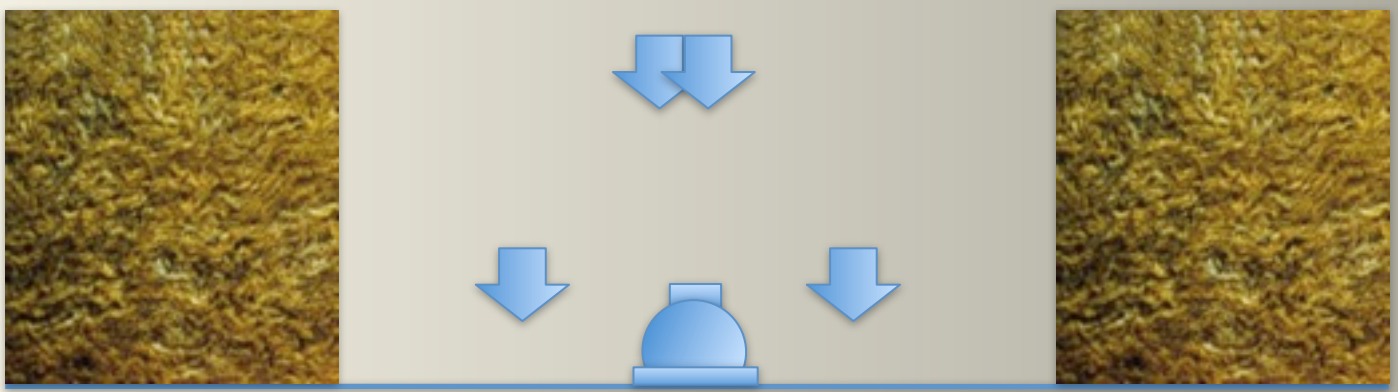
Living Area

Draught and Cool Air Dropping to lower ground.

Loft Area

Cold air in your Loft area, immediately drops down into your living area. Gimble Fittings are particularly a problem with this effect this is also contributed by draught effects.



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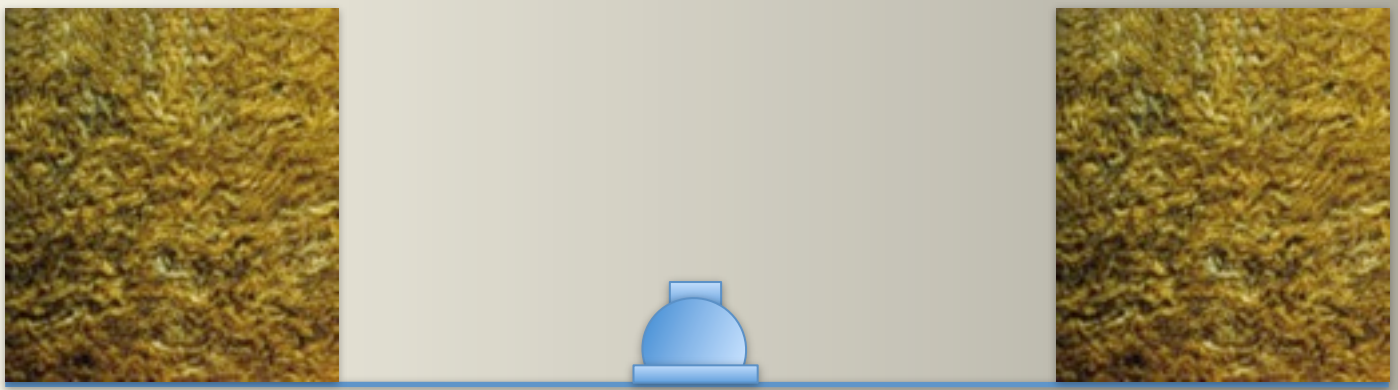

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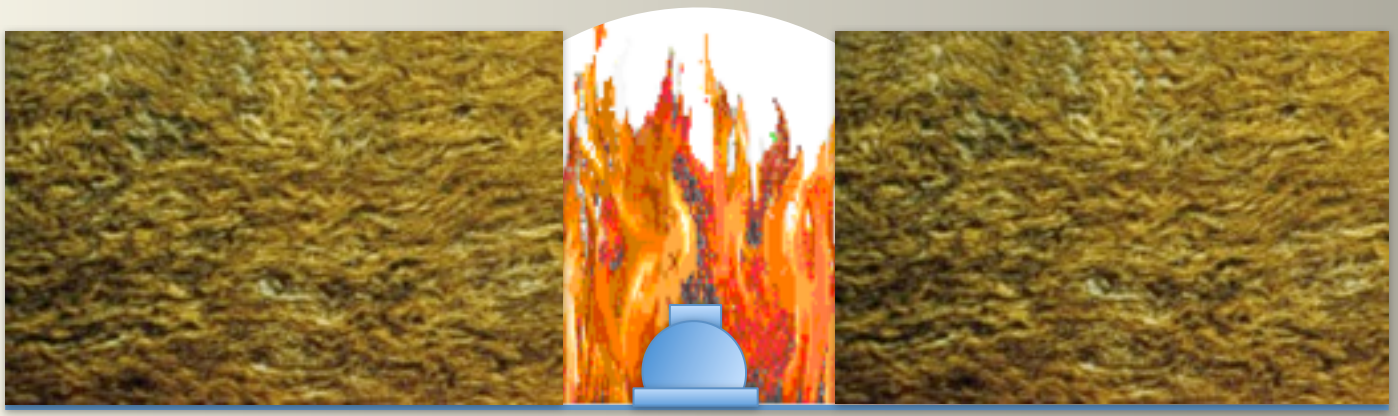
Exposure to Fire Damage

Loft Area

A Fire can be ignited by a halogen 50W/35W Lamp, via direct contact with insulation or any other flammable material that may be blowing around your loft area.



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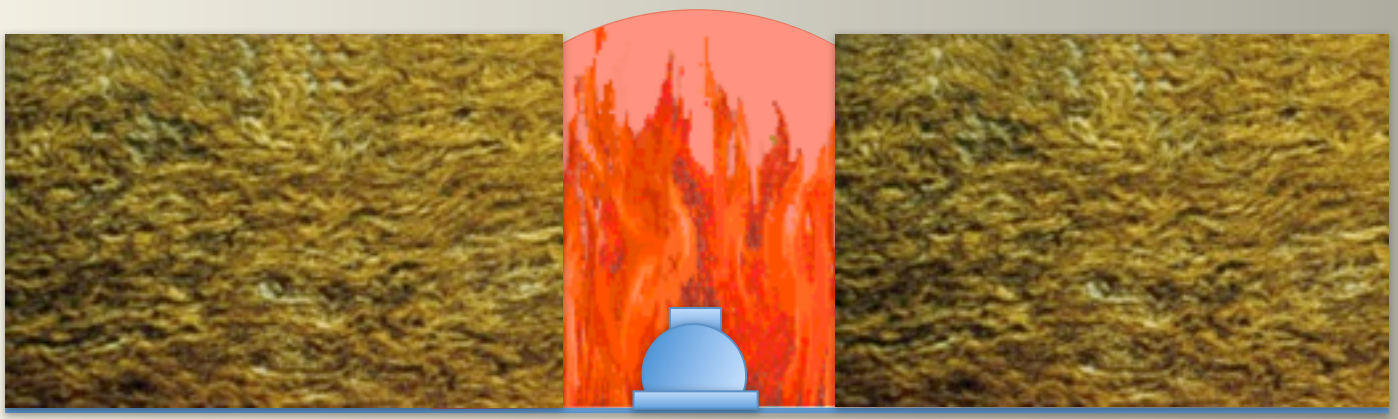


Living Area

The Solution.
Lamp and Downlight cover technologies converging

Upcoming problems for the recessed lighting Industry as a whole

- Energy Star Ratings for homes cracking down on insulation inconsistency and stopping draughts.

– More and more people are waking up to this fact

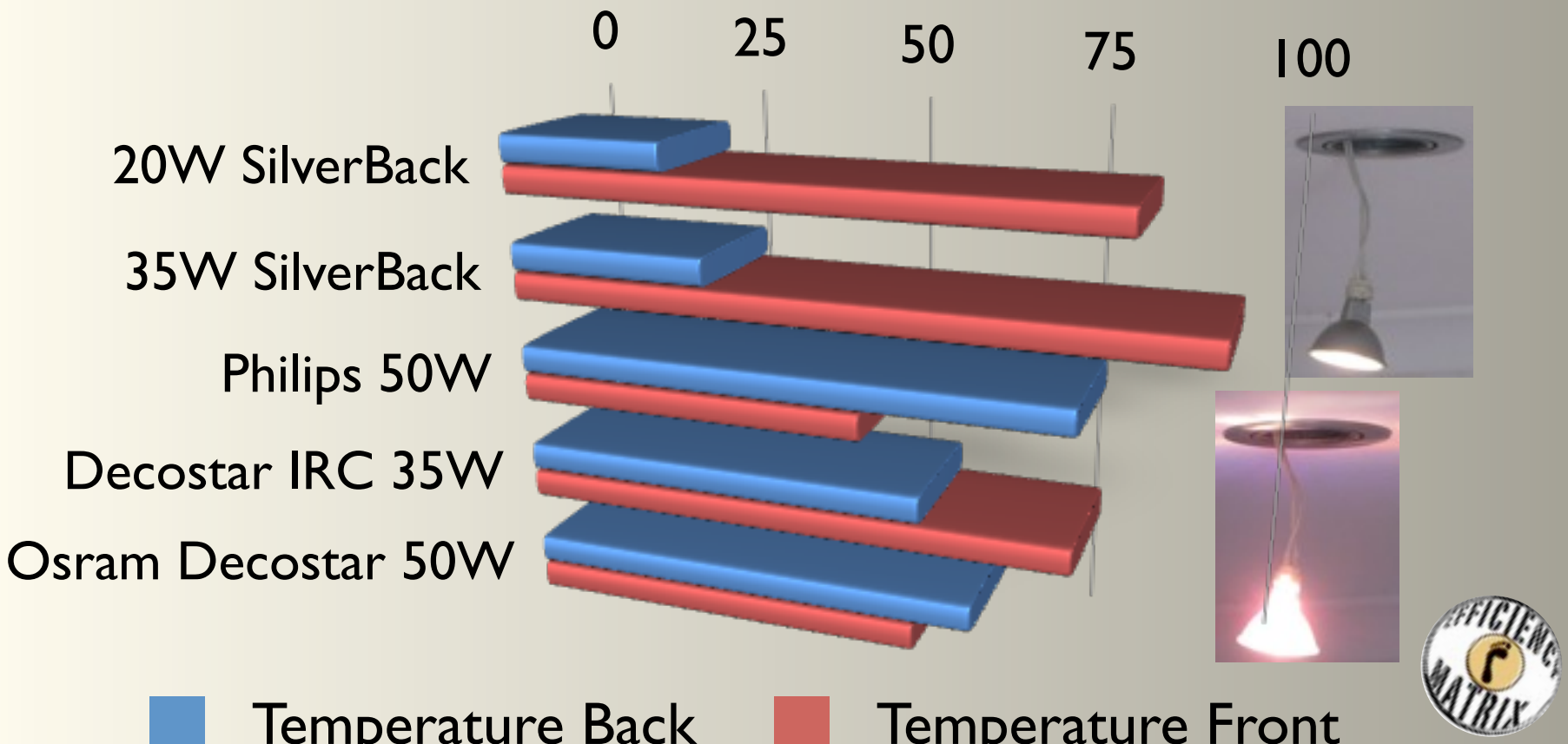
- Halogen Lamp still get very hot at 37W, with the lamp itself reaching up to 300˚ Celcius.
- LED Lighting going down the same path as Halogen Lighting by needing ventilation in the roof area.

Consumer Benefits in safety and efficiency for Insulating the back of a fitting and ventilating downwards

- Gimble fittings (90mm holes) are a preferred fittings for electricians and the fitting has large gaps into the living area, which is actually good.
- Insulation can be installed around and over the fitting, improving energy efficiency substantially.
- No debris can mix with the fitting and the Lamp.
- Draught effects and convection currents are stopped, allowing the whole house to maintain separation from cooler or hotter air in the roof.

Difference Between Dichroic and ALU/SilverBack Halogen Lamps

Running for 40 minutes each - tested front and back - Thermal couples positioned 2cm away from front and back in a completely open configuration.



Intumescent Downlight Mitt, Downlight cover Benefits

- A Fire rated material, capable of containing a fire for up to 2 hours
- Material is capable of extinguishing a fire by expanding toward a flame
- Certified R-value better than plasterboard
- Installable from above and below the ceiling with transformer
- Downlight cover can insulate LED's from extreme temperatures that can develop in a roof area

Biggest problem with LED's is over heating of Lamps.

LED Downlight cover Effect with gimble ventilation to living area, protecting the Lamp from extreme temperatures of 60˚ Celcius during summer periods.

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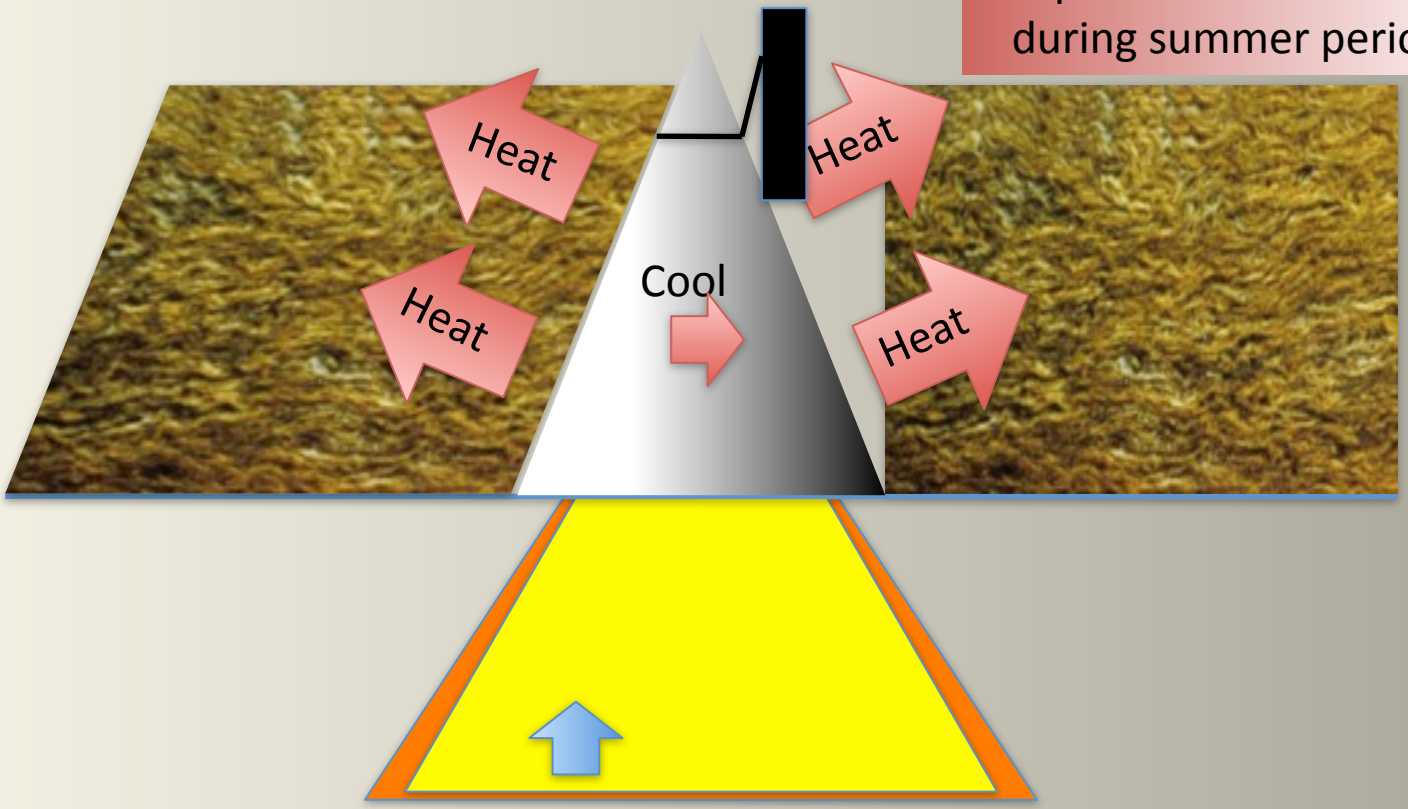

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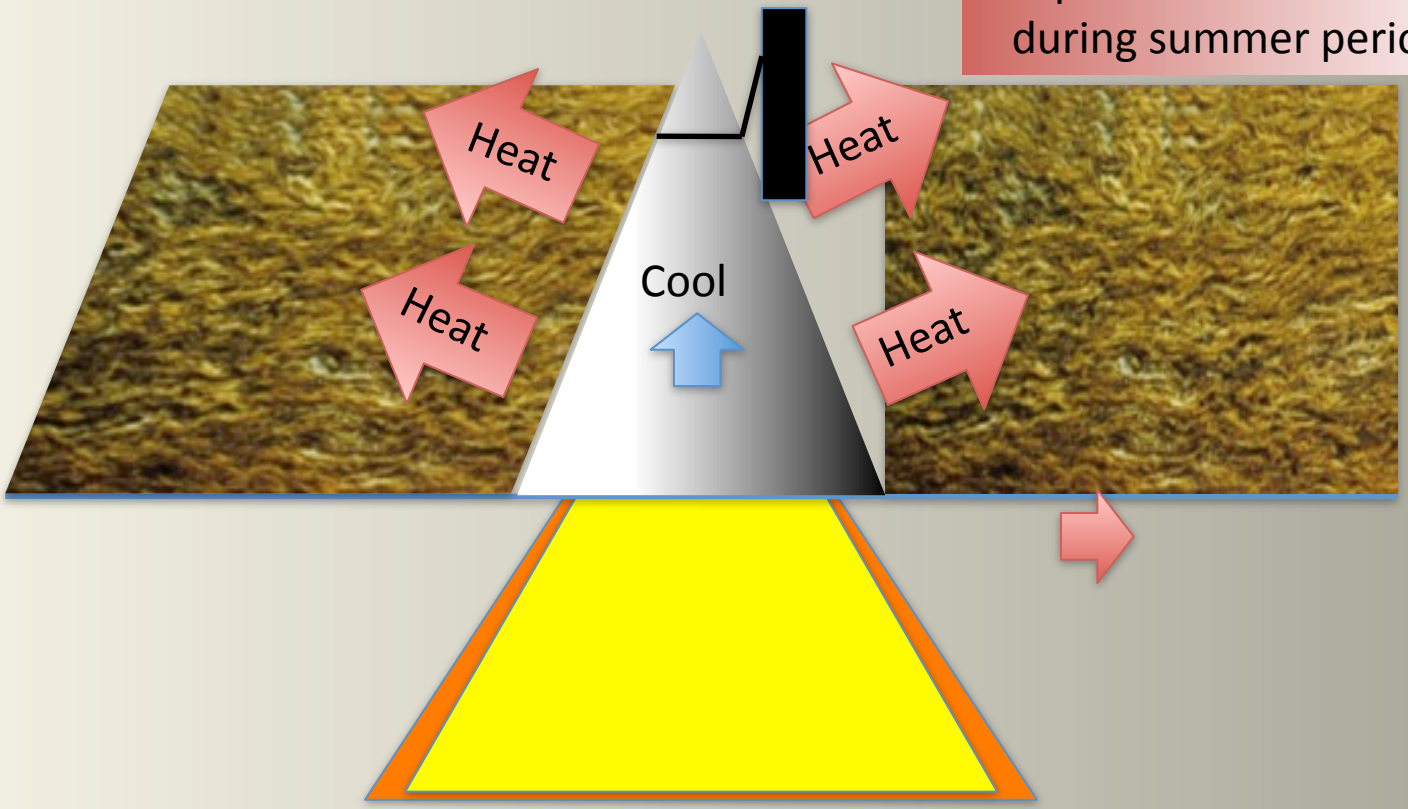
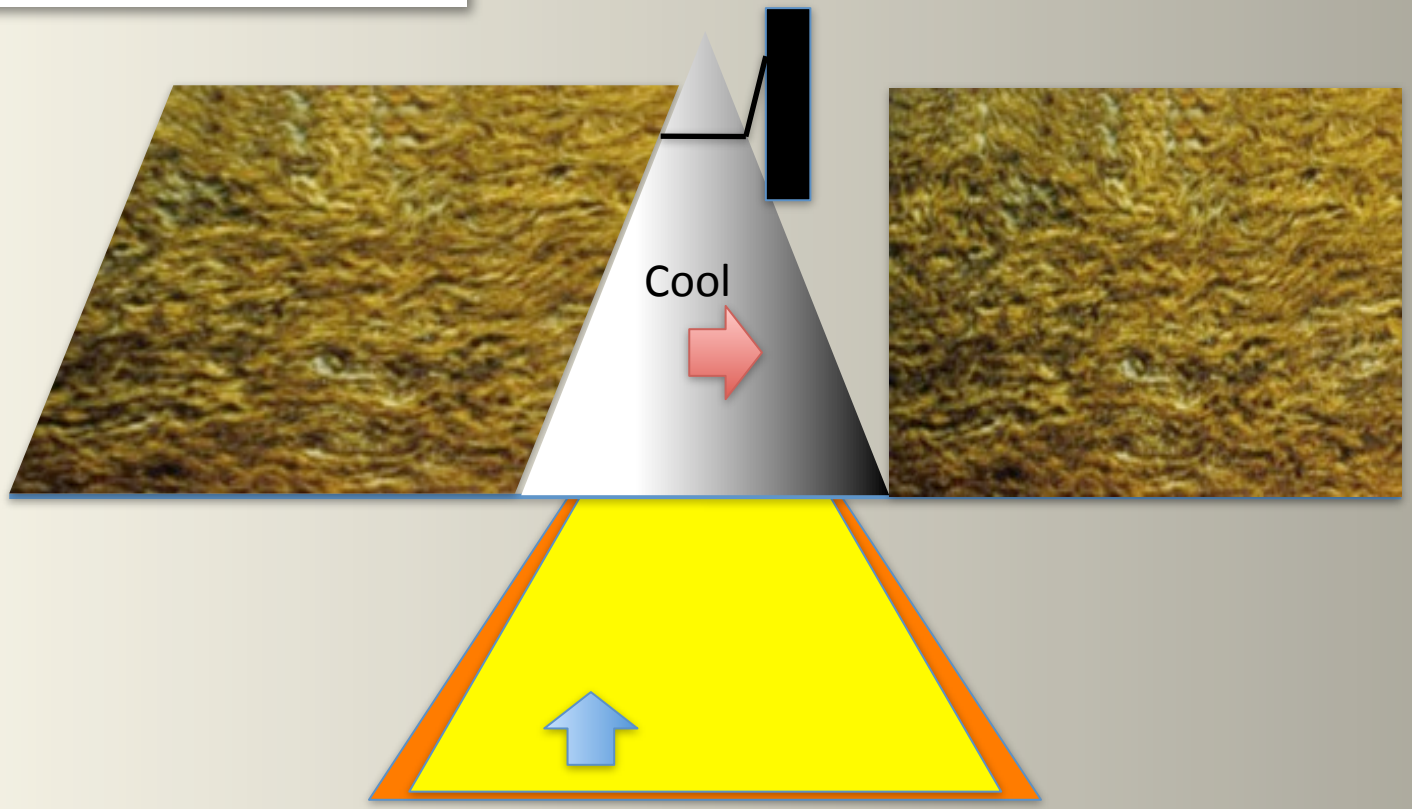


Living Area

Biggest problem with Halogen Lamps is the heat dissipation into the Roof.

Loft Area

Silver Back/ALU Halogen Lamps with Downlight Mitt and a Gimble ventilated fitting.



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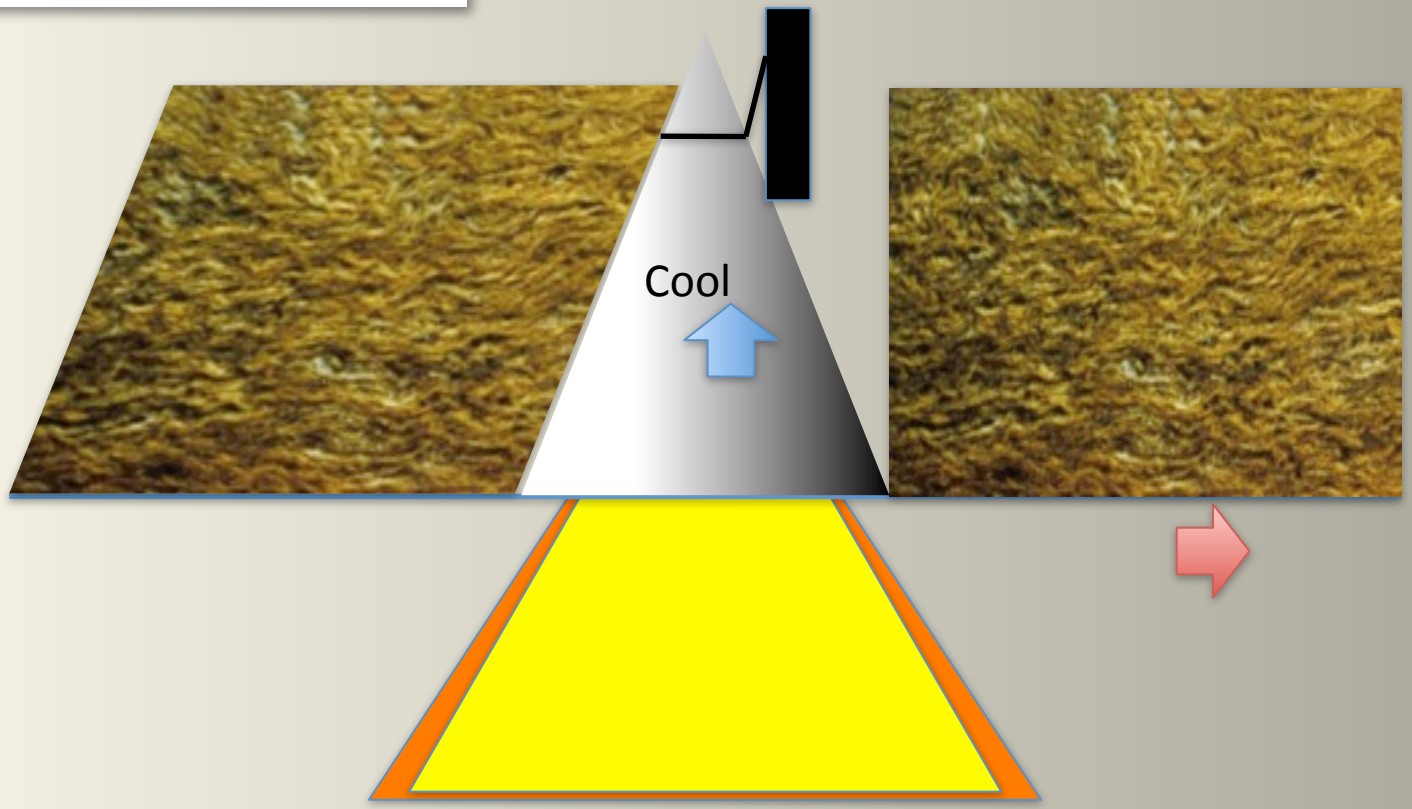

Living Area

Heat

Heat

Recap of the Efficiency Matrix Mitt

- Certified R-Value above fitting, with a better R-value than plasterboard. Think of the downlight cover as an extension of the plasterboard.
- No wasted Light in the Loft Area.
- Reduced energy consumption on halogen lighting.
- Certified Fire rating.
- Stop Draught effects.

Final Thought...

Is it wise to compromise insulation in a whole house which is exposed to the elements all year around, so that we can safely ventilate downlight fittings that might be turned on for only a quarter of the day in several rooms of our homes.

In the foreseeable future LED's that are ventilating downward will eventually solve the Halogen problem but we need to make sure they are designed correctly to ensure insulation consistency.

Helping to Reduce Australia's Operational Footprint, Affordably.

Any Questions?