

# **Submission to the Senate Inquiry into the Energy Efficient Homes Package**

## **Introduction**

This submission is being made on behalf of Autex Pty Ltd.

Autex Pty is one of Australia's largest manufacturers of Polyester insulation with plants in VIC,NSW,QLD and WA.

Autex is a foundation member of PIMMA (Polyester Insulation Manufacturers Association of Australia) The membership of PIMAA represents over 90% of the installed capacity for the manufacture of polyester insulation in Australia, and all members are committed to the manufacture and supply of insulation which meets the requirements of the relevant Australian Standards.

Polyester Insulation represented approximately 10% of the turnover of total Insulation Industry at the commencement of the program, and this ratio was confirmed as 10.78% of the Energy Efficient Homes Package (EEHP) based on the advice released by Energy Efficient Homes Team, Department of the Environment, Water, Heritage and the Arts in their Installer Advice 15, dated 13 November 2009.

## **Polyester Insulation**

Polyester Insulation is a superior insulation media in consideration of the following:

- Polyester insulation is manufactured primarily from recycled polyester fibres
- The manufacturing process is comprised of blending these recycled fibres and uses heat to bond and stabilize the media into a hardy and resilient fabric; supplied in either batt or roll form
- The manufacturing process does not require a high use of energy
- There are no chemicals or resins used in manufacture and there are miniscule (at background environmental levels) VOCs released into the environment during production or from the finished product.
- Polyester is an inert and stable insulation media using heat to provide an intrinsic bond between fibres and does not rely on friction or introduced chemical adhesives or resins. Consequently it will not settle, nor is the adhesive bond prone to breakdown before the effective life of the underlying insulating media. Insulation made from Polyester is the only commercially

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available media which will remain effective for the very long life of the Polyester fibres used in manufacture.

- There are no toxic or harmful off gases released from polyester insulation and as such there is no requirement for respiratory PPE during installation.
- There are no carcinogenic resins used in the manufacture of Polyester Insulation and as such there is no requirement for manufacturing workers or installers to take special precautions during handling and use.
- There is no shedding of microscopic or nanofibres from the use of Polyester insulation to cause eye, skin or respiratory irritation and inflammation and as such there is no requirement for extensive PPE during installation.
- Polyester insulation is quick and easy to install which makes it both an efficient material for installation purposes, and reduces the time necessary for installers to remain in cramped, hot and confined roof spaces
- The unique ability for polyester to remain in tact over a very long life span means that it is easy to add further insulation media should increased thermal resistance be required without the need for its removal.
- This unique ability to remain in a stable form for the entire life of the fibre makes it simple and easy to remove and negates the need for special precautions to deal with loose fibres which may be deemed to be injurious to the health of the homeowner.
- **Polyester insulation is the only insulation media which can be re-used or recycled rather than requiring controlled disposal. It is the only sustainable insulation available in Australia**
- Polyester insulation is initially more expensive to buy, but is lower cost to install, and is a lower cost option over the extended life and utility of the media.

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*“Brookfield (formerly Multiplex) have been using Australian made polyester insulation products for many years*

*Research indicates that Australian made polyester insulation products are non irritant, non toxic, and odourless. Furthermore research indicates that there are no physical or health concerns associated with using the polyester insulation products.*

*The benefits of using the polyester insulation products on Brookfield projects include*

- *Ensures a safer and comfortable environment is provided for construction workers when using insulation products*
- *reduces manual handling issues as the product is lightweight*
- *reduces side effects such as itching after use*

*The product is re-usable which reduces the amount of waste and will not harm the environment.” Paul Breslin, OHS&E Manager, Occupational Health Safety, Brookfield Multiplex Limited*

## **Program Support**

Autex has been a strong supporter of the EEHP objectives.

“A Cost Curve for Greenhouse Gas reduction”, Per Anders Enquist, Tomas Naucler & Jerker Rosander, The Mckinsey Quarterly, 2007, conclude that building insulation is the most cost effective way to reduce greenhouse gas emissions and results in a net economic gain as a result of the reduced cost of energy usage.

With proper implementation the EEHP should have delivered significant benefits to the Australian economy, including:

1. Stimulus for employment
2. Investment in infrastructure resulting in the increased economic value of housing in Australia
3. Reduced energy consumption
  - a. lower greenhouse gas emissions
  - b. lower usage cost
  - c. a natural offset to higher energy costs driven by carbon trading initiatives
4. Improved standard of living
  - a. Improved comfort
  - b. Cleaner environment
  - c. Reduced potential for heat stress mortality

*“...don't you think insulation is sexy stuff? Here's what's sexy about it: saving money. Think about it this way: if you've not upgraded your home yet, it's not just heat or cool air that's escaping – it's energy and money you are wasting.” US President Obama, 15 November 2009.*

## **Program Implementation**

### **Industry consultation**

The EEHP was announced and implemented with minimal industry consultation.

By the time we were invited to the roundtable the basics of the program were already set.

I attach with this submission a copy of a letter sent to the department in February of this year highlighting many of the issues that could and have occurred.

We were virtually coached as to what to discuss or table during the more public sessions.

Until it was highlighted that ICANZ only represented the interests of the fibreglass and Rockwool industries, statements from this organisation were regarded by government as representative of the industry as a whole.

CSR and Fletchers are now the two biggest importers of insulation in Australia. Hardly supporting the aims of the program

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Industry was encouraged to support the program with increases in employment and investment in manufacturing capacity with the certainty of a program which had a designated level of funding and would run for a number of years.

Like other members of PIMAA, Autex followed the government direction and increased training and employment. Millions of dollars were committed and spent on Capital Equipment programs to increase domestic manufacturing capacity which will progressively come on line early in 2010. Millions of dollars were also committed to purchase materials for production and to fill a pipeline for supply. A significant cash outlay is required to fund new employment and training, purchase of capital equipment and raw materials as credit terms are generally not available for this type of purchase. All PIMAA members have made a strong cash commitment to EEHP in anticipation of a future return.

There were a small number of Industry Roundtable meetings held at which the government line was promoted. There was little if any effective dialogue with PIMAA or its members and the Minister has not responded to requests for a meeting to discuss the issues surround the scheme.

### **Implementation**

The implementation of EEHP has been flawed from the very beginning.

There has been little consideration to the proper installation of insulation to ensure its effectiveness. Insulation is generally easy to install for trained professional installers, however this has been misconstrued as it is so easy that anyone can do it without an understanding of the principles of correct insulation necessary to achieve an effective and safe outcome.

In combination with low barriers to entry to the Industry, the potential to make super profits, and lack of effective control over the quality of workmanship, has encouraged a flood of new entrants. This has achieved one of the Program's goals but at the cost of super profits to many new entrants, unsafe work practices, shoddy workmanship which will result in no benefit to the householder, and a significant waste of tax payer's funds.

Numerous house fires and a small number of deaths have been attributed by the news media to poor workmanship.

There has also been little consideration to the effectiveness and safety of materials used as insulation media. The program guidelines require Australian standards to be met, however there is no effective mechanism to ensure compliance. Consequently there has been a flood materials imported to Australia which both do not meet Australian standards for performance materials, and represent a significant respiratory health risk to both installers and householders due to excessive levels of formaldehyde which is also a known carcinogen.

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The ACCC has been notable by its absence in any action, particularly given the very public nature and high cost of this program.

Similarly there is no mechanism in place to favour Australian made manufactures over inferior or other imports, and maximize the stimulus benefit for Australian manufacturing industry and Australian workers.

Millions of square metres of insulation batts and rolls have been imported and dumped into the Australian market from China, Thailand, Mexico, the USA and elsewhere.

*“But the fact of the matter is energy efficiency is a perfect example of how this can be a win-win. Manufacturers like Owens Corning, whose CEO is here today, they win because they produce the stuff. And those are American jobs. And right now – I just heard from the CEO, because Australia put an incentive to do exactly what we’re talking about, they’ve seen a huge increase in their volume of exports – exports to Australia.” US President Obama, 15 November 2009.*

## **Changes**

The latest changes to the EEHP, again without consultation, have had a significant detrimental effect on the Polyester Insulation industry in Australia, which is now effectively excluded from the Program.

The effect of these changes needs to be seen in the context of the enormous change to the normal rational decision making processes of the consumer and the market as a result of the artificial economic stimulus by the government.

The EEHP has had an enormous take up because it offers “free” insulation rather than necessarily because of the utility or efficacy of the program as a nation building tool or as a mechanism to reduce energy consumption and greenhouse gas emissions.

The reduction of the rebate has resulted in a flight of new installer entrants away from the initially more expensive to buy Polyester Insulation; driven by short term profit imperatives, and a lack of competitiveness of its traditional customer base against unscrupulous operators and cheap non-compliant imports.

Consequently the demand for Polyester insulation has significantly reduced under this Program. This has already resulted in heavy job losses for newly trained production employees, a significant increase in underutilized capacity which will shortly come on line, just to be mothballed, and a significant cash and cost drain on our members who complied with the government’s urging to install additional capacity and ramp up for the Program.

The Polyester Insulation industry is now in a significantly worse predicament than before the Program was announced, and the additional burden from the investment to support EEHP could result in the failure of some of these businesses.

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## **Solutions**

Options:

- Support local industry with Government Purchasing
- Register of acceptable materials
- Recognize appropriate skills for installers
- More effective action against poor quality installers and materials suppliers
- Sliding scale for grants
- Co-payment scheme for householders
- Promote benefits of insulation, not just “free” aspect

Yours Sincerely

Warrick Batt  
Managing Director  
Autex Pty Ltd

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## Appendix A

### **THE DIMINISHING BENEFIT OF EXTRA HOME INSULATION**

by James Fricker B Mech Eng, CPEng, M.AIRAH, M.IEAust (amos@melbpc.org.au) 18 April 2002.

In most Australian homes, insulation is essential to assist heating and air conditioning systems to maintain comfortable temperatures.

Insulation reduces winter heat loss, reduces summer heat load, and improves comfort by reducing temperature variations.

However, additional insulation has diminishing advantage. The table below shows a ballpark result of modelling a Melbourne home with R2.5m<sup>2</sup>.K/W total roof path insulation rating and a \$1000pa heating energy bill.

Example: MELBOURNE HOME	No roof insulation				Typical Example				
Roof total R-value, m <sup>2</sup> .K/W	R0.3	R1.0	R2.0	R2.5	R3.0	R3.5	R4.0	R5.0	
Home heating cost per year:	\$3,933	\$1,600	\$1,100	\$1,000	\$933	\$886	\$850	\$800	
Portion due to ceiling losses:	\$3,333	\$1,000	\$500	\$400	\$333	\$286	\$250	\$200	

Assumptions:

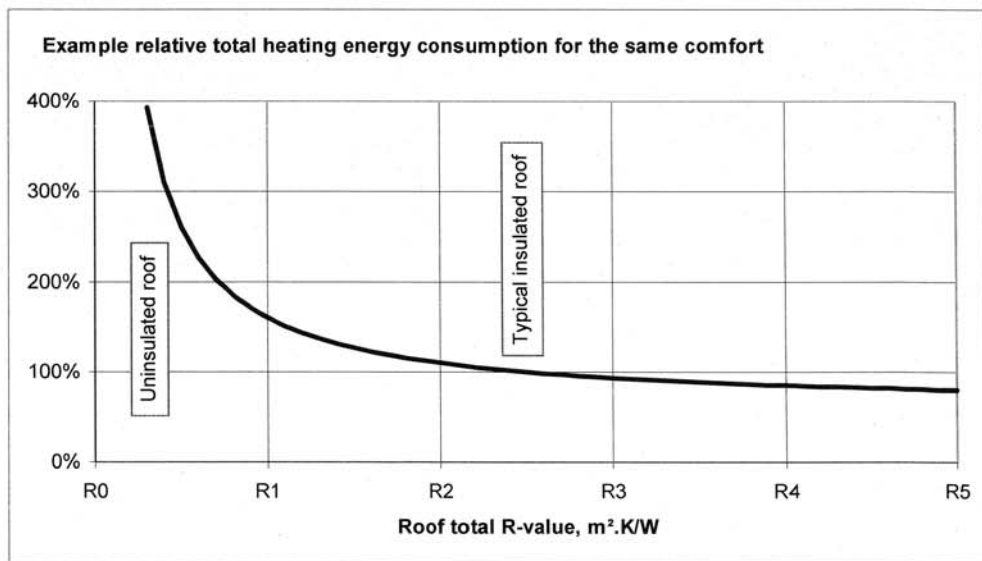
Floor, wall & window losses: \$300pa; Infiltration losses: \$300pa  
(estimate for home having carpetted slab floor and insulated walls)

It is evident that if there was no ceiling insulation at all, the heating bill would have to climb by nearly \$3000pa to achieve similar comfort.

Also:

- If the ceiling insulation was poorly installed making an average roof total R-value of R2 instead of R2.5, there would be a penalty of \$100pa.
- If the roof total was R3, there would be an extra \$67pa saved over an R2.5.roof.
- If the roof total was R3.5, there would be an extra \$48pa saved over an R3 roof.

Thus there is a diminishing return from additional insulation. The correct choice is that choice that gives the minimum life-cycle cost. This evaluation depends on local climate, insulation and energy costs. The following applies to the modelled Melbourne home:



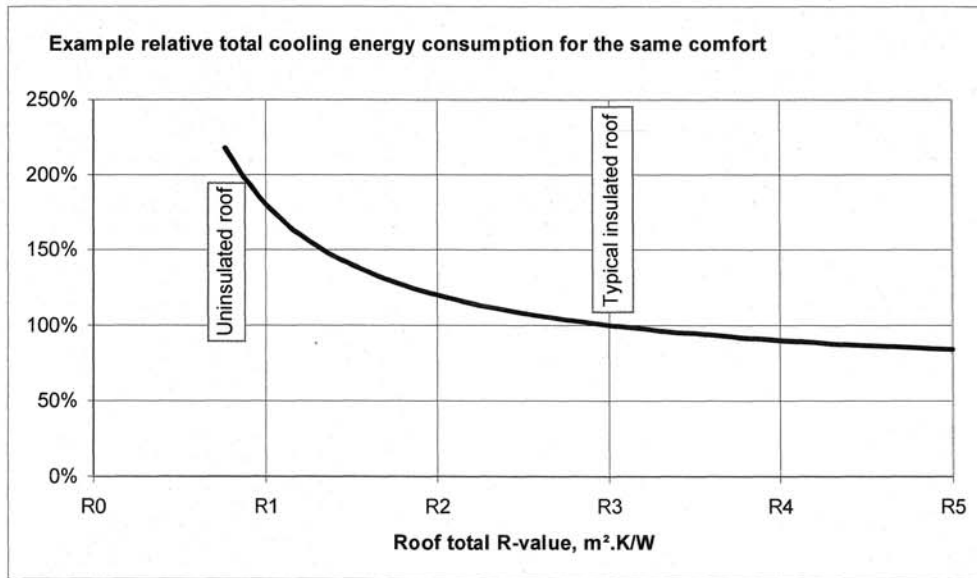
A similar analysis can be modelled for a home in Brisbane with air conditioning.

In this case, the roof insulation rating is typically higher because heat flow is downwards, hence results are slightly different:

Example: BRISBANE HOME	No roof insulation			Typical Example			
Roof total R-value, m <sup>2</sup> .K/W	R0.8	R1.0	R2.0	R3.0	R4.0	R4.5	R5.0
Home cooling cost per year:	\$2,179	\$1,850	\$1,212	\$1,000	\$900	\$867	\$840
Portion due to ceiling losses:	\$1,579	\$1,250	\$612	\$400	\$300	\$267	\$240

Assumptions:

Wall & window losses: \$300pa; Infiltration losses: \$300pa  
(estimate for home having carpetted slab floor and insulated walls)



Most energy uses (as well as insulation manufacture) are allied with generation of the greenhouse gas, carbon dioxide. A life-cycle analysis could be made on minimum total CO<sub>2</sub> generation, but it is likely it would give a similar optimum "best insulation" result to the life-cycle cost analysis results above.

The lesson: **Extra R does not necessarily mean extra comfort or substantially more energy cost savings or greenhouse gas reductions.** In fact, there is a level where extra R will actually cause an increase in life-cycle energy and greenhouse gas costs.



## Appendix B

### Except from AS/NZS3999

#### 2.6 ELECTRICAL CABLES AND ELECTRICAL EQUIPMENT

**2.6.1 General** The flow of electric current in cables generates heat which is dissipated to the surroundings. The introduction of thermal insulation around cables will reduce the heat dissipation and in some instances may result in electrical cables overheating and the electrical insulation exceeding its rated temperature, and degrading. It is also possible that electrical equipment may overheat if enclosed by thermal insulation.

##### 2.6.2 Electrical cables

**2.6.2.1 Dwellings wired in accordance with AS 3000—1986, or a subsequent edition** If electrical

cables in accordance with AS 3000—1986, or a subsequent edition, are present and the bulk insulation

would surround the cable, installation of bulk insulation may proceed in accordance with Sections 3

to 5, as appropriate, provided that the depth or thickness of the bulk insulation is not greater than

150 mm. Where the depth or thickness of the bulk insulation in the ceiling is greater than 150 mm, the

installation of the bulk insulation shall comply with Clause 2.6.2.2.

The installation of bulk insulation in walls shall not proceed until the insulation installer has checked

with the inspecting authority to determine if the walls have been deemed to contain thermal insulation.

Walls that are deemed to contain bulk insulation shall have the bulk insulation installed to comply with

Sections 3 to 5, as appropriate.

Walls that are not deemed to contain bulk insulation, and also floors, shall have the bulk insulation

installed to comply with Clause 2.6.2.2.

NOTE: The inspecting authority may determine that cavities in external walls in domestic premises are deemed to contain bulk thermal insulation. For further details, refer to the current edition of AS 3000.

##### 2.6.2.2 Dwellings not wired in accordance with AS 3000—1986, or a subsequent edition

The installation of bulk insulation in spaces where electrical cables which do not comply with

AS 3000—1986, or a subsequent edition, are present and where the bulk insulation would surround the

cables for lengths of cable greater than 150 mm, the alternatives (a) or (b) as follows shall be

considered and the appropriate procedure adopted:

(a) The bulk thermal insulation shall be installed so that it shall not surround electrical cables either completely or partially.

(b) By consultation with an electrical contractor or the electrical inspecting authority, the suitability

of surrounding the electrical cables with bulk thermal insulation either completely or partially shall

be determined.

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If the electrical cables are suitable for surrounding with bulk insulation, installation may proceed and shall comply with Sections 3 to 9, as appropriate. If the cables are found unsuitable for surrounding with thermal insulation, the installation of bulk insulation shall comply with the requirement of Item (a) or the relevant areas shall be left uninsulated, or the cables shall be rerouted by an electrical contractor away from the space to be insulated.

**NOTES:**

1 Assistance can be obtained from the Electrical Contractors Association of Australia in matters of rerouting cables or making changes to existing wiring.

2 Surrounding electrical cables with thermal insulation can sometimes be avoided by the use of separators (see Figure 2.1).

The separators may be mechanically fixed in position or supported by the insulation, but a clearance of at least 5 mm should be maintained between the top of the separator and the structural member carrying the electric cable. The space between the structural member and the separator should be kept free of insulation.

3 Lighting circuits, and particularly individual cables to luminaires, usually carry relatively small currents and are unlikely to overheat when surrounded by thermal insulation. Some types of low voltage recessed lights require high currents and need special consideration.

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