



The Home that Planted the Seed for Australia's Leading Retrofit Company

The ecoMaster approach was developed when Lyn and Maurice Beinat received an astronomical winter heating bill for heating their 'new home'. Having been built in the 1980s by a reputable builder, their large ranch style home had north-east facing outlook and large windows to take advantage of the views. There was central heating throughout, a large wood heater in the central living room and two electric hot water systems.

They had to find a way to make their home much warmer in winter and a lot more affordable. During their first winter they ran central heating on a low thermostat setting and the wood heater non-stop. Their first winter energy bill totalled \$2,075 (\$500 on electricity, 13 metres of wood \$975, \$600 in LPG gas central heating), plus another \$360 for LPG gas bottle rental - bringing the total to \$2,435. Despite spending this huge sum they had still been cold and uncomfortable; and so was everyone who came to visit.

The initial energy rating of the home showed a disappointing, but unsurprising, 1.5 stars. A retrofit plan was developed to convert this home to a much higher energy rated home over a 4 year period and each year the energy savings would help to pay for the next phase. During their home makeover something unexpected happened. This family has caught the energy and thermal efficiency bug!

First Phase: Draught Proofing

There were many aspects to draught proofing this home, including properly sealing doors and windows, installing draught excluders on external doors, on internal utility doors, on all ceiling extractor fans as well as sealing all gaps and cracks. This was the beginning of Maurice's passion for developing smarter and more effective draught proofing solutions.

The family were already much warmer and the big surprise was their winter energy bill coming in at \$983 - less than half of the previous year! Electricity was \$533, 6 metres of wood was burnt totalling \$450 and LPG gas was \$0 because they had turned it off! Their friends had started to visit again and the home was rated at 2 stars just having draught proofed.

“Our energy bill was cut in half following just the draught proofing phase!”

Second Phase: Secondary Glazing and Wall Insulation for the Bedrooms

Committed to make the bedrooms and study warmer, secondary glazing and wall insulation were installed. Their next winter was cosy, even in the living room which had not been upgraded! Their total winter heating bill had dropped to \$875 (\$475 electricity, \$400 wood) and the home was rated 3 Stars. Friends had trouble believing it was the same home.

Third Phase: Lighting, Ceiling Insulation, Solar Hot Water and Appliance Audit

The next step was replacing all halogen down-lights with energy efficient lights and upgrading the ceiling insulation to R5.9 with a combination of insulation products to retain winter warmth and repel summer heat. Evacuated tube solar hot water panels in combination with a wet flue was also installed. This generated 100% of their hot water needs in the first year! Their home was energy rated at 3.5 stars and their winter energy bill has reduced by 66% (\$414 electricity and \$400 wood).



The Journey Continues...

Inspired by these amazing results, the energy bug really struck. What else was possible? Fired up, they committed to continuous improvement of their home until it is a "zero bill, zero emission" home; meaning that it will cost nothing to heat and cool – not financially nor environmentally. They replaced their brown coal electricity with green energy, eliminating their electricity carbon emissions with one phone call! Replacing their peak / off peak meters with a smart meter allowed them to move to a more cost effective tariff, saving even further.

They conducted an energy audit of all electrical appliances in the home. This allowed them to identify and eliminate phantom loads and understand which appliances used the most energy meaning that they could then make informed choices based on that knowledge - the replacement of the inefficient family fridge was high on the list! Next they planted 3,000 trees to sequester additional carbon.

Fourth Phase: Underfloor Insulation & Passive Heating Systems

Two different passive heating systems were installed at either end of the home to reduce the need for a wood fire. R2 underfloor insulation was added to an extremely challenging underfloor space. Invisible pelmets were fitted to the existing heavy drapes.

Fifth Phase: Solar Panels

The installation of a 2.6 kWh solar panel array balanced the energy bill to a negative, with the energy retailer supposedly paying them. Whilst that is a long story, they achieved their goal of zero bill. They continued to see what else was possible...

Sixth Phase: Secondary Glazing for the Living Areas

Installation of secondary glazing in all the living areas was the last major piece of the puzzle to go into place. The home is now cosy in winter, using 1 log on the fire most nights and no heating required during the day. The composition of this family has changed dramatically over the 10 years. Up to ten people have lived in the home at once, and occasionally it has been down to three. It is not surprising that the energy bill fluctuates with the migratory habits of teenagers.

Life goes on...

The home is now rated at 7.8 stars and the triple bottom line results are excellent. Financially, the energy bills have reduced by 84%. Socially, the home is a warm welcoming space; average internal temperature of the home during winter is now a much more comfortable 19 degrees. On the hottest days when it is 46 degrees outside, this home operates at 24 degrees, rising to 28 or 29 degrees at the end of the day - with no air conditioning. Environmentally, carbon emissions are zero.

This is a brilliant result. Until now there has been a perception that in order to help the environment, you need to deprive yourself. This makeover proves that the opposite is the case - nobody living in this cosy home feels the least bit deprived!

“Many people don’t realise that 40%–60% of their energy bills can be attributed to heating and cooling their homes. ”

Lyn Beinat, Co-Founder and CEO of ecoMaster

“...the energy bills have been reduced by 84%”

