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16 May 2003

Mandatory Renewable Energy Target Review

Submission

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Australia could take a massive step towards meeting the Kyoto requirements if it introduced a carefully structured program of incentives and regulations for the rapid use of heat pump technology for heating hot water.

Heat pumps use the refrigeration cycle to pump heat accumulated from the outside environment inside into specific areas where heat is required. It can do this even if the outside temperature is below freezing.

In Australia about 20% of domestic electricity use goes to heating water. Heat pump water heaters already on the market save 70% of the electricity normally used by electric elements. If heat pumps became widely used there would be a massive 70% reduction in electricity consumption for domestic use. This would result in an estimated reduction of five million tonnes of emissions annually.

The Government is to be congratulated of course for introducing the Renewable Energy (electricity) Act 2000. I am not suggesting for a moment that the Government should reduce the existing incentives for Flat Plate Solar Water Heaters (F P S W H). Where the usage of hot water is small and in warmer states F P S W H are reasonably competitive with H PW H. This is not true for the colder states or when the water usage is high.(see Solar and heat pump energy saving comparisons. see also enclosed Annual Energy Use Comparison For a Larger Industrial User.)

The fact remains that F P S W H can only produce energy savings of the order of 42.53% in Perth, in Sydney 37.83%, in Melbourne 35.77%,in Brisbane 43.27%,in Adelaide 39.07%, in Hobart 31.48%. (see chart 3 Solar Contribution in Australia enclosed). A Heat Pump Water Heater on the other hand has energy savings of the order of 70% the year round. (see Simulation of Packaged Solar Heat-Pump Water Heaters G. L. Morrison pages 1 and 4 enclosed).

When the Renewable Energy Bill was introduced H P W H although on the market had not been perfected. They were using flat plate collectors to give a solar boost to the heat pump. The development of the air sourced heat pumps has given the market a self contained unit that does not require charging with refrigerant on site.(see brochure enclosed).

History of Heat Pump Water Heaters in Australia

During the early 1980`s the Engineering School of Melbourne University was researching heat pump technology for heating water. Siddons Ramset Ltd , a large public company, negotiated with the University to acquire an early patent, established an energy division, Siddons Research, and engaged three of the Universities PHD graduates in the field plus other appropriate engineers. The research company spent many millions and eventually, after much effort,began marketing a water heater which saved 70% of the electricity used by conventional immersion electric element heaters. At the time the writer was the C E O and Chairman of S R L.

A combination of some teething problems and a serious financial recession led S R L to concentrate on core Sidchrome and Ramset activities. Subsequently the research company was sold to employees and traded under the name Quantum. The writer was the major share holder and Chairman of Quantum. The company invested a further million dollars to develop and market the products in Australia and internationally. Many large Singapore hotels, including Raffles, use Quantum water heaters.

During a period when the writer had a serious heart attacks and SRL was subject of a hostile $500 million takeover bid by a giant US company, Quantum was sold to two people who were Quantum`s Newcastle distributors. They quickly drove the company into liquidation. Rheem offered the liquidator $1.4 million for Quantum but were outbid by a Mr. Sydney who offered $1.6 million. Rheem withdrew their bid saying they intended to develop a H P W H of their own that get around the Quantum patents. They have recently field tested their H P W H in Queensland.

Dux are rumoured in the market place to be considering the manufacture and marketing of a heat pump water heater. The Chinese have made a large investment to manufacture and sell H P W H under Quantum patents.

Proposal

I suggest consideration be given to a review of the Renewable Energy Certificates eligibility requirements pertinent to the new generation of Heat PumpWater Heaters and their classification relative to Flat Plate Solar Water Heaters.

The regulations allow the F P S W H manufactures to have only their 4 best days of the year used in the calculation of their R E C eligibility.

On these 4 days the F P S W H require no external power input at all. However , for 4+ months of the year they derive virtually no solar input during that time, and become only restive element heaters- the most inefficient and wasteful form of heating. Heat Pump Water Heaters maintain a high Coefficient of Performance (C O P) and offer efficiencies nearly twice that of Flat Plate Solar Water Heaters on a year average bases.

A review of the criteria of R E G eligibility to better reflect the year round system efficiency of the Heat Pump Water Heater and encourage its rapid introduction is urgent.

This would save, as was pointed out in the introduction, an estimated 5 million tonnes of emissions annually.

Yours sincerely

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