action matters for business

We've saved on our energy costs, and cut about a day off our timber drying time.

Kim Hayter
Managing Director
LM Hayter and Sons

LM Hayter and Sons: at the cutting edge of saving energy

Heat pump technology has enabled us to dry timber more quickly at a third of the cost, saving us more than $12,000 a year off our energy bills.

ABOUT US

Based southwest of Sydney, we are a 100 percent Australian, family-owned business employing 60 people across a sawmill and two retail stores. Our sawmill in Werombi was first established in 1968, and today processes around 18,000 cubic metres of timber a year.

OUR SITUATION

We dry timber in our sawmill with two twin nine-year-old kilns that are heated using electric elements. The heating elements consume large amounts of electricity, and we wanted to find a way to reduce our energy demands. A 99 kW solar energy system we'd installed a few years prior generates just about enough energy to power both kilns, but if the kilns didn't use so much electricity, we could direct this energy towards other parts of our sawmill's operations.

BY THE NUMBERS

Kiln upgrade: $30,000

Estimated cost savings: $12,000

Energy savings: 120 MWh a year - approximately 70% of the kiln's total electricity use

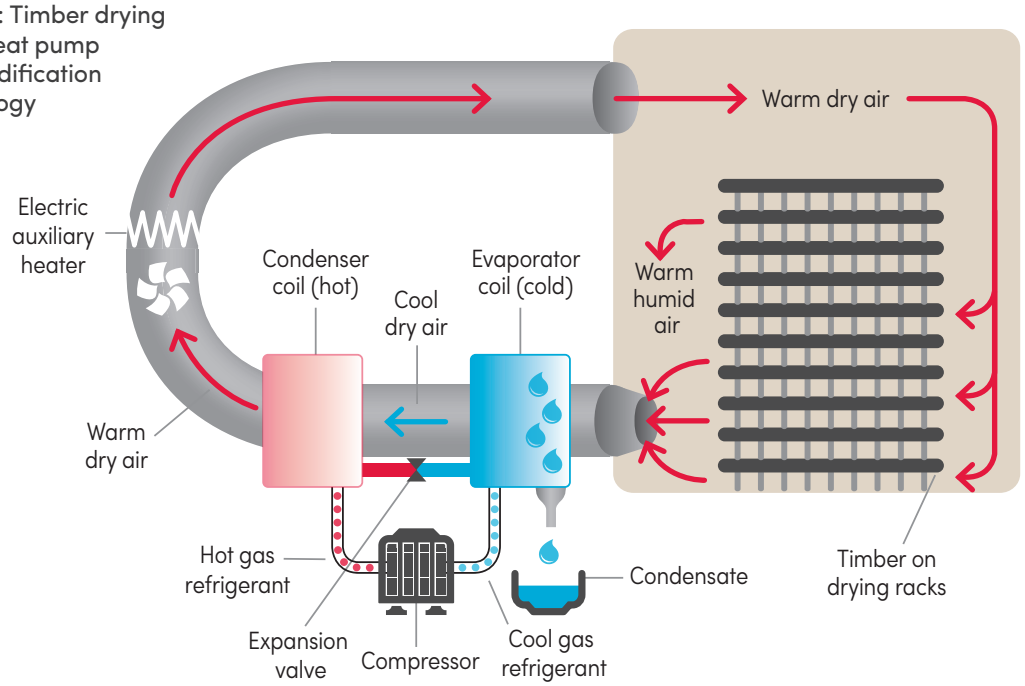
Simple payback: 2.5 years

THE TECHNOLOGY

- The controlled drying of timber is typically achieved in conventional low temperature kilns using thermal energy derived from electric heating elements, direct burning of gaseous fuels or via steam coils.
- These systems typically require high rates of air circulation and venting to manage the humidity inside the kiln, in order for moisture to be continually extracted from the timber.

NSW GOVERNMENT Office of Environment & Heritage

Figure 1: Timber drying using heat pump dehumidification technology



WHAT WE DID

We considered a number of alternative fuels, including gas and wood waste, but decided in the end to stick with electricity as it was easier to control and work with. We settled on a dehumidifying system based on heat pump technology, which promised to be more energy efficient.

We had this installed in one of our two kilns to see how it would perform. Initially it didn't seem as if the system was operating as it should. The new kiln was frequently relying on its supplementary electric element heater and this was having an adverse impact on its energy efficiency.

With the support of the NSW Office of Environment and Heritage, we engaged an energy specialist to assess the system. He was quick to spot issues with the temperature and humidity setpoints, and that the ducting configuration was not quite right. Adjustments were made and performance improved significantly.

THE RESULTS

Our upgraded kiln requires only a third of the electricity to process the same amount of timber as its conventional electric element twin. This has resulted in a saving of just over $12,000 a year.

We can also dry timber to required specification more quickly. While it takes up to five days in the original kiln, the upgraded kiln does this in around four days.

With the electricity saving, we're now also able to deploy the excess energy generated by our solar system towards other aspects of our sawmill's operations, such as our timber treatment plant.

- The use of heat pump technology in low temperature kilns has two main benefits:

1. Energy consumption is reduced because much of the thermal energy required to warm the kiln is extracted from the environment and from warm humid air that would have otherwise been vented.
2. Humidity is kept continually low by periodically cooling the air to condense the water out and reheating it again (as shown in Figure 1). Lower humidity means that drying can then be achieved either at a lower temperature, or more rapidly at conventional temperature levels – resulting in reduced energy demand.

TAKE ACTION

To find out how you can save on your energy costs, contact the Energy Efficient Business team.

EMAIL

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CALL

1300 361 967 (ask for the Energy Efficient Business team)

VISIT

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