

Pyramid Hill Salt -- turning an age-old problem into a new-millennium resource

Highlights

- A partnership between an entrepreneur and an engineer is turning one of Australia's greatest environmental problems into an opportunity.
- An international scholarship was pivotal in allowing key personnel to study best international practice and technology.
- Enthusiasm and perseverance have created a vibrant and viable business, and the next challenge is to deliver sustained profitability.

The first great innovation of Pyramid Hill Salt company was to recognise that the saline groundwater which plagues so much of Victoria's north-west was not a problem, it was a resource.

That has set in train a series of innovative developments, the most visible of which is the company's salt producing facility. There saline ground water is pumped into evaporation ponds to crystallise out into salt that can be purified for commercial use. This not only produces a saleable product, but also lowers the water table, allowing salt-degraded land to be restored to commercial use.

The same approach is now being extended to intercept and remove salty groundwater which is invading irrigation canals and storages in the area.

However, for the company's creator, John Ross, these are but starting points to what he hopes will be far more ambitious innovations that can transform the Murray-Darling Basin. One of these is the development of solar ponds, which Pyramid Hill is currently undertaking jointly with The Royal Melbourne Institute of Technology (RMIT).

From salt production to energy production

John Ross dreams of the day when the Murray Darling's heavily salted groundwater not only produces salt for export, but also energy from saline ponds, and which supports a range of downstream industries for which salt is a feedstock.

Solar ponds rely on the fact that highly saline water traps heat more effectively than fresh water. Equally important, when a still pond contains bodies of water of different salinity, they do not mix; they instead separate out into stratas with the most heavily saline water at the bottom. Sunlight passing through the water is trapped by the lower, more saline layers, forming a natural heat bank.

This phenomenon has been exploited in both Israel and the USA, but with limited success, because in such ponds the upper layers of water can become quickly clouded, reducing the ability of the sun's rays to penetrate to the heat-trapping brine below.

Pyramid Hill Salt has found that the use of biological agents like brine shrimp can keep the upper layers sparkling clear, with significant improvements in efficiency. Thanks to this, the capacity of solar ponds to produce energy on a commercial scale is greatly enhanced.

RMIT has been developing heat pipe technology using evacuated tubes, to capture and transmit low level heat and concentrate it so that it can be harnessed. Pyramid Hill Salt and RMIT now have in train a \$550,000 program to use this in a solar pond to create energy. The initial aim is to power some machinery on their own sites. If that proves successful, the next stage will be to generate electricity.

Meanwhile, the saline water drained from the land has lowered the water table and they are planting sections of it to produce tea-tree and eucalyptus oil.

John Ross may seem an unlikely agent to have instigated these far reaching changes. He had no previous association with salt or other chemical industries and no formal scientific qualifications. He says it has been a matter of perseverance, and one stroke of pure fortune in meeting up with the company's other driving force, Gavin Privett.

Background

John Ross 's family had farmed in the Tocumwal region of northern Victoria since the 1860's, but was forced off the land in the early 1940s after a prolonged drought. After finishing secondary school he tried his hand at dairy farming and then at building before moving into real estate where he founded the Ross Hunt agency.

As the agency prospered, he decided to restore his links with the land and 12 years ago he bought 1,800 acres at Pyramid Hill in north-western Victoria.

Like much of the Murray Darling Basin the land covers an old sea bed. Tree clearing and changes to natural drainage patterns have meant that since white settlement began, the water table has been steadily rising in the area, bringing the salt of that old sea bed ever closer to the surface, and rendering areas of the land useless for farming.

The idea of extracting salt from this water was by no means new, and John Ross was sufficiently intrigued by the talk of locals to drill his own land to test for reliable saline water. He sunk 10 bores and two struck strong-flowing saline aquifers.

Then luck lent a hand. On a trip to France for his daughter's wedding he found himself sitting behind Gavan Privett, then an engineer with Shark Bay Salt in WA. When John Ross asked him about the feasibility of making salt on his own property, Privett said: "If you send me a water sample I'll check it for you."

Ross arranged for some water samples to be trucked across to WA. Privett tested the samples, extracted salt and agreed to visit the site and give some technical advice on how to proceed. Privett then returned to his job in WA, but a few months later he suddenly telephoned Ross and said: "I'm coming over to join you."

The partnership has now brought Pyramid Hill Salt into production, moving close at last to profitability. Although they have saved hundreds of thousands of dollars by adapting other equipment rather than ordering new, the project has still cost close to \$2 million.

They have made innovations along the way, including building a giant greenhouse which keeps the salt pure and free from dust, and have established some good marketing connections. They expect to achieve profitability in the first quarter 2000.

Victorian based dairy-food manufacturers have placed orders, and a medical/pharmaceutical company is making firm offers. Thanks to the widespread media exposure, they are even getting unsolicited export inquiries from as far afield as Japan. The world market for salt is an estimated 190 million tonnes a year.

Now they face the challenge of building this business to sustained profitability while working on new projects like the solar ponds, and working with the Murray Darling Commission on the interception of saline water to keep it from irrigation channels.

All these additional possibilities were boosted when Privett won a scholarship to the US to study salt extraction developments there. John Ross decided to accompany him, at his own expense. They had fruitful exchanges with salinity researchers at the Department of Agriculture of California and were delighted to find that the head researcher into solar ponds at El Paso, Texas, was an Australian with whom they could exchange views very freely .

They now have an RMIT postgraduate student working on these issues and are planning the first trial operation.

The sources of innovation

John Ross thinks he has been a 'fairly innovative bloke' most of his life. He says the success of Ross Hunt was partly due to his willingness to set up specialised systems for managing properties, an area which was once considered a high effort-low yield area of real estate, but one which Ross Hunt turned into a very solid business.

He has done no course in innovation and acknowledges no particular mentor, other than 'the good fortune to have had teachers at school who encouraged you to think.' He believes the real core to being innovative is an individual's attitude to work, which in turn has much to do with relationships with those around you – a working relationship which encourages open communication.

"It would be a tragedy to ever wake up and feel you didn't want to go to work. I think then you'd lose the energy and the desire to accept and explore new ideas," he says.

A partnership between the entrepreneur and the technical expert

Clearly the vibrant working relationship and shared enthusiasm between Ross, the entrepreneur, and the more technically qualified Privett has also been a factor in the company's success.

As the company progressed it became necessary to produce more formal business plans, not least because they were required for finance and funding. However, Ross says that in a business that is enlisting evolving technologies, these plans need to be flexible.

This last comment reflects very much the spirit of the company. It is driven by enthusiasm and a crusading belief in the potential of the project to deliver real benefits. The management style is personal and hands-on, rather than structured, with staff from the real-estate business frequently helping John Ross out with work at Pyramid Hill.

It remains an organisation very much driven by the vision of its founders , and that vision is continually refined and re-defined in ongoing informal discussions on the basis of their experience and ever-expanding knowledge base, rather than through formal planning documents.

Can an innovative company be created?

An innovative company, John Ross believes, isn't something ordained by a formal structure, but something which grows out of a warm, enthusiastic ethos. "When there is a bit of fun about the place, good ideas flow more freely."

Besides, good ideas are only part of the equation. For an individual who is not backed by a large corporation, the reach challenge is making a new venture a reality. While he acknowledges that people at all levels of the Victorian and Federal Governments have been supportive, the path to profitability in a ground breaking new venture is still a long one.

For the successful innovator, perseverance is as important as inspiration.