

Untapped Power

The Need for Strategic Energy Management

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Summary Points

- Australia is performing poorly regarding energy efficiency compared with other developed nations.
- There needs to be a renewed focus on strategic energy management in both the public and private sector.
- Lack of energy strategy could be stifling investment and seeing important projects overlooked.
- Government has a leadership role to play by encouraging and demonstrating good energy management practices such as ISO50001.

Introduction

The American Council for an Energy-Efficient Economy's 2018 International Energy Efficiency Scorecard¹ ranked Australia 18th – the worst in the developed world. This is quite simply a tragedy of missed opportunity, especially when some of our jurisdictions (particularly South Australia) have some of the highest energy costs in the world.

Our nation has been endowed with such tremendous resources, yet for some reason we are simply not managing them well enough and it's costing us.

The Costs to Australian Business

It's costing us by reducing competitiveness. We can't rely on the services sector and raw materials alone to carry export earnings, we still need to value-add and make things – which takes energy.

It's costing us in jobs. Manufacturing industries are becoming unsustainable due to cost pressures (including energy costs) and therefore shutting down or downsizing.

It's costing us in terms of lost opportunities. Energy dependant businesses are choosing either not to expand or finding other locations to invest interstate or overseas.

The Solution

We need to do more with less. It's about increasing efficiency and productivity to enable enduring competitiveness.

There is no shortage of opportunities available such as; compressed air management, LED lighting, motor upgrades/controls, pumping efficiency, HVAC controls, refrigeration optimisation, burner efficiency, heat recovery, insulation, automation, co-generation and demand management. But what is right for the business?

This is where strategic energy management comes in. To talk about efficiency and productivity without strategy can impede progress. To embark upon efficiency projects in an ad-hoc or piecemeal manner can inadvertently stifle further investment.⁴

Energy Efficiency vs Energy Productivity

The concepts of energy efficiency and energy productivity are similar but are generally regarded to differ in the following ways.

Energy efficiency is essentially about using less energy to produce the same outcomes, whereas energy productivity is doing more with less energy.

Technically speaking, efficiency is the energy output divided by the energy input expressed as a percentage. For example, old motors would typically have efficiency below 90%, but newer technology sees this increase to around 95%. Therefore 5% less input power is required to produce the same mechanical output power or work.

Productivity is more about the value created per energy input. It would typically be communicated as a production or sales output (value) divided by energy input. This gives a broader business context by looking beyond just equipment level to consider the impact on the site as-a-whole. This is particularly relevant in the industrial sector.

What is Energy Management?

Energy management encompasses energy efficiency and productivity, but also considers the broader elements of energy including procurement, generation, systems and most importantly, strategy.

World's best-practice for Energy Management Systems (EnMS) has been established as ISO50001. However, the Australian take-up of this standard has been sluggish at best.

Attention has historically been placed on efficiency and more recently on productivity, although the strategic element has been missing. The enduring effect of strategic energy management therefore has not been fully realised in this nation.

ISO50001 Around the World

The U.S. Department of Energy promotes the standard and has a Superior Energy Performance (SEP) program² to encourage facilities to get recognised for verified energy performance improvement using ISO50001.

An independent third party audits each facility to verify achievements and qualify it at the Silver, Gold, or Platinum level, based on energy performance improvement. This certification emphasises measurable savings through a transparent process.

The facilities in SEP who have met the ISO50001 standard have improved their energy performance up to 30% over three years.

Barriers to Energy Management

Energy management is typically not well understood at senior levels in organisations. Many energy efficiency and productivity projects can be technical in nature. So, without good data and advice, they can fall into the 'too-hard basket' and lie dormant.

Energy management education of company leaders needs to be encouraged by government. Currently there is no real accountability or impetus for senior managers to seek out this information and take action.

Between 2009 and 2014 the Federal Government had an Energy Efficiency Opportunities (EEO) program³. The object of the program was to improve the identification, evaluation and implementation of energy efficiency opportunities by large energy-using corporations.

EEO required large organisations to report on progress and was effective in improving the uptake of good energy management practices. It was hoped that ISO50001 would fill the gap left by this program, but sadly it hasn't yet.

The Danger of 'Low-Hanging Fruit'

A common approach to energy efficiency is to select the 'low-hanging fruit' or quickest payback projects. The danger of this approach is that it could potentially delay higher value projects.

Energy efficiency projects almost always have benefit beyond just energy savings. Most often an upgrade of equipment delivers greater reliability, reduced maintenance and in some case better output. These benefits can often be left out of the business case, even though they have an important impact.

A strategic approach to energy management would consider all projects in context and preferably select the right grouping of projects that add best overall benefit. In other words, using the short paybacks to reduce the longer paybacks.

For example, a business with a hurdle rate of 3 years, could select lighting project with a 2-year payback and bypass a refrigeration upgrade with a 5-year payback. However, bundled together, the desired 3-year payback is achieved, and an important site project is given the go-ahead.

Conclusion

Federal and State Governments play a very important role by setting policies which educate, encourage and enable businesses to reap the benefits of strategic energy management.

More can be done to promote the best-practice principles of ISO50001 which clearly delivers results⁵. Both the private and public sector need to work together to bring Australian industry back into a leading position in energy management. program was to improve the identification, evaluation and implementation

Links

1. <http://aceee.org/sites/default/files/publications/researchreports/i1801.pdf>
2. <https://www.energy.gov/ISO50001>
3. <https://www.eex.gov.au/large-energy-users/energy-management/energy-efficiency-opportunities/>
4. <https://www.swisslog.com/en-au/newsroom/news/2018/05/kaizen-para-dox-blog-post>
5. https://icn.org.au/sites/default/files/Allwater%20Helen%20Beard_0.pdf

About

EfficientSee Pty Ltd

EfficientSee was established in 2009 and is headquartered in the Tonsley Innovation Precinct, Adelaide South Australia.

Quentin Roberts

Quentin has been engineering for 20 years and specialising in energy for the last decade. He founded EfficientSee in 2009 and has advised some of SA's largest energy users.

He is one of the country's leading specialists in ISO50001 (International Standard for Energy Management Systems) and was an integral part of seeing the first Australian company to have an accredited Energy Management System.

He is a certified energy coach and qualified electrical engineer with a broad range of experience across the industrial and commercial sectors.

Recently, Quentin initiated the Tonsley Energy Consortium to facilitate greater collaboration between like-minded innovative energy generators, service providers and equipment suppliers.

He is passionate about making a positive, lasting and measurable impact on businesses by guiding and supporting them on their efficiency journey.

THIS PAPER IS PART OF A LARGER SERIES OF WORKS RELATING TO STRATEGIC ENERGY MANAGEMENT.

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