

Global Energy Management System Implementation: Case Study

Australia

Rindin Enterprises

*Scott Safety and Tyco Projects Guildford.
The first Tyco site globally to achieve
ISO50001.*



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Business Benefits Achieved

Since our baseline year 2008, we have enjoyed a 48% reduction in cost and ongoing energy savings of AUD\$25K. In addition, we have achieved a 65% reduction in the cost of a single manufactured unit, no small feat when one considers we manufacture over 10 million components annually. These figures excite both customers and staff and propel the company to achieve even greater results.

“Quality product made and moved more efficiently”

- Wilson Morrison, Facilities Coordinator

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Case Study Snapshot	
Industry	Manufacturing
Location	Sydney Australia
Energy Management System	ISO 50001
Product/Service	PPE and ITS Traffic Management Systems
Energy Performance Improvement (%)	38.41%
Annual energy cost savings	AUD\$25,248
Cost to implement	AUD\$12,000
Payback period	1.5< Years

Company Profile

The Guildford facility consists of Scott Safety and Tyco Projects Australia, two Tyco businesses. Scott Safety is a premier manufacturer of innovative respiratory and personal protective equipment and safety devices for firefighters, industrial workers, police squads, militaries, homeland security forces, and rescue teams around the world. With five global manufacturing locations, Scott products protect thousands of individuals each day from environmental hazards including smoke, toxic fumes, combustible gases, falling objects, and contaminants.

Tyco Projects Australia t/a Tyco Traffic and Transportation are part of the Tyco group of companies, world leaders in the provision of engineered Traffic, Fire and Security solutions.

The Traffic and Transportation division has earned a well-established track record of working collaboratively with government and private customers, design consultants and asset owners in high profile, public facing environments, to successfully deliver complex Intelligent Transport Systems (ITS) technology solutions and services.

Business Case for Energy Management

With over 69,000 employees globally, Tyco utilizes a vast network of machines and vehicles to undertake business and move product from the factory to the end user.

Energy, whether it be electricity, a company vehicle or the transport company used to deliver product consumes immense resources, and our obvious strategy is to minimize our energy consumption. As a result, many of our sites globally are ISO14001 accredited.

Our primary motivation is to have quality product made and moved more efficiently to the end user.

While a primary factor of our Energy Management Program (EMP) is based on the principles and requirements of ISO14001, it also stems from an Operational and Financial perspective where the more inefficient the process, the more costly it is to the business.

While the Guildford facility implemented ISO14001 in 2007, we have developed a mature EMS system, and while this is a benefit to the business, Continuous Improvements and energy reductions were a challenge year after year. We had reviewed other areas of energy usage (Company Vehicles and Transportation/Couriers)

but had little or no ability to make or enforce changes. As ISO50001 includes these, we are now in a much more beneficial position to involve third parties and work together to for mutual reductions.

Essentially, our ethos as to:

Make exceptional quality products which are moved from Factory to Customer more efficiently.

Have more efficient machines and processes to make the product.

Keys to Success

- **The Golden Rule:
ENSURE ALL STAFF AND MANAGEMENT HAVE
BUY IN!!!**

Involve stakeholders who are prepared to implement and commit to change.

- Implement strategies that are proactive rather than reactive. Plan, Do, Check, Act.
- We rely extensively on Power Factor Correction (PFC) to gauge the “quality” of our energy consumption = Power that enters the premises (Reactive Power or the power we drew from the grid) versus the power we actually use (Real Power). In simple terms, PFC is a ratio between real power versus reactive power and is a number between .0 and 1. The higher the Power Factor Correction, the better the energy usage/less wastage
 - = More bang for your energy buck.The Power Factor Correction for the Guildford was 0.94 in our baseline year 2008, while we now consistently record PFC of at least 0.98++.
(see pg. 5 for definition of PFC).
- Wherever possible, establish realistic targets and benchmarks for all energy sources – Machines, Vehicles and Freight Forwarders. Work with these stakeholders to improve energy efficiency and usage.

- Create a report to track and celebrate improvements.

EnMS Development and Implementation

In early 2015, a Scott Safety global summit was held in the United Kingdom that included all significant Stakeholders who could (and would) instigate change within their business units to encompass World's Best Practice. As part of this, it was established that while the three largest Scott Safety manufacturing facilities had achieved ISO14001, they had effectively come to an impasse on how to further reduce their impact on the environment as a whole.

In being tasked with achieving certification to ISO50001 by the Global Senior Leadership Team, the Scott Safety/Tyco Projects Guildford facility created an EnMS that could either be partially or fully implemented throughout the global organization. Since achieving certification to ISO50001 in December 2015, the Guildford facility now mentors and provides support to other Scott Safety facilities globally so that they too can pursue certification, or at least incorporate processes into their operations to reduce their energy usage locally with a medium term view of certification.

Business benefits

Based on our Global EHS policy, the Facility EHS Policy was amended to further highlight energy usage and our commitment to further reductions, and this was endorsed by Senior Management. In addition, components of the policy are communicated and reinforced to all staff through Toolbox and Huddle (Cell) Meetings and EHS Meetings.

After Management approved the Facilities Coordinator as the Management Representative, key team members were volunteered to participate in the implementation of the EnMS. The team consisted of: the EHS Coordinator, the Plant Manager, the onsite Electrician and the Manufacturing Engineer to become the Energy Management Project Team (EMPT).

The facility has been collecting energy consumption data from 2004 onwards and "knee jerk" action plans have been in place sporadically since that time. The incorporation of consumption data, plans and general strategies has been in place formally since 2008.

Through the high level Action Plan and staff nomination, the consumption of our Moulding Machines were targeted as they represented approx. 68% of total consumption for the premises in any given month, however after data logging the top 5 Machines, it became apparent that these machines alone represented 28 -30% of the peak KVA demand, and so these have been targeted for immediate investigation.

An active and enthusiastic workforce exists at the Guildford premises, with the average factory employee serving 27 years with the company.

The workforce is willing to assist in and/or take ownership of projects and tasks extraordinary to their job role – specifically in ensuring a culture of safety and "looking after their mates" with broad knowledge training undertaken accordingly by external Service providers. A flat line structure of communication exists with the usual Toolbox/Cell Meetings and face to face communication. Senior Management are dedicated to daily site walks and in many cases, decisions are made on the shop floor and then communicated to other areas of the business for implementation.

While no external consultant was used throughout the ISO50001 certification process, this was by design so that while the EMPT were researching various aspects and requirements of the Standard, they also became impassioned and enthusiastic about the whole process, which then spread to others.

The Guildford premises is an avid proponent of Lean Manufacturing and Six Sigma philosophies, and we undertook several significant Kaizen's in the high volume and high energy use work cells in the Factory area in order to achieve not only better work processes, but with minimal energy required to maximize production.

Only the services of our Energy Broker and our HVAC Service Repairer were utilized on order to conduct an Energy Review and in depth audit on our HVAC systems. While we anticipated the result of the Energy Review, the Audit on the HVAC systems highlighted that the units were using significantly more energy to maintain output and were actually costing more to maintain. As such, plans were put into place to replace these units with more energy efficient and economical alternatives.

Both services were provided at no charge and all other measurement was undertaken by our onsite Electrician.

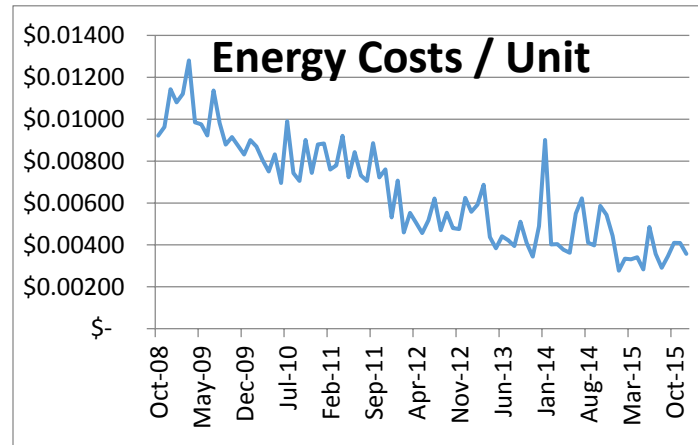
Procedures and action plans were created to highlight energy usage and controls to all Managers and Supervisors and these are in line with the Facility and Global EHS Policy. Energy consumption of all new capital Equipment is thoroughly investigated before purchase.

By monitoring PFC in real time, we have achieved improvements and all devices are data logged on a regular basis to confirm accuracy.

In order to reflect real against the real cost of implementation, the aspects of total consumption, total units produced, work hours, single unit cost were compared against the overall cost of implementation and this as then measured against the anticipated ROI.

“ISO50001 provides a structured approach to Right First Time methodologies, which leads to improved efficiencies, maintenance practices and ultimately cost savings for our organization, the shareholder and ultimately, our customer.”

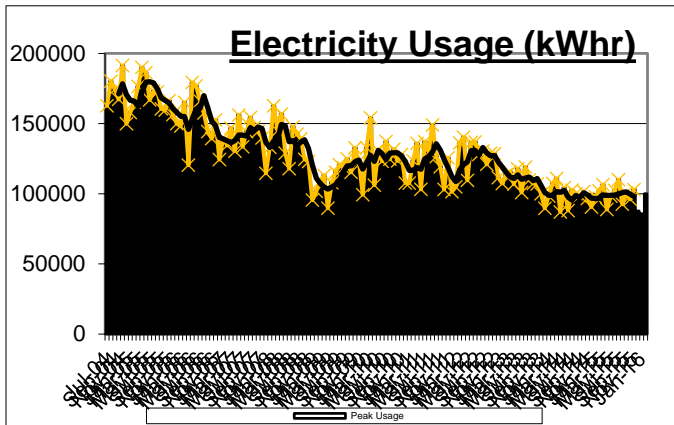
- Wilson Morrison, Facilities Coordinator



The above diagram highlights the 65% reduction in the cost of a single manufactured unit, no small feat when one considers we manufacture over 10 million components annually.



To better gauge the power that enters the premises versus the power we actually use, we monitor energy usage through Power Factor Correction (PFC). Put simply PFC is a ratio between real power versus reactive power and is a number between .0 and 1. In the case of the above, the beer represents the real power and the froth is the reactive or wasted energy, so the more beer you have, the less wasted energy.



Lessons Learned

- “Success is no accident, it arrives after the hard work, perseverance, learning, study, sacrifice and love for what you are doing”. Pele. This quote has become quite a mantra for the EMPT here at the Guildford site as we experienced all of these things and more. As they say, it is the journey that is the reward not necessarily the destination and we have learned that IO50001 is a journey of several years.

The reduction in energy usage since our base year 2008.

After the GFC in 2009, (the dip in the middle of the spreadsheet), we focused on significantly improving Power Factor Correction so that we were better using what we were paying for.

Through the Energy Management Working Group (EMWG), government officials worldwide share best practices and leverage their collective knowledge and experience to create high-impact national programs that accelerate the use of energy management systems in industry and commercial buildings. The EMWG was launched in 2010 by the Clean Energy Ministerial (CEM) and International Partnership for Energy Efficiency Cooperation (IPEEC).

For more information, please visit www.cleanenergyministerial.org/energymanagement.

