

ISO 50001 Energy Management System Case Study

Wyeth Nutrition's Energy Management Journey

Ireland

Wyeth Nutrition

38% improvement in energy efficiency



Wyeth Nutrition Plant, Askeaton, Co. Limerick

Organization Profile & Business Case

For the past 100 years, Wyeth Nutrition has pioneered innovative nutrition science with premium-quality products that meet the needs of infants, young children and adults. Through scientific research, world-class manufacturing and product safety standards, Wyeth Nutrition deliver scientifically sound solutions that offer parents confidence to help nourish children and support healthy futures, when breastfeeding is not an option. Wyeth Nutrition commenced operations in Askeaton in 1974. The site now employs over 750 people between staff and contractors. The Askeaton operation supplies infant nutrition products all over the world. In 2012 Wyeth Nutrition was acquired by Nestlé SA and operates as part of Nestlé Nutrition. The key drivers for adopting the ISO 50001 Energy Management standard on site were:

- Reduce our environmental impact
- Deliver environmentally sustainable business practices

- Reduce costs in line with corporate strategy
- Build energy management into business practices
- Optimise our major energy consumers
- Adopt energy management best practices
- Improve operational and capital cost decisions
- Improve our ability to benchmark, measure and report energy performance

"We have developed a robust ISO50001 certified energy management system which assists with our commitment to environmentally sustainable business practices, energy efficiency, to achieve zero waste and use sustainably managed renewable resources"

— Paul van Rooij, Factory Manager, Wyeth Nutrition, Askeaton

Case Study Snapshot

Industry	Food sector
Product/Service	Infant Nutrition
Location	Askeaton, Ireland
Energy management system	ISO 50001
Energy performance improvement period	2012- 2018
Energy Performance Improvement (%)	38%
Total energy cost savings over improvement period	\$ 2,790,667 USD
Cost to implement EnMS	\$ 400,000 USD
Total Energy Savings over improvement period	439,300 (GJ)
Total CO ₂ -e emission reduction over improvement period	24,161 (Metric tons)

Business Benefits

Since our energy management journey began in 2012, we have seen many benefits for the organization listed below:

- Cost savings of nearly \$2,800,000 so far
- Energy savings of 439,300 GJ so far
- Carbon savings of 24,161 tonnes from the site
- Senior management revaluation of the sites approach to energy management
- Energy champions and an effective site energy team continues to deliver
- Recognition from both our customers and suppliers of our energy efficiency journey
- National recognition through the Sustainable Energy Authority of Ireland – Wyeth Nutrition are 2018 Large Business Energy Management Award Winners.
- Improved energy awareness which is leading to employees achieving savings at home and at work
- The energy management system is integrated with our environmental, quality and health & safety systems. Continual improvements are replicated across all systems.
- ISO 50001 EnMS has forced us to look at large renewable projects which deliver significant primary energy savings and further environmental benefits
- All energy savings are verified by a Certified Energy Measurement and Verification Professional. The verified savings are recycled into further energy efficiency projects, ensuring the cycle never ends.
- Improved perception of the organization from the local community by being green and winning energy awards, etc.
- The site has been recognized by corporate for its energy efficiency by being awarded new production lines which leads to further jobs for the site and surrounding communities.

Plan

Wyeth Nutrition have always had a great history of delivering energy efficiency projects. In 2004 the site delivered a significant project in transitioning from heavy fuel oil to gas and installed a CHP which has since provided the large majority of the sites electricity requirements. In 2012 Wyeth set about a programme of energy projects and energy management that led to certification to ISO 50001.

The following were the key actions in development of our energy management system:

- Meeting with the site leadership team to explain the issues in regard to energy costs, climate change, carbon costs, national & European energy efficiency targets. The site were behind the ISO50001 EnMS immediately and backed it 100%.
- Energy team – a cross functional energy team was put together – comprising of team members from all activities and departments throughout the organization. Responsibilities include communicate Energy Awareness throughout the organization, provide feedback. Energy team members also organise special events, such as energy awareness day / week, providing input into improvements of the energy programme i.e. suggesting improvement projects, providing updates on how their department/section is progressing and any problems they encounter as regards their energy reduction objectives, working with other members of the Energy Team to ensure the overall objectives of Energy reduction are met.
- From a technical perspective we started looking at our energy consumption in detail using the following techniques:
- Mapping energy flows & identification of significant energy user (SEUs)
- Establishment of a Register of Energy Saving Opportunities

- Establishment of energy use performance indicators
- Effective Operational Control of large users
- Energy Efficient Design & Procurement
- Energy Awareness was also a big part of our programme. We host 2 days in December with various themes all around energy efficiency. We also communicate throughout the year on energy efficient practices and areas of interest including home energy savings, community energy programmes, etc.
- Project identified through our Register of Opportunities are scored and the best scoring opportunities are put forward to management for capital funding approval. Management support projects with an acceptable payback period, usually less than 3 years.
- All projects follow the concepts of Energy Efficient Design & Procurement including life cycle costing analysis in key decisions
- As mentioned, all energy savings are verified by a Certified Energy Measurement and Verification Professional. The verified savings are recycled into further energy efficiency projects, ensuring the cycle never ends.

“Our ISO50001 certified energy management system has been a huge success that continues to deliver energy savings and reduce our environmental impact.

— Ian Ryan, Energy Engineer, Wyeth Nutrition, Askeaton

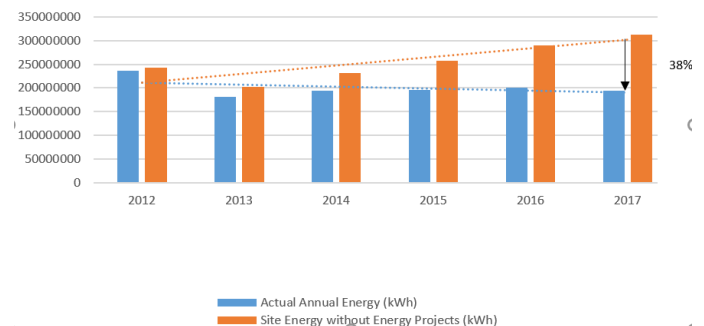
Do, Check, Act

Energy at Wyeth is managed as effectively as possible without denying staff an effective and comfortable work environment and our customers a high quality product. Listed below are key aspects of how we delivered our energy management system

- Scope of the Energy Management System was agreed with senior management
- Energy Policy was approved and signed by senior management
- Energy Review was carried out
 - Methodology for Energy Review was developed
 - Identification of Significant Energy Users – highest users to lowest
 - Energy variables/energy drivers were reviewed, production volume and intensity are the key drivers of energy
 - Opportunities Register was developed for the site
- Energy Baseline was established which was normalized against production volume
- Energy Performance Indicators were developed including
 - Boiler & CHP efficiencies
 - Refrigeration COP
 - Compressed Air Nm³/kWh
 - Effluent Treatment kWh/m³
 - Dryer efficiency metrics, etc
- Energy Objectives, Targets & Energy Action Plans
 - Identify and agree suitable Energy Objectives & Targets, All energy Objectives and targets have been achieved to date
 - Verification of energy savings are completed by a Certified Energy Measurement and Verification Professional.
- Operational Control
 - Operational Control procedures were established outlining optimum operating parameters, when maintenance should be carried out, etc.
- Energy Efficient Design is included in all projects

- Monitoring, measurement & analysis
 - Continually reviewing and improving effectiveness of current energy monitoring
 - Review energy measurement plan
 - Identify areas for improvement
- Internal Audits of the EnMS are continually carried out by the energy team
- Nonconformities, correction, corrective and preventive actions
 - Non conformities identified and dealt with when a limit has been breached or a procedure has not been adhered to.
 - Subsequent corrective and preventive actions are carried out
- Management Review – the energy team and site leadership team attend the annual management review and plan energy activities for the following year,
- Externally verified savings can be seen on the chart below. The site has been producing more energy intensive product in recent years. Had it not been for the energy management programme energy would have increased significantly (orange bars in chart), however due to our projects and ISO 50001 system we have kept energy down (blue bars in chart).

Actual Annual Energy Consumption (kWh)
versus Without Energy Projects (2012 - 2017)



Transparency

Following our ISO 50001 certification and our recent Sustainable Energy Authority of Ireland Energy Award we publicly announced these through the following mechanisms:

- Askeaton Connect Magazine the site quarterly magazine reaching all staff and contractors
- Nestle & Wyeth Nutrition Twitter & Linked In pages which reach a global audience
- The Global Nestle Ezine Magazine
- A press release to local and national media
- Direct communication with the SEAI – Sustainable Energy Authority of Ireland

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.

Lessons Learned

If we were to do it all over again, we would not change a great deal. We find our system to be very robust and is continually delivering so we do not have a lot that we would change. Below are our key lessons learnt,

- The system is scalable to any site or organization as it adopts a forensic analysis of the energy consumption coupled with developing engagement and communication from all stakeholders in the organization.
- Energy savings have truly resulted from our efforts in getting the site certified to ISO 50001 so the process has been very worthwhile
- Some learnings for others that may be starting the process, things they should try and avoid are as follows:
 - **Making your system too complex:** eg, documenting all the requirements of the standard and your activities into a set of rigid procedures that require multiple approvals to change
 - **Focusing on doing and not recording:** eg, identifying improvement opportunities, and indeed implementing them, but not recording them in the Register of Opportunities
 - **Focusing on the technical aspects and ignoring the system:** eg, making efficiency changes to processes without updating the process descriptions/controls and neglecting to retrain operatives
 - **Maintaining two systems** – one for use, the other for external auditors to see
 - **Not seeing the value in internal audits:** eg, only conducting compliance audits (do we have a policy, is it written down?) as opposed to audits focusing on making improvements (is our policy reflected in what we do and how can we test it?)
- **Restricting communication:** eg, only a core team is involved and really runs the system, while those outside the team are excluded
- **Not giving enough resources to the system:** eg, appointing a management representative but not allocating them financial and/or human resources to run the system

Photos & Graphs showing performance improvement:

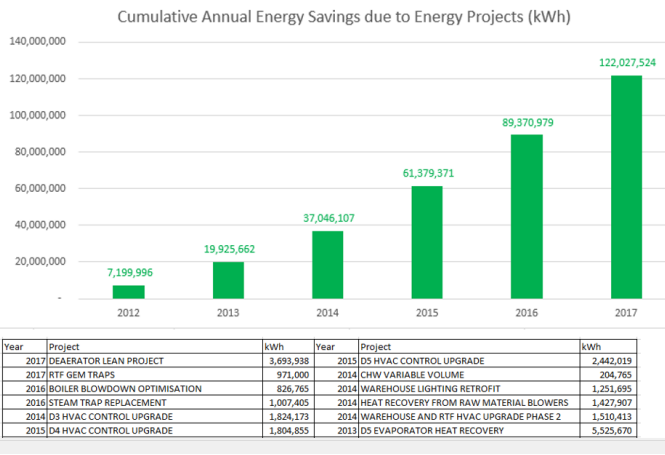
Below is our site specific energy awareness campaign logo 'Power to Save' that was developed in house:



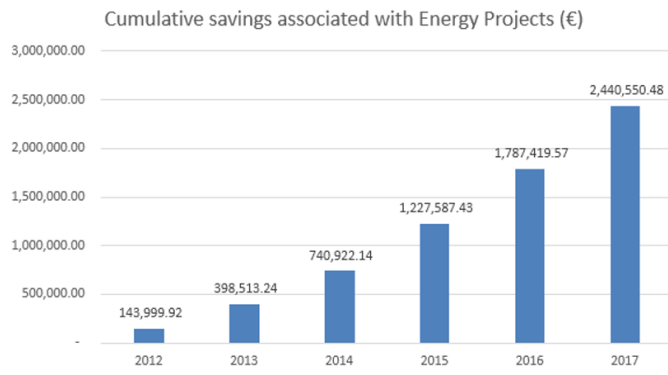
Wyeth Nutrition won the 2018 Large Business Energy Management Award at the SEAI Energy Awards



KWh Energy Savings since 2012:



Energy Cost Savings since 2012:



- As previously identified, all energy savings are verified by a Certified Energy Measurement and Verification Professional who is registered with the AEE – Association of Energy Engineers. The verified savings are recycled into further energy efficiency projects, ensuring the cycle of energy savings continues annually.