

Global Energy Management System Implementation: Case Study

Ireland

Abbott Diagnostics Division Sligo

Reducing our carbon footprint for a greener, healthier and more sustainable environment.



Case Study Snapshot	
Industry	Healthcare (Diagnostics)
Location	Sligo, Ireland
Energy Management System	ISO 50001
Product/Service	Diagnostics manufacturer
Energy Performance Improvement (%)	65.3%
Annual energy cost savings	1.4 million
Cost to implement	€ 6000
Payback period	<1year

Business Benefits Achieved

Since the implementation of ISO 50001, Abbott Diagnostic Division Sligo has achieved a 40% reduction in CO2.

The implementation has also resulted in an energy cost reduction of 36%

“The improvements identified through the implementation of ISO 50001 helped reduce our CO2 emissions by 40% and reduce our energy costs by 36%”

—Connor Murphy, Site Director

Company Profile

Abbott Diagnostics is a global leader of in-vitro diagnostics with around 70000 institutional customers in more than 100 countries. Its diagnostic products include a broad range of innovative instrument systems and tests for hospitals, reference labs, physician offices and clinics. The Sligo site was the first Irish Diagnostics manufacturing facility built in 1994 to manufacture blood-screening products and reagents. This impressive manufacturing facility has expanded eight times, and now spans nearly 170,000 square feet over a nine-acre site. The site is unique in that it is located along the newly established “Wild Atlantic Way.” The 1,500km Wild Atlantic Way is described as a scenic drive which is being sold as a rival to California’s Pacific Coast Highway and Australia’s Great Ocean Road.

Business Case for Energy Management

“Life to the fullest” What does it look like to really live life to the fullest? Does it look the same to an accountant in Shanghai as it does to a street artist in Sao Paulo?

Those are the questions that Abbott asks.

At ADD Sligo, we embrace living life to the fullest. Creating an environment which is greener, healthier and more sustainable is part of that. Being out in the open enjoying the Wild Atlantic Way is also part of that. Going for a run or walk with your family and enjoying the great Atlantic ocean is part of that.



Coney Island, Co.Sligo

As a business, it is up to us to safeguard the environment so that future generations can enjoy the great outdoors as well. Having implemented an effective energy management system was always a goal for Sligo. So, the Sligo facility signed up to the energy Agreements Programme (EAP) in 2010 and achieved certification to ISO 50001 in September 2013.

Having a systematic approach in reducing carbon emissions and implementing best practices through robust environmental projects place Abbott as a leader in future proofing the local area as being greener, healthier and a more sustainable environment. Prior to Abbott being certified to ISO 50001, the approach to

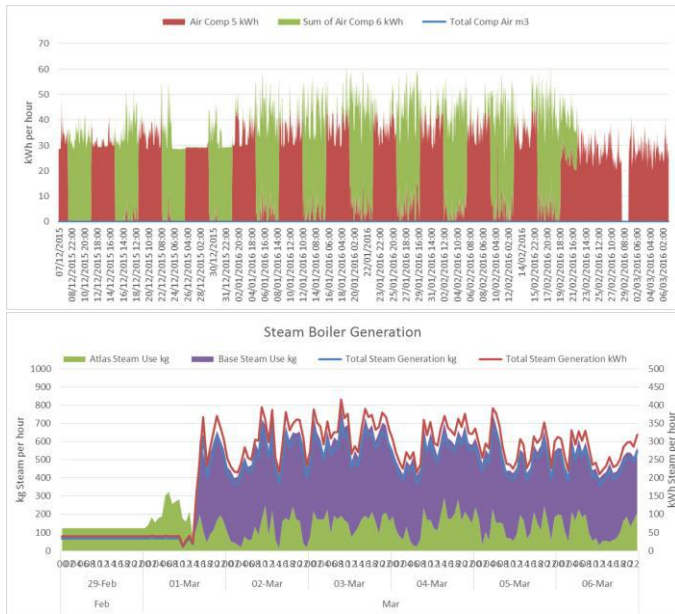
energy management was unstructured. Although the site made multiple energy efficiency improvements prior to the certification, no actual energy reviews of Significant Energy users (SEU) took place

Keys to Success

- Support from Management: In order to implement ISO 50001, you will need full support from the Site's senior management team. They are key to successful implementation, they will allocate time and headcount if required,...
- Understanding your Significant energy users: it might be daunting to implement ISO 50001 without having 100's of energy meters, but a good understanding of your significant energy users (SEU) can be achieved by reviewing engineering data, knowing motor/engine sizes, manufacturers documentation,...
- Develop your energy performance indicators (EnPI's): It is really important to understand what you are going to measure and track. The EnPI's will tell you how your significant energy users are operating, highlight issues,...
- Develop a metering plan: There is no need to buy 100's of meters and collect 1000's of data points. What is important is that you understand the generated data and use the data. A lot of times, a lot of data gets collected, but nobody knows what to do with it. Understand your operation limits,...
- Try to use existing systems: If you already have systems in place to investigate non conformances or you already have systems for reporting, don't reinvent the wheel. Try to use the tried and tested systems and modify them where needed

EnMS Development and Implementation

Where Abbott Diagnostics Division Sligo has really excelled is how they approached the implementation and day-to-day running of ISO 50001.



Metering diagrams (lower/upper limits)

When Abbott Ireland Diagnostics Division site in Sligo were in the process of further developing the site’s energy metering plan, it was decided to incorporate a total energy management programme.

The programme has been rolled out in a phased approach and is in accordance with the principles of ISO 50001. The programme utilizes the Energy Efficiency Obligation Scheme (EEOS) which was implemented pursuant to the Energy Efficiency Directive 2012, Article 7. The Directive imposes a legal obligation on Member States to achieve new savings each year from 1 January 2014 to 31 December 2020 of 1.5% of the annual energy sales to final customers of all energy distributors and all retail energy sales companies by volume, averaged over the most recent three-year period prior to 1 January 2013.

Obligated parties under the EEOS are energy distributors and retail energy sales companies that have market sales in Ireland of greater than 600 GWh final sales in any relevant year, regardless of the sector they supply. Obligated parties’ targets are allocated according to their proportion of energy market sales volume in Ireland. So with other words, it is the obligated parties (energy suppliers and distributors) which share the states burden of achieving energy targets.

The obligated parties can chose to achieve these savings independently or by partnerships with service providers. And it is here where Abbott were one of the first companies in Ireland to utilize the Energy Efficiency Obligation Scheme (EEOS). Abbott decided to work together with one of these EEOS to supply them with knowledge and funding to run the energy management programmes.

The whole agreement between the EEOS and Abbott commenced in 2012 and resulted in a phased implementation period.

Phase# 1

This first phase of the programme entailed the installation of Abbott specified and operated energy metering systems, data capture systems and data analysis tools. A mixture of PLC systems, wireless data collection (ZigBee and z-wave) and manual data collection are in use. The selection of meter locations within the site was decided through detailed metering plans.

Phase# 2

The second part of the programme entailed the implementation of tailored reporting and energy metrics. These were implemented based on each of the site’s Significant Energy users (SEU) and their relevant energy performance indicators (ENPI’s).

Throughout the framework agreement the current and historic data is analysed using a variety of statistical methods. This information, combined with the

knowledge and experience of Abbott Personnel populates the opportunity list for both sites. There are many data collection and analytical tools available, however unless that available data is adequately analysed data collection and analytical tools are worthless.

Further, what the site discovered early in the process was that by using the correct SEU and EnPI's, the daily/weekly reviews would highlight issues with how the significant energy users are operating.

This has resulted in a significant number of cost avoidances on site.

For example, increases in steam would be investigated and would highlight issues with steamtraps, blowdowns or chemical dosing issues.

By not just tracking fuel usage for the low pressure hot water boilers, but taking degridays into account, inefficiencies are highlighted in a fashionable manner

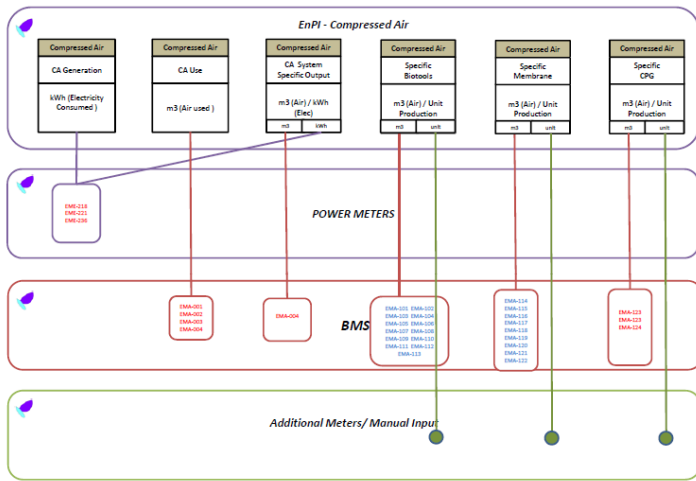
The programme, which is fully supported by the management team, has also resulted in the development of an energy team. These people, who are from a wide variety of departments (Quality, planning, warehouse, Technical,) on site, are involved in not just creating awareness, but also are actively involved in the implementation of projects.

One of the first projects of the newly formed Energy team was to design a logo.



Energy logo

An important extension for the site towards maintaining ISO 50001 is the introduction of energy efficient design. Where in the past, projects would have been implemented using engineering standards; further development of the standard incorporates energy efficient design. At AIDD, one of the first projects going through an energy efficient design (EED) has been the development and build of a new fill suite. This fill suite



SEU + EnPI diagrams

Phase# 3

Once both phase# 1 and phase# 2 were implemented, Abbott Diagnostics Division Sligo were able to identify energy opportunities and cost avoidances. The implementation of an opportunities register which is always “live” has resulted in many energy efficiency projects being implemented at both sites. With the supporting data, it became also easier to build its business case for each project.

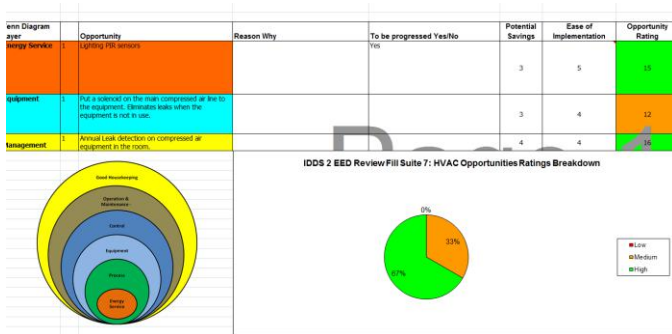
At Abbott Diagnostics Division Sligo, it became quickly clear that the implementation of ISO 50001 resulted not only in cost savings, but also resulted in a huge amount of cost avoidances.

The site has achieved since the introduction of ISO 50001 an absolute CO2 reduction of 40% although production increased. This is mainly driven by the opportunities register in which all potential energy efficiency projects are highlighted and evaluated.

has set a new standard within Abbott regarding Class 5 fill suites.

Energy efficiency measurements which were introduced were:

- a) Free cooling
- b) Set back modes on HVAC (off peak demand)
- c) Reduced air changes
- d) Humidity control
- e) Lighting control



There was no additional cost involved in implementing the system with the exception of the fee for the actual audit.

During the implementation of ISO 50001, a lot of awareness sessions were rolled out within the plant. As a site, the emphasis was to change employee’s perception regarding energy usage. As the site was an established site with a lot of employees who had been on the site for years, the culture of “energy is not my issue” approach had to be changed.

So a lot of events were rolled out over the course of the implementation months with the help of the newly appointed energy champions. These ranged from competitions to toolbox talks to a full energy week. Leaflets were left on PC monitors if they were left on, positive engagement with employees through awareness training and energy fair resulted in employees becoming proactive regarding energy usage.

Template for EED

The implementation of ISO15001 was completed by site personnel in approx. 8 months (1 headcount + approx... 14 energy champions).



“The implementation of ISO 50001 has enhanced the analysis of data from our energy management system and leveraged advantages in energy efficiency projects and ongoing energy management.”

—Peter De Bie, EHS supervisor

Lessons Learned

One of the main lessons learned is that we should have implemented ISO 50001 earlier. It has brought significant CO2 reductions and cost savings to the site and has resulted in an energy engaged workforce who are not only conserving energy at work, but also in their own home.

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.

