SUSTAINABLE ENERGY IRELAND

Large Industry Energy Network

Annual Report 2008



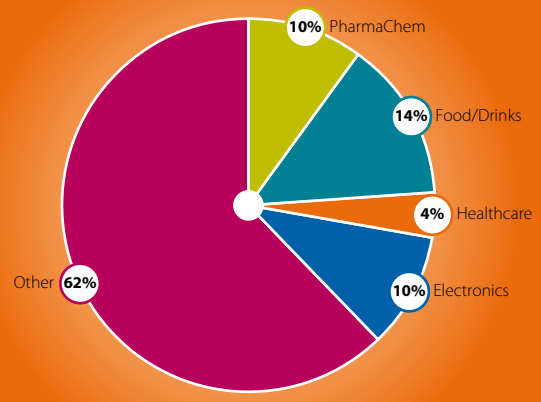



*The **Large Industry Energy Network** is a voluntary network of companies working to maintain strong energy management and environmental protection practices.*

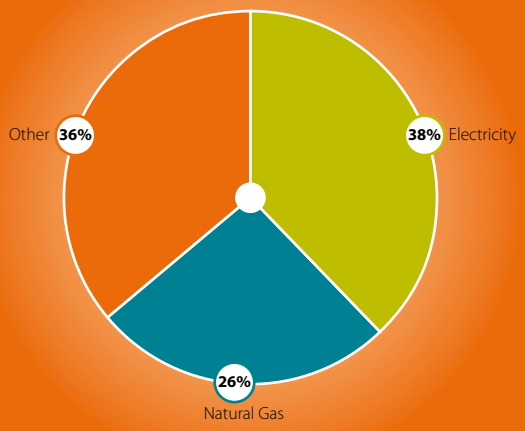
Large Industry Energy Network

2008 Results

Sectoral Breakdown of TPER



Sources of Primary Energy



2008 Overall Energy Performance

LIEN Total Primary Energy Requirement (TPER) 2008 (GWh)	26,600
Energy savings due to energy-efficient gains 2008 (GWh)	1,620
Avoided energy requirement	5.2%
National TPER 2008 (GWh)	190,488*
LIEN as percentage of national TPER	14%
Total CO_2 emissions 2008 (tonnes)	6,344,800
CO_2 avoided due to energy-efficiency gains	364,900

** 2008 Provisional Energy Balance*

For more information on LIEN and Energy Agreements, visit our website:

www.sei.ie/largeindustry

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Who we are

THE Large Industry Energy Network (LIEN) is a voluntary network, facilitated by Sustainable Energy Ireland, of companies working to maintain strong energy management and environmental protection practices.

LIEN members recognise the benefits of collaborating with like-minded organisations on best practice and new technologies in energy management.

Membership of the LIEN is open to organisations who are part of the Energy Agreements programme and/or those who have annual energy spend in excess of €1m.

What we do

LIEN's core aim is to support participants' goals for reducing the cost of energy. There are also wider benefits, not least the environmental gains of energy efficiency, which have social benefits and also improve firms' relationships with their stakeholders.

Workshops and seminars are organised throughout the year for LIEN members, providing them with a forum to learn from energy experts and other specialists, as well as from other energy managers.

Where we are going

There are strong government priorities and targets for improving energy efficiency and the use of renewable energy. Achievements by LIEN companies are recognised and contribute to national energy objectives ranging across efficiency, competitiveness, energy security and environmental protection.

Introduction

by Prof. J. Owen Lewis

Ireland's industry is all too aware that it operates on a global stage, where economic turmoil continues to play out on a scale not experienced before by this generation. Our largest enterprises especially, with their export focus, have had to grapple head on with the unfolding economic drama.

The intense challenge posed by today's harsh economic conditions adds to challenges already reflected in national and international policies on energy and climate change – namely to achieve secure energy supplies, maximise cost competitiveness and meet environmental obligations. Indeed, large industrial operations are in the front line in facing these growing strictures and pressures. How they procure and manage energy is central to all these challenges, and needs to be central to their response.

Energy users have very limited control on the price of energy, which showed dramatic fluctuations in 2008. But it is within their power to improve energy efficiency to meet head-on both the economic and climate-change challenges. There is tremendous potential for savings through actions which are cost effective here and now.

SEI's strategy in support of Ireland's business sector is to drive the adoption and application of world class models of structured energy management and green procurement practices. These will equip enterprises with systems and supports that enable them to manage their energy in a structured way as a visible factor within an ethic of continuous improvement. In this regard, the response of our leading industrial companies has been most encouraging.

The results set out in this year's Large Industry Energy Network (LIEN) report show just what can be achieved when senior management adopts best practice in energy management. Collectively in 2008, LIEN members achieved a 5.2% improvement in energy efficiency, resulting in an avoided energy spend of over €60m.

The LIEN experience also shows the huge competitive benefit of long-term commitment to energy efficiency. Amongst LIEN companies reporting between the years 1995 to 2008, a cumulative energy efficiency gain of 39% has been recorded over that period.

LIEN network membership continues to grow. A total of 122 of the largest energy users in Ireland are actively engaged with SEI in an ongoing relationship that involves site visits, workshops and annual performance reviews. This has grown from 100 companies in 2007, and indications are that numbers will rise to 140 in 2009. LIEN members now account for 61% of all industrial energy use, representing 14% of national primary energy use and a significant proportion of national economic output.

€60m

COLLECTIVELY IN 2008, LIEN MEMBERS ACHIEVED A 5.2% IMPROVEMENT IN ENERGY EFFICIENCY, RESULTING IN AN AVOIDED ENERGY SPEND OF OVER €60M.

39%

AMONGST LIEN COMPANIES REPORTING BETWEEN THE YEARS 1995 TO 2008, A CUMULATIVE ENERGY EFFICIENCY GAIN OF 39% HAS BEEN RECORDED OVER THAT PERIOD.

Our Energy Agreements initiative is a significant intensification and extension to the LIEN, where companies commit to a rigorous programme of action and commit to continuous improvement on a multiannual basis. These companies enter into a formal relationship with SEI to develop and implement a plan to obtain certification to Ireland's pioneering Energy Management Standard IS 393 and to cut energy costs and emissions in both the short and long term. In this process, SEI provides tailored advice and training through a suite of technical, networking and financial supports.

SEI continues to develop its programmes, setting the pace in supporting progressive improvement by large energy users. Initiatives such as the Energy-Efficient Design (EED) methodology, and tailored approaches developed by technology-specific and sector-specific Special Working Groups, have proved of particular benefit in extending the energy efficiency skills base in both LIEN members and engineering services companies.

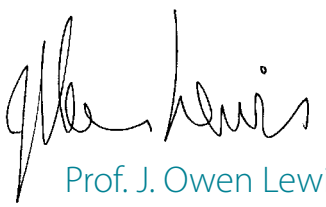
In addition to the cumulative energy savings already achieved, the Energy Agreements system and its accompanying initiatives such as the EED methodology and Special Working Groups have identified further potential efficiency improvements of 20% to 50%.

This report shows that applying structured energy management systems yields impressive results. But the benefits of this pioneering work and accumulated knowledge of the LIEN network are not confined to LIEN members. Their experience and know-how can be adapted systematically by other large industrial organisations, by SMEs in general and by the public sector. This is now a very active agenda, and SEI's leadership in working with business to support Ireland's ambitious but achievable climate-change goals has seen it working with well over 1,000 organisations of all sizes. This figure is well on course to approach 2,000 organisations in 2009.

A further achievement of the SEI/industry partnership is that it is turning Ireland into a world leader in energy efficiency. It now offers world class companies a route to leading edge corporate responsibility solutions.

In 2009, Energy Agreements companies will make the transition from IS 393 to the new European energy-management standard, with tailored support for companies embarking on this course or upgrading from their previous certification. The LIEN network will be among the first set of companies to be certified internationally, reinforcing its position as a global leader.

I congratulate the LIEN members on their successes to date, and pledge SEI's commitment to provide leadership to ensure further progress. And to those companies not yet in the network, I say: *Come and join us.*



Prof. J. Owen Lewis

Chief Executive Officer, SEI

A Message

from the Minister for Communications, Energy and Natural Resources

Energy, and how we supply and use it, is a core issue for our society. Whether we see it as a threat or an opportunity, it's an issue to which we must respond. Nowhere is this felt more than in our business sector, particularly by enterprises where energy is a major cost item.

In Ireland, such enterprises are invariably operating in intensely competitive international markets. It is now very clear that the effectiveness of our energy policies and practices in this and other sectors will have a vital bearing on the recovery and future sustainability of our economy.

The three pillars of Ireland's energy policy – security of supply, cost competitiveness and environmental protection – align strongly with the National Climate Change Strategy and are shared with almost all our trading partners. However, we need to go beyond seeing these as defensive goals, and look to them becoming positively transformative. This challenge, to see sustainable energy as a force of opportunity and to establish Irish enterprise as an engine for creating and applying innovative, superior energy products and services, is given strong expression in the Government's policy for a smart green economy, published in December 2008.

Intrinsic to all these policy goals is energy efficiency. Indeed "energy efficiency first" is a win-win maxim that applies to all sectors. Almost always it is the most cost effective means of meeting these goals. It fits well with the culture of successful business, of doing more with less, and with the ethic of continuous improvement. It is now recognised as imperative that we create an energy-efficient economy.

In early 2009, we published Ireland's first comprehensive national energy efficiency policy. The National Energy Efficiency Action Plan 2009-2020 (NEEAP) plots a course to an ambitious but achievable overall target energy efficiency gain of 20% by 2020. Within the plan, the goal for the industrial and commercial sector is to cement an international reputation for embracing energy efficient practices, innovation and competitiveness.

In this regard, the initiative of LIEN has played an important role. It is a network of our largest energy using companies, united in common cause – to seek and drive energy efficiency opportunities in the interests of cost competitiveness first and foremost. The access this gives to expert advice and to learning from the best practices of others can make all the difference. I note that this can yield not only significant savings in energy costs and CO_2 emissions, but also other benefits. Examples in this report include cases where energy efficiency projects carry accompanying improvements in process efficiency and product quality. These benefits are progressive and, when embedded by strong organisational commitment and practice, will be enduring.

20%

THE NATIONAL ENERGY EFFICIENCY ACTION PLAN 2009-2020 (NEEAP) PLOTS A COURSE TO AN AMBITIOUS BUT ACHIEVABLE OVERALL TARGET ENERGY EFFICIENCY GAIN OF 20% BY 2020.

80%

PIONEERED THROUGH THE LIEN, UP TO 80% OF IRELAND'S LARGEST ENERGY USERS ARE ACTIVELY IMPLEMENTING THE STANDARD. THIS IS AMONG THE HIGHEST TAKE-UP RATES IN THE WORLD FOR CERTIFIED ENERGY MANAGEMENT.

Now in its fifteenth year, LIEN is an excellent example of government and business working together to build an energy efficient economy. It has fostered and developed a culture of commitment and capability in energy management across a vital segment of Ireland's business community. With over 120 member companies representing over 60% of industrial energy use and tens of thousands of jobs, it continues to grow in achievement and influence.

Year on year, its members identify and harness new energy efficiency opportunities. For 2008 alone their recorded savings of over 5%, equating to cost savings of €60 million and emissions avoidance of 365,000 tonnes of CO_2, testify to that. The Energy Agreements initiative has been built on the foundations laid by LIEN, and is bringing energy management from the boilerhouse to the boardroom. This type of structure and professionalism can help to create a supportive environment to indigenous enterprise, and help attract or retain international corporations considering investing here. And I am pleased to see that SEI has successfully extended its support services to the SME sector, with over 1500 companies now signed up and significant energy savings already emerging in that business community.

Two further policy actions are reinforcing the network exchange and leadership models shown in the LIEN and SME initiatives. First, we introduced in 2008 a new tax incentive through the Accelerated Capital Allowance scheme, encouraging companies to purchase the most energy-efficient equipment. Almost 5,000 products in a wide range of categories now qualify under this scheme.

Second, energy efficiency practices are now being embedded in our leading companies through the framework of IS 393, the Irish Standard for Energy Management. This is one of just four such certifiable standards in the world and is underpinning a growing number of formal Energy Agreements. It has also been the model for the new European energy management standard EN 16001, applicable in 30 countries. Pioneered through the LIEN, up to 80% of Ireland's largest energy users are actively implementing the standard. This is among the highest take-up rates in the world for certified energy management.

LIEN is also well placed to provide a proving ground for innovative green solutions as they emerge. Indeed, several LIEN companies are now exporting their energy efficiency expertise to sister plants worldwide. So while founded and fashioned under more benign energy and economic conditions than those that exist currently, LIEN continues to offers a strong support platform to Ireland's most energy intensive companies, helping them maximise their competitive performance.

The type of innovation and professionalisation spearheaded by LIEN shows that the goal of gaining a world class reputation for Ireland's businesses in the field of energy, CO_2 and cost performance is attainable. Large industry is of course just one part of the huge national effort required. But each year of progress is further evidence that Ireland's businesses can emerge not just as followers but as leaders in energy efficiency, in combating climate change, and in becoming a keystone to a smart green economy.

Eamon Ryan, TD

Minister for Communications, Energy and Natural Resources

The Large Industry Energy Network and its Membership

THE Large Industry Energy Network (LIEN), established in 1995, is a voluntary grouping of companies, facilitated by SEI, that works together to develop and maintain robust energy-management practices.

Workshops, seminars and site visits are organised throughout the year for LIEN members, providing a forum to learn from energy experts and other specialists, as well as from fellow energy managers. Members benefit from the experience of a peer group which can save valuable research time and help ensure that investments are made in the most appropriate areas to maximise returns.

In 2008, there were 27 new members with 8 members leaving the LIEN either due to closure or restructuring. The network continues to grow in line with its reputation as a practical and unique energy forum for the country's leading industrial companies. The current membership of 122 companies now accounts for 14% of the total primary energy requirement in Ireland. This is an increase of approximately 3% on 2007 figures, due to both the increase in membership numbers and the overall drop in the national primary energy requirement in comparison to 2007.

The network is still building partnerships with more established sectors, such as Ireland's cement producers, who are all now represented, as well as attracting members from sectors only recently represented in the network, such as the power-generation sector. Although the LIEN is composed of companies from a diverse range of industrial and commercial activities, the common goal is to set energy-saving targets to address energy waste, related costs and CO_2 emissions. The members' achievements are publicised as a way of enhancing their reputation as environmentally responsible operators.

In challenging economic times companies are increasingly looking to energy management as a cost-effective investment to reduce operating costs. Additional support from industry peers is seen as contributing effectively to in-house knowledge and expertise. In addition, SEI continues to expand the range of support activity available to member companies. For example, the Energy Agreements Programme is generating a strong body of knowledge about a broad range of techniques which have great potential for savings replication when adopted at host sites.

It is expected that the LIEN will grow further during 2009, when up to 20 new members are expected to join. Membership is open to companies with an energy bill of more than €1 million. The current average energy spend across the LIEN membership is in the region of €8 million. All member companies and organisations are making a notable contribution to the CO_2 emission targets set out in the National Energy Efficiency Action Plan.

€8m

THE CURRENT AVERAGE ENERGY SPEND ACROSS THE LIEN MEMBERSHIP IS IN THE REGION OF €8 MILLION.

122

THE CURRENT MEMBERSHIP OF 122 COMPANIES NOW ACCOUNTS FOR 14% OF THE TOTAL PRIMARY ENERGY REQUIREMENT IN IRELAND.

Development of the Network

The LIEN is a well-established networking and information programme for large industrial energy users.

It has grown, over time, to currently incorporate 122 of Ireland's largest industrial and commercial companies. New members are also coming from the more recently launched Energy Agreements Programme (EAP), launched in May 2006. The EAP centres on a commitment to adopt the Irish Energy Management System IS 393 as the means for continuous and sustained improvements in energy efficiency.

The track record of member companies is impressive and the energy expertise and knowledge base gathered by LIEN over the last 14 years is an immense resource for new members.

In joining the LIEN, companies make a commitment to:

- Develop a management programme for energy use
- Set and review energy targets
- Undertake an annual energy audit
- Produce annual statement-of-energy accounts

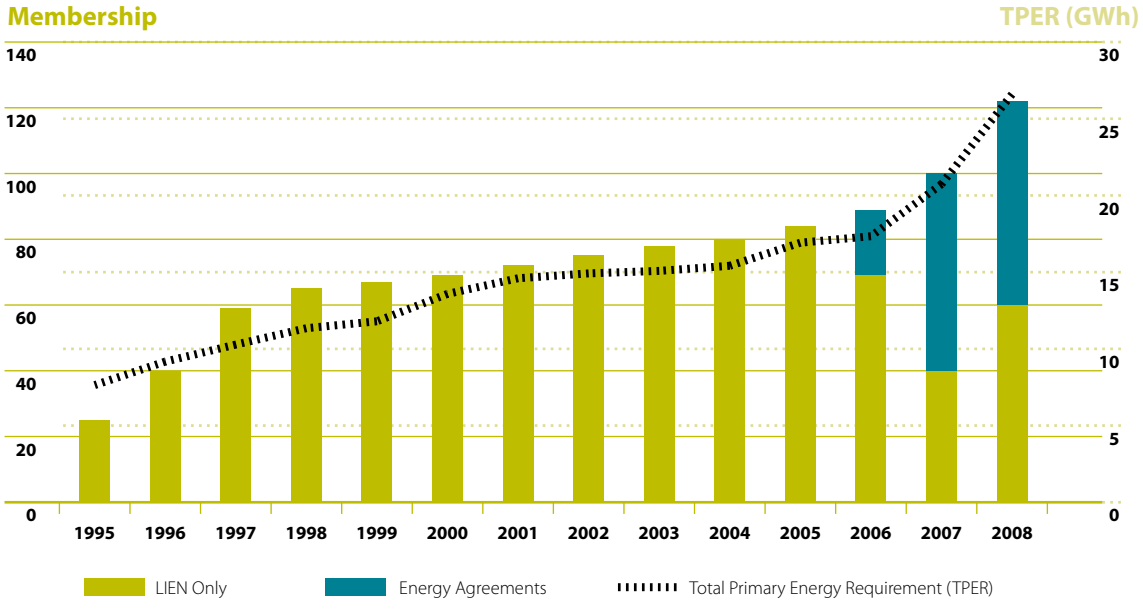
The following companies joined the LIEN during 2008:

- Abbott Vascular Devices Ireland Ltd
- Arkil Ltd
- Associated Packaging Technologies*
- Boston Scientific Ireland Ltd (Clonmel)
- CITADEL100 Datacenters Limited*
- Citi
- Edenderry Power Ltd*
- Eircom
- Iarnród Éireann
- Interxion Ireland Limited
- Irish Cement (Limerick)*
- Irish Cement (Platin)*
- Microsoft
- Molex Ireland*
- Monaghan Mushrooms
- Green Isle Foods, Gurteen*
- Green Isle Foods, Longford*
- Green Isle Foods, Naas*
- Green Isle Foods, Portumna*
- Procter & Gamble Ireland (Naas)
- Quinn Cement Ltd*
- Roadstone Wood Group* (Consisting of 9 Quarries)
- Takeda Ireland Ltd, (Grange Castle)*
- Teva Pharmaceuticals Ireland*
- United Fish Industries Ltd
- Vitra Ireland Ltd*
- Vodafone*

** Companies joining the Energy Agreements programme*

Of the 122 companies that are members of the LIEN, 60 are LIEN-only members, 62 are Energy Agreement programme members. The Energy Agreement members represent a total of 74 independent sites committed to IS 393 energy management system certification.

Figure 1: The increase in LIEN membership 1995-2008, with participating companies' total primary energy requirement (TPER)



Network Activities for LIEN Members

SEI works closely with LIEN members to ensure that support activities reflect the practical needs of industry. The LIEN continues to stimulate energy savings in industry through SEI's support for a programme for members of customised events and activities such as workshops, site visits, seminars and conferences. These activities integrate closely with the wider energy programmes of SEI. Many of the events are hosted by network members, which increases their impact.

Some of the key events that took place in 2008 were:

- **Best Practice in Design and Optimisation of Industrial Equipment Seminar – April**

  This Large Industry Seminar took place at the 2008 Energy Show. It showcased Irish and international best practice in the optimisation of energy-using processes and equipment. It focused on HVAC design methodologies, HVAC optimisation in cleanrooms, the optimisation of industrial refrigeration systems and energy usage in IT server rooms.

- **Energy Market Seminar – July**

  This Dublin seminar was organised to help LIEN members to gain more understanding of Ireland's energy market first-hand, from specialists in this complex area. It covered the future outlook for electricity and gas tariffs, and oil prices, and the various solutions that may alleviate security-of-supply concerns. The seminar concluded with a guided tour of Huntstown Power Station in North Co Dublin.

- **New and Emerging Technologies Seminar – September**

  This seminar, hosted by Google Ireland in Dublin, covered a wide range of energy-saving and renewable-energy technologies, including: a product using intelligent control to improve BEMS controls; energy-storage systems; an update from SEI's Ocean Energy Development Unit; wave-energy technology; and a review of micro-generation potential in Ireland. Delegates also had the opportunity to test-drive a world best-selling electric vehicle.

- **Chief Executive Officer Briefing Event – November**

  This CEO Energy Forum breakfast gathered together the senior management of Ireland's top energy-using businesses. Its purpose was to facilitate dialogue between government and industry. Government was represented by the Minister for Communications, Energy and Natural Resources, Eamon Ryan, TD. The participants had an ideal opportunity to discuss energy-related activities at their own sites with business colleagues, and government policy issues with the minister.

- ***Energy in Industry 2007* Report Launch – November**

  The annual Energy in Industry report catalogues the development of the LIEN and the energy usage and emission trends of member companies. Its launch helps to showcase the achievements of member companies every year. Through the use of energy-efficient technologies and practices, LIEN companies avoided €55 million on their energy bills, which equates to cuts of over 430,000 tonnes in CO_2.

8

8 LIEN MEMBERS COMPANIES WERE SUCCESSFUL IN THE SEI SUSTAINABLE ENERGY AWARDS 2008.

- **Energy Awareness Seminar – November**

  This event covered all aspects of running an effective and sustained energy-awareness campaign and highlighted relevant materials available from SEI. The seminar took place at the Bulmers production facilities in Clonmel, Co Tipperary. Delegates learned about the Bulmers in-house campaign and had an opportunity to tour the plant and view the campaign materials in use. Representatives from Pfizer, Ringaskiddy, holders of the SEI 2008 award for an Energy Awareness Campaign, also passed on their award-winning advice.

- **The SEI Sustainable Energy Awards 2008 – November**

  This black-tie gala event for Irish energy-using industry goes from strength to strength every year. SEI estimates that cumulative energy cost savings achieved by projects which have entered the awards, since their establishment in 2004, total €327 million. The 2008 entrants to the awards, sponsored by ESB Customer Supply, reported energy savings of €17 million based on the energy-management initiatives implemented in their organisations. The prestigious Energy Manager of the Year – Large User award went to Intel Ireland's Energy Manager Kevin Geoghegan. Improvements in Intel's manufacturing energy efficiency has led to a 20% reduction in its natural-gas usage during 2006-2007 and, along with other measures, have yielded savings of over 25,000 tonnes of CO_2 over the last three years.

Award Winners from LIEN membership

Category A: Energy Efficiency Project – Large User
Winner: Diageo, St James's Gate Brewery
Highly Commended: Bausch & Lomb

Category A: Energy Efficiency Project – Medium User
Winner: Alza Ireland Ltd
Highly Commended: Dalkia Ltd

Category C: Energy Awareness Campaign
Winner: Pfizer Ireland Pharmaceuticals, Ringaskiddy
Highly Commended: Citi

Category F: Coordinated Energy Management Programme – Large User
Winner: HJ Heinz Frozen & Chilled Foods Ltd

Category F: Coordinated Energy Management Programme – Small/Medium User
Winner: Vodafone/Dalkia Ltd

Category G: Energy Manager of the Year – Large User
Winner: Kevin Geoghegan, Intel Ireland Ltd

€327m

SEI ESTIMATES THAT CUMULATIVE ENERGY COST SAVINGS ACHIEVED BY PROJECTS WHICH HAVE ENTERED THE AWARDS, SINCE THEIR ESTABLISHMENT IN 2004, TOTAL €327 MILLION.

€17m

THE 2008 ENTRANTS TO THE AWARDS, SPONSORED BY ESB CUSTOMER SUPPLY, REPORTED ENERGY SAVINGS OF €17 MILLION BASED ON THE ENERGY-MANAGEMENT INITIATIVES IMPLEMENTED IN THEIR ORGANISATIONS.

Energy Agreements Programme

THE Energy Agreements Programme (EAP) is a subset of the LIEN and was launched in May 2006. It supports businesses implementing advanced energy-management systems through IS 393, the Irish Energy Management Standard, and is aimed at the largest energy users who are committed to a strategic and systematic approach to energy management.

Companies agree to implement the IS 393 standard and to pursue an aggressive programme of energy-efficiency action and investment. In return, SEI offers relationship support, advice, networking and selected financial support over the initial three-year agreement timeframe. The EAP now covers a significant proportion of large energy users in Ireland, and is currently working with 80 major industrial organisations.

The diagram on the right gives an overview of the Energy Agreements Programme. Further detail is available on the SEI website at www.sei.ie/energyagreements.

Agreements Support Managers (ASMs) provide support services to companies who are members of the Energy Agreements Programme via:

- site visits to companies
- providing advice to companies,
- responding to company queries,
- helping companies to meet their commitment within the Energy Agreement with SEI
- assisting, where applicable, with administration of funding

ASMs have a mix of technical, business and relationship management skills and experience of energy management in industry.

ASM Tailored Tasks

SEI is committed to maintaining and developing supports on an annual basis for members of the Energy Agreements Programme. Each year, members can plan their activities to incorporate SEI initiatives and specific energy projects.

Recent activities have focused on compressed air and HVAC benchmarking (2008) and industrial best practice (2007).

Energy Projects

The Special Working Groups (SWG) are member-driven and focus on specific technologies, initiatives and areas of interest to the programme members. Membership of the SWGs is drawn from the Energy Agreements Programme and/or the LIEN.

The work programme, supported by SEI-appointed experts, moves through the phases of Piloting, Implementation, Replication and Standardisation. The projects are split into multiple 'Spin' cycles to cater for phases of the project and new membership. The scope of each SWG is determined by the group.

A wide range of Energy Awareness material and resources are available to Energy Agreement members. These include:

- Case studies
- Workshop presentations
- DVDs
- Statistics/reports
- Benchmarking data
- Energy Map tool

Special Working Group Member

Special Working Group Reports

Special Working Groups (SWG) activities include site assessments, audits, demonstration projects, special investigations, desktop research, design of experiments, methodology development, new tools and new solutions development.

Published SWG reports include international input and details of energy-saving opportunities. Areas covered include: HVAC, refrigeration, purified water and waste water.

Energy Awareness

IS 393 & Year Work Programme

Special Investigations (w-w/o SEI Grant)

Participant companies also agree to complete detailed Special Investigations over the initial three-year period, to reveal further 'hidden' energy-saving opportunities. Depending on the nature of the investigation, support funding may be available.

Workshops Training

SEI has developed specific IS 393 training courses to support companies on their certification journey. Additional tailored workshops and networking events are also provided as part of the Energy Agreements programme.

LIEN Seminars

SEI works closely with LIEN members to ensure that support activities reflect the practical needs of industry. Activities such as workshops, site visits, seminars and conferences integrate closely with the wider energy programmes of SEI. Many of the events are hosted by network members, which increases their impact.

SEI's Energy Agreements Programme

Organisations joining the Energy Agreements Programme begin by undertaking a fundamental review of their energy use, on their way to implementing IS 393.

Participant companies achieve immediate energy cost savings through 'low-hanging fruit' and easily identifiable opportunities. They also agree to complete detailed Special Investigations over the initial three-year period, to reveal further 'hidden' energy-saving opportunities.

In addition to its standard support, SEI commits to a range of tailored support, including the development of special initiatives and projects to generate new strategies on energy-saving opportunities. These initiatives are typically managed as Special Working Groups (SWG) but may also be discrete projects.

Energy Management System IS 393

The IS 393 Energy Management Systems Standard helps integrate energy management into organisational business structures, so that organisations save energy, save costs and improve energy and business performance. It is structured and based on existing management standards such as ISO 9001 and ISO 14001, and thus facilitates the integration of energy, environmental and quality-management systems.

The objective of IS 393 is to establish a systematic approach for improving energy performance continuously within organisations. When the system is mature, energy management becomes integrated into both strategic and day-to-day business processes and activities. IS 393 also emphasises implementation with a strong technical bias to help organisations focus on energy-saving opportunities and achieve energy cost reductions.

Table 1: Companies certified to IS 393

CERTIFIED in 2006

RUSAL Aughinish

CERTIFIED in 2007

HJ Heinz Frozen and Chilled Foods Ltd
Astellas Ireland Co Ltd (Dublin)
Pfizer Ireland Pharmaceuticals (Loughbeg)
Pfizer Ireland Pharmaceuticals (Little Island)
Glanbia Ingredients (Ballyragget) Ltd
Roadstone Wood Group (Slane Quarry)
Diageo Ireland (St James's Gate)
Abbot Ireland Pharmaceutical Operation
Xerox (Europe) Ltd

CERTIFIED in 2008

Wyeth Medica Ireland Ltd
Intel Ireland Ltd
Boliden Tara Mines Ltd
Schering-Plough (Avondale) Co.
EMC Ireland Ltd
Bristol-Myers Squibb (Cruiserath)
Astellas Ireland Co Ltd (Kerry)
Roadstone Wood Group (Bunratty Quarry)
Roadstone Wood Group (Galway Quarry)
Roadstone Wood Group (Castlebar Quarry)
Roadstone Wood Group (Belgard Quarry)
Roadstone Wood Group (Huntstown Quarry)
Roadstone Wood Group (Allen Quarry)
Roadstone Wood Group (Kilmacow Quarry)
Roadstone Wood Group (Mallow Quarry)
Schering Plough (Brinny) Co.
Roche Ireland Ltd
Bulmers Ltd

Further development of Energy Management Systems

The European energy-management standard EN 16001 is to be released in July 2009. Based on the existing Irish standard, it does not contain any major changes from IS 393. In some clauses, the text is more or less identical.

Companies committed to IS 393:2005 will be required to transition or upgrade to IS EN 16001:2009 by July 2010.

ISO 50001 is the international energy-management standard. It is currently in development and scheduled for release at the end of 2010.

The main benefits of an energy-management system (EMS) are:

- A demonstrated commitment to energy efficiency by the organisation and its senior management
- Superior energy management embedded into normal operations
- Action based on key energy usage
- Emphasis on getting it right first time and a process of continuous improvement
- Participation in energy management by all staff, so that it becomes the responsibility of the whole organisation
- Standardisation of processes so that improvements are sustained over time

The commitment to implement an EMS provides a means for continuous and sustained improvements in energy efficiency. Through an energy-management standard, companies will attain the highest level of energy management, which is independently certified and helps to produce bottom-line savings.

Special Initiatives in 2008

Special Working Groups

The Special Working Groups (SWG) are member-driven and focus on specific technologies, initiatives and areas of interest to the programme members. Membership of the SWGs is drawn from the Energy Agreements Programme and/or the LIEN.

The work programme, supported by SEI-appointed experts, moves through the phases of Piloting, Implementation, Replication and Standardisation. The projects are split into multiple 'Spin' cycles to cater for phases of the project and new membership. The scope of each SWG is determined by the group. Activities may include a combination of site assessments, audits, demonstration projects, special investigations, desktop research, design of experiments, methodology development, new tools and new solutions development. The deliverables of each SWG are published for the use of the wider Energy Agreements group or LIEN participants.

The following are the areas that the SWGs targeted in 2008.

Energy Efficient Design

The most significant energy-saving opportunities are at the design stage of any project – up to 50% lifetime energy savings, as evidenced by SEI-sponsored projects. An objective of the Energy Efficient Design (EED) SWG was to promote EED as a means of realising these opportunities with the least initial investment.

EED helps investors to design, construct and manage projects so that they use the lowest quantity of energy during their operation. The group was made up of members of the SEI's Energy Agreement Programme and engineering design companies.

The SWG developed an EED Methodology for design of plant or process. The two key aspects of the EED Methodology are Organisation and Process. This requires changes to the traditional project approach to ensure that the methodology is systematically implemented throughout the project lifecycle. The EED approach must be championed by the investor and given an 'owner' with leadership, authority and a direct line to senior management. The 'owner' strategically manages the process and ensures that an EED expert is appointed who carries out the day-to-day execution, coordination and management of the EED activities.

At the core of the methodology is a three-phase process: Facility Energy Balance, Analyse & Challenge, and Implementation:

- The **Energy Balance** establishes overall energy use, identifies significant energy users, and highlights strategic opportunities for energy saving.
- The **Analyse and Challenge** phase prioritises energy-saving proposals and shortlists the agreed measures.
- In the **Implementation** phase, the agreed measures are put into effect.

The EED methodology developed provides a framework to ensure that energy management is addressed at the outset. It also provides the basis for complying with the requirements of IS 393. The guidelines ensure that a strong focus on energy efficiency is maintained throughout a project's lifecycle, and that the process of achieving energy efficiency is carried out in a structured, systematic and holistic way. All this can be done at a lower overall project cost or through measures with very short paybacks.

A key conclusion is the Project Summary Report, which highlights the achievements of the EED process.

Alternative methodologies

Many companies are seeking to integrate IS 393 into their existing continuous-improvement culture, a culture that has been achieved with the help of established tools and approaches such as Lean, Six Sigma and TQM.

SEI recognised the opportunity to assist such companies with advice on integrating IS 393 into their existing culture and to improve the analysis tools already in their arsenal, for application to energy management. In turn, energy consultants would also gain from the introduction of proven quality/operations techniques to their array of energy-management tools and techniques.

The Alternative Methodologies SWG consisted of nine member companies and a number of Energy, Lean and Six Sigma experts. The group achieved the following:

- It investigated how an IS 393 Management System could be integrated into a Lean – Six Sigma environment applying synergy to common attributes of these methodologies. It synthesised tools and workflows traditionally used in energy, quality and operations management so as to create more effective versions.
- It piloted a diagnosis tool to examine the effectiveness and efficiency of the applied IS 393 Energy Management System.
- A series of demonstration projects were completed to showcase a number of the proposed alternative methodologies and, in particular, the synthesised tools.

The group clearly demonstrated the inextricable links between energy, quality and operations and the fact that an improvement initiated in one area has beneficial effects on the others.

HVAC (Spin II)

Spin II built on the findings of Spin I of the HVAC working group, and investigated in greater detail the potential savings associated with HVAC. If all the potential opportunities identified by the SWG are implemented, savings can be as high as 40% of the operating costs of a well-maintained system.

Thirteen companies contributed to Spin II and identified potential savings in the region of 134 GWh of electrical energy and 84 GWh of thermal energy. Implementing these savings would result in €17.9 million worth of energy savings and a decrease of 98,000 tonnes in CO_2 emissions. This underpinned the Spin I findings of potential energy savings of 16% of a site's total energy usage from HVAC energy-saving projects alone.

The results included:

- a report on the savings opportunities for HVAC systems
- a HVAC system audit guide
- a control strategy illustration of good and bad practice
- a URS guidance document to help include energy efficiency at the design stage of a project
- case studies
- a demonstration project in a highly regulated facility

Refrigeration

This group examined energy efficiency in industrial refrigeration, covering installations using process-chilled heat transfer fluids and installations generating chilled water for the supply of cooling coils for space air conditioning.

Fifteen companies participated and surveys were carried out on the refrigeration system of each. These identified savings of around 16 GWh of electrical energy, equal to €2.047 million worth of energy savings and a reduction of 8,744 tonnes in CO_2 emissions. On average, the surveys identified opportunities to reduce refrigeration energy usage on site by 24%. This was despite the fact that the companies were already energy-conscious and had implemented numerous energy-saving measures in the past.

A technical summary of the findings and report was produced, detailing the typical refrigeration energy-saving opportunities, along with identifying current bad practices. A number of fact sheets were also published.

The working group clearly demonstrated that refrigeration offers important opportunities for saving energy and identified areas that require further work in subsequent phases.

Special Initiatives planned for 2009

In 2009, SEI is planning a number of special initiatives, as described below.

Special Working Groups

- **Energy Efficient Design (Spin II)**
  Focus: Implementation

  The primary objective of the Energy Efficient Design SWG with responsibility for Spin I was to develop an EED methodology for implementing EED in Irish industrial process design projects. Six projects were sponsored by the SWG that either demonstrated the benefits of the methodology or the associated design tools.

  The maximum potential is realised when investor companies adopt the methodology and engineering design companies develop the business case to market EED for new projects.

Spin II will focus on further sponsorship of projects for demonstration of the EED methodology and tools. It will also consider linkages to the Energy Management System, methods of dissemination and measures to track the impact of the initiative.

- **Alternative Methodologies (Spin II)**
  Focus: Implementation
  Six-Sigma, Lean Manufacturing, TQM and derivative tools (eg, Kaizen) as well as other methods are used in industry as a means to strengthen operational excellence and drive improvements in quality, productivity and cost.

  It is felt that there is considerable benefit to further develop this work, sponsor demonstration projects and develop a methodology or guidance materials.

  This SWG will extend work completed in the initial phase and focus on how the energy-management function can be integrated into this environment. It will sponsor projects to demonstrate the benefits and weaknesses and how associated techniques can create new opportunities otherwise overlooked or outside project scope. This work is quite novel, with no considerable experience or body of evidence in existence already.

- **HVAC (Spin III)**
  Focus: Replication
  The HVAC SWG initiative is well advanced, with two spin cycles completed. The focus of the work carried out in 2008 was a more in-depth evaluation of energy-saving opportunities in HVAC systems. Detailed analysis and evaluation was carried out in a number of HVAC-intensive areas. These included a demonstration project in a sterile area, differential pressure analysis and simulation models of a variety of control systems.

The focus of Spin III in 2009 will be further demonstration and replication of energy-saving initiatives for HVAC systems and replication of opportunities already demonstrated. Demonstration projects should take place across industry to show how the opportunities identified in Spin I and Spin II were implemented and the resulting benefits.

It is expected that a sub-group of companies will be set up to meet with the regulatory authorities to address current good manufacturing practice (cGMP) and gain an understanding from a regulator's perspective on the optimum requirements of HVAC systems.

- **Food & Dairy Industry**
  Focus: Pilot
  A pilot SWG will be implemented for the food & dairy industry, which marks a further development in the SWG approach by targeting a sector rather than a technology. This group will build on the knowledge and experience gained from the established groups and aim to apply the best practice identified in the energy technology SWGs.

  The nature of the food sector suggests that a high degree of replication can be achieved across the companies. It is anticipated that 70% to 80% of the energy usage will be identical from plant to plant – covering refrigeration, cleaning/CIP, pasteurisation/sterilisation, ventilation, etc. In addition, potential energy-saving technologies to be investigated at member's sites include heat recovery, refrigeration, compressed air and CIP.

  The sectoral approach presents significant potential to share experience, demonstrate best practice and carry out special investigations across member companies.

- **Data Centre Industry**
  Focus: Pilot
  Operated through the LIEN, this pilot SWG will focus on the data-centre sector. A growing industry in Ireland, data centres are highly energy-intensive for power and cooling requirements.

  The SWG activity will focus on efficient utilities and minimising the energy service requirement. Energy auditing and best-practice research will be the likely activity in Spin I, the full potential scope of work of this initiative will be explored by this new group. Input will also be sought from the HVAC, EED and Refrigeration/Cooling Systems Optimisation SWGs.

- **Large Commercial Buildings**
  Focus: Pilot
  Another pilot SWG will be run focusing on energy-efficiency opportunities in large commercial (non-manufacturing) buildings. Targeting best practice, new build design and standard opportunities, it is expected that the main activity will consist of site-specific audits, best-practice desktop research and demonstration projects. Standard solutions will be tested at member company locations for feasibility.

Abbott Vascular

Abbott puts energy at the heart of operations

ABBOTT Vascular, part of the global Abbott healthcare company, is one of the premier companies in the south-east, with a diverse workforce of approximately 1,600.

The facility is located in Clonmel, Co Tipperary on a 19-acre site. It consists of a 180,000 sq ft state-of-the-art medical-device manufacturing facility and a new 70,000 sq ft administration, warehouse and logistics facility.

The Clonmel facility manufactures a broad range of catheters and stents for treating coronary heart disease, including the Xience V drug-eluting stent.

The site has a strong environmental culture supported by an ISO14001-accredited environmental management system. It also operates under an Environmental Protection Agency IPPC licence. Its environmental controls go far beyond Irish regulatory requirements; a number of Abbott corporate technical environmental standards are implemented.

Abbott Vascular Clonmel is also actively engaged with the local community. It has received recognition for its work in the community and for working with people with disabilities.

Abbott, as a relatively new company in Clonmel, started to focus on site energy usage towards the end of 2007. Full-time energy personnel were appointed. An initial site survey led to a number of energy-saving initiatives, including lighting controls, removal of unnecessary fluorescent tubes, optimisation of HVAC, chilled-water setpoint changes and a thermographic survey and subsequent repair of building envelopes.

Annual saving to exceed €400,000

HVAC and chilled water are the main users, accounting for 38% and 39% respectively of total site electrical usage, but due to stringent validation and quality requirements associated with HVAC operating parameters, focus has been placed on the chilled-water system. A review of

€400,000

THE CAPITAL INVESTMENT WAS PAID BACK IN FIVE MONTHS. THE ANNUAL SAVING IS EXPECTED TO EXCEED €400,000, WITH CO_2 EMISSIONS BEING REDUCED BY 1.4 MILLION TONNES A YEAR.

12,080kWh

A REVIEW OF THE SYSTEM AND SUBSEQUENT MODIFICATIONS LED TO ALMOST HALVING THE ENERGY USED, FROM AN AVERAGE OF 20,250 KWH/DAY TO 12,080 KWH/DAY.

the system and subsequent modifications led to almost halving the energy used, from an average of 20,250 kWh/day to 12,080 kWh /day. System performance also improved as it now operates on a demand-based control, where chilled water is provided only to those valves that require it. Maintenance requirements have also decreased.

The capital investment was paid back in five months. The annual saving is expected to exceed €400,000, with CO_2 emissions being reduced by 1,619 tonnes a year.

The improvements included:

- Supply and installation of an ISN chiller sequencer
- Cooling-tower optimisation sequencing (including free cooling)
- Secondary chilled-water system variable-flow modifications
- Installation of a flow balance line to separate the primary and secondary circuits

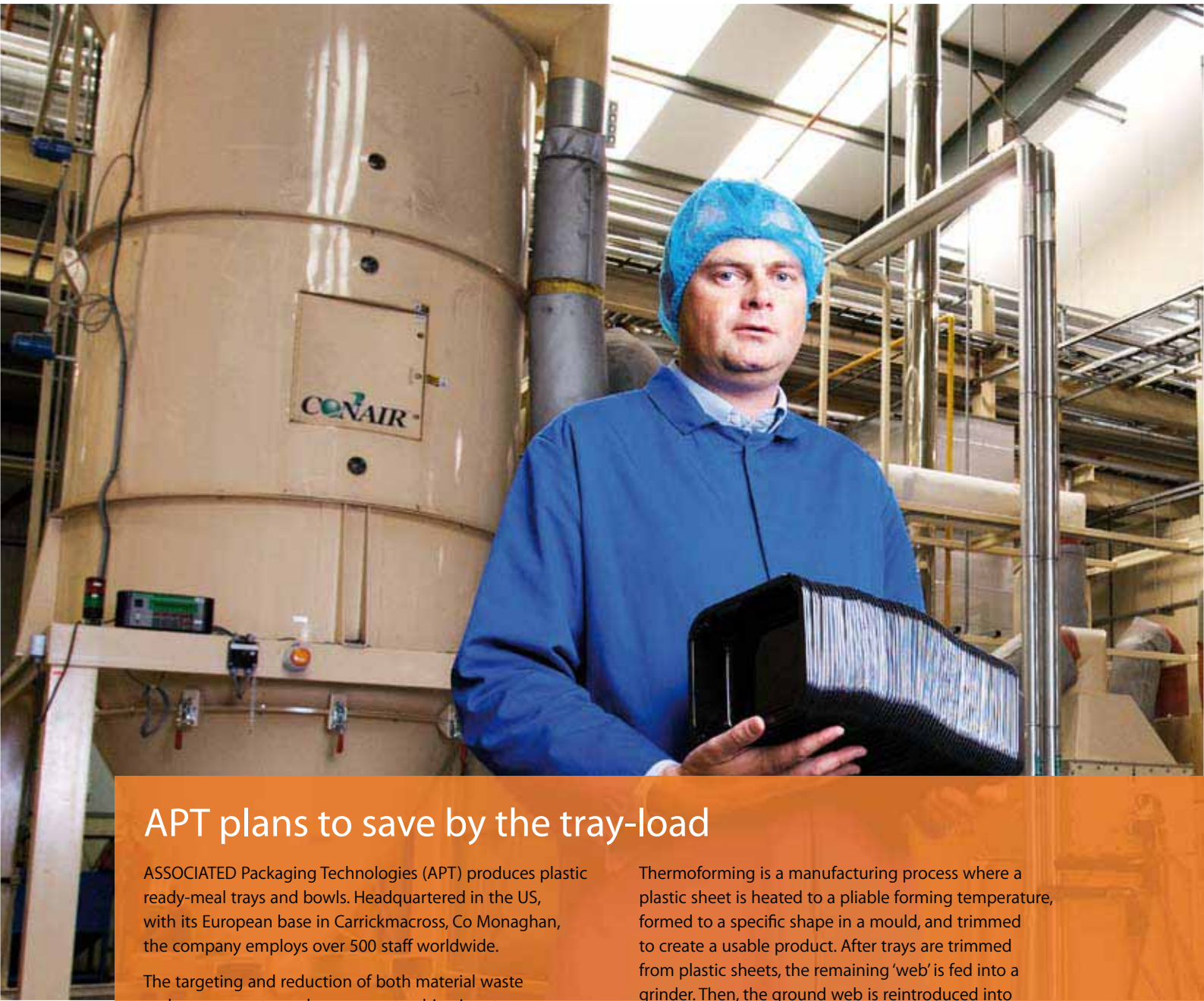
The sequencer now interfaces with the BMS to tell it how many chillers and pumps are required, and ensures that free-cooling is used to its full potential, since it uses the potential of the cooling towers, especially during the winter months.

The variable-flow modifications involved converting all three-port to two-port valves, and installing a pressure transducer (connected to the pump VSD) on each chilled-water loop to ensure demand-based control. The addition of the flow balance line has enabled one, two or three chillers to run as required, to achieve the chilled-water setpoint temperature.

In an effort to further cut electricity use across the site and reduce its carbon footprint, the company is implementing a project to install a 1MW CHP plant, and use the waste heat to supply the site LPHW circuit.

Abbott will continue to avail of the services of Sustainable Energy Ireland to help realise future energy-saving opportunities, and share its success through the LIEN.

AP Technologies



APT plans to save by the tray-load

ASSOCIATED Packaging Technologies (APT) produces plastic ready-meal trays and bowls. Headquartered in the US, with its European base in Carrickmacross, Co Monaghan, the company employs over 500 staff worldwide.

The targeting and reduction of both material waste and energy waste are key corporate objectives to maintain competitiveness. On the materials side, the company uses a closed-loop manufacturing system that all but eliminates scrap material.

Thermoforming is a manufacturing process where a plastic sheet is heated to a pliable forming temperature, formed to a specific shape in a mould, and trimmed to create a usable product. After trays are trimmed from plastic sheets, the remaining 'web' is fed into a grinder. Then, the ground web is reintroduced into the system and formed into sheet to be re-used.

Campaign to cut electricity costs

The main driver of the energy-management process is the cost and quantity of electricity required to run the production process. Although Con Rice, the Manufacturing Manager, has only recently joined the company, he has ambitious plans for getting to grip with electricity costs. These include:

500

OVER 500 STAFF EMPLOYED WORLDWIDE.

- Optimising the compressed-air generation and distribution systems
  - investigation of a decrease in compressor discharge pressure to a minimum acceptable value
  - a programme of compressed-air leak repair
  - evaluation of the economic viability of replacing the fixed air speed compressor with a VSD alternative
  - isolation of end units when compressed air is not required
- Optimising the chilled-water cooling systems
  - investigation of an increase in the cooling water distribution temperature
  - examining the options for free cooling using ambient air temperatures and the associated savings potential
- Monitoring and targeting the usage of individual pieces of machinery with the purchase of a three-phase electricity meter
  - monitoring of energy usage before and after changes to system setpoints
  - assessment of savings through changing from electricity to natural gas for drying raw materials

While local management at APT are pursuing a number of energy-efficiency projects, Con acknowledges that his primary role is overseeing the production process. He believes that support from SEI will be invaluable in helping APT to continue to deliver a high-quality product as energy-efficiently as possible.

Boston Scientific

Boston Scientific scores early success with CHP

Boston Scientific is the world's largest medical device company dedicated to less invasive medicine and health treatment. It has over 25,000 employees. In Ireland, it has a workforce of 5,000, based mostly at its facilities in Cork, Galway and Clonmel.

The IS014001-certified Clonmel plant manufactures pacemakers and defibrillators. The site has an annual energy requirement of approximately 36 GWh, split 75/25 between gas and electricity.

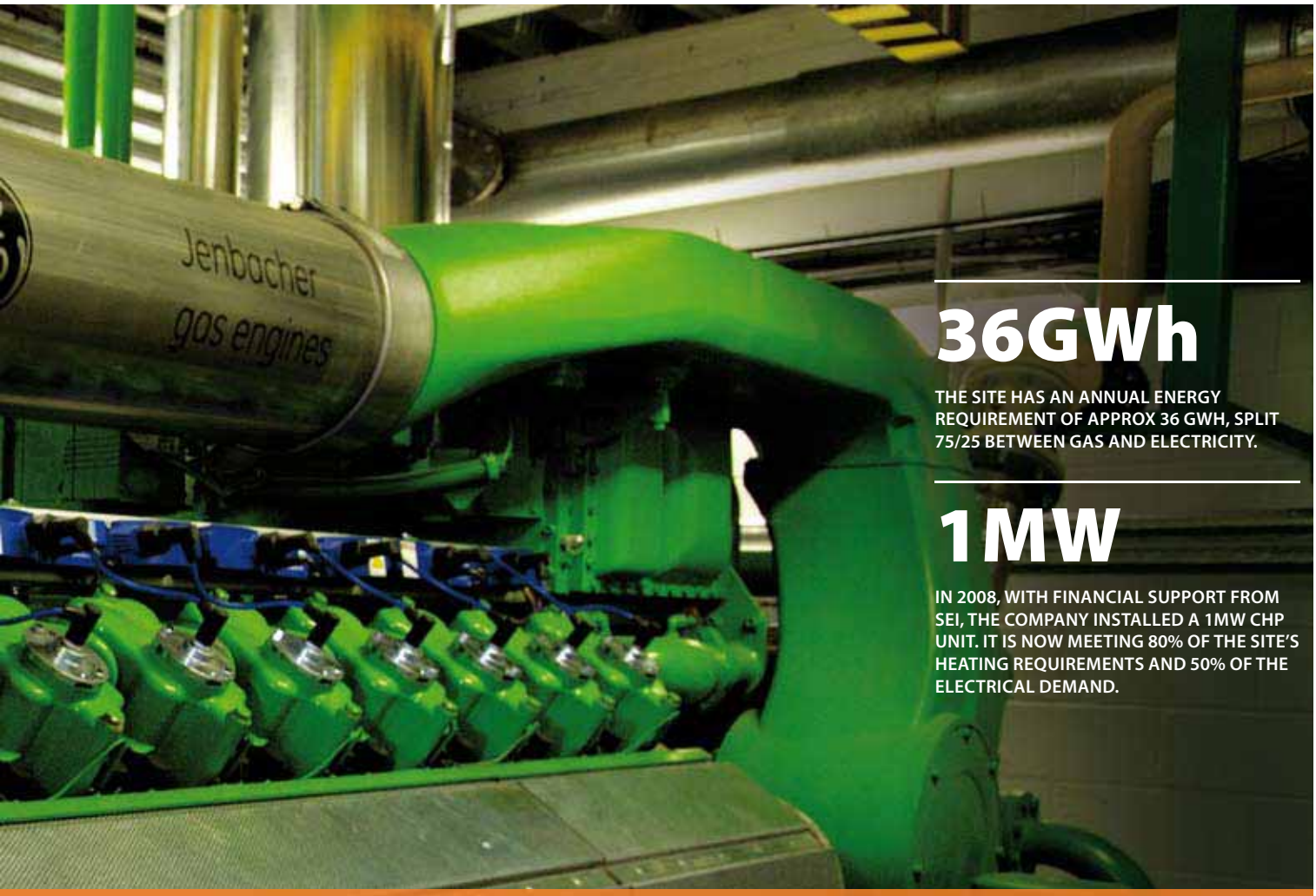
In 2008, with financial support from SEI, the company installed a 1MW combined heat & power (CHP) unit. It is now meeting 80% of the site's heating requirements and 50% of the electrical demand. The primary heating loads are for humidity control of air in the cleanroom environment.

Benefits and payback

The Clonmel facilities team, who are pioneering the application of the technology in Boston Scientific, believe that the installation of the CHP unit has given them more control over their electricity costs in a market subject to wide price fluctuations.

The technology is also a cost-effective way of meeting the site's electrical and heating services demand. By using the heat that would normally be wasted in producing electricity, CHP systems use less fuel than separate electricity and heat-generating equipment. This results in a significant reduction in CO_2 emissions.

The installation has an expected payback of less than three years and is already considered a success.



36GWh

THE SITE HAS AN ANNUAL ENERGY REQUIREMENT OF APPROX 36 GWH, SPLIT 75/25 BETWEEN GAS AND ELECTRICITY.

1MW

IN 2008, WITH FINANCIAL SUPPORT FROM SEI, THE COMPANY INSTALLED A 1MW CHP UNIT. IT IS NOW MEETING 80% OF THE SITE'S HEATING REQUIREMENTS AND 50% OF THE ELECTRICAL DEMAND.

Pioneering

This first installation for the company is being carefully evaluated as a technology that could be adopted at other Boston Scientific sites around the world. This is consistent with the company's green credentials and its policies of continual improvement. The company strives to deliver its medical products as cost-effectively as possible for its customers. CHP is seen as an effective approach to minimising facility operating costs while benefiting the environment. The Galway manufacturing facility is already committed to a similar installation.

Other energy-efficiency initiatives at the Clonmel site include:

- Energy awareness campaigns for the workforce
- PC auto-shutdown in the evenings
- Energy-efficient lighting projects in the production facilities and car parks
- Variable-speed drives on HVAC systems
- Non-essential HVAC shutdown procedures
- An evaluation of more efficient technologies during plant upgrades and expansion

The company sees the LIEN as making a valuable contribution to its ongoing efforts in energy management.

John Griffin, the Facilities Manager at Clonmel, believes that 'the LIEN network offers the facilities team a unique opportunity to engage with similar companies to explore energy-efficient practices and to share accumulated knowledge'.

CITADEL100

CITADEL100 datacentre leads the way

CITADEL100, a member of the Keppel group, is a leading datacentre owner and operator in Ireland. It specialises in designing, developing and operating 100%-availability next-generation datacentres.

CITADEL uniquely enables the world's leading blue-chip enterprises (such as Hewlett Packard) with customised, wholesale collocation and specialised datacentre management services. It enables these enterprises with the highest power-density environments for all its business continuity and mission-critical IT operations.

Established in 2002, CITADEL operates its main European datacentre C101 in Citywest Dublin, where it has deployed leading energy-management solutions that are crucial for its own and its clients' business growth.

CITADEL100 is one of the largest energy users in the datacentre industry in Ireland. While it is an active member of a number of high-profile green energy groups, it sees membership of the LIEN and Energy Agreement Programmes as a hugely important step in highlighting its commitment to sustainable-energy programmes.

200%

SINCE ENERGY USAGE IN DATACENTRES IS PREDICTED TO MORE THAN DOUBLE WITHIN THE NEXT FIVE YEARS, CITADEL100 IS DEVELOPING ENERGY-SAVING SOLUTIONS IN ALL ITS FACILITIES.

Energy usage to double

While 100% availability is its priority, CITADEL100 is committed to operating the most efficient datacentres in Europe. Since energy usage in datacentres is predicted to more than double within the next five years, CITADEL100 is developing energy-saving solutions in all its facilities.

Through innovative design and a continual-improvement approach, it continues to optimise power utilisation efficiencies (PUE). This results in lower operating costs for clients, while at the same time dramatically reducing its carbon emissions. CITADEL100 is currently working towards achieving the EN 16001 energy-management systems certification.

CITADEL's Energy Manager George McDonald has gained 18 years' valuable experience working in the energy and utilities field in Europe. He and his expert team at CITADEL100 ensure that operational excellence is part of the day-to-day organisational culture.

CITADEL hopes that, as one of the initial large datacentre operators joining the LIEN and Energy Agreement Programmes, it can lead the way for other companies in the industry to participate, while at the same time gaining valuable knowledge from other industries that are actively involved in the network.

CITADEL is currently involved in an exciting expansion plan of its next-generation datacentres, the design of which is focused on deploying the most sustainable energy-saving technologies to future-proof these facilities.

Citi

Citi banks on energy independence

Citi Ireland is widely regarded as an environmental leader within the Citi global banking network. Its Dublin base at North Wall Quay is viewed as one of the regional flagship facilities and the flag-waver for local environmental efforts. As the regional processing centre for Citi's European operations, with 2,400 staff nationwide, Citi is also the largest foreign bank operating in Ireland.

Operating over eight floors, the North Wall Quay building has had its combined heat & power (CHP) system re-engineered in an energy services agreement that is delivering major carbon savings. However, this is just one outcome of Citi's current environmental mission to drive down energy usage per head by 15% and deliver an overall carbon reduction of 28%.

Awareness campaign

Staff energy awareness remains the main driver of Citi's energy-saving efforts. Country Engineering Head Paul Boylan sees it as his mission to ensure that the awareness campaign is fun and socially acceptable.

Every department has its own environmental/energy champion. A full arsenal of emails, electronic message screens, events and poster campaigns are deployed. In November 2008, Citi ran an in-house Environmental Expo at North Wall Quay – the first of its kind for any Citi facility.

Staff members are taken on plant-room walks as part of their induction to understand exactly what it takes to service a modern office environment. "It's not an exact science, but more about putting things into perspective," says Paul. He likes to point out that not all energy-saving initiatives require capital expenditure.

28%

CITI COMPLETED AN ESCO AGREEMENT WITH CES ENERGY. THIS GREATLY CONTRIBUTED TO A 28% REDUCTION IN THE FACILITY'S CARBON EMISSIONS – A CUT OF 1,200 TONNES.

€100,000

THE SAME AGREEMENT PRODUCED SAVINGS IN EXCESS OF €100,000, COMPARED TO THE PREVIOUS YEAR.

ESCO agreement

In 2008 Citi completed an energy service company (ESCO) agreement with CES Energy. This greatly contributed to a 28% reduction in the North Wall Quay facility's carbon emissions – a cut of 1,200 tonnes. It also produced savings in excess of €100,000, compared to the previous year.

The turnkey project involved the redesign of the existing CHP plant. The completed package comprised two 1MW gas-fired engines, two 750kW absorption chillers, heat exchangers, a distribution system and a control centre.

Surplus heat from the generation of electricity is used to heat the building. The system is currently being modified to meet the cooling load also, which will deliver further efficiencies.

Paul Boylan says the CHP arrangement offers North Wall Quay complete independence from the grid if necessary, unlike other low-carbon options, and should leave Citi well placed to face any future carbon-saving regulatory regime.

Through the ESCO package, Citi simply buys its energy at agreed rates via a Power Purchase Agreement, leaving CES Energy with full responsibility for plant operation and maintenance.

Citi Ireland's membership of the LIEN is leading the way for the banking sector. It hopes that its contribution will encourage others to follow suit. It see its membership as an ideal opportunity to share its unique experience on energy issues with other industries and in return to benefit from the experience of fellow members.

"2008 was a very good year for Citi in terms of managing carbon reduction. We anticipate being even more proactive in terms of environmental and energy management in 2009"

Edenderry Power Ltd

Edenderry targets energy for integrated management system

THE 120MW Edenderry power plant (EPL) is part of the Power Generation & Renewable Energy division of Bord na Móna plc. The peat and biomass co-fired base-load plant, commissioned in 2000, is currently operating in the Single Electricity Market (SEM).

Using modern bubbling fluidised bed boiler technology, the plant supplies about 3% of Ireland's annual electricity requirement. It directly employs 45 people, of whom around 250 are employed indirectly in the supply of fuel and services to the plant.

The Edenderry plant has operated since its commencement with a uniquely high level of cost efficiency and flexibility. This achievement contributes to Bord na Móna's ambitious plans to be a leader in renewable-energy generation, by providing approximately 500MW of wind and biomass capacity by 2015, supported by flexible thermal plant.

While the power plant generates around 120MW of exported electricity, it is also a large user of power; the in-house load accounts for about 10MW of power generated.

Committed to quality

From the outset, EPL has had a strong commitment to quality assurance. It was the first company in Ireland to achieve certification to the ISO 9001 Quality, 14001 Environmental and 18001 Health & Safety standards, as part of an integrated business management system.

As an EPA-licensed Integrated Pollution Prevention Control (IPPC) site and with biomass co-fuelling becoming a more important feature of the business, the company sees achieving certification to the EN 16001 Energy Management standard as a natural progression for existing management processes. It also sees it

as providing an opportunity to link in with energy-management best practice across a range of industries.

As a power generator, EPL is very aware of the importance of energy efficiency for both its commercial performance and environmental obligations, which are at the forefront of its business planning. Its business management system is based on a continuous-improvement structure where incremental improvements over time deliver large, sustainable, long-term benefits to the business.

The company sees an opportunity to use innovation and technology to achieve energy efficiencies across the complete production cycle. One example is management of the boiler system to maintain optimum heat transfer capability and achieve ongoing energy-efficiency improvement. The current on-line explosives cleaning methods used are the result of an innovative four-year development project which involved developing site-specific technologies adapted from other industries.

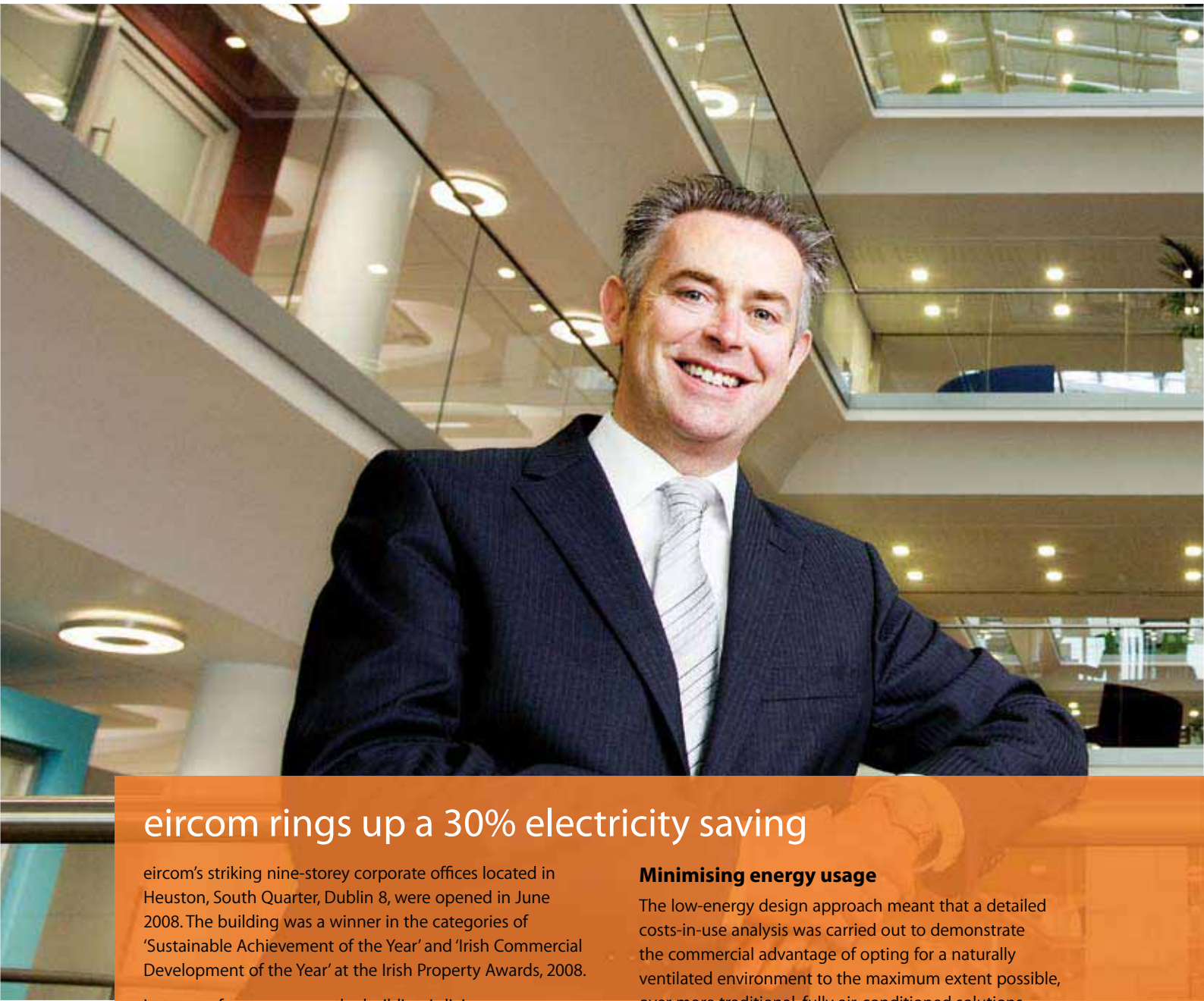
Sharing through LIEN

Richard Neale, the Environmental Health and Safety Manager, is aware that through the LIEN he has more to gain by sharing information.

"I am looking forward to working with other leading organisations to share and learn best energy-management practice across a range of industries," he says. "In doing so, I think we have the opportunity to help our organisation to be better positioned to meet future challenges as well as contributing to the national requirement to use energy more efficiently."

Pictured: Edenderry Power Ltd Senior Management Team, L to R: Stephen O' Connor Commercial & Administration Manager; Peter Gillespie Operation & Maintenance Manager; Tom Egan Plant Manager and Richard Neale EHS Manager.

eircom



eircom rings up a 30% electricity saving

eircom's striking nine-storey corporate offices located in Heuston, South Quarter, Dublin 8, were opened in June 2008. The building was a winner in the categories of 'Sustainable Achievement of the Year' and 'Irish Commercial Development of the Year' at the Irish Property Awards, 2008.

In terms of energy usage, the building is living up to expectations by using almost 30% less electricity than the 'good practice' benchmark for a traditional air-conditioned prestige office building.

Back in 2001, the company decided to consolidate a number of smaller offices into a new corporate headquarters. eircom's senior management was determined that it should be a beacon for modern, environmentally progressive, low-energy building design, while providing an effective and flexible workplace for up to 1,550 staff.

Minimising energy usage

The low-energy design approach meant that a detailed costs-in-use analysis was carried out to demonstrate the commercial advantage of opting for a naturally ventilated environment to the maximum extent possible, over more traditional, fully air-conditioned solutions.

Energy usage in the building is minimised by:

- Avoiding unwanted solar gain by using solar shading appropriate to the orientation of the façade
- Using a triple façade to ameliorate external weather conditions, reducing both heat losses and gains while facilitating natural ventilation
- Maximising passive cooling ability through constructing floor-to-ceiling heights of 3m to facilitate ventilation, while large areas of exposed concrete absorb heat and mitigate large temperature swings

30%

THE BUILDING IS USING ALMOST 30% LESS ELECTRICITY THAN THE 'GOOD PRACTICE' BENCHMARK FOR A TRADITIONAL AIR-CONDITIONED PRESTIGE OFFICE BUILDING.

1,550

THE BUILDING IS AN EFFECTIVE AND FLEXIBLE WORKPLACE FOR UP TO 1,550 STAFF.

- Using a low-energy, mechanically assisted natural ventilation system
- Having a large internal atrium to enhance air movement and natural ventilation
- Ensuring maximum use of daylight and control of artificial lighting levels based on the availability of natural light
- Controlling heat and ventilation losses by designing U-values to the now current 2007 Part L Building Regulations
- Carrying out building leakage pressure testing

Consideration is currently being given to involvement in a district heating scheme proposed by the site developer. There are also a number of ongoing initiatives to further reduce gas and electricity usage.

The Eircom Facilities Team, supported by the building designers, have created a new landmark for low-energy design in Dublin. More importantly, perhaps, for the employees, they have created what James Nolan, the Facilities Manager, describes as *"a great place to work that is both cohesive and pleasant"*.

"View of the atrium at 1 HSQ which is pivotal in ensuring an airy open workspace and the ventilation of the building."

James Nolan, 1HSQ Facilities Manager

Green Isle Foods

Green Isle Foods finds the right recipe

GREEN Isle Foods, part of UK Northern Foods plc, has grown to become one of Ireland's leading manufacturers of frozen-food products. It produces some of Ireland's best-known brands such as Goodfella's Pizza and Donegal Catch.

With a workforce of over 1,100 in Ireland at four manufacturing plants, the company is committed to driving efficiencies across the supply chain, and reducing both energy costs and carbon emissions. High levels of process cooking, chilling and freezing in the production chain make the company a high energy user. So the corporate philosophy is simple: managing energy effectively reduces the company's impact on the environment and reduces its costs. To address this, the company has set itself tough targets to reduce energy use – by 5% year on year.

Green Isle adopts a range of approaches to achieve its energy goals, from technology solutions to management systems and, to increase awareness, people solutions. Technology has been a major focus in recent years, with investment in, among others:

- compressed-air upgrades
- CHP
- refrigeration
- heat recovery

Compressed air plays an integral part in the manufacturing process, from forming to filling and finally packing the products. At the Portumna, Co Galway plant, energy costs related to compressed air were cut by approximately 25% through installing a new frequency-controlled screw compressor. The new system works strictly in accordance with compressed-air demand by producing the right volume of compressed air at the pressure required.

CHP will cut electrical load by 23%

Gas-fired combined heat and power (CHP) has been installed in the Naas, Co Kildare plant. This will reduce the electrical load by 23% and also produce hot water

23%

GAS-FIRED COMBINED HEAT AND POWER (CHP) HAS BEEN INSTALLED IN THE NAAS, CO KILDARE PLANT. THIS WILL REDUCE THE ELECTRICAL LOAD BY 23% AND ALSO PRODUCE HOT WATER AND STEAM.

7,172

THE NEW PLANT WILL CUT THE SITE'S CARBON EMISSIONS BY 7,172 TONNES PER YEAR. THIS IS EQUIVALENT TO TAKING 2,600 CARS OFF THE ROAD EACH YEAR.

and steam. The new plant will cut the site's carbon emissions by 7,172 tonnes per year. This is equivalent to taking 2,600 cars off the road each year. Once up and running, the plant performance will be evaluated with a view to rolling out the technology to other sites.

Green Isle is also working on a refrigeration upgrade project with SEI, to amalgamate two ammonia refrigeration plants which will allow it to raise the cooling temperature while achieving the same output. This is expected to result in a 30% reduction in energy cost. Another part of this project is to retrieve heat and use it to heat the 150-200 m^3 of water used daily at a temperature of 55ºC. This will be achieved through installing a heat exchanger in the ammonia plant and on the return air in the air compressors, which will replace the steam boiler and reduce oil and water usage.

The company is aware that, without systematic management of the energy resource, efficiency gains through investing in energy-saving technology and day-to-day efforts to control its use may be under threat. In a systematic approach to reduce energy use, the company introduced a single method of scoping, tracking, monitoring and targeting energy use at its sites. Hundreds of energy and utility monitoring meters have been installed and Energy Desktop, a specialist software solution, captures and reports energy use.

Ian Leslie, Technical Director at Green Isle Foods, sums up the company's approach: "Managing energy effectively reduces our impact on the environment and reduces our costs, and this contributes to the profitability of the business while at the same time improving our environmental impact. Along with our environmental commitment, it becomes part of what we do."

Environmental management systems are in place. Energy efficiency is considered whenever new plant and equipment is being purchased. Green Isle – like its parent, Northern Foods – is committed to controlling energy use and improving environmental performance. It is already working with SEI and is confident that co-operation through the LIEN will, through the process of exchange, benefit both the company and its partners in the network.

Molex

Molex cuts energy cost by 50%

MOLEX Ireland Ltd, based in the Shannon industrial estate, is a global leader in the production of innovative electrical, connectivity and communications solutions.

The ISO14001-accredited facility has special expertise in the use of power, signal and interface technology in automation systems. Through limited investment and a motivated workforce, it has effectively cut its monthly energy use in half.

The main energy users at the plant are the moulding facility, compressed-air generation and lighting. By focusing on these key areas, senior management and staff were able to dramatically cut energy costs.

Motivation plus technology

To tackle energy waste, the company combined the enthusiasm of an energy-aware and motivated workforce and some simple technology. Savings resulted from:

- Training staff on the environmental and cost benefits of energy efficiency in both the home and the workplace
- Operating a 'switch off when not in use' promotional campaign covering moulding equipment, compressed-air systems and lighting
- Insulating the moulding heaters to minimise the heat loss from the units
- Implementing a compressed-air leak detection and elimination programme throughout the plant
- Optimising the chiller and compressed-air set-points and their control systems to match end-user requirements
- Installing occupancy sensors in office areas and lighting systems linked to individual machine operation

50%

THROUGH LIMITED INVESTMENT AND A MOTIVATED WORKFORCE, THE FACILITY HAS EFFECTIVELY CUT ITS MONTHLY ENERGY USE IN HALF.

To maintain the level of interest in energy management and the company's financial savings, a regular update detailing the environmental and financial results of energy-saving actions is regularly emailed to the entire factory. A noticeboard set up outside the canteen informs people how the energy-improvement efforts are progressing.

A number of new energy meters are currently being installed in the facility. These will provide more detailed information on energy usage patterns and provide the information needed to safeguard the substantial achievements to date.

Sharing knowledge

The facility intends to become involved in external working groups supported by Sustainable Energy Ireland (SEI), in order to gain additional energy-management knowledge and to pass on their experience to other companies. This will also be facilitated through membership of the LIEN and Energy Agreement Programmes.

Certification to an energy-management system is also a key goal. This will help ensure that the Molex approach to energy saving is correctly managed, may be sustained over long periods and will consistently deliver results.

Monaghan Mushrooms

Why savings are mushrooming

THE Monaghan Mushrooms Group, based at Tyholland, operates three divisions – Compost Manufacture, Mushroom Growing and Mushroom Packing – at 19 sites throughout Ireland and the UK. It employs 1,500 staff across the group.

Year-round production ensures a constant supply of high-quality mushrooms to all the major supermarkets in Ireland and the UK. Mushroom cultivation is a competitive and capital-intensive industry which requires, first, the manufacture of composts and, secondly, the management of growing environments.

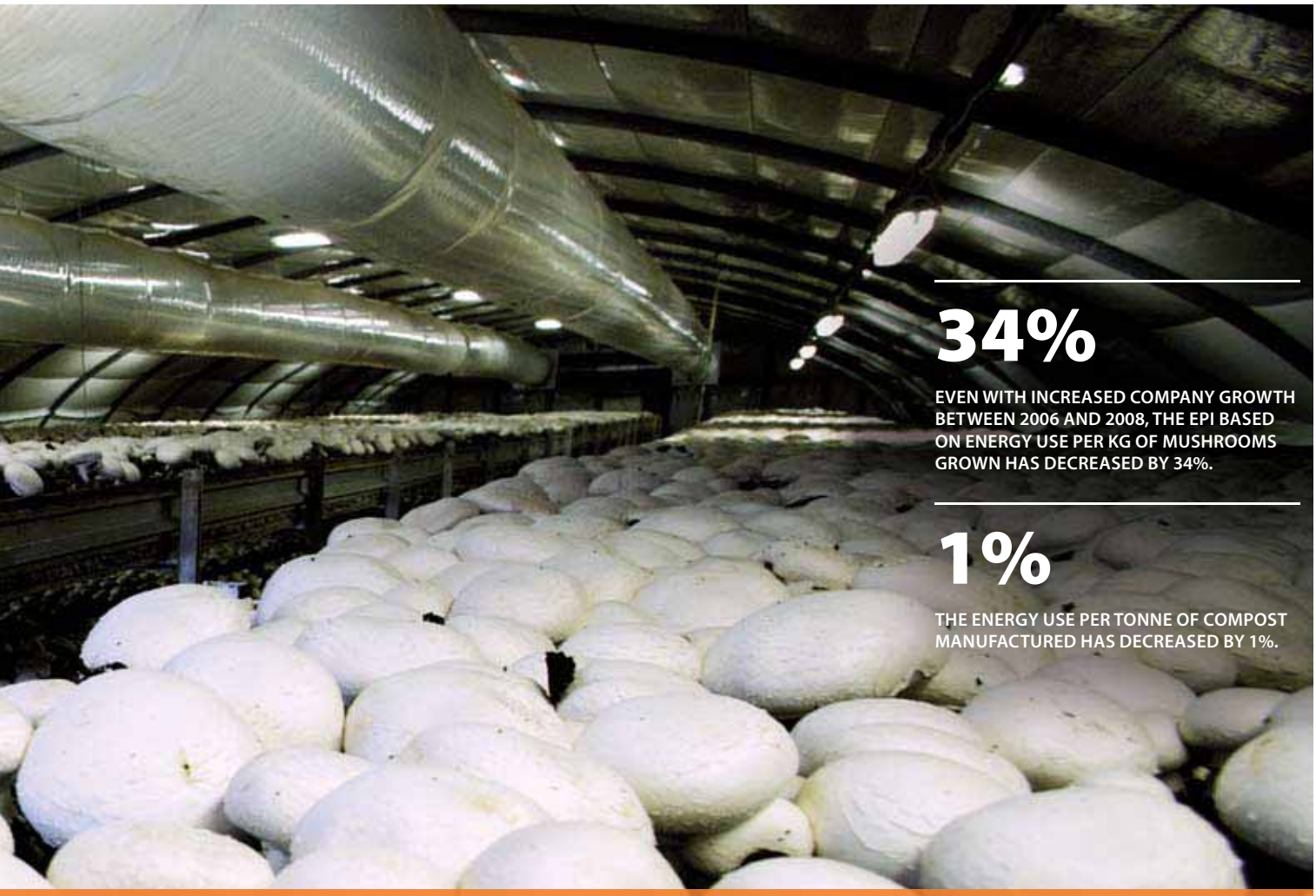
Temperatures in the mushroom growing houses need to be maintained between 16°C and 22°C, depending on the stage of the growing cycle. This close temperature control and the energy-intensive process of compost production and sterilisation require a year-round demand for energy.

Tight control of energy usage

The company consumes 16 million kWh of electricity and 22 million kWh of oil across its operations in the Republic of Ireland. To help ensure it retains its competitive edge, Karen Coyle was appointed as the Energy Manager in November 2007. With responsibility for energy throughout the company's portfolio of businesses, she reports directly to Managing Director Ronnie Wilson.

Over the last couple of years, the company has introduced a number of initiatives to help maintain tight control of its energy use. These include:

- Carbon footprinting of the production process
- Upgrading lighting in offices, growing and distribution facilities by providing high-efficiency T5 lamps and luminaires with presence detectors, fitted in low-occupancy areas to automatically turn the lighting off when the space is vacant



34%

EVEN WITH INCREASED COMPANY GROWTH BETWEEN 2006 AND 2008, THE EPI BASED ON ENERGY USE PER KG OF MUSHROOMS GROWN HAS DECREASED BY 34%.

1%

THE ENERGY USE PER TONNE OF COMPOST MANUFACTURED HAS DECREASED BY 1%.

- Development of a new sustainable mushroom farm using ground-water for cooling
- Insulation of all pipework and distribution systems
- Energy-awareness training day for farm managers
- In-house staff awareness campaigns
- Reviewing of larger equipment and plant purchases for energy-efficiency characteristics

Even with increased company growth between 2006 and 2008, the energy performance indicator (EPI) based on *energy use per kg of mushrooms grown* has decreased by 34% and the *energy use per tonne of compost manufactured* has decreased by 1%.

In the development of a new indoor compost production facility at Carbury, Co Kildare, one of the requirements of the company is that the production costs be minimised where possible through the selection of energy-efficient plant and equipment.

Karen has represented Monaghan Mushrooms at the SEI's Energy MAP training, and the LIEN network is giving her more opportunities to share experiences with other energy managers in a wide range of industries.

Reporting of Results

Summary

The performance of the LIEN during 2008 is summarised in the table below.

Table 4.1: Overall energy performance of LIEN members in 2008

LIEN Total Primary Energy Requirement (TPER) 2008 (GWh)	26,600
Energy savings due to energy-efficient gains 2008 (GWh)	1,620
Avoided energy requirement (%)	5.2
National TPER 2008 (GWh)	190,488*
LIEN as percentage of national TPER (%)	14
Total CO_2 emissions 2008 (tonnes)	6,344,800
CO_2 avoided due to energy-efficiency gains	364,900

* 2008 Provisional Energy Balance

LIEN membership is reported as growing from 100 members in 2007 to 122 companies in 2008. Although the national Total Primary Energy Requirement (TPER) fell by 4.5% in 2008, the LIEN percentage of national TPER increased to 14%.

The avoided energy requirement of 2008 is calculated at 5.2%.

The equivalent avoided energy spend is in excess of €60m.

5.2%

OVERALL AVOIDED ENERGY REQUIRED IN 2008 IS CALCULATED AT 5.2%.

€60m

EQUIVALENT AVOIDED ENERGY SPEND IS OVER €60m.

Figure 4.1: TPER Breakdown of the LIEN

LIEN-only vs EAP membership

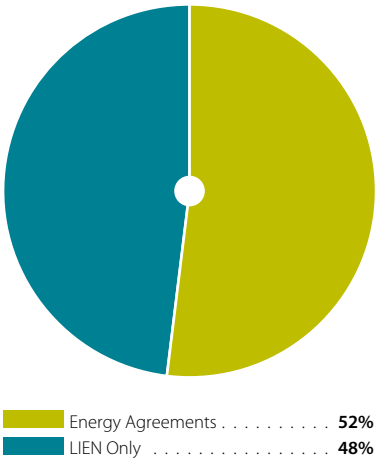
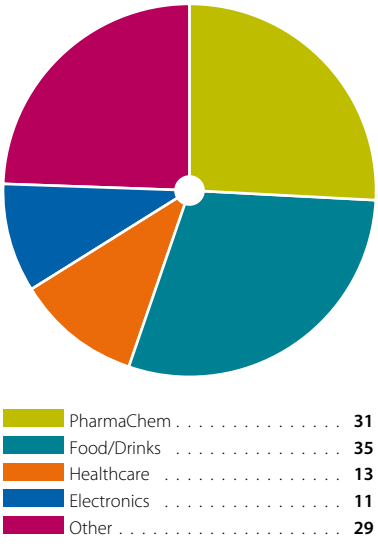


Figure 4.2: LIEN Membership by sector



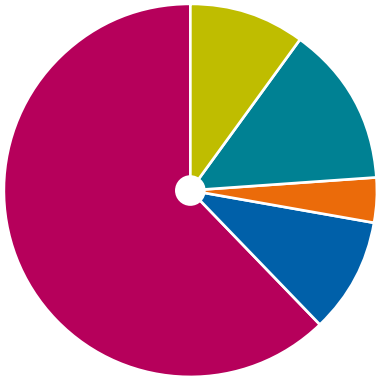
The avoided energy requirement in 2008 is the amount of energy that would have been required had the 2007 energy intensity not improved. The energy intensity change is effected by all drivers including structured energy-management systems and programmes, business, productivity or regulatory requirements.

2008 Performance

Energy usage in 2008

In 2008, the estimated TPER for the LIEN membership was 26,600 GWh, representing a total estimated energy spend of €950 million. The sectoral split is shown below.

Figure 4.3: TPER by sector



PharmaChem 10%
Food/Drinks 14%
Healthcare 4%
Electronics 10%
Other 62%

Performance analysis

The follow table lists the changes in the energy requirement, level of output and energy efficiency in 2006, 2007, and 2008:

Table 4.2: Changes in energy requirement, output and energy efficiency in 2006, 2007 and 2008

Period	% Change in TPER	% Change in output	% Efficiency gain/loss
2006	+ 0.1	+9.9	+ 7.0
2007	- 4.2	-1.5	+ 6.9
2008	- 3	+0.8	+ 5.2

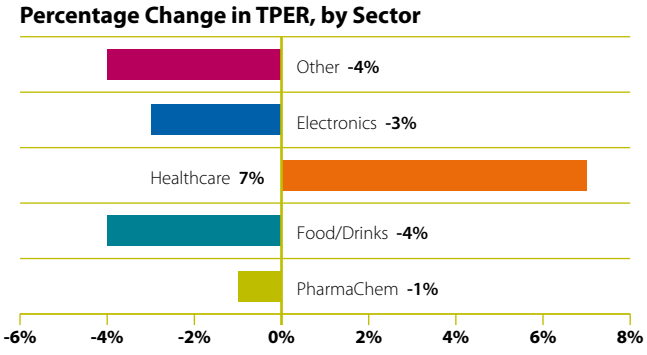
The data in table 4.2 suggests several interesting observations:

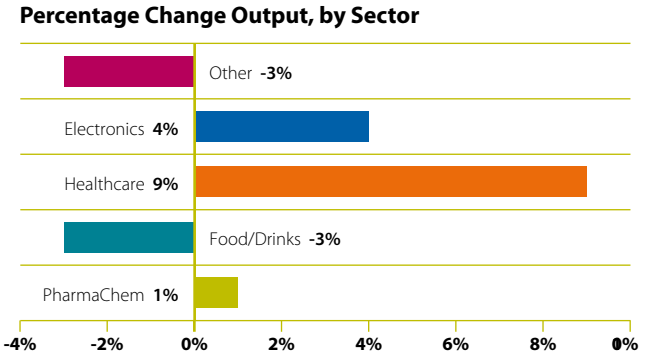
- The energy requirement has decreased since 2006. This is not unexpected given the change in economic conditions.
- The aggregate output has remained relatively flat since 2006. It should be noted that the aggregated output number includes significant variations in output of some members across various sectors. Again, this is not unexpected given the economic conditions in 2007 and 2008.
- Over the period, the reporting companies have consistently improved their energy efficiency.

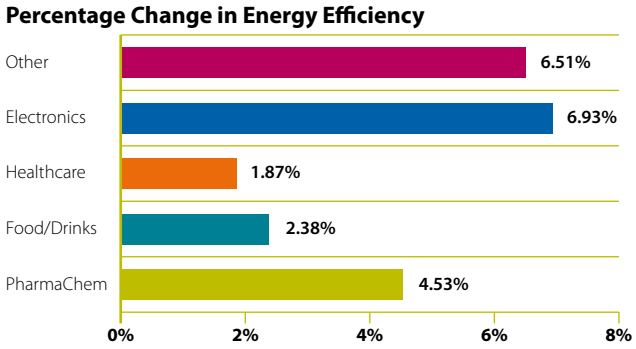
In primary energy terms, an improvement of 5.2% in energy efficiency translates into a saving of around 1,620 GWh and an avoided cost of over €60 million. That is to say, if the LIEN members operated their plants with the same energy intensity performance as in 2007, they would have incurred an additional cost of over €60 million.

On a sectoral basis, the following plots illustrate the changes in TPER, Output and Energy Efficiency between 2007 and 2008.

Figure 4.4: Sectoral analysis of TPER, Output and Energy Efficiency







It can be seen from figure 4.4 that:

- All sectors reported an improvement in energy efficiency
- The only sector to see an increase in TPER was the healthcare sector (as in 2006/2007).
- The 'Food & Drinks' and 'Other' sectors experienced declines in output. These two sectors account for 75% of the reported TPER for the LIEN.

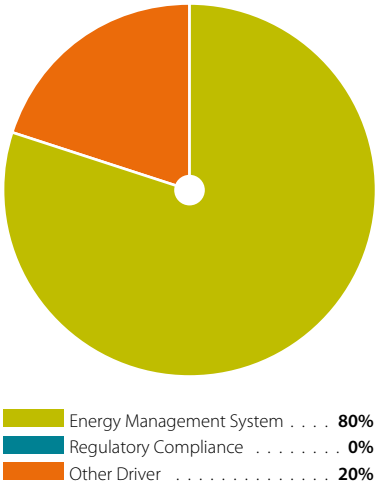
Energy-efficiency driver & project category

The drivers of energy-efficiency change within the LIEN are broadly categorised as an energy management system (EMS) or programme driver, a regulatory driver or 'other' driver e.g., a business change, productivity influence, new-product introduction, new capability or capacity requirement. This data is presented as both a percentage of total energy avoided and percentage of reported projects:

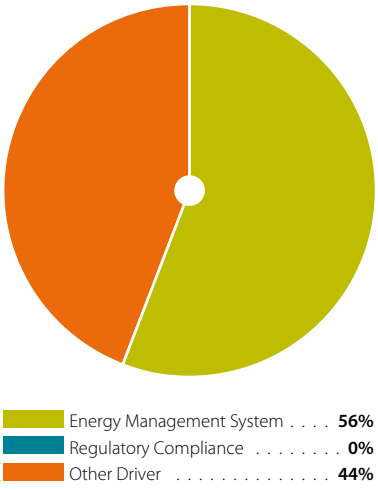
- 80% of projects reported were driven by a structured EMS. They accounted for 56% of energy saving.
- 20% of projects were driven by an 'other' driver, accounting for 44% of energy saving.

Figure 4.5: Energy-efficiency project drivers

Discrete Projects Reported



Energy Saving (kWh)

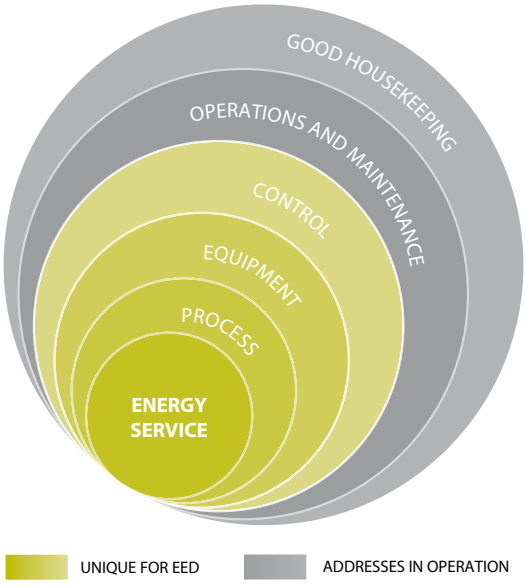


75%

THE 'FOOD & DRINKS' AND 'OTHER' SECTORS EXPERIENCED DECLINES IN OUTPUT. THESE TWO SECTORS ACCOUNT FOR 75% OF THE REPORTED TPER FOR THE LIEN.

Energy projects are categorised using the EED Venn Diagram (c.f. SEI EED Methodology). This diagram is used to illustrate where design opportunities are found and have greater impact. Challenging the energy service requirements will deliver the greater saving. Each category moving outward illustrates where decisions are made that deliver the energy service requirement. The outer two categories are typical of energy management programmes during operation of a process or plant. They require ongoing training and awareness to maintain improvements. The inner categories will have greater benefit for less investment if detected at the design stages. Energy projects implemented during operation can equally be categorised in this way. A greater mix of projects signifies a more mature energy management system.

Figure 4.6: EED Venn diagram



Based on data received on projects implemented, the following graphs illustrate the breakdown and range of activity. This data is presented as both percentage of energy avoided and percentage of projects completed.

Figure 4.7: Categorisation of Reported Projects

Achieved Energy Savings (kWh)

Operations & Maintenance	12%
Equipment	32%
Control	18%
Housekeeping	3%
Energy Service	24%
Process Change	1%
Other	9%

Projects Implemented

Operations & Maintenance	25%
Equipment	20%
Control	22%
Housekeeping	8%
Energy Service	10%
Process Change	8%
Other	7%

It is interesting to compare these graphs with the same analysis for 2007. The comparison shows clearly that the IS 393 energy-management systems are maturing within the LIEN.

- Energy Service Requirement and Process changes are introduced where not evident in 2007
- Control and Housekeeping categories have increased in quantity and impact
- The projects in the equipment category have reduced in comparison to 2007, however the resulting energy saving impact has increased.

Table 4.3: Percentage increase in 2007 and 2008 in (a) the number of projects initiated within various categories and in (b) energy savings (kWh)

Project Category	2007 kWh	2007 Projects	2008 kWh	2008 Projects
Energy Service Requirement	0%	0%	24% ▲	10% ▲
Process	0%	0%	1% ▲	8% ▲
Equipment	14%	30%	32% ▲	20%
Control	9%	15%	18% ▲	22% ▲
Operation & Maintenance	48%	37%	12%	25%
Housekeeping	1%	6%	3% ▲	8% ▲
Other	28%	12%	9%	7%

Housekeeping and Operation and Maintenance efforts are typical of traditional energy-management scope. These activities will achieve energy savings, but with diminishing returns. As well, they depend on continual training and awareness. As an energy-management system matures, more activity is expected to occur in the other categories. Within the LIEN, achieving both step change and incremental continuous improvement of energy efficiency is expected.

Energy Agreements Programme (EAP) versus LIEN-only performance

The performance of LIEN-only members and that of EAP members differ significantly:

- EAP members made energy-efficiency gains of around 6% (compared with 8% in 2007)
- LIEN-only companies made gains of around 4.7% (1% in 2007)

The improved performance of LIEN-only members in 2008 may be attributed to the dramatic increase in oil prices during the year, rising to a high of $147 per barrel in July.

This analysis indicates that the EAP members are outperforming LIEN-only members.

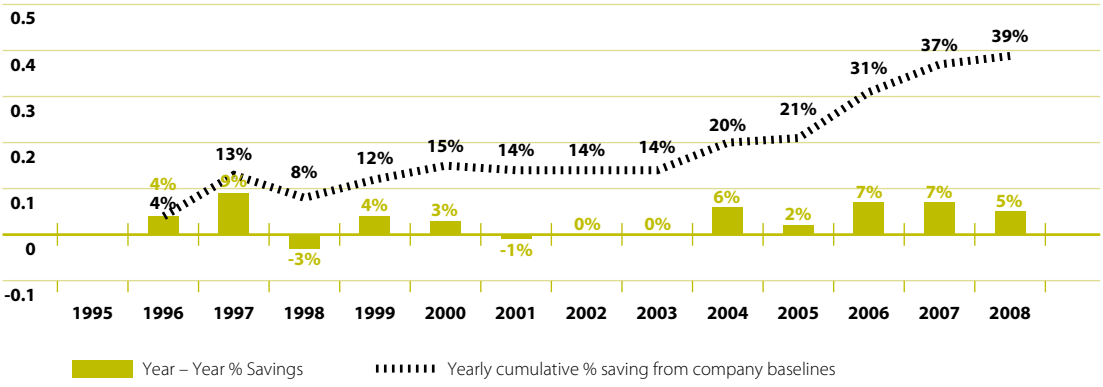
Historical performance

Companies that reported in both 1995 and 2008 have achieved an average energy-efficiency gain of 37% during this timeframe.

Companies that reported in both 2000 and 2008 have achieved an average energy-efficiency gain of 20% during this timeframe.

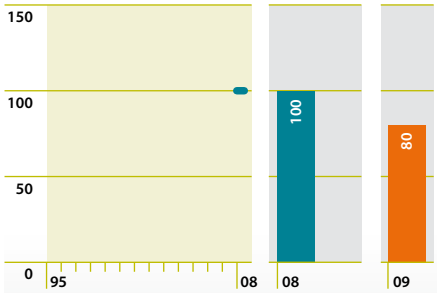
The graph below illustrates the overall accumulated energy efficiency improvement of the LIEN membership each year, from the year of joining the LIEN, that is if every company had the same energy intensity in 2008 as in the year they joined, the LIEN TPER would be 39% greater to produce 2008 output.

Figure 4.8: Historic LIEN energy performance



Index: Members' Results and Targets

Abbott Vascular Devices Ireland Ltd



Factors influencing 2008 result

- Optimisation of non-cGMP HVAC: including, introduction of temperature & humidity deadbands, on/off schedules optimised for occupancy, HVAC serving unoccupied suites shut.
- Repair of building envelope: Use of Thermal Imaging to identify significant heat lost through doors, windows, cladding & roof. Building performance improved following repairs.
- Chilled water set-point temperarure increased from 2°C to 5°C.
- A detailed energy mapping exercise identified the key areas for improvement.

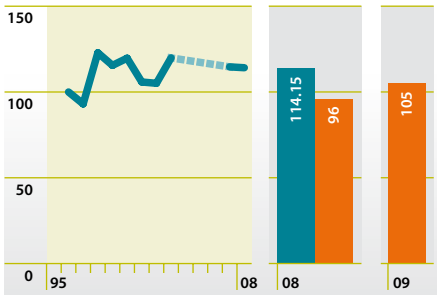
RESULT 100

Factors influencing 2009 target

- Implementing a 1MW CHP plant, and use the waste heat to supply the site LPHW circuit.
- Chilled Water Optimisation Project has resulted in a 36% reduction in total CHW consumed kWhr's delivering significant yearly savings with improved system performance.
- Begun project to optimise all cGMP HVAC's: The Air Change Rate for one HVAC has been decreased reducing running cost by 44%. This project will continue into 2010.
- Further engagement with SEI to help realize future energy-saving opportunities.

TARGET 80

Abbott Ireland (Cavan)



Factors influencing 2008 result

- Production increase.
- Many energy projects begun, including boiler economiser. Savings from this project expected in coming years.
- Lighting energy projects begun in 2008, including warehouse lighting replacement and installation of room lighting control switchgear.

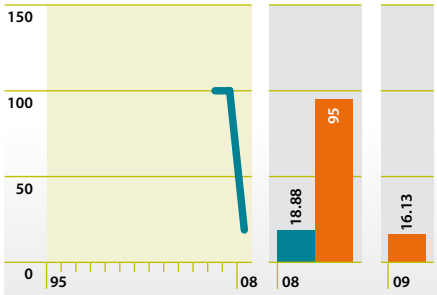
RESULT 114.15

Factors influencing 2009 target

- Audit carried out to identify key projects.
- Improved metering on site.

TARGET 105

Abbott Ireland (Longford)



Factors influencing 2008 result

- Setting up site energy team increased focus and led to identification of substantial projects that could be easily implemented without major capital investment. Once these projects were executed the energy consumption reduction delivered significant costs reductions to the business.
- Rise in energy awareness across site increased people's engagement in energy conservation programme.

RESULT 18.88

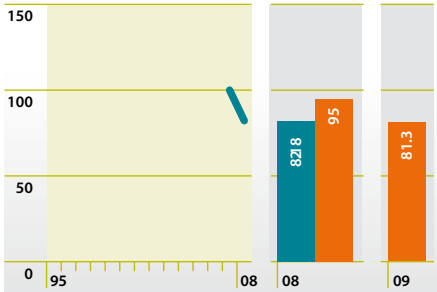
Factors influencing 2009 target

- Site is keen to install EMS that would help to map energy usage in greater detail and become a tool to initiate and monitor further projects to reduce energy.
- A number of feasibility studies in progress in the utility area are expected to identify additional potential energy savings.

TARGET 16.13

Actual EPI | Period of missing data | Actual EPI | Target EPI

Abbott Ireland Pharmaceutical Operation



Factors influencing 2008 result

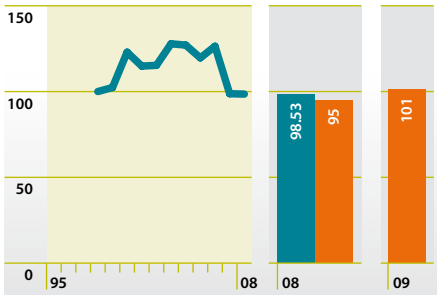
- Large energy savings achieved in 2008 by continued capital investment in energy projects: upgrade and replacement of equipment and process.
- Prudent energy-management activities have also been important.

Factors influencing 2009 target

- Despite a large capital project carried out on site throughout 2009, which increased site energy profile, overall energy usage has again been reduced YTD.
- A number of projects are ongoing to reduce both thermal and electrical usage.

RESULT 82.18 **TARGET 81.3**

Allergan Pharmaceuticals Ltd



Factors influencing 2008 result

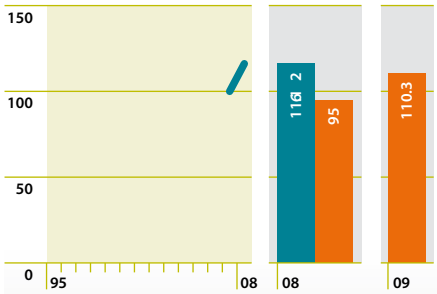
- Electrical energy reduced by 5% on an absolute basis versus 2007 figure; reduced by 22% per unit product.
- Fuel usage decreased by 3% versus 2007 figure.
- Water usage decreased by 18% per unit product.

Factors influencing 2009 target

- Implementation of IS 393 EMS.
- Reduce energy usage by 5%.
- Reduce water usage by 10%.

RESULT 98.53 **TARGET 101**

Alza Ireland Ltd



Factors influencing 2008 result

- Significant non-manufacturing additions to the campus in terms of R&D, laboratories, admin and canteen. Increase in energy usage without any direct increase in production.
- Successful EMS rolled out in conjunction with IS 393 process, which has resulted in significant savings. These savings have offset both cost and energy usage increases associated with additions to site.

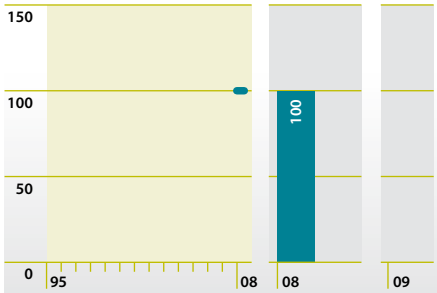
Factors influencing 2009 target

- Alza committed to expanding Energy MAP for 2009 to generate further savings. This is expected to reduce power and gas usage by further 5%.
- Substantial energy metering plan, being rolled out in 2009, will allow greater knowledge of users to be gathered and documented.
- IS 393 certification planned for late 2009
- Commissioning and validation of new manufacturing building as part of the Cordis expansion onsite will add about 5.7 GWh of electrical usage and 6.2 GWh of gas usage to site for 2009 without any additional production output.

RESULT 116.12 **TARGET 110.3**

Actual EPI | Period of missing data | Actual EPI | Target EPI

Arvato Digital Services Ireland (formerly Sonopress Ireland Ltd)



Factors influencing 2008 result

- First year in the LIEN.
- Introduction of energy saving light fittings.
- Reduced compressed air pressure setpoint and leak reduction programe.

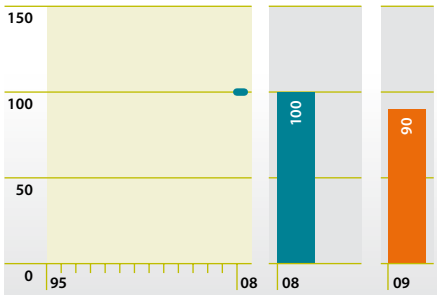
Factors influencing 2009 target

- Adjustment of AHU parameters.
- Reconfiguration of drying room.
- Reduced production volumes.

RESULT 100

TARGET NOT SPECIFIED

Arkil Ltd



Factors influencing 2008 result

- Gap Analysis took place which identified several possibly energy saving opportunities.
- Increased awareness of energy use over the company's sites.
- Significant energy users identified.
- Regular Energy management meetings now scheduled.

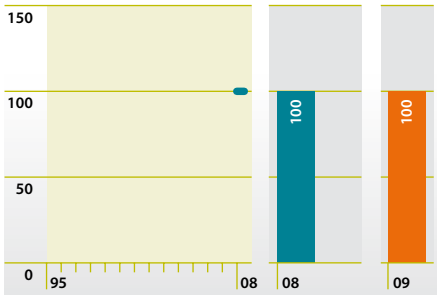
Factors influencing 2009 target

- Energy awareness days held over company's sites.
- Decreased production due to Economic climate.
- Energy Providers, Billing & Tariffs investigated for suitability.
- Several energy saving initiatives introduced.

RESULT 100

TARGET 90

Associated Packaging Technologies



Factors influencing 2008 result

- New member.
- 2008 is first year of participation.

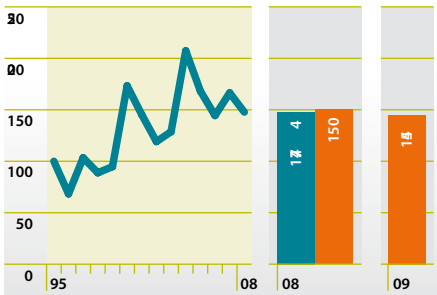
Factors influencing 2009 target

- Since company is a major electricity user, we have earmarked several projects and studies which could help to reduce overall usage.
- Areas of investigation will include analysis of compressors, chillers and process heating.

RESULT 100

TARGET 100

Astellas Ireland Co. Ltd (Dublin)



Factors influencing 2008 result

- Site energy awareness maintained by running awareness campaigns. Results of monthly audits of areas for switching off lights, computers and printers are posted on the Energy Noticeboard. Percentage compliance is generally excellent.
- M&T data from meters reviewed weekly.

Factors influencing 2009 target

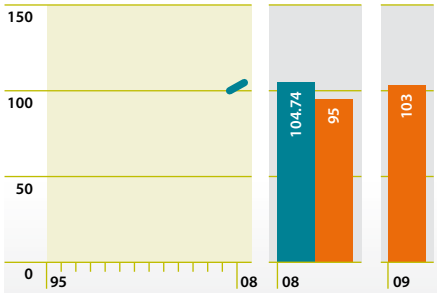
- Investment in energy-efficient technology such as smart lighting and VSD.
- Six-sigma analysis of production process will enable better understanding of peaks and troughs in energy usage, in relation to EPIs.
- Reduction in compressed air usage by replacing air bubbler level transmitters with different technology.

RESULT 147.74

TARGET 145

Actual EPI | Period of missing data | Actual EPI | Target EPI

Astellas Ireland Co. Ltd. (Kerry)



Factors influencing 2008 result

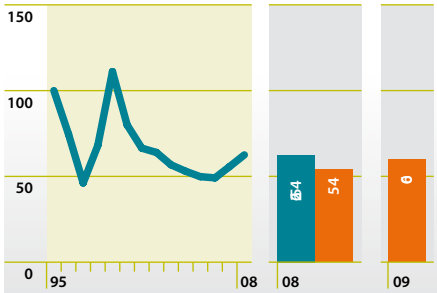
- Reduction in site energy usage achieved mainly through implementing the company's energy-management programme, developed as part of IS 393 documentation.
- Participation in SEI special working groups yielding numerous opportunities for improvement.

Factors influencing 2009 target

- CHW is single greatest electrical user on site. Reducing CHW generation energy usage will yield significant cost benefits.
- To date, site has mainly concentrated on electrical efficiencies. LTHW consumption reduction is first main thermal reduction project undertaken by company.
- Reducing QC chemistry energy usage involves changing procedures and refining work practices through energy audits and awareness. Benefits of buy-in to this project will be long-lasting and provide savings well into the future.

RESULT 104.74 **TARGET 103**

Bausch & Lomb Ireland Ltd



Factors influencing 2008 result

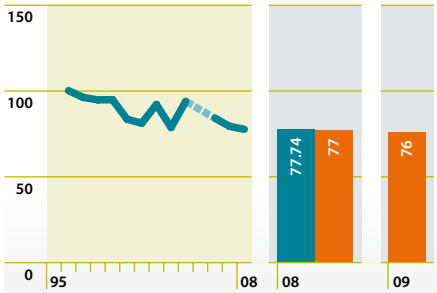
- Increase in site automation.
- Reduction in site headcount.
- Removal of CHP unit.

Factors influencing 2009 target

- Ongoing site automation will counteract efficiency improvements.
- Feasibility study of potential for new CHP.

RESULT 62.54 **TARGET 60**

Baxter Healthcare SA



Factors influencing 2008 result

- Replacement of 164KW belt-driven motor with more efficient, directly driven VSD-controlled motor.
- Automation of chilled-water system.
- T8 fluorescent tubes replaced with T5 fluorescent fittings with integrated occupancy sensors, particularly in areas of low occupancy. LED fluorescent replacement trials (100) also.
- Increase in cooling-tower capacity led to more efficient cooling processes.
- Recovery of heat from WFI sanitisation processes.

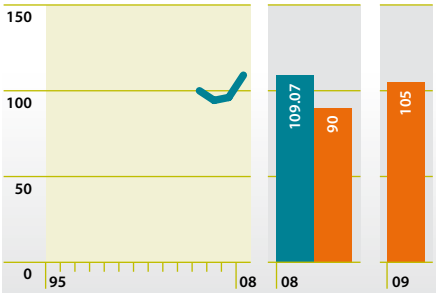
Factors influencing 2009 target

- Retrofit two distillation units with direct-drive VSD system.
- Implement PLC control on existing cooling tunnels system.
- Replacement of single-stage Venturi system with multistage Venturi system on 20 label applicators.
- Insulation of 3 un-insulated autoclaves.
- HVAC: reduction in speed of AHU fans.

RESULT 77.74 **TARGET 76**

Actual EPI | Period of missing data | Actual EPI | Target EPI

Bitech Engineering (Glen Dimplex Group)



Factors influencing 2008 result

- Lower production volumes lowered energy efficiency.

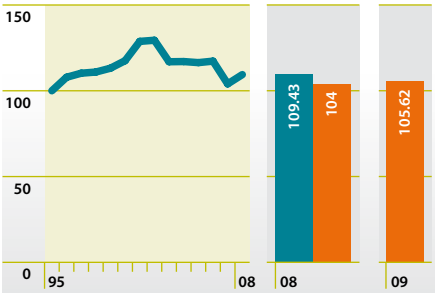
Factors influencing 2009 target

- Changes to business structure and market demand are reducing overall energy usage.

RESULT 109.07

TARGET 105

Boliden Tara Mines Ltd



Factors influencing 2008 result

- High energy usage per tonne due to shortfall in production volume.
- Certified to IS 393 in July 2008.
- Many small changes led to ongoing savings of 1.4 GWh per year.

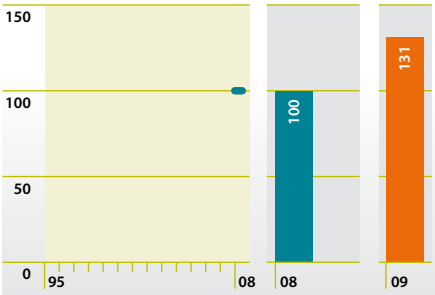
Factors influencing 2009 target

- Commissioning of new autogenous grinding mill.
- Upgrade of electrical sub-metering.
- Energy-efficient lighting and occupancy sensors.

RESULT 109.43

TARGET 105.62

Boston Scientific Ireland Ltd (Clonmel)



Factors influencing 2008 result

- Energy awareness campaigns.
- Automated PC Shutdown.

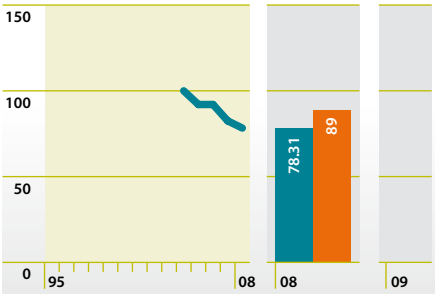
Factors influencing 2009 target

- Additional production load.
- CHP Installation.
- Change over boilers from fuel oil to duel fuel oil/natural gas.
- Timers on non essential HVAC.

RESULT 100

TARGET 131

Boston Scientific Ireland Ltd (Cork)



Factors influencing 2008 result

- Upgraded energy monitoring and trending system for more accurate, better analysis of electrical usage.
- Replaced cooling coils on chillers to increase effectiveness and efficiencies.
- Global Utilities Management Team set up to report and reduce utility usage and share best practices.
- Minor energy reduction from plantwide energy audit and specific chiller audit.

Factors influencing 2009 target

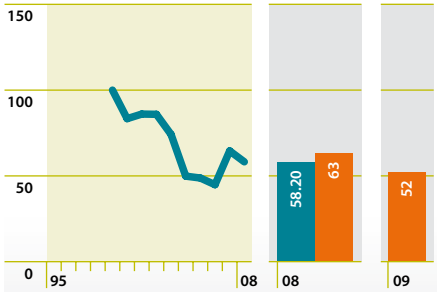
No influencing factors or target provided.

RESULT 78.31

TARGET NOT SPECIFIED

Actual EPI | Period of missing data | Actual EPI | Target EPI

Boston Scientific Ireland Ltd (Galway)



Factors influencing 2008 result

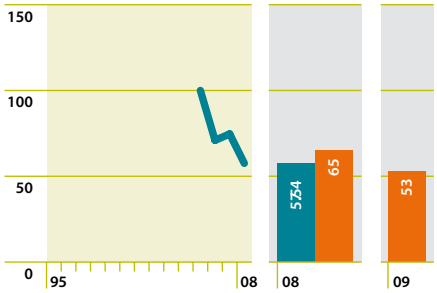
- Energy usage rose by 2% due to installation of new equipment/areas. This rise was offset by upgrading chillers to high-efficiency types.
- Large new equipment individually metered for electricity and gas.
- Continuing programme to replace old chillers with new high-efficiency type.
- Programme to replace steam humidifier completed.
- Extension of energy monitoring system planned.

Factors influencing 2009 target

- CHP unit and boiler upgrade will remove heavy fuel oil usage by changing to natural gas. Some boilers changed to dual (NG & kerosene) as back-up. Heavy fuel oil will be removed.
- 1 MW electricity and 1.1 MW thermal generated by CHP. Excess heat used in LPHW system.
- Extensive roll-out of energy-reduction campaign with local energy champions.
- AHU run hours will be reduced in office areas and shut off at weekends and nights.
- Temperature/humidity bands widening planned for all production areas.

RESULT 58.20 **TARGET 52**

Bristol-Myers Squibb (Cruiserath)



Factors influencing 2008 result

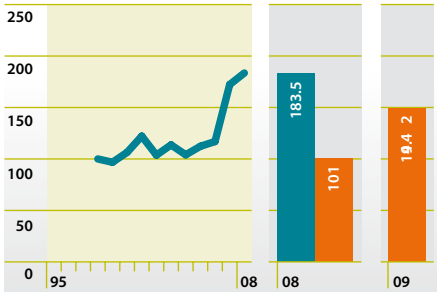
- Energy usage increased as a result of increased manufacturing output, but this increase was minimised due to energy and process improvement initiatives.
- Continuous-improvement process reviews were executed on site. Although the reviews were not directly investigating energy reduction, the increased operating-efficiency process equipment had positive impact on energy usage.
- Energy surveys carried out on HVAC and cooling towers led to short and medium-term energy projects. Savings realised towards end of 2008. Most of these will be evident for full year 2009.
- Site certified to IS 393 in Q4 2008.

Factors influencing 2009 target

- Energy review and projects carried out in late 2008 will realise saving in energy in 2009.
- Gas and electricity usage expected to fall in 2009 due to energy projects implemented in 2008/ early 2009 and continued initiatives to improve process systems.
- Energy projects realised through EMS will be implemented and start to achieve energy savings in 2009, including motor VSDs and burner modifications on waste-treatment system.
- Further energy surveys have been carried out and potential energy opportunities are being investigated in 2009. Surveys carried out on compressed-air and refrigeration systems.

RESULT 57.54 **TARGET 53**

Bristol-Myers Squibb (Swords)



Factors influencing 2008 result

- Increased production across all plants led to increased demand for both gas and electricity.
- Register of aspects and opportunities completed. Actions taken improved energy savings and awareness.

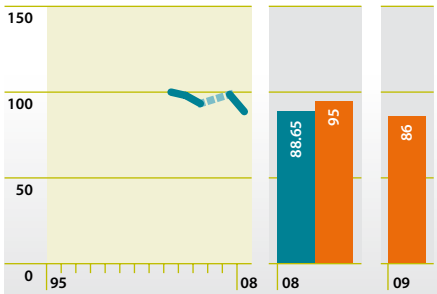
Factors influencing 2009 target

- Production levels expected to increase on 2008 levels, and EPI to fall accordingly.
- Monitoring system upgraded and calibrated to give better understanding and visibility of site electrical usage.
- Implementation of IS 393 will also reduce EPI as energy awareness is raised and opportunities implemented.

RESULT 183.5 **TARGET 149.42**

Actual EPI | Period of missing data | Actual EPI | Target EPI

Bulmers Ltd



Factors influencing 2008 result

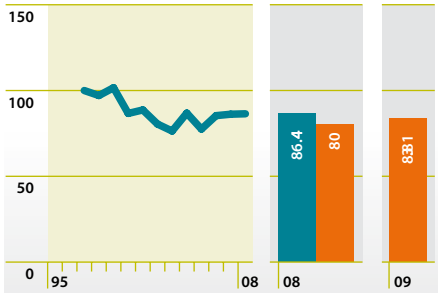
- Reduction of weekend baseloads.
- Installation of CO_2 recovery system.

Factors influencing 2009 target

- Modify chilled-water pumping control system.
- Steam system improvements.

RESULT 88.65 **TARGET 86**

Cadbury Ireland Ltd (Dublin)



Factors influencing 2008 result

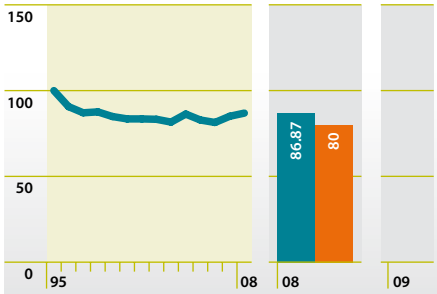
- It was a very competitive year for manufacturing. Energy saving offered opportunity to reduce costs. We must seek to reduce energy usage and play our part in reducing our carbon footprint.
- Energy audit identified substantial savings potential.
- Flash steam recovery system installed, including steam-trap replacement programme.
- Compressed-air leak survey.

Factors influencing 2009 target

- Installation of economiser.
- Insulation improvements.
- Improvements to insulation.

RESULT 86.44 **TARGET 83.81**

Cadbury Ireland Ltd (Kerry)



Factors influencing 2008 result

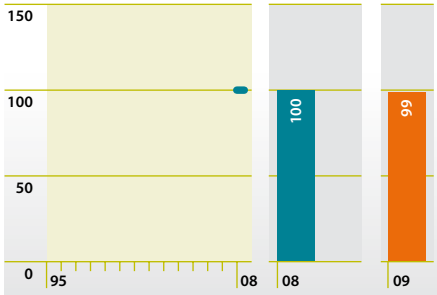
No influencing factors provided.

Factors influencing 2009 target

- New steam generation plant will help reduce oil usage and emissions.
- Implementation of M&T system will help manage overall energy usage.
- Reduction in production volumes in 2009 will make achieving 2009 energy targets difficult.

RESULT 86.87 **TARGET NOT SPECIFIED**

CITADEL100 Datacenters Limited



Factors influencing 2008 result

- Number of coolers required tuned to server load.
- Tuning of number of chillers required to the server load.

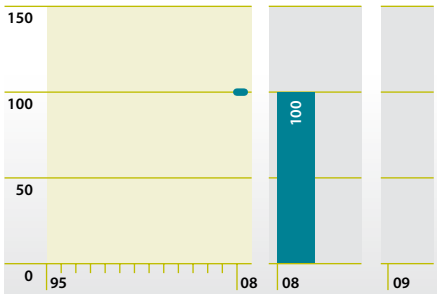
Factors influencing 2009 target

- Optimisation of chiller system.
- Extension to metering system.
- Obtain IS 393.

RESULT 100 **TARGET 99**

Actual EPI | Period of missing data | Actual EPI | Target EPI

Citi

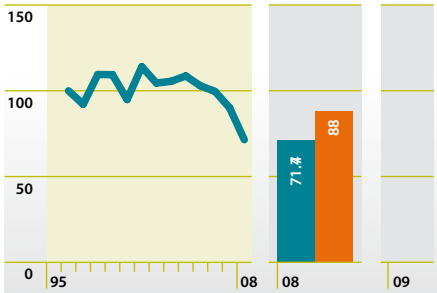


Factors influencing 2008 result
- Introduction of CHP to meet 60% of building energy requirements.
- Energy Awareness Project.
- Relamp project.

Factors influencing 2009 target
- Introduction of lighting sensors.
- More efficient AC system.

RESULT 100 | TARGET NOT SPECIFIED

Cognis Ireland Ltd

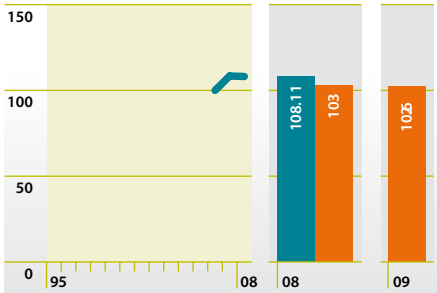


Factors influencing 2008 result
- Ongoing cost reductions including increased use of condensate return.
- Increased use of VSD technology.

Factors influencing 2009 target
No influencing factors or target provided.

RESULT 71.47 | TARGET NOT SPECIFIED

Connacht Gold Ltd (Shannonside)

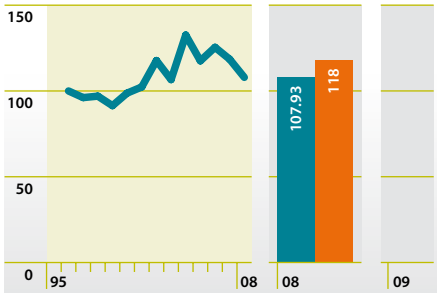


Factors influencing 2008 result
- Production output has fallen significantly in the last 12 months.
- Change in product mix significantly changed energy intensity of plant.

Factors influencing 2009 target
- Product mix should improve performance.
- Product volume projected to fall significantly in 2009.

RESULT 108.11 | TARGET 102.6

ConocoPhillips Whitegate Refinery Ltd



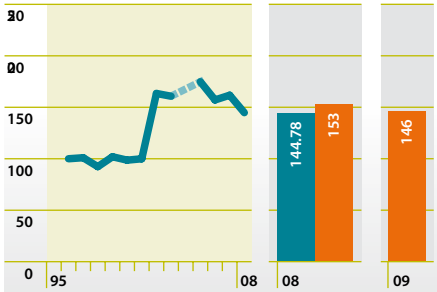
Factors influencing 2008 result
- Introduction of steam ratio controllers on distillation towers.
- Commissioning of water demineralisation plant to reduce condensate blowdown.

Factors influencing 2009 target
- Optimisation of chiller system.
- Extension to metering system.
- Obtain IS 393.
- No target provided.

RESULT 107.93 | TARGET NOT SPECIFIED

Actual EPI | Period of missing data | Actual EPI | Target EPI

Covidien (Athlone)



Factors influencing 2008 result

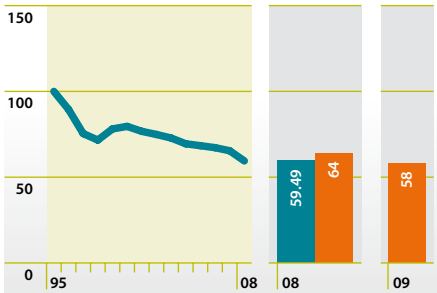
- The new injection moulding machine was introduced to manufacturing and all product validations completed.
- New blast cooler operating successfully but older machine still used due to volume demand increase.
- New VSD air compressor, in operation since January 2009, has contributed significant savings.

Factors influencing 2009 target

- Energy programme planned to begin in fiscal 2009, to include feasibility study to establish renewable energy opportunities for site.
- New VSD air compressor scheduled to go into operation in 2009. Benefits should be realised for approx. 80% of year.
- Project looking at replacing internal factory lighting with more energy-efficient units is under way.

RESULT 144.78 TARGET 146

Covidien (Mulhuddart)



Factors influencing 2008 result

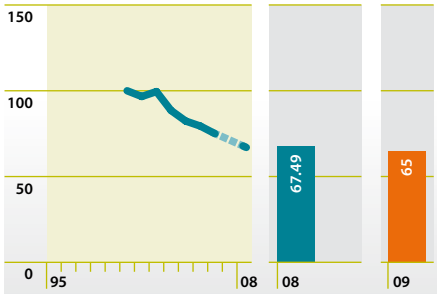
- Introduction of a new filtration system in place of evaporative technology significantly reduced the use of natural gas at Covidien.

Factors influencing 2009 target

- Increased production volume and continued efforts to reduce energy usage combined to reduce our EPI in 2009.

RESULT 59.49 TARGET 58

Dawn Meats Ltd (Ballyhaunis)



Factors influencing 2008 result

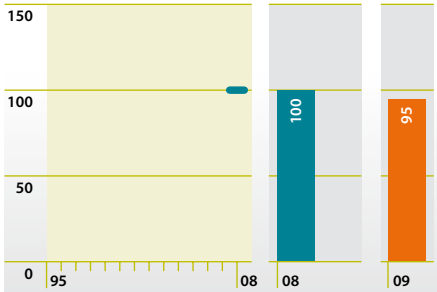
- Amalgamated two closely located sites with the aim to increase output by a margin of 80% for similar energy use.
- Encorporation of blast freezing into the cold storage facility in combination with improved insulation and access control provided significant energy efficiencies.

Factors influencing 2009 target

- Heat recovery system from refridgeration plant used for 40 C water will reduce our fuel oil requirement.
- Insulation program which will see the lagging of all piping completed by year end.
- Program of replacement of old light fittings with more efficient lower power, higher lux fittings.

RESULT 67.49 TARGET 65

Depuy (Ireland) Ltd



Factors influencing 2008 result

- Our strategy is based on three pillars: cost, usage and sustainability.
- Under the usage pillar we have made significant progress, reducing our kWh per unit shipped by 21% during 2006-2008.

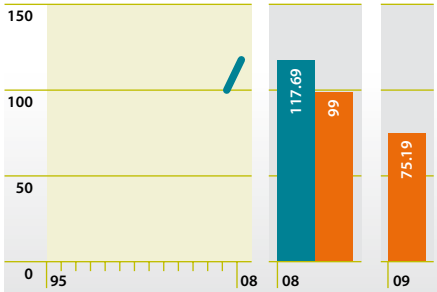
Factors influencing 2009 target

- We are going for EN 16001 accreditation in August this year.
- Our 2009 target is to reduce our kWh per unit shipped by a further 5%.

RESULT 100 TARGET 95

Actual EPI | Period of missing data | Attua EPI | Target EPI

Diageo Bailey's Global Supply



Factors influencing 2008 result

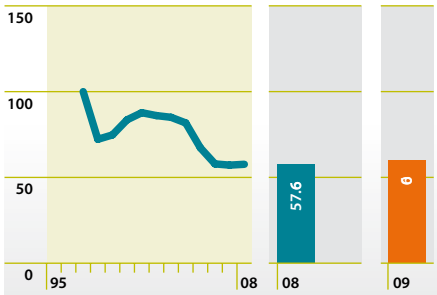
- Our strategy is based on three pillars: cost, usage and sustainability.
- Under the usage pillar we have made significant progress, reducing our kWh per unit shipped by 21% during 2006-2008.

Factors influencing 2009 target

- We are going for EN 16001 accreditation in August this year.
- Our 2009 target is to reduce our kWh per unit shipped by a further 5%.

RESULT 117.69 **TARGET 75.19**

Diageo Ireland (St James's Gate)



Factors influencing 2008 result

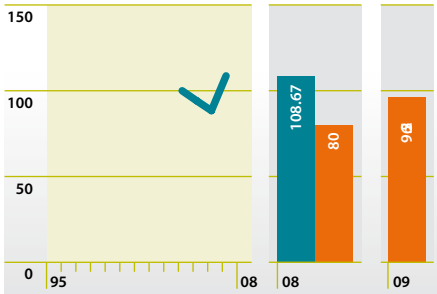
- Teamwork and a culture of continuous improvement, supported by IS 393, energy-management systems, and monitoring and targeting with regular reviews, are the key elements that sustain the energy savings achieved.
- Full benefit of project commissioned in 2007, to use incoming process water to provide process cooling instead of mechanical refrigeration, was realised in 2008.

Factors influencing 2009 target

- In 2009, Guinness celebrates 250 years at St James's Gate.
- Innovation, change and continuous improvement are the challenges for future success.
- Finding and eliminating base energy loads will be key to a predictable EPI.

RESULT 57.66 **TARGET 60**

Donegal Meat Processors



Factors influencing 2008 result

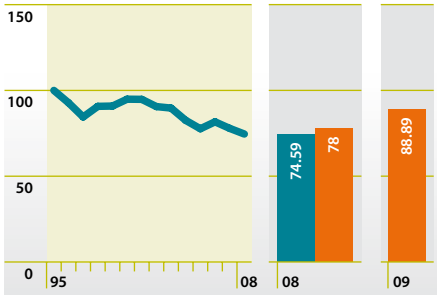
- Plant output has increased.
- Cattle average weight has increased.

Factors influencing 2009 target

- New compressors being purchased.
- New boilers being purchased.
- General house-keeping audits and compressed-air audits.

RESULT 108.67 **TARGET 96.25**

Dublin Airport Authority



Factors influencing 2008 result

No influencing factors provided.

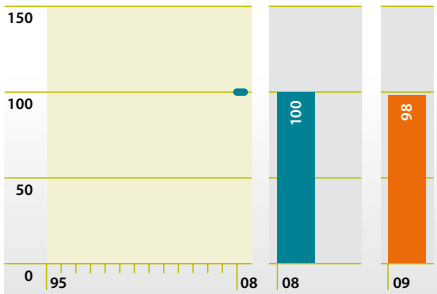
Factors influencing 2009 target

- Ongoing construction work on new Terminal 2.

RESULT 74.59 **TARGET 88.89**

Actual EPI | Period of missing data | Actual EPI | Target EPI

Edenderry Power Ltd



Factors influencing 2008 result

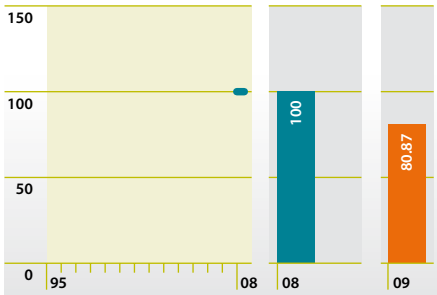
- Fitting of a new economiser has improved plant capability.
- Fuel quality and plant dispatch had direct effect on efficiency.

Factors influencing 2009 target

- It is hoped that multiple-technology approach to boiler fouling problems will yield results.
- Initial results from condenser backpressure project show measureable efficiency improvements.

RESULT 100 **TARGET 98**

Eircom



Factors influencing 2008 result

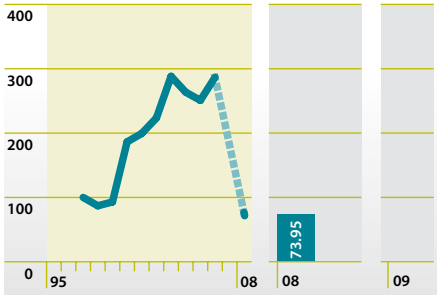
- Energy usage minimized due to building design.

Factors influencing 2009 target

- Ongoing initiatives to further reduce gas and electricity usage.

RESULT 100 **TARGET 80.87**

Elan Pharma



Factors influencing 2008 result

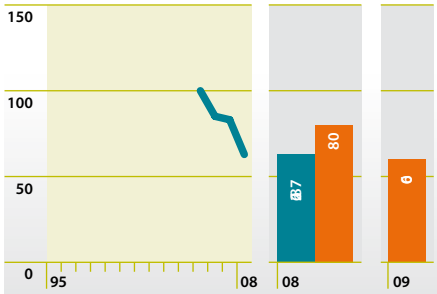
No influencing factors provided.

Factors influencing 2009 target

No influencing factors or target provided.

RESULT 73.95 **TARGET NOT SPECIFIED**

Element Six Ltd



Factors influencing 2008 result

- Due to capital restrictions in the current financial circumstances, energy projects are on hold.
- Involved in large CHP plant being developed commercially by Prime Energy Solutions.

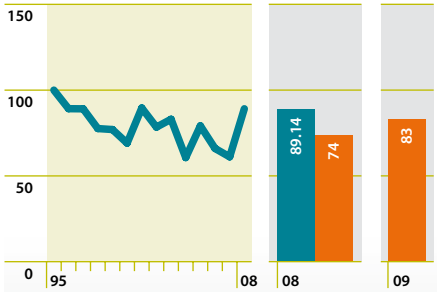
Factors influencing 2009 target

- Costs and cost reductions are huge factors in life of any business at present.
- No capex available for energy projects, so no major projects in 2009.

RESULT 62.87 **TARGET 60**

Actual EPI | Period of missing data | Actual EPI | Target EPI

Eli Lilly S.A.



Factors influencing 2008 result

- Construction activity relating to the new biotech facility has increased energy usage.
- Change in product mix coupled with construction of new biotech facility has led to increase in site EPI. This EPI is expected to fall when new facility goes into operation.
- Use of HFO has decreased from 2007 figures due to energy-efficiency measures on boiler system. This is building on reduction in 2006 figures also and will be continued into 2009 as part of site EMP.

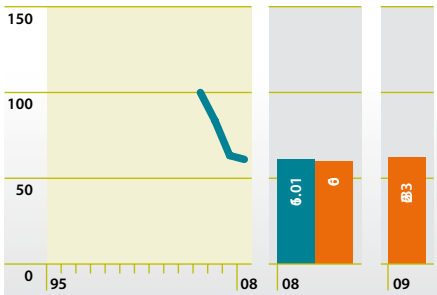
RESULT 89.14

Factors influencing 2009 target

- Commissioning and operation of new biotech facility will result in increased energy usage on site.
- Ongoing site energy conservation projects identified and implemented through site's EMP will aim to reduce energy usage in line with previous years.
- Renewable-energy projects under investigation with view to reducing environmental footprint of site.
- Site is implementing European EMS standard EN 16001. This will add increased structure around site's energy-management initiatives and is expected to yield increased energy savings.

TARGET 83

EMC Ireland Ltd



Factors influencing 2008 result

- Energy awareness programmes carried out.
- Replaced 1700 light fittings with 800 new sensor fittings and installed occupancy sensors in office areas.
- Implementation of hot & cold corridors in data centres, virtualisation & chiller optimisation.
- Equipment default power-off.

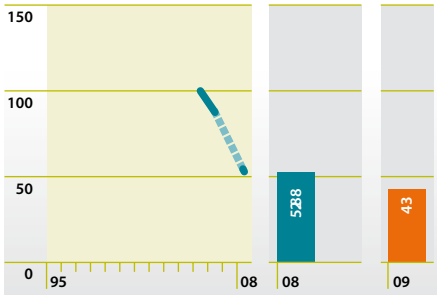
RESULT 61.01

Factors influencing 2009 target

- HVAC scheduling.
- New hardware labs coming online.
- Increased cross-functional input into energy programmes.
- Energy awareness programmes.

TARGET 62.33

Genzyme Ireland Ltd



Factors influencing 2008 result

- Increase in energy requirement primarily driven by increased in Fill Finish production.
- Commissioning of New Oral Dose facility.

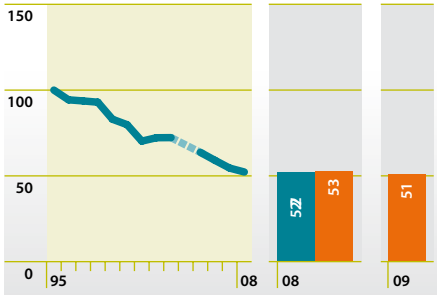
RESULT 52.88

Factors influencing 2009 target

- Continuing ramp-up of manufacturing in new Oral Dose.
- Construction of new Laboratory, and Fill Finish Capacity expansion.

TARGET 43

Glanbia Ingredients (Ballyragget) Ltd



Factors influencing 2008 result

- A number of process projects led to improvements. More use of RO plants and VSDs were significant contributors.
- Control improvements at CHP plant and refrigeration yielded significant savings.

RESULT 52.27

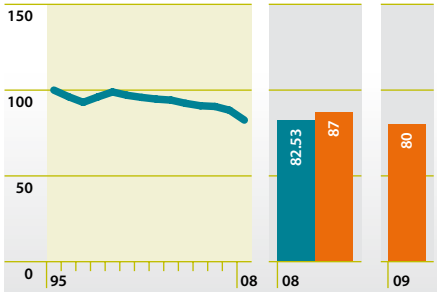
Factors influencing 2009 target

- Ongoing projects on insulation and steam traps will help to improve 2009 performance.
- Additional plant automation and extension of monitoring system will pinpoint areas for improvement.

TARGET 51

Actual EPI | Period of missing data | Actual EPI | Target EPI

Glanbia Ingredients (Virginia) Ltd



Factors influencing 2008 result

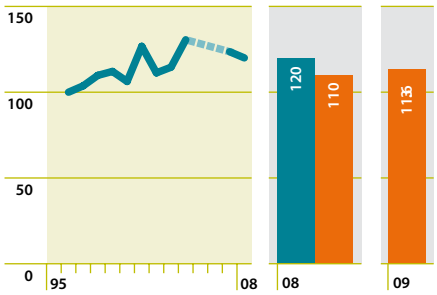
- Continuous monitoring and reporting of usage, as well as greater energy awareness among managers, have improved overall plant efficiencies.
- IS 393 register of opportunities highlighted areas for energy conservation.

Factors influencing 2009 target

- Awareness of energy costs and environmental impact of CO_2 emissions are driving force behind energy-reduction measures.
- IS 393 register of opportunities has highlighted areas for energy conservation.

RESULT 82.53 **TARGET 80**

Glanbia Consumer Foods Ltd (Inch)



Factors influencing 2008 result

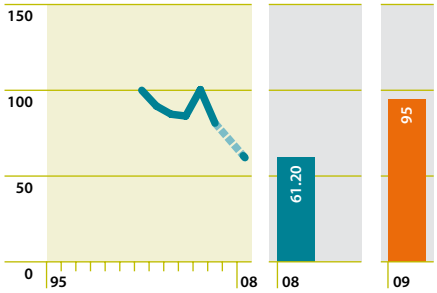
- Plant's energy performance improved, primarily through programmes to eliminate inefficient processes and activities. Energy-saving programmes led to reduction of 8% in electrical energy purchased and of 5% in terms of kWh/tonne packed.
- Monitoring & measurement programmes which made data available to management team in real time were central to success of energy-saving initiatives.
- Following success of 2008 programmes, management team will build on savings to further improve energy performance, which is vital as energy continues to be very expensive in Ireland, a serious concern for all.

Factors influencing 2009 target

- Energy usage rate per tonne is one of key drivers for site cost-avoidance programme. Central to energy-reduction programme is optimisation of production schedule. Streamlining product runs and minimising product changeovers while maintaining service levels of >99.75 is central pillar of programme.
- Challenging operational procedures in manufacturing process will deliver opportunities for new technologies to be incorporated into the process. To achieve these, management team will use the detailed information now available from various data-collection systems on site.

RESULT 120 **TARGET 113.6**

GlaxoSmithKline Ltd (Dungarvan)



Factors influencing 2008 result

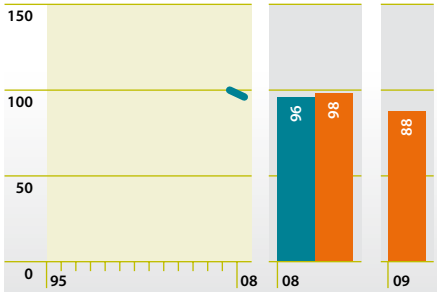
- 2008 figures represent combined energy usage and production output for the GSK 'Medicinals' and 'Medical Devices' sites in Dungarvan.
- Two large expansions on Medicinals site in 2007/8 added significant new footprint, equipment and utilities, and thus increased site's absolute energy usage. As only 20% of total energy usage is production-related, these expansions will skew EPI until both new facilities are in full commercial production. However, major focus on energy reduction is already improving both metrics in early 2009.
- Addition of new production lines on Medical Devices site in 2007/8 increased site demand. Again, focus on energy reduction is showing improvement in metrics for site.

Factors influencing 2009 target

- As this is the first report to take account of the two sites (Medicinals and Medical Devices), EPI target expressed for 2009 looks towards 5% reduction on 2008 performance.
- Additional load from 2 plant expansion projects and new production lines pose challenge to 2009 EPI. Target set will require that planned production throughputs and benefits from energy-saving projects in hand (and planned) are both realised.

RESULT 61.20 **TARGET 95**

Google Ireland



Factors influencing 2008 result

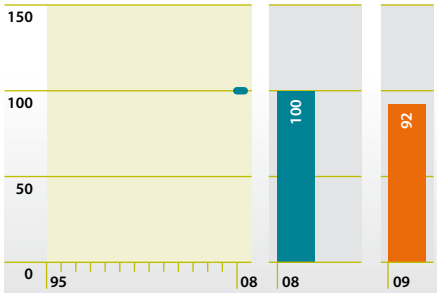
- Embarked on IS-393 EMS implementation.
- Implemented an energy measuring and targeting system.
- Reviewed and adjusted all HVAC schedules and set points.
- Enhanced lighting controls with PIRs.
- Increased awareness of the importance of energy conservation among end users.

Factors influencing 2009 target

- Out target for 2009 is a further 8% energy reduction based on the same level of activity.
- Achieve IS-393 certification.
- Optimising boilers and chiller controls.
- Investigation of occupancy driven HVAC services.

RESULT 96 TARGET 88

Green Isle Foods (Gurteen)



Factors influencing 2008 result

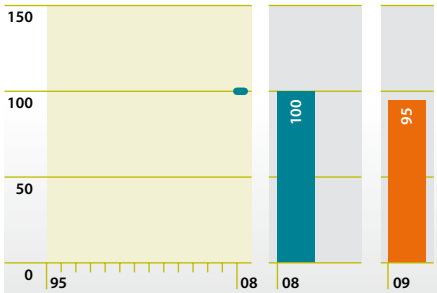
- Project have concentrated on refrigeration being the most significant energy user.
- Doubled size of refrigeration condenser and reduced temperatures.
- Raised evaporating temperatures.

Factors influencing 2009 target

- Waste heat recovery from refrigeration to be used to generate hot water.
- Replace steam boilers with smaller hot water boilers, reduce boiler size by 80%.

RESULT 100 TARGET 92

Green Isle Foods (Longford)



Factors influencing 2008 result

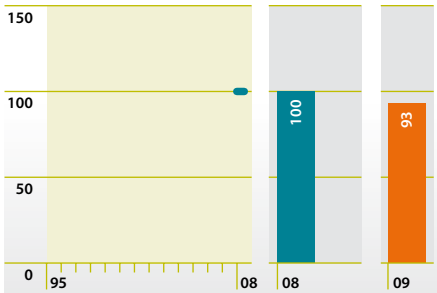
- Implemented an energy management programme including increased energy monitoring capability.
- Focus on compressed air projects and implemented an leak detection and management system.
- Achieved energy savings in refrigeration by challenging and changing evaporator temperatures.
- Installation of VSD on freezer fans.

Factors influencing 2009 target

- Assess waste heat recovery opportunities from refrigeration plant to supply hot water.
- Assess product specific refrigeration setpoints.
- High bay lighting project planned.
- Upgrade to refrigeration plant including new compressor and VSD control.

RESULT 100 TARGET 95

Green Isle Foods (Naas)



Factors influencing 2008 result

- Implemented an energy management programme including increased energy monitoring capability.
- Focus on compressed air projects and implemented an leak detection and management system.
- Achieved energy savings in refrigeration by challenging and changing evaporator temperatures.
- Installation of VSD on freezer fans.

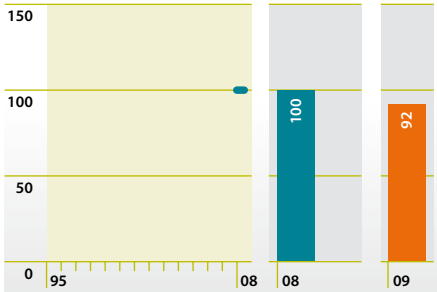
Factors influencing 2009 target

- Introduced target reduction of 5% electricity and gas within the group.
- Planning to implement the Energy Management Standard EN 16001.
- Installation of CHP plant onsite.
- Challenging compressed air pressure requirements.
- Process optimisation of steamers.
- Optimisation of refrigeration processes.

RESULT 100 TARGET 93

Actual EPI | Period of missing data | Actual EPI | Target EPI

Green Isle Foods (Portumna)



Factors influencing 2008 result

- Implemented an energy management programme including increased energy monitoring capability.
- Focus on compressed air projects and implemented an leak detection and management system.
- Installation of energy efficient lighting and controls.
- Monitor water in and water out and the losses in the system.

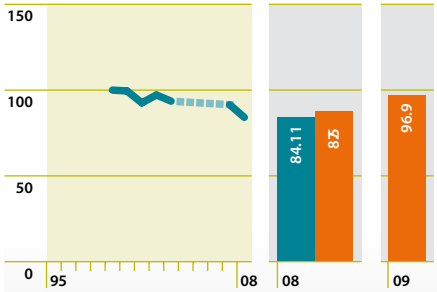
RESULT 100

Factors influencing 2009 target

- Waste heat recovery project opportunities.
- Improve efficiency of boilers.
- Process optimisation to reduce requirements for steam, compressed air and water.
- Optimisation of refrigeration systems.
- New compressor planned with improved controls and VSD.

TARGET 92

Gypsum Industries Ltd



Factors influencing 2008 result

- Final implementation of inverter programme completed, following successful SEI-assisted project completed in 2007.
- Focused improvement project on effective use of compressed air led to substantial cut in electricity use, estimated at 200,000KWH/yr. Plant is now being run on one 1000 CFM compressor per day.
- We have hit a baseline and need to identify further energy-reduction initiatives. Since current monitoring and measurement (M&M) data available on site is limited, improving M&M system is key focus for 2009.

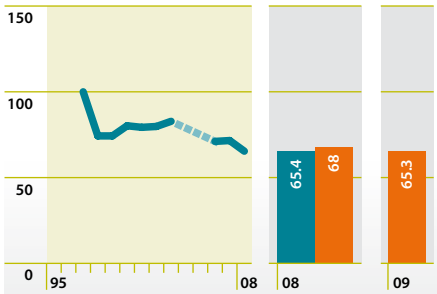
RESULT 84.11

Factors influencing 2009 target

- We recognise that we have hit a baseline and need to identify further energy-reduction initiatives. Since current monitoring and measurement (M&M) data available on site is limited, improving M&M system is key focus for 2009.
- Raise awareness within engineering and operations function of potential energy savings when planning maintenance operations and lifecycle costing for new equipment.

TARGET 96.9

HJ Heinz Frozen and Chilled Foods Ltd



Factors influencing 2008 result

- Maintaining the agreement programme with SEI.
- Maintaining and continually improving the energy management system and preparing for I.S. EN 16001:2009.
- Energy teams are playing very important part in improving energy efficiency.
- Awareness training carried out across the site to all employees.
- Good communication of energy performance and energy projects to all employees.

RESULT 65.4

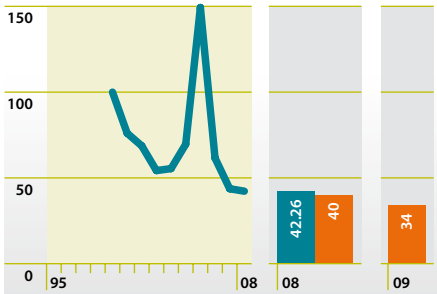
Factors influencing 2009 target

- Increased energy awareness and training across the site.
- Repairing / replacing lagging on steam pipes and boiler to prevent heat escaping.
- Installation of steam meters in sauce cooking area will clarify and identify significant steps or process that require action to improve energy efficiency.
- Upgrade prioritised steam traps on site.
- Investigate efficient instant lighting for freezers that will turn-off if no one inside the freezers or fridges.

TARGET 65.3

Actual EPI
Period of missing data
Actual EPI
Target EPI

IBM International Holdings



Factors influencing 2008 result

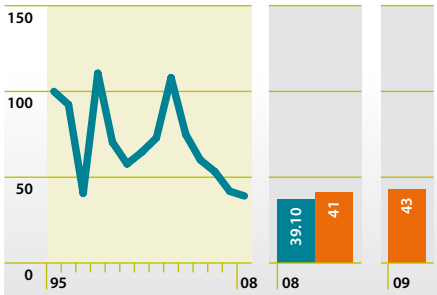
- Increase in absolute energy usage.
- But, when business growth is accounted for, normalised usage is down.

Factors influencing 2009 target

- Significant energy reductions forecast through conservation activities.
- Examples of conservation initiatives include improved boiler control systems, free cooling and energy-efficient lighting.

RESULT 42.26 TARGET 34

Intel Ireland Ltd



Factors influencing 2008 result

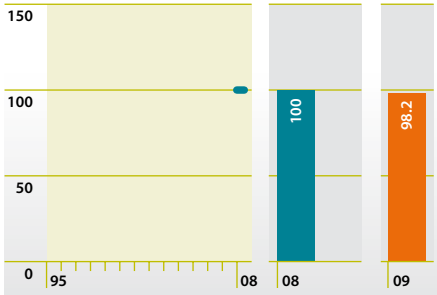
- Full-year impact of over 50 projects completed in 2007.
- Additional 42 projects completed in 2008.
- All factories at high levels of production.
- Highlights include chiller control optimisation and condenser bundle cleaning.

Factors influencing 2009 target

- Modulation of energy to meet changes in factory output.
- Factory throughput reduction associated with global demand reduction means increased EPI for 2009.

RESULT 39.10 TARGET 43

Interxion Ireland Limited



Factors influencing 2008 result

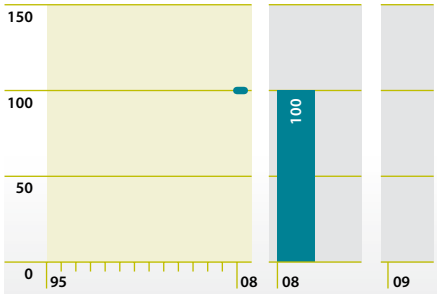
- Increased customer power usage.
- More efficient air-conditioning units deployed.
- Better cold-air management.
- Energy awareness audit/programme.

Factors influencing 2009 target

- Increase in customer electrical usage.
- More effective use of air con and non-critical power.
- Continue energy awareness programme.

RESULT 100 TARGET 98.2

Irish Cement (Limerick)



Factors influencing 2008 result

- Construction of new €200m investment in the Kiln 3 cement production line.
- Establishment of Electricity Management Team, chaired by Operations Director, focussed on realising improvements in electricity consumption per tonne of cement produced.
- Shut down of older Kiln 1 technology being replaced by new Kiln 3 line.
- Ramp-up in production of new lower carbon intensity CEM II limestone cements.

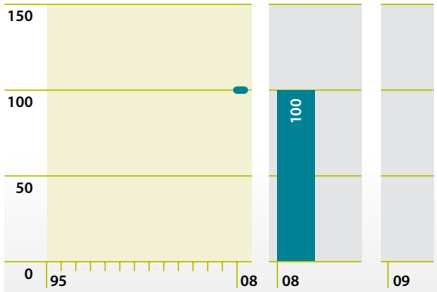
Factors influencing 2009 target

- Commissioning and optimisation of new Kiln 3 cement production line.
- Optimisation of new Vertical Roller mill technology for cement milling.
- Commencement of process to achieve certification to new EN16001 standard (when launched).

RESULT 100 TARGET NOT SPECIFIED

Actual EPI | Period of missing data | Actual EPI | Target EPI

Irish Cement (Platin)



Factors influencing 2008 result

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- Shut down of older Kiln 1 technology being replaced by new Kiln 3 line.
- Ramp-up in production of new lower carbon intensity CEM II limestone cements.

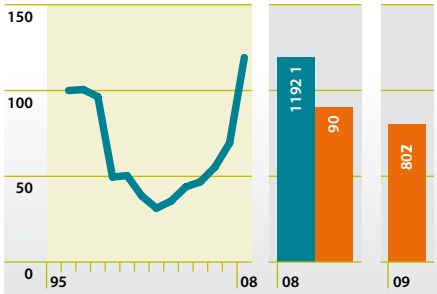
RESULT 100

Factors influencing 2009 target

- Commissioning and optimisation of new Kiln 3 cement production line.
- Optimisation of new Vertical Roller mill technology for cement milling.
- Commencement of process to achieve certification to new EN16001 standard (when launched).

TARGET NOT SPECIFIED

Janssen Pharmaceutical Ltd



Factors influencing 2008 result

- Products manufactured have switched to small batch-size, high-spec materials that require higher grades of classifications.
- Classified areas maintained in operation during process validation (though no material for sales was produced).

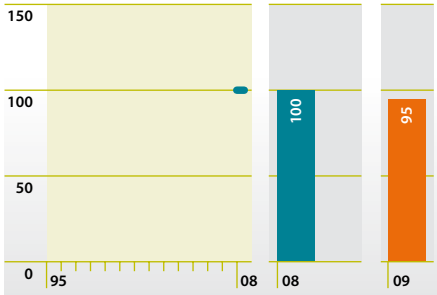
RESULT 119.21

Factors influencing 2009 target

- Expected increase in production tonnage will improve EPI.
- To improve energy efficiency, focus continues to be on operational practices rather than capital investment.

TARGET 80.27

Iarnród Éireann



Factors influencing 2008 result

- 2008 was the base year for Iarnród Éireann.
- Primary use of diesel fuel relates to 60 locomotives and 320 rail-cars.
- Electricity is used primarily in over 400 metered locations plus the DART traction system.
- Most buildings are old / Protected Structure.

RESULT 100

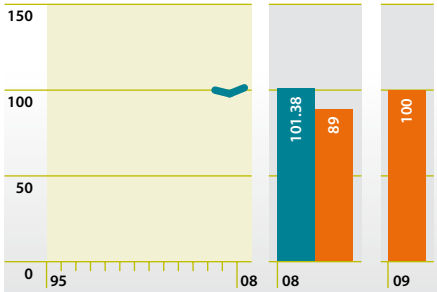
Factors influencing 2009 target

- DART regeneration scheme.
- Automatic shut off on Rail-cars.
- Reduced demand from passengers but same timetable.
- Surveys of major buildings leading to proposals for reduction.

TARGET 95

Actual EPI | Period of missing data | Actual EPI | Target EPI

Kerry Foods Ltd (Shillelagh)



Factors influencing 2008 result

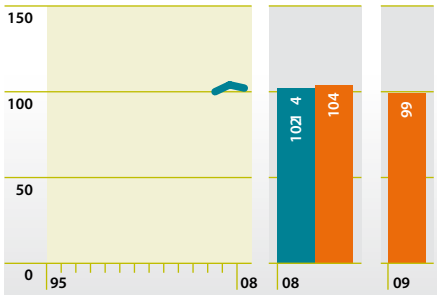
- Carbon champion manager nominated.
- 2007 9% saving sustained into 2008.
- Research and feasibility studies ongoing throughout 2008 on main energy drivers.

Factors influencing 2009 target

- Energy and carbon champion nominated.
- In-house energy audits identifying waste energy.

RESULT 101.38 TARGET 100

Kerry Ingredients, Charleville



Factors influencing 2008 result

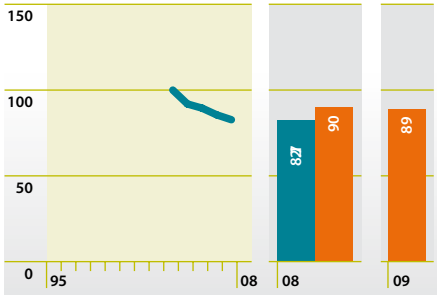
- Challenging manufacturing conditions for process.
- Varying production levels affected utilities energy usage.

Factors influencing 2009 target

- Predicted EPI based on increased energy awareness on site.
- Investment in new plant and technologies.

RESULT 102.14 TARGET 99

Kerry Ingredients, Listowel



Factors influencing 2008 result

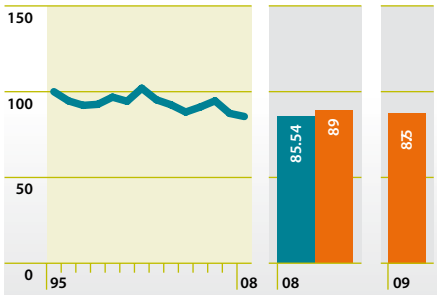
- Air-compression upgrade project delivered 18% saving.
- Structured approach adopted to energy management.

Factors influencing 2009 target

- Product mix variation.
- Superheat recovery.
- Targeting EN 16001 accreditation.

RESULT 82.71 TARGET 89

Lakeland Dairies (Bailieboro)



Factors influencing 2008 result

- In 2008, site had opportunity to optimise production plan, adapting to new product ranges and additional processing steps introduced in preceding years.

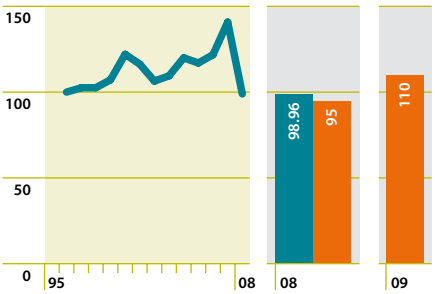
Factors influencing 2009 target

- Processing capacity and product range on site is being expanded with construction of new milk dryer and associated systems. This will initially adversely affect EPI because of interruptions in production in 2009.
- Proposed new CHP plant using 5MWe gas turbine and waste-heat boiler is being installed in 2009, while electrical distribution is being restructured.

RESULT 85.54 TARGET 87.5

Actual EPI | Period of missing data | Actual EPI | Target EPI

LEO Pharma



Factors influencing 2008 result

- Ageing HVAC chiller replaced with 'best available technology', highly efficient chiller.
- Mechanical modifications made to process chiller, resulting in two-fold increase in COP.
- Timer/transformer combinations added to warehouse lighting circuits, reducing voltage by 12% once fluorescents warm up.
- Inverters installed on large AHU enabling ramp down during unoccupied periods and air change rates cut back to bring them closer to minimum requirements.
- After 25 years, plug pulled on penicillin plant in 2008. This brought EPI back in line as plant was consuming full energy yet producing less and less in recent years.

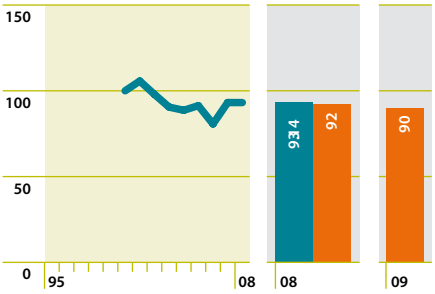
RESULT 98.96

Factors influencing 2009 target

- Compressed-air system will be completely replaced in 2009, with new compressors, dryers, filters and heat recovery.
- HEPA filters in grade D areas will be changed from H14 to H13. The new filters will have a lower pressure (slightly lower grade and newer/cleaner) and hence require less fan power to deliver required air flow.
- New approach to HVAC qualification. Air-change rates were set to deliver required level of cleanliness and thus reduced by more than 30, resulting in reduction of more than 50% in power usage.
- Depending on business case approval, significant investment may take place in CHP and hot and chilled water upgrades/replacements.

TARGET 110

Lisheen Mine



Factors influencing 2008 result

- Water volumes in new ore-body have stabilised over past two years, but additional ventilation required in new area for rest of mine's life.
- Due to mining in new ore body, additional ventilation requirements arise for remainder of life of mine. Fuel usage has also increased due to greater haul distance associated with new ore body, resulting in minor rise in total energy requirement.
- Energy initiatives of previous years remain in place. Additional opportunities are implemented as they are identified. A new, reinvigorated energy-management team has been set up to address areas of large energy usage. Improvements will require capital expenditure and substantial infrastructural changes but we expect to see the benefits over the coming years.

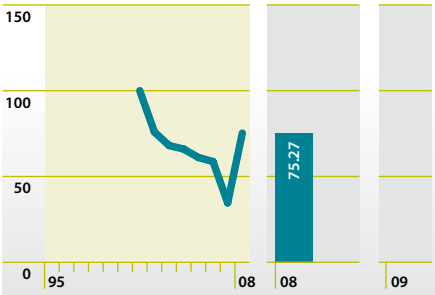
RESULT 93.14

Factors influencing 2009 target

- Review of compressed-air hardware, now that outload has finally been established. We want to marry compressor hardware to air requirement, with expected saving of around €60,000 p/a.
- Huge number of auxiliary submersible pumps are used U/G. We want to resize them to their required load and also build proper sumps to enable pump on/off controls.
- Ventilation engineer now on board. Plans to optimise U/G vent system and controls.

TARGET 90

Masonite Ireland



Factors influencing 2008 result

No influencing factors provided.

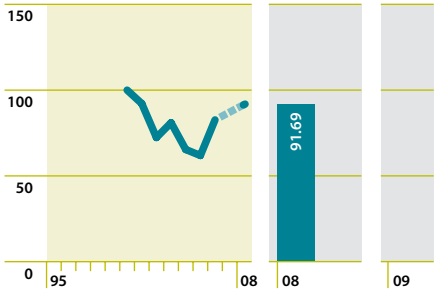
RESULT 75.27

Factors influencing 2009 target

No influencing factors or target provided.

TARGET NOT SPECIFIED

Merck Sharp & Dohme (Ireland)



Factors influencing 2008 result

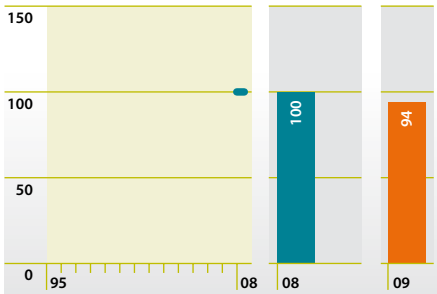
- Lean Six Sigma (LSS) approach has streamlined execution of energy-reduction opportunities (both previously known and generated during Kaizen).
- LSS approach has identified areas to focus on, based on energy usage and usage profiles for the site.
- 2008 energy-reduction achievements realised without capital funding.
- Commissioning of new plant onsite providing a negative to EPI calculation in 2008 and 2009.

Factors influencing 2009 target

- Capital projects identified through 2008 Kaizens now being executed.
- Standardised monitoring and daily checks completed by energy-management team (eg, making HVAC control adjustments based on daily ambient temperature).
- Standardised visual tools provided to major energy users to enable monitoring of equipment owned by production areas to be monitored/reviewed on daily basis.
- Systems to ensure energy tracking and monitoring is sustained are developed and provided to major energy users.
- Further use of LSS resources to identify further areas for energy reduction and to execute energy-reduction opportunities in these areas.

RESULT 91.69 **TARGET 0**

Microsoft



Factors influencing 2008 result

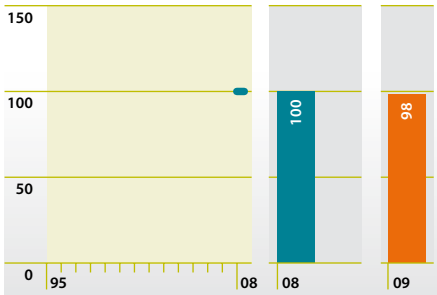
- Implemented energy-management programme that reduced overall electrical usage.
- Microsoft virtualisation has assisted with decommissioning many desktop PCs.

Factors influencing 2009 target

- Projects planned for 2009 to reduce gas usage by fitting control systems to boilers.
- Number of T8 light fittings and switch-start ballast are being reduced, through replacing these with new T5 fittings.

RESULT 100 **TARGET 94**

Molex Ireland



Factors influencing 2008 result

- Energy awareness campaign.
- Change in business levels.
- Energy team established.

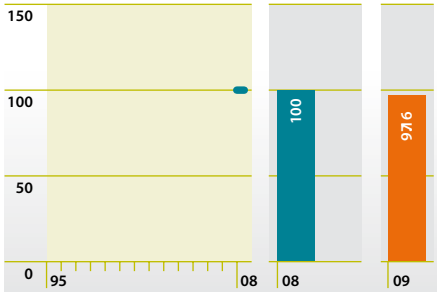
Factors influencing 2009 target

- New product families.
- Change in product mix and hence energy priorities.
- Local energy-monitoring meters and improvement activities based on these.
- Implementation of EMS EN 1600.

RESULT 100 **TARGET 98**

Actual EPI
Period of missing data
Actual EPI
Target EPI

Monaghan Mushrooms



Factors influencing 2008 result

- First Year in LIEN.

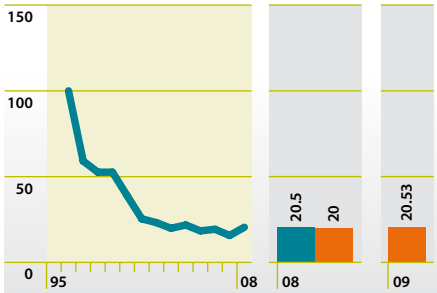
Factors influencing 2009 target

- The further completion of work to move compost operations indoors will increase overall energy consumption. A proportion of this will be offset by an increase in production.
- Work is ongoing on farms to increase insulation levels which should enhance thermal savings.

RESULT 100

TARGET 97.16

Novartis Ringaskiddy Ltd



Factors influencing 2008 result

- Total plant output increased from 327 to 364 tonnes.
- Improved compressed air leak management.
- Optimisation of HVAC in Offices and Laboratories.

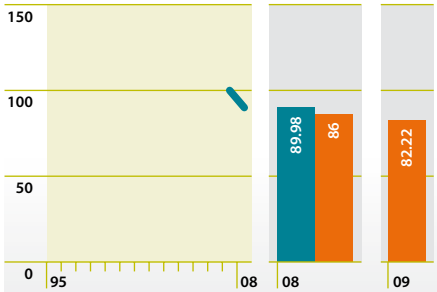
Factors influencing 2009 target

- Improved site compressed air management.
- Optimisation of HVAC in non-continuous use buildings.

RESULT 20.5

TARGET 20.53

Organic Lens Manufacturing



Factors influencing 2008 result

- Use of BMS to shut off AHUs when not required resulted in both electrical and gas savings. Circulation pumps automated to switch off when heat not called for.
- Increased out-flow temp on two of chillers, to reduce chilling load.
- Energy monitoring software now shows daily energy use by department which can be acted on to reduce energy use.
- Changes in manufacturing process enabled reduction in amount of equipment needed.

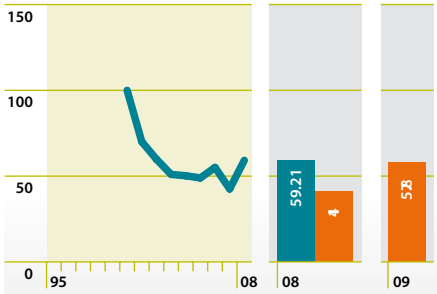
Factors influencing 2009 target

- Reduce use of gas heating in stores area.
- Implement heat recovery in manufacturing process.
- Implement changes in manufacturing process to reduce amount of equipment necessary to produce good product. Improve efficiency of existing equipment.
- Continue using energy-monitoring software to implement further improvements throughout plant.

RESULT 89.98

TARGET 82.22

Pfizer Ireland Pharmaceuticals (Little Island)



Factors influencing 2008 result

- Project implemented to increase temperature setpoint for ammonia chillers resulted in significant electricity saving.
- Nitrogen generation plant installation implemented successfully in line with 2008 energy-management programme.
- Change in boiler running sequence resulted in reduced gas usage.
- IS 393 recertification achieved.

Factors influencing 2009 target

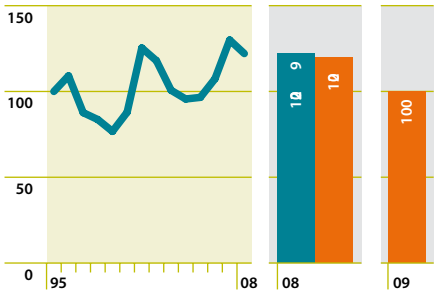
- Implementation of project to reduce usage of mains water.
- Investigate electrical usage of WWTP and implement energy-saving measures identified.
- Further adjustment to boiler and chiller controls to be investigated and implemented where feasible.
- Continued corporate energy-reduction policy.
- Further implementation of changes to reduce energy usage in compressed-air generation.

RESULT 59.21

TARGET 57.8

Actual EPI | Period of missing data | Actual EPI | Target EPI

Pfizer Ireland Pharmaceuticals (Ringaskiddy)



Factors influencing 2008 result

- During 2008, slight increase in production activity combined with aggressive energy-management programme improved site EPI. Focus areas for energy conservation in 2008 were:
  - Increased ownership and awareness, through expanding energy-management system
  - Continuously challenging the way key utility equipment is operated, to ensure it operates at optimum efficiency
  - Number of projects requiring capital implemented in 2008. Focus areas were boiler combustion control optimisation, compressed-air and nitrogen generation.
- Much time and effort was put into HVAC optimisation in 2008. The benefits will arise in 2009.

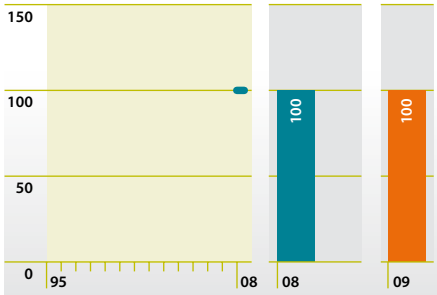
RESULT 122.09

Factors influencing 2009 target

- During 2009, our EPI will improve significantly, driven by increase in site activity combined with aggressive energy-management programme. The energy-management effort is driven by the newly developed energy master plan. The key elements for 2009 are:
  - HVAC optimisation, encompassing room air-change reduction on one of buildings
  - M&T will be expanded further to incorporate CUSUM, which will enable more efficient operation
  - Energy Kaizen will be used to increase energy awareness and savings
  - Energy sub-teams are operating in each area of site.

TARGET 100

Quinn Cement



Factors influencing 2008 result

- 2008 is base year for EPI.

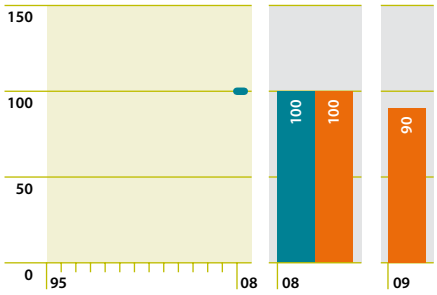
RESULT 100

Factors influencing 2009 target

- Project to substitute fossil-fuel use with alternative fuels will reduce CO_2 emissions, energy use and costs.
- Project to increase electrical metering on site will raise awareness of energy use and identify further areas for saving.
- Benefits expected to be reflected in subsequent years' EPIs.

TARGET 100

Roadstone Wood Group



Factors influencing 2008 result

- Amalgamation of multiple sites into one reporting entity.
- EPI reset due to company restructure, however sites achieved savings of 10%.
- A reduction in production volumes increased the kWh/ton indicator, however IS 393 implementation resulted in a reduction in energy inputs required.
- Full analysis of each site's lighting and heating requirements led to a reduction in baseline energy requirements.
- Reduction of fuel usage due to introduction of KPI "Number of litres used per tonne of blacktop produced".
- Review of Compressors resulted in preventative maintenance programs that increased efficiency in the use of compressed air.

RESULT 100

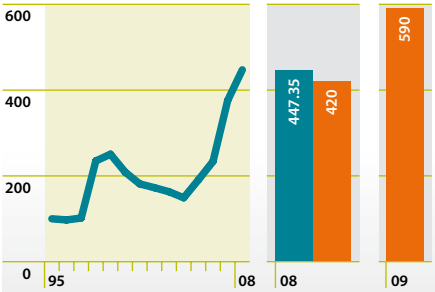
Factors influencing 2009 target

- Plans in place to install the IS 393 standard across eight additional quarry locations in Ireland.
- Involvement, education and training of the workforce will remain a core part of the implementation strategy.
- Investigate baseline data and implement changes to reduce unit costs.

TARGET 90

Actual EPI | Period of missing data | Actual EPI | Target EPI

Roche Ireland Ltd



Factors influencing 2008 result

- Falling demand for API continued throughout 2008, mainly due to patent loss and tighter corporate inventory management. EPI thus disimproved. Base load not directly linked to manufacturing accounts for significant part of annual energy usage.
- Successful implementation of IS 393 standard for energy management has enabled focused, consistent approach to ensure that opportunities to reduce energy usage are capitalised on

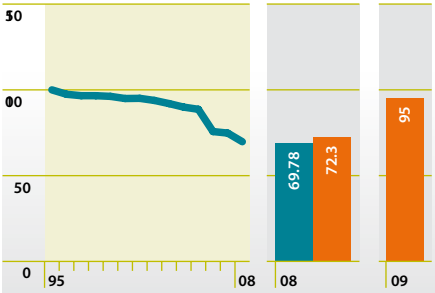
RESULT 447.35

Factors influencing 2009 target

- The trend of falling demand for API will continue throughout 2009 and 2010, mainly influenced by patent loss and tighter corporate inventory management, which adversely affects EPI. Baseload not directly linked to manufacturing accounts for significant part of annual energy usage.
- Adoption of IS 393 will provide framework essential to ensure that energy-reduction opportunities are capitalised on.

TARGET 590

Rusal Aughinish



Factors influencing 2008 result

- Boiler upgrade improved efficiency and reduced emissions.
- Anti-scaling additive improved heat recovery.
- Reduced scaling in cooling towers improved productivity.
- Cumulative impact of heat recovery projects resulted in best ever energy efficiency.

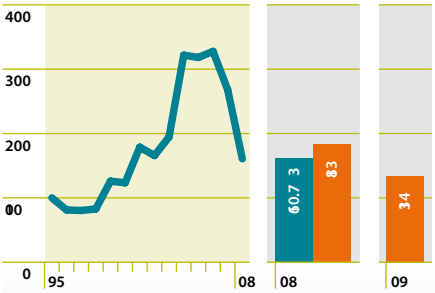
RESULT 69.78

Factors influencing 2009 target

- Economic conditions will lead to lower production and poorer efficiencies in 2009.
- It is not possible to specify exact targets.

TARGET 95

Schering Plough (Avondale) Co.



Factors influencing 2008 result

- Significant improvement in 2008 EPI achieved due to increase in production volumes (28%) coupled with reduction of electricity (4%) and natural gas (34%) usage on previous year.
- Natural gas reduction achieved through implementing solvent-burning project in April 2008. Full-year savings achieved from HVAC optimisation project (air-change reduction) completed in Dec 2007.
- In July 2008, site achieved IS 393 accreditation. This introduced formalised energy-management programme which will drive energy-reduction projects and increase energy awareness.

RESULT 160.73

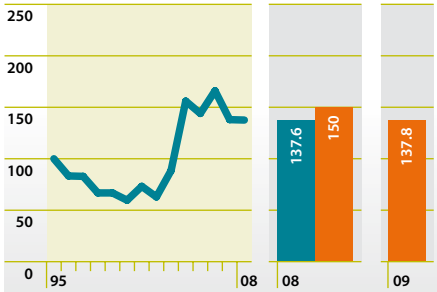
Factors influencing 2009 target

- Increased production volumes in 2009 will benefit EPI, as large portion of energy usage is baseload. Additional manufacturing can be carried out with minimal additional energy usage.
- Following completion of electricity submetering project in 2008, monitoring and targeting programme will be rolled out to all areas on site. This will reveal electricity usage for area owners and help identify energy-reduction opportunities.
- As part of IS 393, 2009 Energy Plan was agreed. It includes technical measures, special investigations and awareness/training objectives which will drive reductions in energy usage.

TARGET 134

Actual EPI | Period of missing data | Actual EPI | Target EPI

Schering Plough (Brinny) Co.



Factors influencing 2008 result

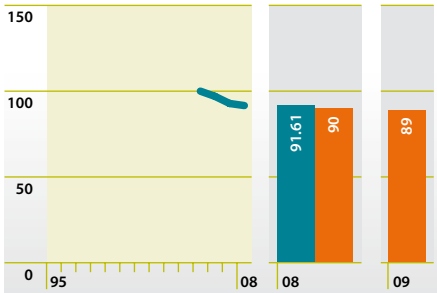
- Better appreciation of value by decommissioning areas/equipment when not needed.
- Internal/external energy audits prompting action.

Factors influencing 2009 target

- Ongoing efforts to get Quality and validation personnel to buy into supporting energy reduction projects.
- We have learned lessons from legacy installations by ensuring that energy efficiency is given due consideration for all future projects.
- Impressed by emerging EED philosophy and hope to embrace as part of our culture.

RESULT 137.6 **TARGET 137.8**

Schering Plough (Swords) Co. (formally Organon Ireland)



Factors influencing 2008 result

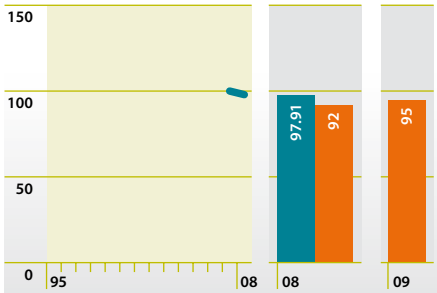
- Implementration of corporate standards. Benchmarking & Best practices.

Factors influencing 2009 target

- Implementation of corporate best practice programmes should lead to further energy savings.
- Introduced Services Request System. Utilities are switched off or reduced by default outside normal working hours. Operations need to request services when required for extra shifts, overtime, etc.
- Energy awareness strategy.

RESULT 91.61 **TARGET 89**

Silver Hill Foods



Factors influencing 2008 result

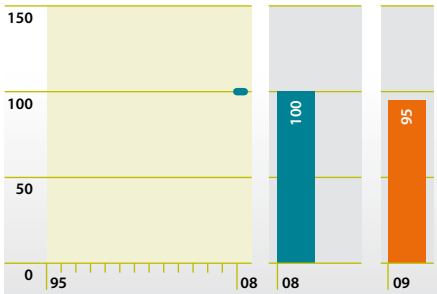
- Refrigeration system optimised through Kaizen study that identified areas that could be improved.
- Establishing IS 393 (aspects register) helped identify most important energy projects to focus on.
- Focus on energy usage in farm houses.

Factors influencing 2009 target

- Targets set for all energy usage.
- Increased focus on energy through implementing IS 393. Energy training has been carried out and energy awareness posters are put in place and updated regularly.

RESULT 97.91 **TARGET 95**

Takeda Ireland Ltd (Grange Castle)



Factors influencing 2008 result

- Site was not in LIEN in 2008, no data completed.
- Site MIC reduced from 4300KVA to 2200KVA.

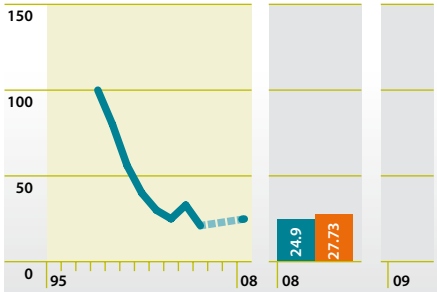
Factors influencing 2009 target

- Energy GAP analysis audit carried out in 2009 as part of first steps in implementing EMS.
- Energy Aspects Review currently being carried out on site.

RESULT 100 **TARGET 95**

Actual EPI | Period of missing data | Actual EPI | Target EPI

Takeda Ireland Ltd (Bray)



Factors influencing 2008 result

- Chillers.
- Boilers.
- Air Handling Units.
- Process equipment.
- Lighting.

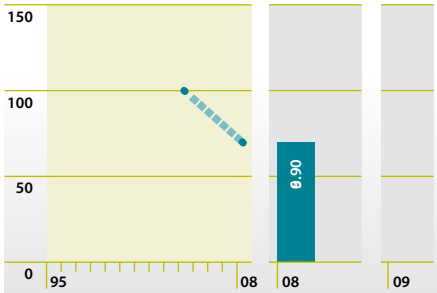
Factors influencing 2009 target

- Chillers.
- Boilers.
- Air Handling Units.
- Process equipment.

RESULT 24.9

TARGET NOT SPECIFIED

Tech Group Europe Ltd (Dublin)



Factors influencing 2008 result

- SEI training through Energy Map has given good grounding for continuous improvement.
- Rising energy costs meant renewed determination to save energy was needed.
- No target provided for 08.

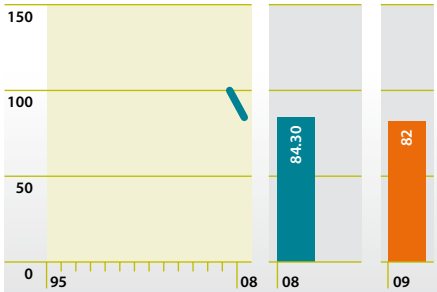
Factors influencing 2009 target

- Air Humidity control savings.
- Compressed air heat recovery and reuse to substitute for boiler load.
- No target provided for 09.

RESULT 69.90

TARGET NOT SPECIFIED

Tesco Ireland Ltd



Factors influencing 2008 result

- Focus on lighting established further possible reductions.
- Focus on refrigeration control systems established that further reductions were possible.

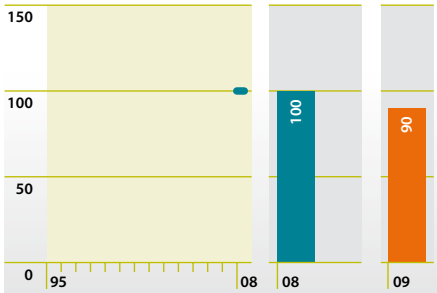
Factors influencing 2009 target

- Further opportunities in lighting due to new technology.
- Further opportunities in refrigeration due to new technology.

RESULT 84.30

TARGET 82

Teva Pharmaceuticals Ireland



Factors influencing 2008 result

- Teva was not part of LIEN group in 2008 but looks forward to participating in 2009 and beyond.

Factors influencing 2009 target

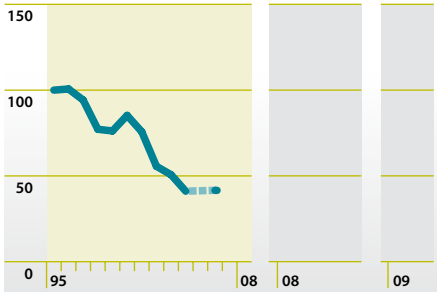
- Implementation of IS 393 at three premises in Waterford has begun.
- Energy efficiency campaign begun, to reduce energy usage at the three plants.
- Teva is delighted to be part of SEI LIEN and looks forward to participating and improving energy efficiency.

RESULT 100

TARGET 90

Actual EPI | Period of missing data | Actual EPI | Target EPI

Thermo King Europe



Factors influencing 2008 result

Incomplete data provided.

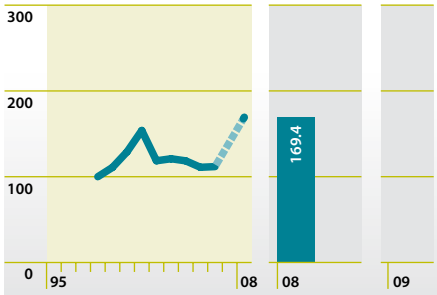
Factors influencing 2009 target

No influencing factors or target provided.

RESULT NOT SPECIFIED

TARGET NOT SPECIFIED

Transitions Optical Ltd



Factors influencing 2008 result

No influencing factors provided.

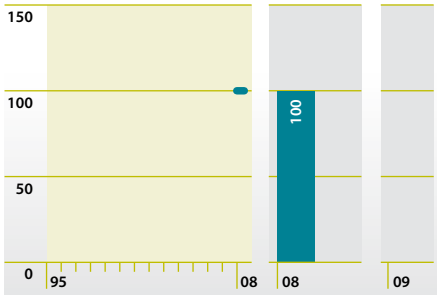
Factors influencing 2009 target

No influencing factors or target provided.

RESULT 169.4

TARGET NOT SPECIFIED

United Fish Industries Ltd



Factors influencing 2008 result

- First year in LIEN.

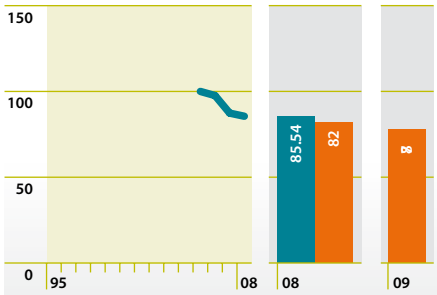
Factors influencing 2009 target

No influencing factors or target provided.

RESULT 100

TARGET NOT SPECIFIED

Vistakon Ireland



Factors influencing 2008 result

- Installation of three new production lines led to increase in electrical usage.
- New fresh-air intake (free cooling) AHU installed which reduced chilled-water load on AHU load.
- New compressed-air filter system allows generation pressure to be reduced.
- New chiller system for moulding machines, using process chilled-water loop. New chiller replaced air-cooled machine which was huge heat source for production area.

Factors influencing 2009 target

- Borewell project to use ground water, direct from two onsite wells, to chill process cooling water loop.
- VSD replacing soft-start panel for inhouse vacuum system.
- On-line condition monitoring of chillers. Device monitors COP of chiller.
- Central vacuum system for production lines.
- Project to reduce operating pressure of compressed air that drives production lines.

RESULT 85.54

TARGET 78

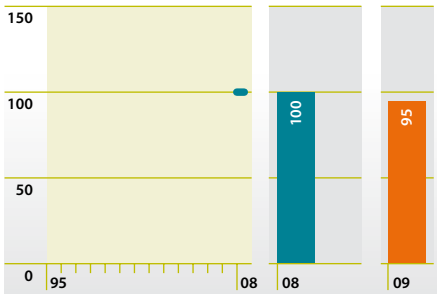
Actual EPI

Period of missing data

Actual EPI

Target EPI

Vodafone



Factors influencing 2008 result

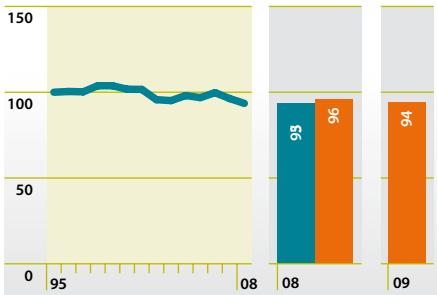
- Better education of store staff on shutting-down procedures and energy saving.
- Results of energy audits communicated and recommendations implemented.

Factors influencing 2009 target

- Continuation of staff education plus remote controls.
- Implementation of engineering recommendations.

RESULT 100 **TARGET 95**

Wellman International Ltd



Factors influencing 2008 result

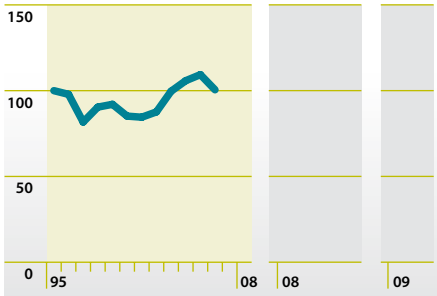
- Installation of controls to Flat Bed Dryer to stop fans when dryers not in use.
- Installation of VSD on Column Dryer to reduce speed on Recycle Fan.
- Customisation of controls on Column Dryer to reduce speed on Recycle Fan.

Factors influencing 2009 target

- Installation of VSD on Column Dryers to reduce speed on Recycle Fans.
- Installation of controls on warehouse lighting to switch off lights when warehouses are not occupied.
- Replacement of Process Air Fans with Blowers that reduce load by 3kWh per unit.

RESULT 93.5 **TARGET 94**

Wyeth Medica Ireland Ltd



Factors influencing 2008 result

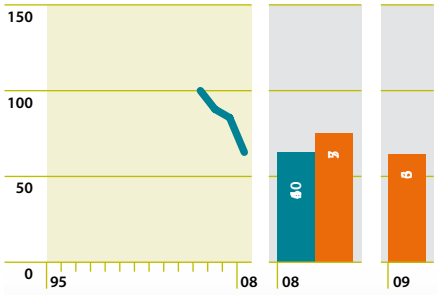
Incomplete data provided.

Factors influencing 2009 target

No influencing factors or target provided.

RESULT NOT SPECIFIED **TARGET NOT SPECIFIED**

Xerox (Europe) Ltd



Factors influencing 2008 result

- Maintained focus on statistical process control to assist deliver process yield improvement.
- Further focus on reducing compressed-air demand reduction, leak detection, monitoring & repair.
- Close control of building management system calendars in line with shifting production requirement, complete with degree-day monitoring.
- Flow analysis, leak repair and monitoring on vacuum convey systems and dust collectors.
- Equipment upgrades giving higher throughput without significant increase in energy demand.

Factors influencing 2009 target

- Focus on demand reduction on large motors through duty and runtime reduction, focusing on reducing process cycle time, efficient turndown of motors and reduction of idle running.
- Focus on grind efficiency through development of new design energy-efficient tooling.
- Load-shifting intensive compressed-air operations to night-time to avail of cooler incoming air.
- Upgrade of compressed-air dryer controls to reduce blowdown requirements.
- Continued focus on eliminating and reducing compressed-air demand.

RESULT 64.10 **TARGET 63**

Actual EPI | Period of missing data | Actual EPI | Target EPI

Non Responding Membership 2008

Analog Devices BV

Braun Oral-B Ireland Ltd

Cantrell & Cochrane Ltd (Dublin)

Cara Partners

Carbery Milk Products Ltd

Cuisine de France Ltd

Dairygold Co-op Society

Diageo Ireland (Dundalk)

Diageo Ireland (Kilkenny)

Diageo Ireland (Waterford)

GlaxoSmithKline Ltd (Cork)

Hewlett-Packard (Manufacturing) Ltd

Honeywell Turbo Technologies

Kostal Ireland Gmbh

Lagan Cement Ltd

Micro-Bio Ireland Ltd

Premier Periclase Ltd

Rosderra Irish Meats Group Ltd

Tegral Building Products

Temmler Ireland Ltd

Vitra Ireland Ltd

Western Proteins

Wyeth Nutritionals Ireland

About Sustainable Energy Ireland

Sustainable Energy Ireland (SEI) formerly the Irish Energy Centre, was set up by the Government in 2002 as Ireland's national energy agency.

Our Mission

To take a central position in facilitating Ireland's transformation to a society based on sustainable energy structures, technologies and practices.

Our Key Strategic Objectives

Energy efficiency first

Implementing intensified energy efficiency actions that radically reduce energy usage.

Low carbon energy sources

Accelerate the development and adoption of technologies to exploit renewable energy sources.

Innovation and integration

Supporting evidence-based responses that engage all actors, supporting innovation and enterprise for our low-carbon future.

Our Roles

- Supporting Government decision-making through advocacy, analysis and evidence
- Providing advice to all users of energy
- Driving the decarbonisation of energy supply
- Raising standards in sustainable energy products and services
- Building markets based on quality, confidence and proven performance
- Fostering innovation and entrepreneurship
- Improving the coherence of Irish energy research and development

SEI Funding

SEI is funded by the National Development Plan 2007-2013; programmes are part-funded by the European Union.

Members List

Abbott Vascular Devices Ireland Ltd
Abbott Ireland Ltd (Cavan)
Abbott Ireland Ltd (Longford)
Abbott Ireland Pharmaceutical Operation
Allergan Pharmaceuticals Ltd
Alza Ireland Ltd
Analog Devices BV
Arkil Ltd
Arvato Digital Services Ireland (formerly Sonopress Ireland Ltd)
Associated Packaging Technologies
Astellas Ireland Co. Ltd (Dublin)
Astellas Ireland Co. Ltd. (Kerry)
Ballina Beverages
Bausch & Lomb Ireland Ltd
Baxter Healthcare SA
Bitech Engineering (Glen Dimplex Group)
Boliden Tara Mines Ltd
Boston Scientific Ireland Ltd (Clonmel)
Boston Scientific Ireland Ltd (Cork)
Boston Scientific Ireland Ltd (Galway)
Braun Oral-B Ireland Ltd
Bristol-Myers Squibb (Cruiserath)
Bristol-Myers Squibb (Swords)
Bulmers Ltd
Cadbury Ireland Ltd (Dublin)
Cadbury Ireland Ltd (Kerry)
Cantrell & Cochrane Ltd (Dublin)
Cara Partners
Carbery Milk Products Ltd
CITADEL100 Datacenters Limited
Citi
Cognis Ireland Ltd
Connacht Gold Ltd (Shannonside)
ConocoPhillips Whitegate Refinery Ltd
Covidien (Athlone)
Covidien (Mulhuddart)
Cuisine de France Ltd
Dairygold Co-op Society
Dawn Meats Ltd (Ballyhaunis)
Depuy (Ireland) Ltd
Diageo Bailey's Global Supply
Diageo Ireland (Dundalk)
Diageo Ireland (Kilkenny)
Diageo Ireland (St James's Gate)
Diageo Ireland (Waterford)
Donegal Meat Processors
Dublin Airport Authority
Edenderry Power Ltd
Eircom
Elan Pharma
Element Six Ltd
Eli Lilly S.A.
EMC Ireland Ltd
Genzyme Ireland Ltd
Glanbia Consumer Foods Ltd (Inch)
Glanbia Ingredients (Ballyragget) Ltd
Glanbia Ingredients (Virginia) Ltd
GlaxoSmithKline Ltd (Cork)
GlaxoSmithKline Ltd (Dungarvan)
Google Ireland
Green Isle Foods (Gurteen)
Green Isle Foods (Longford)
Green Isle Foods (Naas)
Green Isle Foods (Portumna)
Gypsum Industries Ltd
Hewlett-Packard (Manufacturing) Ltd
HJ Heinz Frozen and Chilled Foods Ltd
Honeywell Turbo Technologies
Iarnród Éireann
IBM International Holdings
Intel Ireland Ltd
Interxion Ireland Limited

Irish Cement (Limerick)
Irish Cement (Platin)
Janssen Pharmaceutical Ltd
Kerry Foods Ltd (Shillelagh)
Kerry Ingredients (Listowel)
Kerry Ingredients (Charleville)
Kostal Ireland Gmbh
Lagan Cement Ltd
Lakeland Dairies (Bailieboro)
LEO Pharma
Lisheen Mine
Masonite Ireland
Merck Sharp & Dohme (Ireland)
Micro-Bio Ireland Ltd
Microsoft
Molex Ireland
Monaghan Mushrooms
Novartis Ringaskiddy Ltd
Organic Lens Manufacturing
Pfizer Ireland Pharmaceuticals (Little Island)
Pfizer Ireland Pharmaceuticals (Ringaskiddy)
Premier Periclase Ltd
Procter & Gamble Ireland (Naas)
Quinn Cement Ltd
Roadstone Wood Group
Roche Ireland Ltd
Rosderra Irish Meats Group Ltd
RUSAL Aughinish
Schering Plough (Avondale) Co.
Schering Plough (Brinny) Co.
Schering Plough (Swords) Co. (formally Organon Ireland)
Silver Hill Foods
Takeda Ireland Ltd (Bray)
Takeda Ireland Ltd (Grange Castle)
Tech Group Europe Ltd (Dublin)
Tegral Building Products
Temmler Ireland Ltd
Tesco Ireland Ltd
Teva Pharmaceuticals Ireland
Thermo King Europe
Transitions Optical Ltd
United Fish Industries Ltd
Vistakon Ireland
Vitra Ireland Ltd
Vodafone
Wellman International Ltd
Western Proteins
Wyeth Medica Ireland Ltd
Wyeth Nutritionals Ireland
Xerox (Europe) Ltd

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Sustainable Energy Ireland is funded by the Irish Government under the National Development Plan 2007-2013 with programmes part financed by the European Union