UNIDO-UNECE International Workshop on Industrial EE, Kiev, 27-28 May 2019

“Promoting Industrial Energy Efficiency in Ukraine and Neighbouring Countries” including “Policy/Industry! High level Dialogue

Ivan Sproule, Large Business Programme Manager, SEAI
Sustainable Energy Authority of Ireland

Government Agency...

...120 staff, annual budget of approx. €120 million, policy advisors, developers and implementors....

Mission...

...To play a leading role in transforming Ireland to a society based on sustainable energy structures, technologies and practices

Key objectives

- Energy efficiency first
- Low carbon energy resources
- Innovation and Integration
Ireland’s 2020 Targets

**Renewable energy**
- 16% of total energy by 2020
- 40% electricity by 2020
- 12% heat by 2020
- 10% transport electrified by 2020

**GHG Reduction**
- 20% greenhouse gas reduction in the non-EU ETS sectors

**Energy efficiency**
- 20% energy savings across all sectors by 2020
  - **National Energy Efficiency Action Plan - EU 20/20/20 strategy**

**Electric vehicles**
- 10% of all vehicles to be electric by 2020 (target)
- ~230,000 electric vehicles

**EU 20/20/20 Strategy**
- 20% energy savings across all sectors by 2020

**Energy White Paper 2007**
Ireland

Belfast

Tramore
Who can join LIEN?

• Companies with

Min. €1 million energy spend p.a.

AND/OR

Certified / Pursuing ISO 50001

• Commitments to be fulfilled by LIEN members:
  – Develop an energy management programme and action plan
  – Set and review energy targets
  – Report annually on energy performance
  – Willing to collaborate and network

www.seai.ie
Large Industry Energy Network (LIEN) Results

- 200
  Irelands’ largest energy users

- €1.3bn
  Energy spend

- 21%
  Ireland’s TPER

- 63%
  Industrial energy consumption

- 5.7%
  Energy performance improvement (2017)

- 38%
  Energy performance improvement by original members

- €50m avoided
  €14m Project Savings in 2017

- 300,000
  Tonnes CO₂ avoided in 2017
Sectoral Performance of LIEN Members

**Percentage Change in TPER**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>PharmaChem</td>
<td>0.8%</td>
</tr>
<tr>
<td>Food/Drink</td>
<td>2.0%</td>
</tr>
<tr>
<td>Healthcare</td>
<td>3.4%</td>
</tr>
<tr>
<td>Other</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

**Percentage Change in Output**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>PharmaChem</td>
<td>-6.1%</td>
</tr>
<tr>
<td>Food/Drink</td>
<td>2.4%</td>
</tr>
<tr>
<td>Healthcare</td>
<td>5.7%</td>
</tr>
<tr>
<td>Other</td>
<td>34.3%</td>
</tr>
</tbody>
</table>

**Percentage Change in Efficiency**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>PharmaChem</td>
<td>-0.9%</td>
</tr>
<tr>
<td>Food/Drink</td>
<td>2.4%</td>
</tr>
<tr>
<td>Healthcare</td>
<td>5.1%</td>
</tr>
<tr>
<td>Other</td>
<td>1.1%</td>
</tr>
</tbody>
</table>
Energy Agreements Programme

- Voluntary Energy Agreement
  - Financial support for starting special investigations
  - 10 days Relationship Manager support
  - Special Working Group Concept evolved
- Delivered large savings for first movers
- Development of IS 393 Energy Management standard
- EN16001 > ISO 50001
SEAI Supports

- Financial Assistance
- Relationship Manager - Ongoing mentoring support
- Special Working Groups – co-create solutions
  - Successful outcomes are standardised and circulated to the wider business community to achieve replication
- ISO 50001 Gap Analysis
- Alternative methodology integration
  - Lean, Six-Sigma, Kaizen, TQM, Treasure hunt
- Study tours, workshops, training and networking
- Sectoral approaches
  - Food and Dairy, Data Centre, Commercial buildings
  - Sector cluster energy networks
- Publicity and PR
- Annual Sustainable Energy Awards
Financial Assistance

• Special Investigations
  • Detailed evaluation going beyond routine energy audit
  • Deep-dive in SEUs
  • Process or technology studies retrofits or new plant
  • Up to a maximum of €7,000 support or 50% of eligible costs

• Project Development Assistance
  • EPC Route
  • Process or technology studies retrofits or new plant
  • Up to a maximum of €7,500 support or 50% of expenditure incurred in completing the investigation
  • Further €37,500 towards implementation – legal, technical and metering

• Excellence in Energy Efficient Design (EXEED)
  • Initial detailed design concept €20,000 max
  • Capital investment €500,000 for expenditure above counterfactual
Special Working Groups

- Members share experiences on specific themes - energy efficient design, technologies, process improvements, utilities etc.
- Develop best practice guidance - replicate and standardise the solution
- Outputs may be new tools/methodologies, operational control strategies, EnMS resources, project demonstrations etc.
- Facilitated by SEAI industry experts.
- Clean rooms, HVAC, Steam, Compressed air, Refrigeration
- Helping large business innovate

PROCESS

Challenge Concept | Investigate | Test | Apply & Replicate
Energy Management Standards Development

- LIEN Established 1995
- IS393 Irish EnMS & Energy Agreements Programme 2005
- EN16001 European EnMS 2009
- ISO50001 Intl. EnMS Energy Agreements 2011
- IS399 Irish Energy Efficient Design Management Standard 2014
- EXEED Certified Energy Efficient Design 2015
IS 393 Get organised

Baseline

Ad hoc approach - limited success

With a structured programme

20-50% savings
IS 393 Irish Energy Management Standard
EXEED (Excellence in Energy Efficient Design) Process – IS 399

Certifies the asset as designed, constructed, commissioned & operational for hand-over to owner/operator.

Based primarily on Irish Standard IS 399.

Certifies the asset against measured & verified energy performance with quantified avoided energy consumption substantiated.

Based on ISO 50001.

Certifies the asset at full operational conditions. Incorporates requirements of energy management & continual improvement of energy performance.

Based on ISO 50001.
The Case for early design

Impact of project lifecycle on energy saving potential and investment cost

![Impact of project lifecycle on energy saving potential and investment cost](image-url)
IS 399 Irish Energy Efficient Design Management Standard

Why we developed a new standard

<table>
<thead>
<tr>
<th>Company</th>
<th>Project</th>
<th>Annual Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eli Lilly</td>
<td>New Biotech facility</td>
<td>30% energy savings</td>
</tr>
<tr>
<td>Nypro</td>
<td>New Cleanroom upgrade project</td>
<td>23% energy savings</td>
</tr>
<tr>
<td>Diageo</td>
<td>New Brewery</td>
<td>€2.5M savings</td>
</tr>
</tbody>
</table>
Key focus points

- **Key success factors**
  - SEAI an independent government agency and working with Irish government
  - Collaboration through the SWGs, challenge and analyse - EXEED
    - Clean rooms, challenged FDA regulations and won
    - Dairy and meat plants on utilising HTHW in place of steam
    - Dairy and meat plants on heat recovery from refrigeration plant (and Pharma sector)
    - Large scale wind in Cork lower harbour area, Janssen, GSK and
    - HVAC Working Group
  - ISO 50001 structured approach – 14% savings delivered against 3%
  - Global Energy Leads – Reputation of Irish subsidiary enhanced, job retention
- **Lessons learned**
  - Importance of Training – Energy Management Action Plan (EMAP)/ISO 50001
  - Desire to jointly identify solutions to common problems
  - CSR is as important if not more so than energy savings for some multi nationals
- **Surprise factors**
  - 15 companies in Ireland account for €750 million in energy use – 10% of TPER!
  - Some large multi nationals want a slice of the cake but give nothing in return!
  - Reward and recognition
Summary – LIEN Spill-over

• Development of standards
  – IS 393, IS 399 developed
• Tools and resources developed
  – Compressed air, refrigeration, HVAC
• Knowledge Transfer Networks (Special Working Groups)
  – Willingness to discuss and seek answers to common problems within sectors
• Demonstration sites established
  – Key technologies installed and operational
  – VSD, Water heating, heat recovery, lighting, PV
• Driving innovation
  – New innovative ways of tackling problems
• Maturity Model concept developed
  – After ISO 50001
• Behavioural change
  – Solving the people problem
Our development approach

2016
Prototype Process

STEP 1
Prototype 2 day deep dive in company

STEP 2
Evaluate company feedback

STEP 3
Share and Shape Design workshop to shape programme of supports

New Opportunities Tailored Action Plan

2017+
Enabling Innovation & Competitiveness

Roll-out of proven model and a programme of supports for integrating energy into core business strategy and enabling performance

Ireland leading in energy excellence

Up to 2015
R&D

SEAI developed diagnostic tool to integrate energy management in business strategy

10 Companies selected to participate in prototyping the deep dive diagnosis and action planning process
Large Industry Network
Thank You

Questions?
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