

# Energy Efficient Design

## Services Perspective

**Prepared for:** Launch of I.S.399:2014

**Presented By:** Richard Morrison

**Contact:** [richard.morrison@optien.ie](mailto:richard.morrison@optien.ie)

**Date:** 03<sup>rd</sup> of December 2014

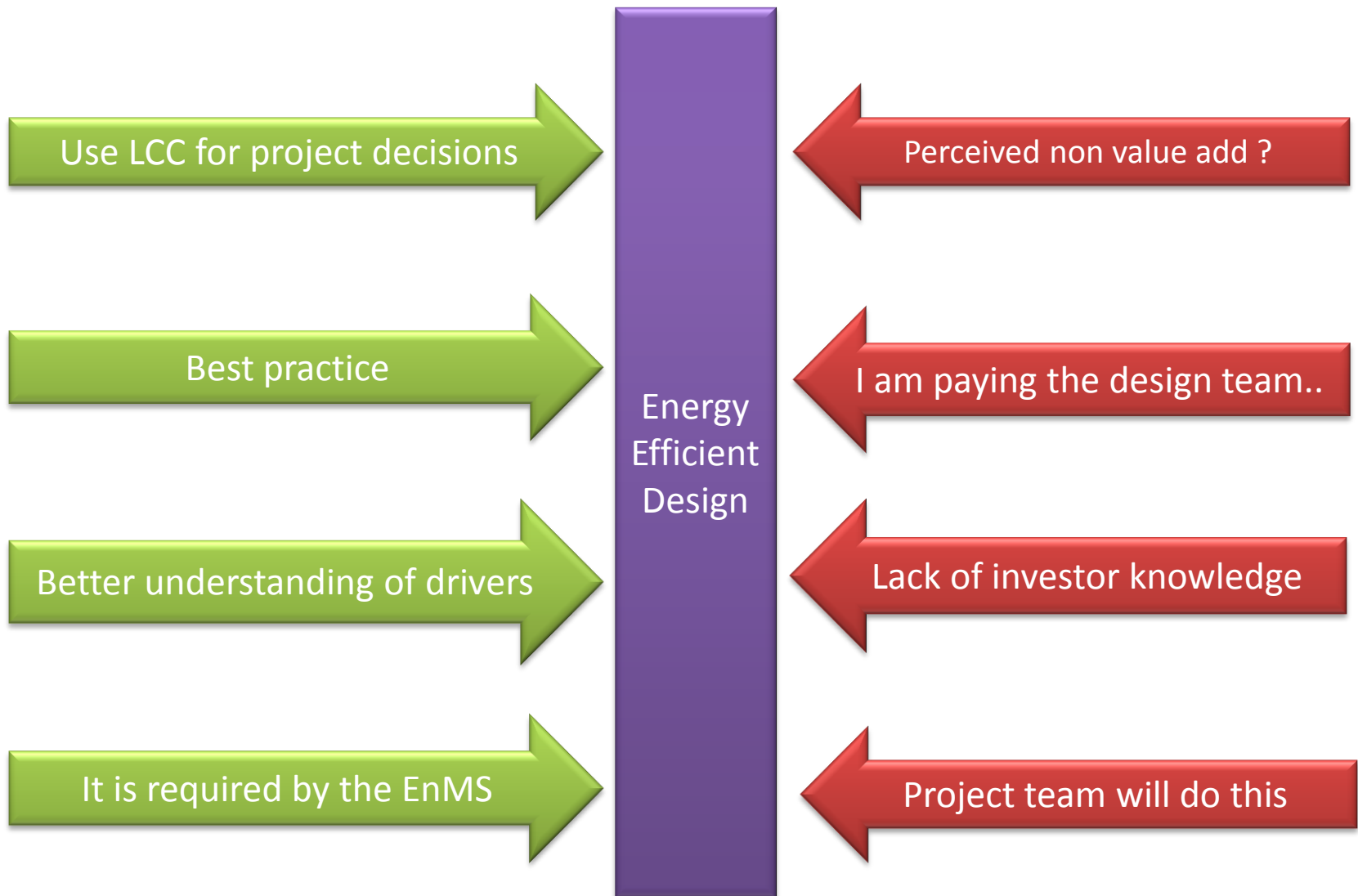
# Agenda

- Background
- Business case difficulties
- ISO 50001 Drivers
- Case Studies
- Key takeaway points



Who Am I?

# Business Case Difficulties?



## 4.5.6 Design

The organization shall consider energy performance improvement opportunities and operational control in the design of new, modified and renovated facilities, equipment, systems and processes that can have a significant impact on its energy performance.

The results of the energy performance evaluation shall be incorporated where appropriate into the specification, design and procurement activities of the relevant project(s).

The results of the design activity shall be recorded.

# Case Study 1

Concept Engineering

Basic Engineering

Detailed Engineering

Construction

Commissioning

Handover

Building retrofit with new process and HVAC equipment, (existing utilities)

Activity carried out at concept design

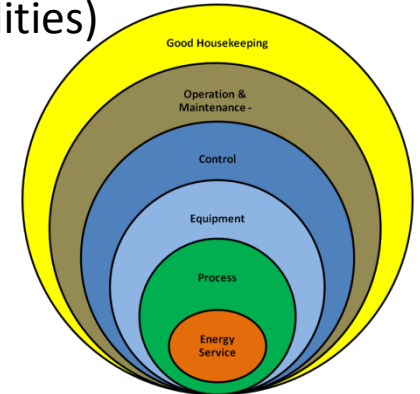
Projected Energy cost €650K per year based on energy balance.

Opportunity to reduce by 62%

1. Air change reduction to best practice
2. Fresh Air Unit
3. Installation of VSD's on process pumps
4. Removal of a cooling step in the process (process engineer)

Issues:

1. Project team focused on project delivery
2. No follow-up on the ideas through the project
3. No one responsible for lifecycle energy performance in the project
4. Why is our energy bill after rising?



# Case Study 2

Concept  
Engineering

Basic  
Engineering

Detailed  
Engineering

Construction

Commissioning

Handover

Pharmaceutical project, cleanroom construction and associated utilities

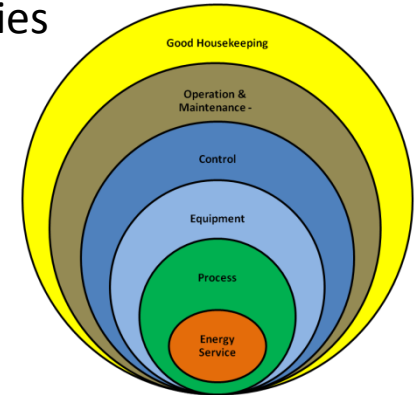
Activity carried out at the start of detailed design

Projected Energy savings of €1M per year through:

1. Air change reduction to best practice
2. Changes to humidity controls
3. Commissioning protocols for setback
4. Reduction of utility service requirements LPHW and Chilled water

Issues:

1. Corporate Design Specifications on ACPH,
2. Late in the process to get major change without cost and schedule implications
3. Lot of resistance from project team
4. Lot of resistance from the client (new flagship project will do energy efficiency later)



# Case Study 3

Concept Engineering

Basic Engineering

Detailed Engineering

Construction

Commissioning

Handover

Brownfield site

Activity carried out from basis design throughout the project

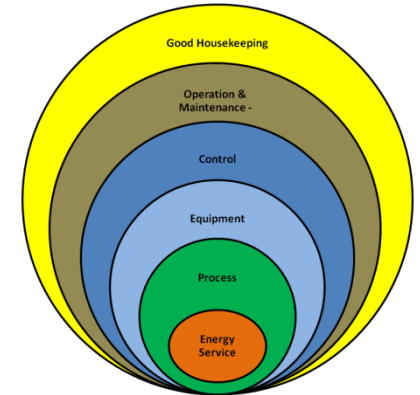
Project team completed good EED work at concept stage

16 Opportunities highlighted from the Initial review

1. Change energy source from electric to steam
2. Minimal air change rates
3. Central heating system
4. Metering
5. Focus on Design for Energy Management and operational control

Challenges:

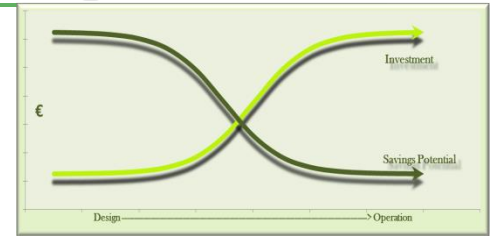
1. Resistance to Independent consultant reviewing project design
2. Fear of schedule delays and cost overruns (build confidence through the construction and commissioning to see the opportunities through)





# Takeaway points

- Engage as early as possible
- Build confidence with the design team
- EED is not “Are you smarter than the design engineer”
- Ensure EED Owner is senior in organisation and can say “No This is what we want”
- Engage an EED expert where necessary
- Quantify the savings from the opportunity
- The greatest value in the process is implementation



“You will never reach your destination if you stop and throw stones at every dog that barks” Winston Churchill

Questions?

Contact [richard.morrison@optien.ie](mailto:richard.morrison@optien.ie)

Date: 02<sup>nd</sup> December 2014

---