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Economic Case for Early Adoption of Facilities Management - Presentation

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The Economic Case for Early Adoption of Facilities Management

By

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Joint CIB W070, W092 & TG72
International Conference on Facilities Management, Procurement Systems and Public Private Partnership

Dublin Institute of Technology
THE IRISH ECONOMY

- €38.4 billion in 2007 / €10.5 billion by the end of 2011
- €300 million a year through simple actions - SEI
- State contracts worth up to €16 billion a year – Irish Government
- Reduce greenhouse gas emissions by up to 20% by the year 2020 – EU
- Traditional method of construction needs to be re-engineered
Mixed Methodology

Case Study
Interviews
Questionnaire
CASE STUDY

- Opened in 2007 and was constructed for an initial €60 million

- Financial plan proposed saving initiatives in the region of €1.2 million over three years

- Better Energy Management Plan totaling €182,000 that generated savings of up to € 360,363 over the three year period

- Interviews with Current Facilities Management Team and former Construction Management Team
## BETTER ENERGY MANAGEMENT PLAN

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Initial Cost</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The changing of all current lights in the downstairs car park to PIRS. This will result in a microwave signal being emitted and in turn will optimize the efficiency of the lighting, as it will only be used on a needs basis.</td>
<td>€9,141</td>
<td>€27,215</td>
</tr>
<tr>
<td>2</td>
<td>Replace all 50watt A.R. 11type lamps with 35Watt energy efficient type.</td>
<td>€6,873</td>
<td>€10,039</td>
</tr>
<tr>
<td>3</td>
<td>Replacement of 120 x 35 Watt capsule halogen downlighter fittings in Consultant suites and throughout the building to 2 Watt LED downlight with equal Lux level performance.</td>
<td>€8,591</td>
<td>€10,479</td>
</tr>
<tr>
<td>4</td>
<td>Modification of all corridor and back house light fittings to incorporate 2 tube electronic start T5 tubes in place of 4 tube T8 type. This will reduce the power consumption by approximately 50% and increase the lifespan of the fittings and components by approximately 50%.</td>
<td>€13,233</td>
<td>€41,454</td>
</tr>
<tr>
<td>5</td>
<td>Installing key switches throughout the building that will prevent the staff and patients from leaving unnecessary lights on. This will enable reduction of electrical waste.</td>
<td>€7,900</td>
<td>€31,971</td>
</tr>
<tr>
<td>6</td>
<td>Reconfiguration of the boiler plant to incorporate a combined Heat and Power system. The proposed installation of a CHP system will eliminate the three boilers which have no connection between the domestic hot water calorifiers and the main headers, resulting in significant savings in gas.</td>
<td>€32,905</td>
<td>€47,916</td>
</tr>
<tr>
<td>7</td>
<td>Installation of two port valves on the existing LTHW and their associating controllers. This will prevent boilers becoming heat sinks.</td>
<td>€10,590</td>
<td>€29,040</td>
</tr>
<tr>
<td>8</td>
<td>Updating the microprocessors in the BMS to encompass a complete re-programming of the existing BMS and include every item of plant in the facility. Also the installation of additional BMS control instruments and the associated I/O cards and programming. This will allow closer control and interaction between the user and the system on the Plant and Equipment set points.</td>
<td>€29,755</td>
<td>€57,692</td>
</tr>
<tr>
<td>9</td>
<td>Design and installation of a new control system for the compressors that will create an “on demand” scenario ensuring the compressors only operate when needed.</td>
<td>€16,790</td>
<td>€15,700</td>
</tr>
<tr>
<td>10</td>
<td>Advanced training on critical equipment i.e. BMS, Medical Equipment, wheel chairs.</td>
<td>€14,500</td>
<td>€24,100</td>
</tr>
<tr>
<td>11</td>
<td>Medical Air Compressor re-design and re-build.</td>
<td>€16,790</td>
<td>€15,700</td>
</tr>
</tbody>
</table>

### Installation / Cost Breakdown

- **Consultancy Design**: €100
- **Ballast Change 320 fittings**: €5,009.60
- **Electronics starters for each fitting 320 x €1.99**: €637
- **Removal of WEEE disposal of existing ballast 320 x €2.50**: €800
- **Purchase new T5 Tubes 640 x €3.95**: €2,997.60
- **Replace T8 Lamp Holders with T5 Lamp Holders (duals x 320 fittings) =1280 x €1.99**: €254.20
- **Testing and Commissioning**: €950

**Total Installation Costs**: €13,233

### Savings Breakdown

**Original cost to power T4 tube to T8 Modular tubing (Get cost Below)**

- 320 fittings x 122 watts (4 x 28w tubes) = 35.84 kw
- 35.84 KW x 12 hours/day = 430kw so 35.84kw x 0.17ct = €73.10 per day

**Cost year 1**: 73.10 x 182 (days) = €13,530.42
**Cost year 2**: 73.10 x 365 (days) = €21,281.90
**Cost year 3**: 73.10 x 365 (days) = €21,281.90

**Total original cost over 2.5 years**: €38,843

**Modified to T5 Electronic Fittings to reduce power consumption to 52 Watts per fitting resulting in a net saving in approx 50% of running costs**

**Savings year 1**: €6,652.10
**Savings year 2**: €13,340
**Savings year 3**: €13,340

**New approximate cost saving on power over 2.5 years**: €53,332

**Saving on relamping is 50% approx per annum**

**Original Cost 320 x 4 - 1280 lamps per year @ $3.20 each = $6096**

**Lamps Year 1**: €2048
**Lamps Year 2**: €4096
**Lamps Year 3**: €4096

**New Cost year 1**: €1024
**New Cost year 2**: €2048
**New Cost year 3**: €2048

**New Calculated savings on lamp changes over 2.5 years**: €5,120

**New installed ballast fittings will reduce the placement rate over the next 2.5 year period**

- Estimated 40% of ballast fitting = 128 new ballasts @ 15.62 per unit = €1,999.36
- Total ballast replacement cost = 320 ballasts @ 15.62 per unit = €5,001
- Hence total saved on ballast expenditure over 2.5 years = €5,001 - €1,999.36 = €3,001.64

**New calculated savings on ballast changes over 2.5 years**: €3,001.64

**New savings benefits achieved from modification of fittings**: €41,453.54
CASE STUDY RESULTS

- Poor design choices and inadequate planning

- Energy Management Scheme could have been realised during construction

- Early collaboration between the Facilities Manager and the design team, would have been reduced life cycle costs.

- The practical approach by the Facilities Manager, could have helped to avoid counterproductive design details

- Facilities Manager suffering from a managerial identity crisis having been confined to the lower levels of Management
QUESTIONNAIRE

- Online Survey through Survey Monkey

- Target Audience
  - Facility Managers
  - Project Managers
  - Architects

- 5 Different Sections
  - Life Cycle Cost
  - Best Environmental Practice
  - A More Innovative Approach
  - Role in the Construction Process
  - Business Function

- A total of 51 Replies
QUESTIONNAIRE RESULTS

- All of the respondents agreed in some form that the Facility Manager should be introduced into the construction management stage at an early level.

- 98% agreement the Facilities Manager if introduced at the design and construction stage can help highlight best environmental practices.

- 92% agreed that a better approach would be the partnering of the Project and Facilities Manager along with the Design Team

- Facilities Manager would best serve if they were integrated into the design stage in a consultant role.

- 86% of the respondents believed that irrespective of its potential as a business strategy, it was still not considered an actual profession
Mixed Methodology Results

- Early collaboration between the Facilities Manager and the design team would have resulted in reduced life cycle costs.

- Adopt a more practical approach in avoiding counterproductive designs in favour of a more passive building.

- Innovative approach of partnering the Project and Facilities Manager along with the Design Team throughout the Construction Stage.

- A vital experience to external visitors and was central to the clinics business goals.

- Facilities Departments are still only viewed at an operational level and is still not considered an actual profession.
CONCLUSION

- Facilities Manager, if introduced into the beginning of a structures lifecycle, has the potential to increase sustainability and in the process promote best construction practice.

- Operational needs of the client are addressed at the onset of construction

- Continue to play the silent partner, unless it begins to promote itself as the key business strategy.

- FM process begins to move towards creating interactive capabilities, in order, to portray its financial worth to an organisation
QUESTIONS