EnPROVE – Workflow and Tooling for Professional Lighting Retrofits

IEA-SHC Task 50 - 1st Industry Workshop
March 20, 2013; Lund, Sweden

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Outline

- Challenges in lighting retrofits
- Advanced lighting retrofit delivery
- Classification of advanced lighting retrofits
- Case Studies: Workflow and tooling needs
  - Philips retrofit (office/industry)
  - FP7 EnPROVE
  - Philips advanced renovation (retail)
## Challenges in Lighting Retrofits

**Mission of IEA-SHC Task 50**

<table>
<thead>
<tr>
<th>Challenge</th>
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<tbody>
<tr>
<td>Lack of awareness of retrofit potentials</td>
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<td>Confusing variety of retrofit solutions for lighting systems</td>
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<td>Missing proven evidence on the saving potential of sound design solutions using new emerging technologies</td>
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<td>Partly lacking technical and constructive solutions</td>
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<td>Missing of integrated rating methods on lighting energy and operational costs</td>
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<tr>
<td>Lack of incentives</td>
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Lighting retrofits can advance in

- the technical retrofit **solution**
- the retrofit workflow & service
- the lighting retrofit **tooling**

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Challenges in Lighting Retrofits

- Diversity of retrofit solutions
- Diversity of customer usage requirements
- Diversity of customer sites
- Diversity of customer economical requirements/business case

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Standard Specifier/Design‘ Way-of Working

When you know what you want/need‘

Crucial tooling components
  • Product selection support and vendor libraries
  • Lighting design and simulation
  • Lighting visualization
Advanced Lighting (Service) Way-of Working

‘When awareness creation, potential assessment, consultancy... is needed’

Offer a 'service experience' around retrofitted lighting and turn-key project delivery

Scoping & Quick Scan

Engage and accompany customer throughout all steps of the decision process

Lifecycle Services

Lifecyle Support

Advisory Services

Scoping

Survey

Design

Finance

Realization

Tailor lighting solution and business case to the customer's needs

Project Services

Lighting Capital Services

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Classification of Advanced Lighting Retrofits

IEA Task 50 Discussion
Use Case-driven Tooling Review

(1) Office Retrofitting and (2) Retail Renovation

- Offices (Use Case 1)
  - Comfort & Experience
  - Light Quality
  - Energy-efficiency
  - Retrofit
  - Redesign
  - Renovation

- Retail (Use Case 2)
  - Scoping
  - Survey
  - Design

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Use Case 1: Office Retrofitting

"Fit-for-Purpose Lighting with best Payback"
Survey and Auditing Tooling

Need for (cost-)efficient data acquisition and presentation

Mobile application facilitating the time/effort-efficient data acquisition for
- all current lighting equipment (asset inventory)
- electrical lighting installation situation
- all usage and operational parameters
- all spatial and environmental information (enabling lighting design and simulations)
EnPROVE Retrofit Advisor Solution

Re-use and utilization of available building and installation data

Sensor-based precise usage and performance data analytics

Product modeling for automatic lighting controls design
Solution Design Tooling

Need for Scenario-Solution Mapping

Solution design and decision tooling – determining the appropriate solution for each area

- **Solution 1** Energy-efficient lighting design
- **Solution 2** Inspiring and comfortable lighting
- **Solution 3** Bringing light to the desk
- **Solution 4** Linking lights & blinds
Use Case 2: Total Green Store*

*Total Green Store: Philips business proposition for daylight/LED retail lighting*
Hybrid LED/Daylight Solutions

Skylight/LED Integration

Intelligent Lighting Controls

Daylight-Harvesting

Peak-Time Lighting Control

Store times:
- 06:00 – 07:00 Uhr: Refilling of shelves
- 07:00 – 08:00 Uhr: Few customers
- 08:00 – 13:00 Uhr: A lot of customers
- 14:00 – 17:00 Uhr: Few customers
- 18:00 – 20:00 Uhr: A lot of customers
- 20:00 – 22:00 Uhr: Few customers
- 22:00 – 22:30 Uhr: Light for cleaning
Survey-Design-Analysis Tooling

Need for detailed Lighting/Climate/Load Analysis

Energy scan for artificial lighting for existing building

Concept

- Draft of the artificial lighting concept including all lighting controls components
- Daylight concept and skylight simulation including annual energy savings with daylight-controlled artificial light – based on individual building parameters (Daylight-Survey)

Business Case Creation

- Arithmetical simulation of the energy savings through constant light-output- and peak-time lighting controls based on individual project parameters
- Total cost of ownership analysis including initial investment, energy- and maintenance costs
Green Evolution*: Workflow & Service Chain for Advanced Lighting Retrofitting

* Green Evolution: Philips service business proposition for professional lighting retrofits
Green Evolution*: Workflow & Service Chain for Advanced Lighting Retrofitting

THANK YOU FOR YOUR ATTENTION!

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