2019 HIGHLIGHTS

Task 61 - Integrated Solutions for Daylight and Electric Lighting

THE ISSUE

Lighting accounts for approximately 15% of the global electric energy consumption and 5% of greenhouse gas. Projections by the IEA show that if governments only rely on current policies, global electricity use for lighting will grow from around 2,900 TWh to around 4,250 TWh by 2030. Due to the world's growing population and the increasing demand for electrically driven services in emerging economies, the increase will occur despite constant improvements in the energy efficiency of lighting systems.

During the last years, there has been a shifted towards digitalized lighting because of its ability to overcome problems in the integration of daylight and electric lighting. New technologies equipped with sensors, "intelligent software," and wireless data communication provide opportunities to bring the disconnected market sectors of electric lighting and façade technology closer together.

OUR WORK

Research and developments in the field of energy efficient lighting techniques encompassing daylighting, electric lighting, and lighting controls combined with activities employing and bringing these techniques to the market can contribute significantly to reduce worldwide electricity consumption and CO2 emissions.

Task 61 is generating diverse outcomes for different stakeholders:

- **Designers:** New integrated tools, system overview, design guidelines, and system performance information.
- **Standardization bodies:** Integrated daylighting and electric lighting hourly energy rating method and spectral modelling, including new material datasets.
- **Industry:** Better integration of electric lighting and daylighting (façade).
- **Building managers:** More effective guidance on the calibration and ongoing adjustment and maintenance of integrated lighting control systems.
- **Policymakers:** Advice to stimulate deployment of successful, energy efficient lighting schemes with added benefits to citizens.
- **Building users:** Improved indoor conditions to support health, comfort, and energy efficiency.

SHC Task 61 is collaborating with the IEA Technology Collaboration Programme on Energy in Buildings and Communities (EBC TCP) in this project.

Participating Countries

Australia
Austria
Belgium
Brazil
China
Germany
Denmark
Italy
Japan
Netherlands
Norway
Poland
Slovakia
Sweden
Switzerland
USA

Task Period	2018 – 2021
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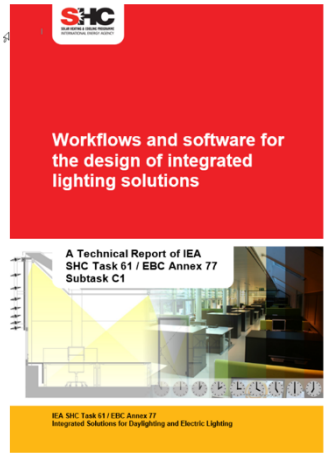
KEY RESULTS IN 2019

IEA SHC Position Paper on "Daylighting of Non-Residential Buildings"

The position paper provides an insider view for energy policymakers and decisionmakers in the private sector to better understand why and how the targeted use of daylight in the built environment (non-residential buildings) should be supported and promoted. Different actions at the government, NGO, and private (industry) levels to significantly drive up this market are recommended. These actions encompass recognizing daylight as a "renewable energy source," revising building ordinances, and using sustainability certificates, memoranda of understanding, and advanced (automated) building design processes. The position paper can be downloaded from the SHC website.

First Published Report – *Workflows and software for the design of integrated lighting solutions*



Practitioners are using a wide variety of different workflows, methods, and tools in the planning of integrated solutions for daylighting, electric lighting, and lighting controls. Lighting design projects cover a wide variety of applications with different requirements, as well as project types and sizes. For this report, Task participants reviewed applied workflows in practical applications. They did this using a three-step process. First, three buildings using integrated lighting solutions were selected and analyzed. The state-of-the-art building projects are in Austria, Germany, and China. Second, based on these design projects, typical workflows for the planning process were collected and discussed. And third, as all described workflows utilize software tools to support the planning and design processes, an overview of the possibilities, strengths, weaknesses, and barriers of the state-of-the-art in lighting simulations was prepared. This analysis includes a tabulated comparison of the key features of relevant and widely used software tools.

Strong Industry Involvement

As part of the Task 61 activities, two industry workshops (in Beijing, China and Gdansk, Poland) were organized and hosted, with 19 presentations in total on different daylighting and electric lighting topics. The objective of these workshops is to mirror the work of the Task with the needs of the industry. In Beijing, the 2019 International Daylighting and Electric Lighting Innovation Technology Conference and the Task's 3rd industry workshop were held on March 27, 2019. Altogether 150 participants, including researchers, engineers, designers, and other technical staff attended, ten presentations given, and 2,586 viewers followed the presentations online live. In Gdansk, the 4th industry workshop was held on September 16, 2019, with 45 participants and nine presentations.