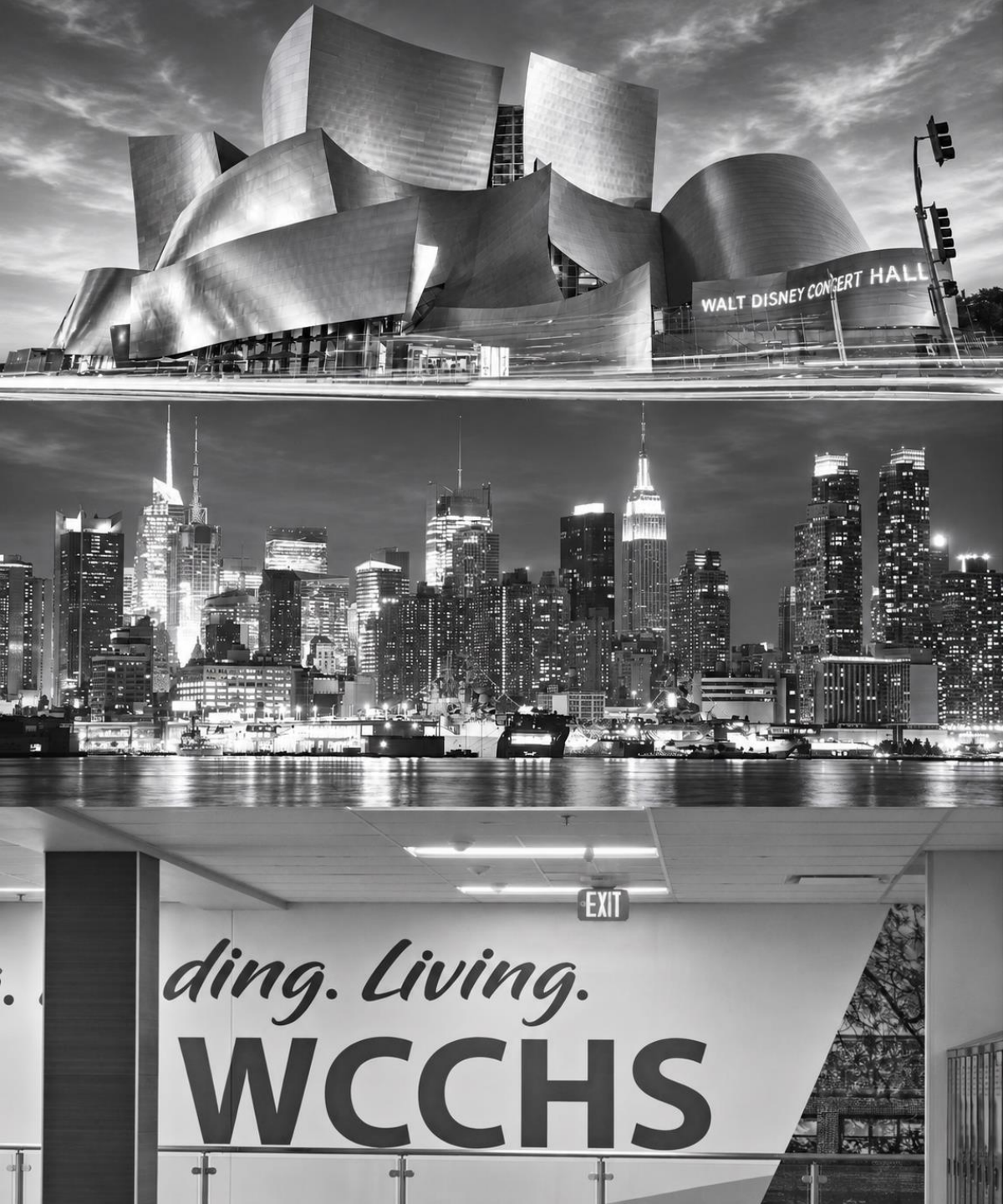
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SMART LIGHTING
- PART OF THE ARCHITECTURAL CONCEPT,

not just an element of building energy efficiency

Elena Rasskazova, Director, HDC CIS & Georgia



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HOW LIGHTING MISTAKES DISTORT ARCHITECTURE AND WHY LIGHTING SHOULD BE DESIGNED AT THE CONCEPT STAGE

On the synergy of architecture, lighting design and smart lighting as key component of future buildings



Walt Disney Concert Hall Los Angeles

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URBAN LIGHTING ECOLOGY

end-to-end day/night environment modelling

Anatomy of a lighting error: the Disney Hall effect

- × Disregard for the principles of insolation
- × Poor selection of material physical properties
- × Creation of a "heat ray" effect
- × Aggressive glare affecting the surrounding urban environment

The light balance formula

- ✓ Insolation analysis at the concept stage
- ✓ Comprehensive lighting calculations
- ✓ Integrated digital modelling of day and night conditions
- ✓ Light smog control
- ✓ Appropriate selection of surface finishes

Digital modelling as the path to harmonious, safe and functional buildings



New York

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URBAN LIGHTING ECOLOGY

tools to combat excessive lighting

Anatomy of a lighting error: the New York effect

- × Lack of unified planning
- × Sources of light smog
- × Erosion of urban aesthetics
- × Ecological disaster

The light balance formula

- ✓ Environmentally responsible lighting design
- ✓ Automated blind control
- ✓ Use of smart glazing
- ✓ Installation of occupancy sensors

An integrated approach and smart technologies are the foundation of future architecture, creating a safe environment for ecosystems and human biorhythms



West Chicago High School

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URBAN LIGHTING ECOLOGY

tools for healthy and reliable lighting

Anatomy of a lighting error: the Chicago schools effect

- × Price prioritised over quality
- × Disregard for the luminous flux flicker factor
- × Lack of interdisciplinary synergy in design
- × Use of components not certified by DiiA

The light balance formula

- ✓ Collaboration of architect, lighting designer and lighting engineer
- ✓ Expert selection of lighting equipment
- ✓ Choice of high-quality flicker-free luminaires
- ✓ Design of certified DALI-2 systems

With high-quality components, abstract visualisation becomes a safe reality











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THE TECHNOLOGICAL FOUNDATION OF LIGHTING ARCHITECTURE

lighting quality guaranteed by market leaders and proven by completed projects



Hilton Hotel Astana

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"Modern intelligent lighting control goes far beyond energy savings.

Today it serves as a flexible tool that preserves the architect's original visual intent and adapts the space to the life scenarios of people and the building"

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Korkyt Ata International Airport

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LED DEGRADATION COMPENSATION

CLO technology

Under the European standard EN 12464-1, lighting calculations must take into account the **maintenance factor**. It builds in a luminous flux reserve, as efficiency naturally declines over time (**LED chip degradation**).

Integrating a smart control system with dimmable luminaires makes it possible to implement the **Constant Light Output** function.

The system automatically and smoothly increases the output of the equipment as it ages, consistently maintaining the original required illuminance level throughout its entire life cycle.



Swissôtel Wellness Resort Alatau Almaty

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OPTICAL BALANCE AND BRIGHTNESS EQUALISATION

A **design power reserve** makes it possible to finely balance the brightness of different luminaire types (e.g. track systems, linear modules and concealed interior lighting).

The smart system evens out differences in their luminous efficacy and optical characteristics, helping to create a **perfectly uniform and balanced lighting environment.**



Syrovarnya Eatery & Cheese Factory Almaty

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DIMMING AND BIODYNAMICS

Human Centric Lighting (HCL)

A brightness reserve is critical for adaptive real-time lighting control. The system gently adjusts artificial lighting based on light sensors (**daylight compensation**) or automatically changes intensity and colour temperature on a schedule within the **Human Centric Lighting** (HCL) concept.

This ensures maximum visual comfort around the clock.



Independence Palace Astana

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SCALABILITY AND SCENE SYNCHRONISATION

When designing **large-scale projects** with thousands of interior lighting points and complex architectural façade lighting, flawless **synchronised operation** is critical.

Modern lighting automation systems **scale seamlessly** to vast spaces. They ensure the simultaneous execution of global lighting scenes without visible delays, flicker or desynchronisation.



Sana Sport Astana

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EVOLVING LIGHTING ENVIRONMENT AND REMOTE MANAGEMENT

Remote addressable control makes it possible to assign **unique scenes** to entire functional zones as well as to each individual luminaire. **Adjusting the operating** logic, **changing zoning** and **reconfiguring accents** is possible not only at commissioning, but throughout many years of operation.

The lighting concept is no longer static — **lighting lives, adapts and evolves with the building's current needs.**



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A HOLISTIC APPROACH TO DESIGN

Synergy of architecture, lighting design and smart lighting

> **Lighting planning**, as in all areas of culture, music, science or art, is always about uniting the measurable and the immeasurable.
>
> The lighting designer **unites the "art" of lighting with technology**; only through such a holistic and humanistic approach can we create truly human-centric light.
>
> Ruairí O'Brien

Ruairí O'Brien, CEO Ruairí O'Brien. Architektur. Licht. RaumkunstThe Good, The Bad and The Ugly in Lighting Design and Architecture // FILD - URL: fild.eu

THANK YOU FOR YOUR ATTENTION

Let’s shape the future of lighting together