



Bureau of Energy Efficiency



सत्यमेव जयते  
Government of India  
Ministry of Power



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DEUTSCHE ZUSAMMENARBEIT

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# ANGAN

## Augmenting Nature by Green Affordable New-habitat

A Courtyard for Revolutionary Change in Building Energy Efficiency

An International Conference on Building Energy Efficiency

9<sup>th</sup>-11<sup>th</sup> September, 2019 | Hotel The LaLiT, New Delhi





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THIS PRESENTATION WAS SHARED BY

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ESPL

FOR THE SESSION:

*“Contemporary System Solutions (Lighting, Air Quality, Heat and Cold Recovery)”*

DURING ANGAN 2019

Knowledge Partner

**teri** | THE ENERGY AND  
RESOURCES INSTITUTE  
Creating Innovative Solutions for a Sustainable Future

Event Partner

**TEC INDIA**™  
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# CONTEMPORARY SYSTEM SOLUTIONS

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LIGHTING, AIR QUALITY, HEAT AND  
COLD RECOVERY



# Building Requirements

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- Lighting
- Thermal Comfort
- Indoor Air Quality
- Process (Sustainable Material and Waste Handling)
- Resource Optimization ?

# Lighting

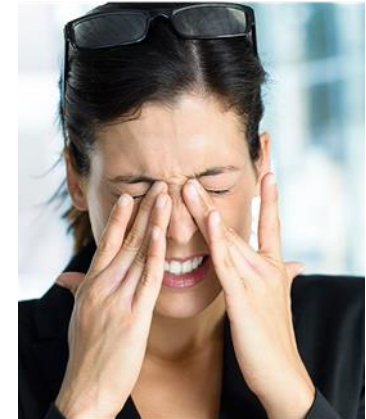
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- Minimum lux level requirement
- Types of lighting source
- Reflecting ambience
- Source efficacy

# Thermal Comfort

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- Indoor Temperature
- Air Speed
- Relative Humidity
- Activity
- Clothing (Insulation)



# IAQ

- Secondhand Smoke
- CO
- VOCs
- Legionella
- Asbestos Fibers
- Carbon Di-oxide
- Ozone
- Particulate Matters
- Fresh Air



## Is it safe inside?

WHO estimates 30% of buildings are sources of illness

50% of all illnesses due to poor IAQ. (American College of Allergists)



# Indoor Air Quality Risk

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- Environment Protection Agency (US) has identified IAQ as one of the top 5 most urgent Environmental risk to public health
- People Spend 90% of their time in indoor air
- Office Employees spend 40hrs per week in office building
- People study, eat, sleep, drink and sleep in enclosed environment where fresh air may be compromised
- Experts believe that more people suffer from effects of Indoor air pollution than from outdoor air pollution

# Material/Process

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FSC Wood



Double glazed window ?



Bricks with better insulation



Waterless Urinals



Efficient Waste Handling



Green Cover

# Resource Optimization

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A. Light

B. HVAC

C. Insulation (films and glass)

D. Water Pumps

E. DG Set

# Challenges in Implementation

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A. Status Quo

B. Funds

C. Payback

D. ESCO

# Solutions at ESPL

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- Advisory for green building and Energy Efficiency
- Helping clients getting certification from USGBC, IGBC or GRIHA
- Indoor air quality monitoring and management
- Carbon inventory and neutrality



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