Operational performance targets in a daylighting design process of a green international airport terminal in the tropics

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Research Findings

**Verification Study**

Comparison between field and simulation data at Zone B

Accuracy during Verification Study
*RE: 11-26% (in Tropical Climate)

**Post Occupancy Study**

Comparison between field and simulation data at Zone C

Accuracy during Post Occupancy Study
*RE: 5-11% (in Tropical Climate)
DAYLIGHT SIMULATION PROCESS IN AIRPORT TERMINAL DESIGN

**Phase**

- **MASTER PROJECT PLANNING PHASES**
- **ARCHITECTURAL DESIGN PHASES**
- **Construction Phase**
- **COMMISSIONING PHASE**

**Method of Study**

- **MEASUREMENT AND VERIFICATION STUDY**
  - Compare measured and simulation data (minimum 7 days)

- **INTEGRATED DESIGN STUDY**
  - Daylight Optimisation at Schematic Design Phase
  - Daylight Simulation at Design Development Phase
  - Final Implementation in Design

- **POST OCCUPANCY STUDY**
  - Verification of Tool

**Outcome**

- **Validation of Tool**
- **Error Analysis 11-26% (in Tropical Climate)**
- **Daylight Performance and Heat Gain Impact with SRR - 8%-9%**
- **Assessment on three different types of sky condition with simulation**
- **Parametric Study on Façade with simulation**
- **Implementation on SRR and WWR to comply with IESNA and ASHRAE 90.1 Guidelines in achieving 75% of LEED requirement of 250 lux distribution.**
- **Field measurement study on illuminance distribution at selected site to verify the daylight simulation study**
- **Error Analysis is 5-11% (in Tropical Climate)**