BUILDING DESIGN REPORT

FOR CONSTRUCTION OF RESIDENTIAL BUILDINGS IN KERALA (INDIA) - Executive Summary

A guide to assist architects and building designers in the early stage design of buildings that exhibit high thermal and daylight performance in Kerala.

By

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Executive summary

This report forms a part of the residential building design guide developed to assist architects and designers, during the early-stages, to design buildings that exhibit high thermal and daylight performance. The design guide is presented via an interactive web-based platform. This design report was produced from the website, based on the user's design considerations and priorities. The design consideration consists of details regarding the location, building type, building context and building orientation. These details are presented in the table below under location and building details tab. The design priority is for a building that exhibit high thermal and daylight performance. The building's thermal and daylight performance were assessed based on the annual total energy demand and Useful Daylight Illuminance (UDI) values respectively. The annual total energy demand for heating and cooling for the building design is 1 kWh/m^2. This is below the lower threshold value (1 kWh/m^2). Thus the design exhibits better thermal performance. The UDI-c value of the building design is 91%. This is in between the lower and upper threshold values (86 % and 92 %) respectively. Thus the design exhibits medium daylight performance.

Building base form:
Type 3

/Volumes/Renjith_WD3/img1/Design_Images/Other_Images/T3_ISO.jpeg

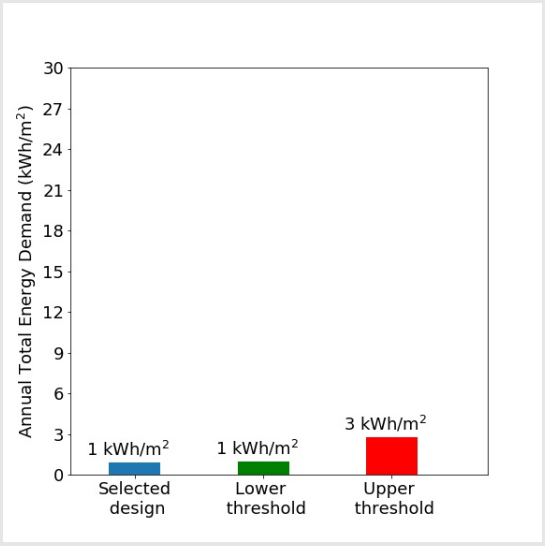
Building plan:
Type 3

/Volumes/Renjith_WD3/img1/Desi

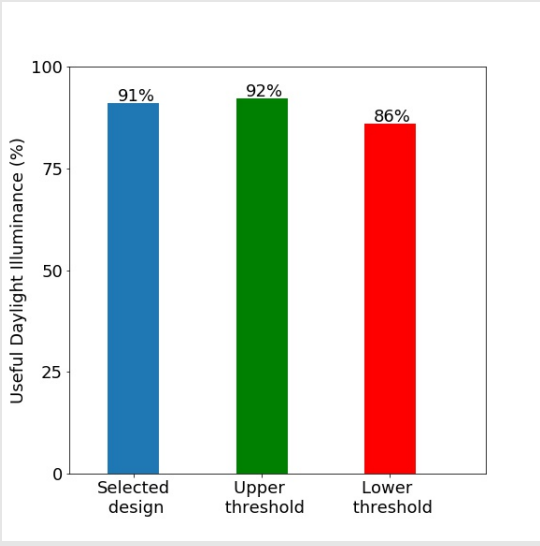
Design context	
State	Kerala
District	-
Location	-
Climate zone	Adaptively Cold Zone
Building type	3
Building context	Open low rise
Orientation	South
Design number	15
Design ID	39

Building design parameters		
Parameters	**Units**	**Values**
Wall A U-value	W/m^{2}K	3.31
-	-	-
Floor U-value	W/m^{2}K	1.34
Roof U-value	W/m^{2}K	3.47
WWR Wall A	%	44.00
WWR Wall B	%	11.00
WWR Wall C	%	14.00
WWR Wall D	%	18.00
Ground reflectance	-	0.07
-	-	-
-	-	-
-	-	-

Thermal performance



Daylight performance



The bar charts above show the thermal and daylight performance of the selected design against the lower and upper threshold values. The threshold values are used to identify whether the design exhibits better, medium or worse thermal/daylight performance. The designs that have an annual total energy demand below the lower threshold is considered to exhibit better thermal performance. Those designs that have an annual total energy demand higher than the upper threshold is considered to exhibit worse thermal performance. All other designs that have an annual energy demand in between the lower and upper threshold are considered to exhibit medium performance. For assessing the daylight performance of designs, the case is vice-versa to thermal performance.