4.0 Design indoor spaces

There are many factors to consider when planning the layout of spaces inside a building. These factors relate to:

- energy consumption
- visual and thermal comfort
- ventilation
- daylight
- materials emissions

Some factors may conflict with others, for example, a space designed for excellent day lighting may be detrimental to energy consumption as a result of poor facade decisions.

Occupant comfort is an important consideration, this includes understanding visual and thermal comfort and as well as ensuring sufficient fresh air provision. The project team should also look to reduce the source of material emissions through low VOC products.

It is important, therefore, to develop a project with the right blend of carefully considered solutions.

Approach

The layout and position of internal spaces within the building to suit daylight and ventilation have to be considered at this stage as per credit RE-R1. It is also necessary to specify glazing correctly to ensure optimal trade-off between light ingress and solar transmission. This design should be done bearing in mind credit LBi-R1, which requires that all spaces must be ventilated according to the requirements of the ASHRAE 62.1 2007, or local code, whichever is more stringent. The consideration of ventilation strategy is an important factor for both RE-R1 and LBi-R1 credits as they are both affected by natural and mechanical ventilation system performance.

As in previous steps, materials forbidden by credit SM-R1 (asbestos and chromated copper arsenate treated wood) should not be specified for indoor spaces. All decisions affecting the design of the building indoor spaces must be part of the Integrated Development Strategy.

Credit LBi-R2 requires residential units or apartments to be appropriately sealed to eliminate or minimize exposure of building occupants to the harmful effects of tobacco smoke from neighbouring apartments. This should be done with adequate seals and weather-stripping.

useful resources:

- ASHRAE Standard 55-2004. Thermal environmental conditions for human occupancy
- International Mechanical Code 2009, International Code Council (http://publicecodes.citation.com/icod/imc/2009/index.htm)
- ANSI/ASHRAE Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality
- Centre of Waste Management, Abu Dhabi. (www.cwm.ae)
- Cabinet Resolution No. 39 of 2006 Concerning Prohibiting Import, Production and Utilization of Asbestos Boards

Related Credits:

- SM-R1: Hazardous Materials Elimination
- SM-R3: Basic Operational Waste Management
- LBi-R1: Healthy Ventilation Delivery
- LBi-R2: Smoking Control
- RE-R1: Minimum Energy Performance