

BUILDOTECH

BUILDING TECHNOLOGY & SUSTAINABILITY

June 2011
Volume 5 - Issue 6

Cybertecture Design Evolution

FOCUS: The Vertical Quest

• Elevators with High IQ

Clean India
PULIRE

8th Edition of Clean India Show

November 10-12, 2011

Bombay Exhibition Centre, Mumbai

www.cleanindiapulire.com

A Bioclimatic Skyscraper

Mumbai, with high density urban living, and programmatic diversity allows for the interpretation of newer buildings and their sites as urban eco-systems. Mumbai based design firm, Mobile Offices (MO-OF), a collaboration of two principal Architects – [Shantanu Poredi](#) and [Manisha Agarwal](#) emphasise that the contextual response should then be to embrace the sky without losing the reference of the ground.



Powai Housing Model

A Green building and its construction focuses on its environmental performance in relationship to the local climate. Its sustainability also depends on lower life-cycle and energy costs arising from energy consumption in the operation of the building. However building for the future is more than just providing energy efficient systems. To quote, Ken Yeang's definition of a bioclimatic skyscraper, "A tall building whose built form is configured by design, using passive low energy techniques to relate to the site's climate and meteorological data, resulting in a tall building that is environmentally interactive, low energy in embodiment and operations and high quality in performance".

High density urban sprawls are slowly being replaced by newer, high rise buildings. With the ability to reach the skies, newer problems of alienation between social groups arise with the loss of neighbourhood interactive spaces. In the context of 'super urban' Mumbai, providing architectural solutions that comply with local regulations, as well as within a global environmental framework, are fast becoming the parameters of green building design.



The 'New High-rise' allows for the activation of all building terraces, refuge areas and margins between buildings, making use of residual/ in between spaces and lost ground cover. Architecture and landscape blend flawlessly, integrating living spaces into the sky gardens, sky courts, terraces, balconies, planters and the views beyond. The creation of these interactive spaces at various levels allows for the harbouring of communities – a conservation of sorts, of urban networks and interconnections.

In the case of high density high rise housing, different typologies of housing can be integrated to create a heterogeneous urban community. The fundamental concept idea behind the creation of several typologies is the incorporation of internal as well as external environments, contributing to climate responsive architecture. So-ho units (small office - home office), neighbourhood shared facilities as well as the other housing formats, creates a varying expression across the facade, giving functional advantages within each unit, maximizing cross ventilation, and shading.

Additional sustainability initiatives include harvesting rainwater and black water treatment facilities to serve the water needs of the residential units and the entire site, in response to the water shortage in dense metropolises like Mumbai. Solar and wind orientation would need to be carefully considered so that the taller structures are placed along the north west boundary of the site so as to permit air and light to reach the lower structures.

High-rise Strategies

In high-rise design, special emphasis is placed on the preservation of larger urban strategies such as the relationships of the high rise on the city as a whole, including infrastructural loads, its immediate context and the pedestrian in and around the building.

In an attempt to preserve social interactions, formal strategies such as the creation of a 'perforated city block' for the lower seven floors (up to 21 metres), complete with a large central open recreational ground can be employed. This space can then be programmed as a large community space with common facilities within the peripheral stilts. The lower block has the advantage of the tree foliage for the screening of windows, allowing for privacy. The front, if required, can be dedicated to commercial ventures, facing the roadside.

Another strategy is the expansion and provision of larger open spaces. At the ground level the open space can be integrated with existing edge landscape zones or water bodies by the creation of double height stilts that allow for visual and physical contiguity.

Terraces at the top of the lower levels can be provided, housing semi-public community spaces such as the swimming pool, club houses, crèches etc, on the residential side and other programmes such as community

New haven housing terrace view

