



香港零碳天地

ZCB Zero Carbon Building, Hong Kong

吕元祥建筑师事务所 /
Ronald Lu & Partners

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摘要

“零碳天地”是由香港建造业议会与香港政府合作完成的香港首座零碳建筑。项目占地面积14 800m²，主体为一栋建筑面积达3 300m²的三层建筑。零碳天地已面向公众开放，它既是一个教育与研究中心，同时设有香港建造业议会的绿色办公室、环保家居展示、多功能室等，并拥有香港首个市区乡土林地和其他户外绿化/活动空间。

关键词

零碳；环境；适应性设计；香港

Abstract ...

Construction Industry Council (CIC) of Hong Kong, in collaboration with the Government, has developed the first Zero Carbon Building (ZCB) in Hong Kong. The Site area is 14,800 m² and there are 3,300 m² in the three-storey building. Open to the public, ZCB is a visitor education and research center and houses a green office for CIC, a demonstration home for low carbon living, a multi-function room, the first urban native woodland of Hong Kong and other outdoor landscaped / event spaces.

Key words ...

Zero Carbon; Environment; Adaptive Design; Hong Kong

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项目地址：香港九龙湾
项目面积：14 800m²
项目委托：香港建造业议会
建筑设计：吕元祥建筑师事务所
设计时间：2011年
建成时间：2012年

Location: Kowloon Bay, Hong Kong
Area (size): 14,800 m²
Client: Construction Industry Council of Hong Kong
Architecture Design: Ronald Lu & Partners
Design Period: 2011
Completion Time: 2012

1. 零碳中心鸟瞰图
2. 整体规划图
3. 项目概念

针对亚热带地区的产能设计

零碳天地针对亚热带城市环境而设计，可因应需要而转换为密封式空调环



境，或开放式对流空间。作为产能建筑，零碳天地可通过可再生能源就地发电，不仅可以抵消楼宇使用中的能源消耗，还能够将剩余电能返于电网，作为对建筑建设过程耗能的补偿。

项目针对香港减少温室气体排放的急切需求，因应本地高密度、高温和高湿的亚热带都市环境而设计。零碳天地已面向公众开放，它既是一个教育与研究中心，同时设有CIC的绿色办公室、环保家居展示、多功能室等，并拥有香港首个市区乡土林地和其他户外绿化/活动空间。零碳天地标志着香港绿色建筑的一座新里程碑，旨在启发业界在建筑项目中融入绿色及低碳元素，推动可持续发展。

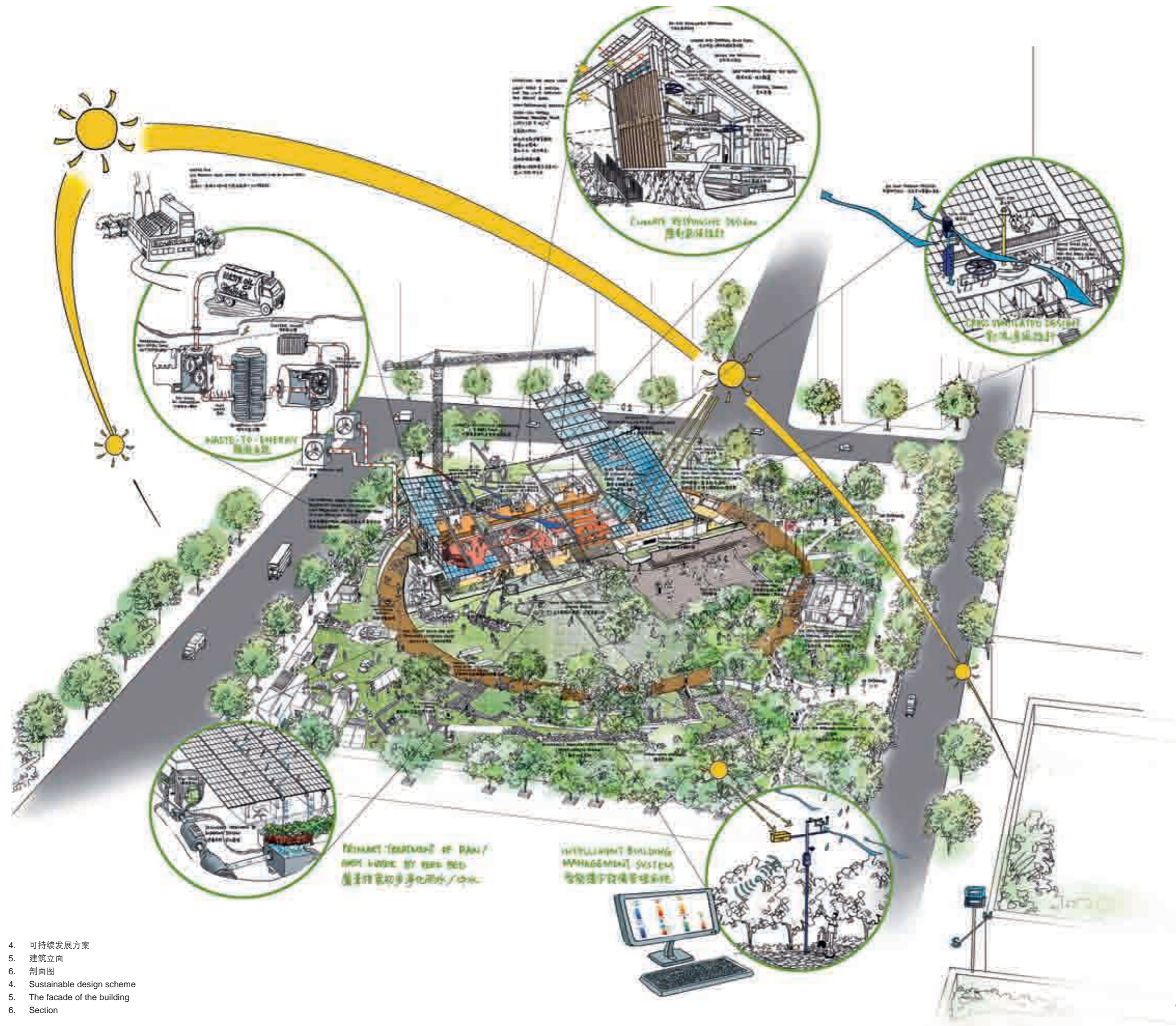
境，或开放式对流空间。作为产能建筑，零碳天地可通过可再生能源就地发电，不仅可以抵消楼宇使用中的能源消耗，还能够将剩余电能返于电网，作为对建筑建设过程耗能的补偿。

善用废料及改善环境

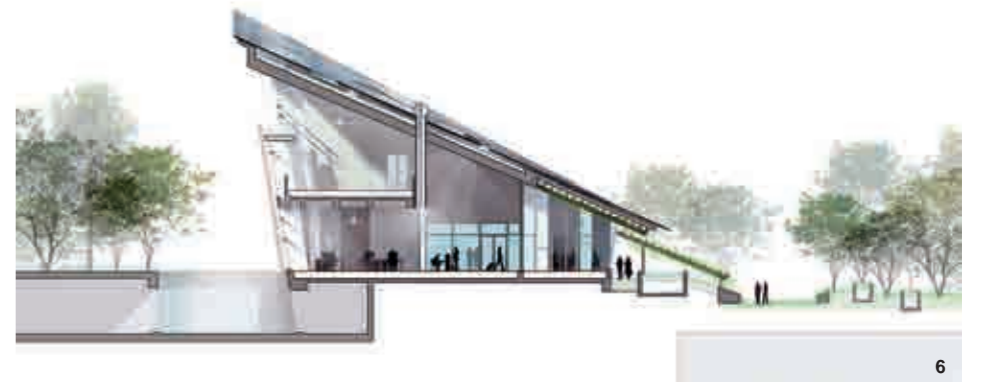
为了缓解附近的频繁交通造成的环境滋扰及减少建筑过程所造成的碳足迹，设计采用了平衡挖填的设计及施工，于场地周边营造高程较高的绿化带，并在场地中央打造了高程较低的多用途开放空间。园内石笼围墙亦使用现场工地回收而来的建筑废料建成。

优化局地气候规划

针对优化局地气候的目标，设计了一系列的遮阳设施，同时充分利用了太阳能及城市风能。项目中的城市乡土林地及约



4. 可持续发展方案
 5. 建筑立面
 6. 剖面图
 4. Sustainable design scheme
 5. The facade of the building
 6. Section



50%的绿化面积增加了生物多样性，并利于夏季时降温，以提升舒适度，为市民提供休憩之所。

零碳建筑结构

设计的首要目标是实现节能，采用了有效的被动式建筑设计及环保机电系统，可分别减少20%及25%能源消耗。另外，设计采用可再生能源科技系统与电网连接，既省却了昂贵及有损环境的电池装置，亦解决了可再生能源供电不稳的问题。

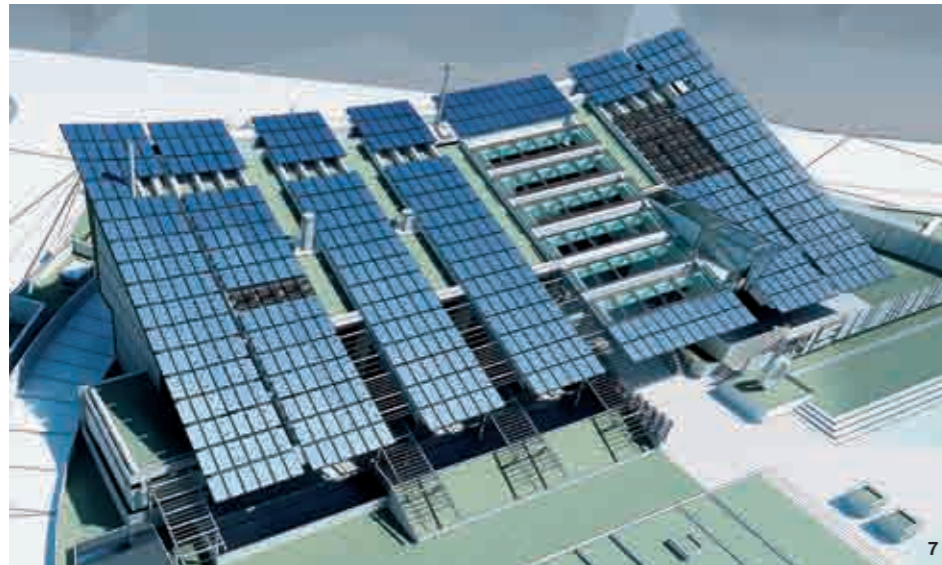
综合和适应性设计

建筑设计及楼宇系统相协调，大楼锥形的建筑形态有助于光伏电池板有效地吸

收太阳能，亦可增加室内的通风和采光。大楼采用了灵活性空间设计，较大跨度的结构及活动式间隔系统可因应需要重新划分空间，令展览及多用途空间具备更多的使用可能性。此外，大楼的高性能外墙配备了智能控制系统，窗户可自动调控，转变为密封或通风模式。

以人为本

为了增强市民对低碳生活的认知，大楼内设有互动式显示器，市民可查阅实时效益来评估数据。大楼入口更设有前厅，供参观者更衣以减去不必要的衣着，从而降低对机械冷却及低温空调的需求，以节约能源。LAF



Construction Industry Council (CIC) of Hong Kong, in collaboration with the Government, has developed ZCB, the first Zero Carbon Building in Hong Kong, which is aimed to showcase state-of-the-art eco-building design and technologies to the construction industry

internationally and locally, and to raise community awareness of sustainable living in Hong Kong.

The project addresses the imminent need for actions to reduce greenhouse gas emissions and is specifically designed for

the high density, hot and humid sub-tropical urban context of Hong Kong. Open to the public, ZCB is a visitor education and research center and a green office for CIC, a demonstration home for low carbon living, a multi-function room, the first urban native woodland of Hong Kong, and other outdoor landscaped / event spaces. It is to set a world-class example in Hong Kong for low-carbon, highly energy-efficient buildings, acting as a teaching tool and a living platform for sustainability.

Subtropical Energy-plus Showcase

ZCB is specifically designed for the subtropical urban context with high adaptability to switch from a tightly sealed air-conditioned environment to a highly porous cross-ventilated space. Being “energy-plus”, ZCB produces its on-site renewable energy that not only to offset its operational

energy consumption, but also export surplus energy back to the grid to offset its embodied energy of major structural elements and its construction process.

High Quality and Low Impact

To buffer against environmental nuisances from surrounding traffic and to minimize carbon footprint, the site is formed in a balanced cut and fill manner, to create higher planting zones along its perimeters and a lower multi-purpose open space at its center. Concrete debris salvaged from the demolition works was used in the gabion wall construction in the landscaped areas.

Climate-positive Planning

The design is highly responsive to the urban climate to provide shading, and make the best use of available solar and wind energy. The urban native woodland and high

greenery coverage (about 50%) is to cool down the southeast prevailing summer breeze, providing shade and amenity.

Zero Carbon Hierarchy

Priority is placed on energy demand control by effective passive design and energy-efficient active systems. The passive design and active systems are expected to reduce ZCB’s energy consumption by 20% and 25% respectively as compared to current benchmarks. Grid connection of on-site renewable energy technologies avoids costly and environmentally-unfriendly battery provisions and resolves the intermittency of the renewable energy supply.

Integrated and Adaptable Design

Various design and building systems work in synergy to deliver the high environmental quality and performance. The tapered

built form provides effective angles for photovoltaic panels cost-effectively, as well as enhances stronger airflow and daylight penetration across the building. Flexible spatial planning, large structural span, and operable partitioning systems allow re-configuration and expansion of multi-purpose spaces at ease. High performance facades with smart control for windows enable the switching over between sealed air-conditioned environment and cross the ventilated space.

People-oriented

Interactive display of real-time environmental performances with user-friendly graphical interface is specifically designed to educate inhabitants on low-carbon living. ZCB is designed with a vestibule that inhabitants may dress down to comply with the “cool biz dress code” at the entrance. **LAF**



7. 利用建筑信息模型技术兴建零碳天地
8. 建筑入口
9. 展览区
7. Use of Building Information Modeling (BIM) to build ZCB
8. The entrance of the building
9. Exhibition area

