



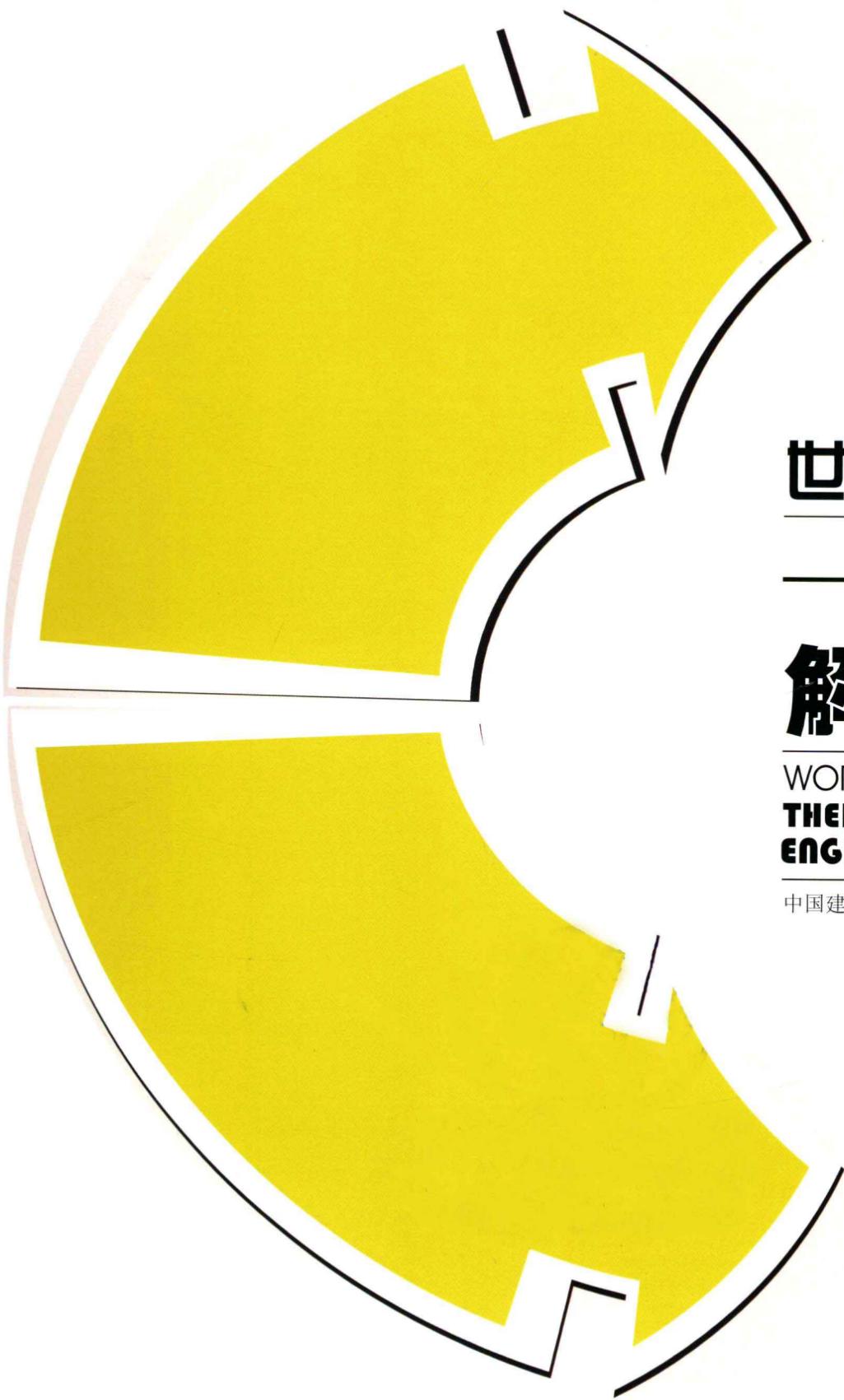
世界绿色建筑

— 热环境  
解决方案

WORLD GREEN BUILDINGS  
THERMAL ENVIRONMENTAL  
ENGINEERING SOLUTIONS

中国建筑文化中心 编

江苏人民出版社



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中国建筑文化中心 编

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World Green

Buildings——

Thermal Environmental

Engineering Solutions

# WORLD GREEN BUILDINGS 世界绿色建筑——热环境解决方案 THERMAL ENVIRONMENTAL ENGINEERING SOLUTIONS

我国“十二五”规划纲要提出：“建筑业要推广绿色建筑、绿色施工，着力用先进建造、材料、信息技术优化结构和服务模式”。

发展绿色建筑对于实现科学可持续发展、建立循环经济模式、建设低碳社会具有重要意义，是实现绿色发展和建设资源节约型、环境友好型社会的必由之路和有力抓手。绿色建筑在我国大规模城镇化进程中，已成为促进产业结构调整、带动产业升级的重要载体。

发展绿色建筑是应对全球气候变化的重要途径，已引起国际社会的广泛关注，并成为世界各国倡导与发展的主流和方向。一些发达国家形成了较为成熟的绿色建筑技术体系、评价机制及推广模式。为了展示世界绿色建筑领域前沿动态，介绍国外最新技术和实践成果，我们编纂了这套“世界绿色建筑”系列丛书，包括《世界绿色建筑——热环境解决方案》《世界绿色建筑——可再生能源应用与建筑一体化》《世界绿色建筑——环境景观规划设计》及《世界绿色建筑——生态城市与住区规划》，计划于2012年内陆续出版。

《世界绿色建筑——热环境解决方案》集中关注如何运用绿色技术、材料，通过系统、优化设计，实现建筑为人类提供健康生活、工作环境的探索实践。编者历经半年多时间，收集了大量国外相关信息资料和项目案例，从20余个国家和地区的200多件来稿和案例中，精选出50个典型项目案例，进行精心整理、编译，呈现给读者。这些案例采用系统的设计方法和适用的材料设备，通过太阳辐射控制、自然通风、节能环保电气设备、被动措施与主动措施综合应用，给出了热环境解决方案，营造出健康舒适的生活、居住环境。这些方案不乏获得了绿色建筑评价认证及国际或区域性奖项的优秀案例，可供建设领域研究人员、建筑师、设计师、工程师、建设管理人员参考借鉴。

China's Twelfth Five-Year Plan put forward that green building and green construction should be popularized in building industry. We should make great efforts to optimize the structure and serving patterns of building industry through advanced construction techniques, new building materials and information technology.

The development of green building is of significant importance in striving for scientific sustainable development, establishing cycle economic model and building low-carbon society, which plays an important role in realizing green development and building resource-saving and environment-friendly

society. In the process of the urbanization, green building and sustainable development have been turned into the vectors of industrial restructuring and upgrading.

It is a best way to tackle the global climate change by developing green building, which has aroused worldwide concern and become the mainstream and orientation advocated by the most countries in the world. Mature technical systems, evaluation mechanism and promotion models of green building have been built up in a number of developed countries. With the purpose of presenting excellent achievements of green building and of introducing the latest theory and technology, we compile a series of *World Green Buildings*, including *Thermal Environmental Engineering Solutions*, *Building Integrated Renewable Energy*, *Landscape Planning and Design* and *The Planning of Eco-City and Green Community*, scheduled to be published this year.

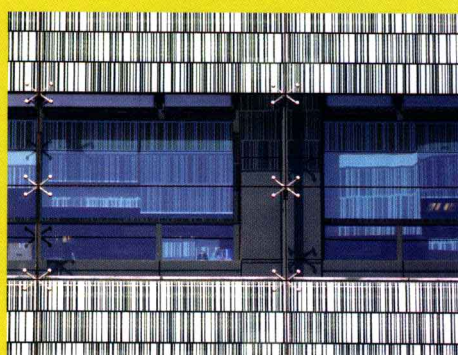
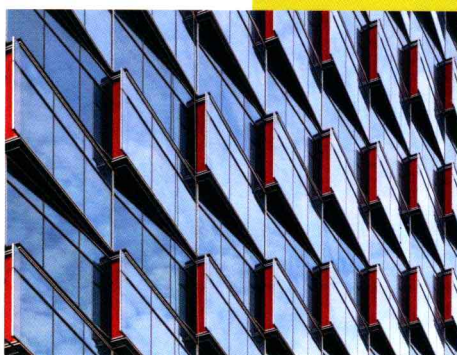
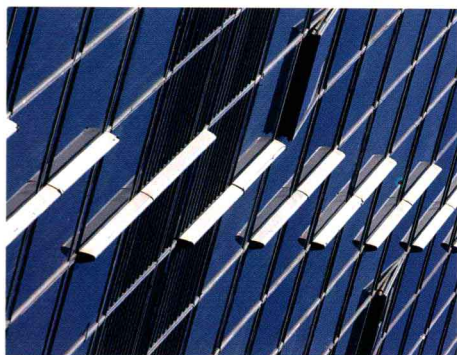
*World Green Buildings Thermal Environmental Engineering Solutions* presents the exploring practices and typical project cases concerning how to realize the aim of providing healthy working and living environment for people by means of systematic design and optimization, usage of green materials and technology.

We have spent several months accumulating over 200 foreign project cases and relevant materials, selected 50 cases among them and compiled carefully, presenting them to readers. Systematic design methods, appropriate building materials and techniques are adopted in these projects, solar radiation control, natural ventilation, energy-saving equipment, passive and active measures applied integrally. These cases provide thermal environmental engineering solutions, show creations of healthy and comfortable living environment. A number of the projects gained national-level green building certifications, international or regional awards. This book serves as technical reference book on green building for researchers, architects, designers, engineers, project managers in construction industry.



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# GREEN

WORLD GREEN BUILDINGS 世界绿色建筑——热环境解决方案  
THERMAL ENVIRONMENTAL ENGINEERING SOLUTIONS



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# EDUCATION EXECUTIVE AGENCY & TAX OFFICES

## 教育与税务机关综合 管理大楼



2011, UNStudio©Aerophoto Eelde

地点：荷兰格罗宁根

建筑面积：办公48 040 m<sup>2</sup>，停车场21 000 m<sup>2</sup>，附属建筑1500 m<sup>2</sup>

场地面积：31 134 m<sup>2</sup>

建筑及室内设计：UNStudio

室内设计：Studio Linse

景观设计：Lodewijk Baljon

委托方：Dutch Government Buildings Agency (RGD)

摄影：Ewout Huibers；Ronald Tilleman；Aerophoto Eelde

Location: Groningen, the Netherlands

Building Area: 48,040 m<sup>2</sup> offices, 21,000 m<sup>2</sup> parking, 1500 m<sup>2</sup> pavilion

Building Site: 31,134 m<sup>2</sup>

Architecture and Interior: UNStudio

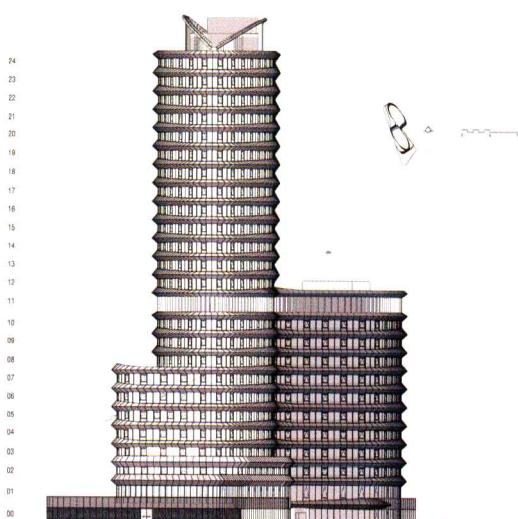
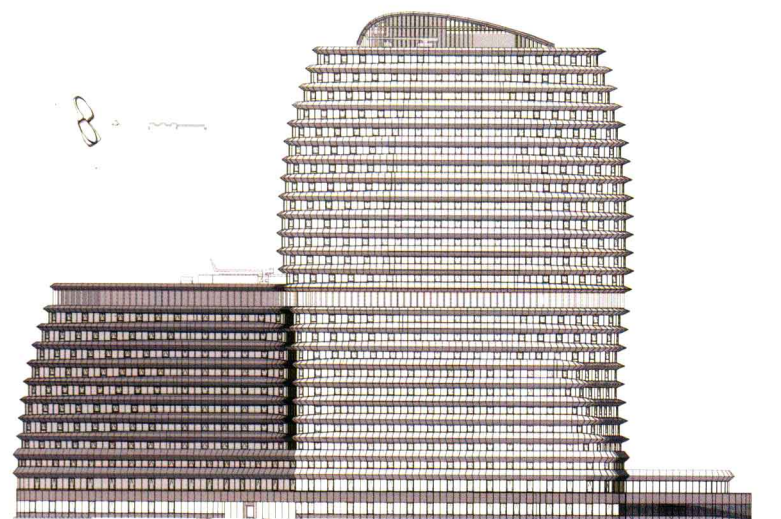
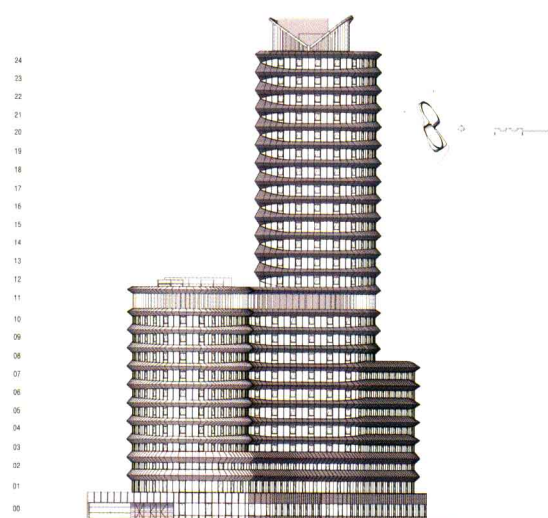
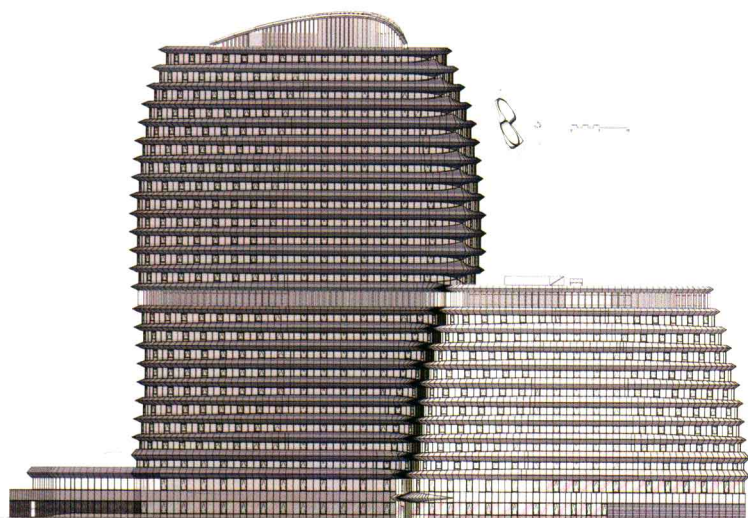
Interior: Studio Linse

Landscape: Lodewijk Baljon

Client: Dutch Government Buildings Agency (RGD)

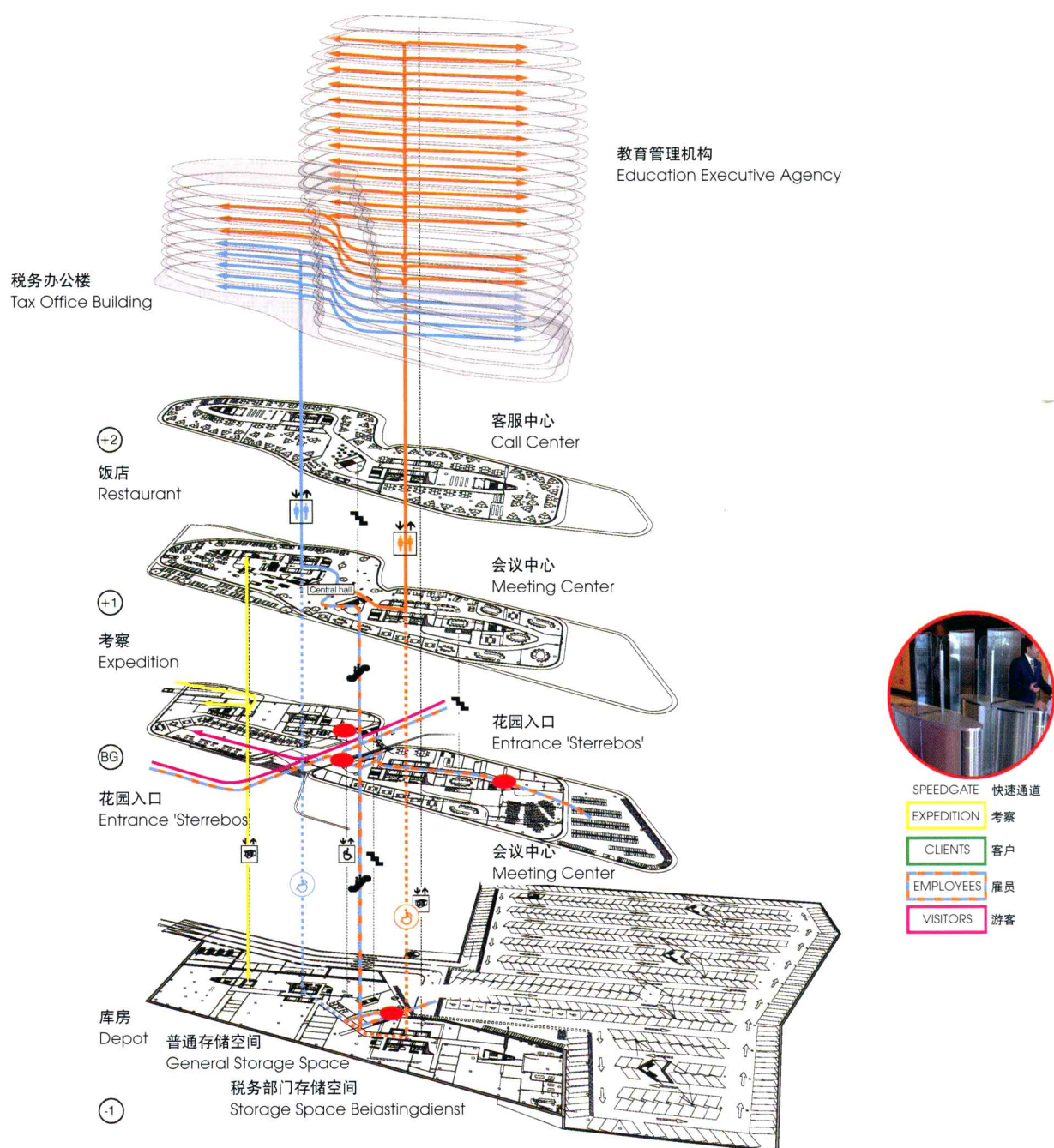
Photography: Ewout Huibers；Ronald Tilleman；Aerophoto Eelde

World Green  
Buildings—  
Thermal  
Environmental  
Engineering  
Solutions

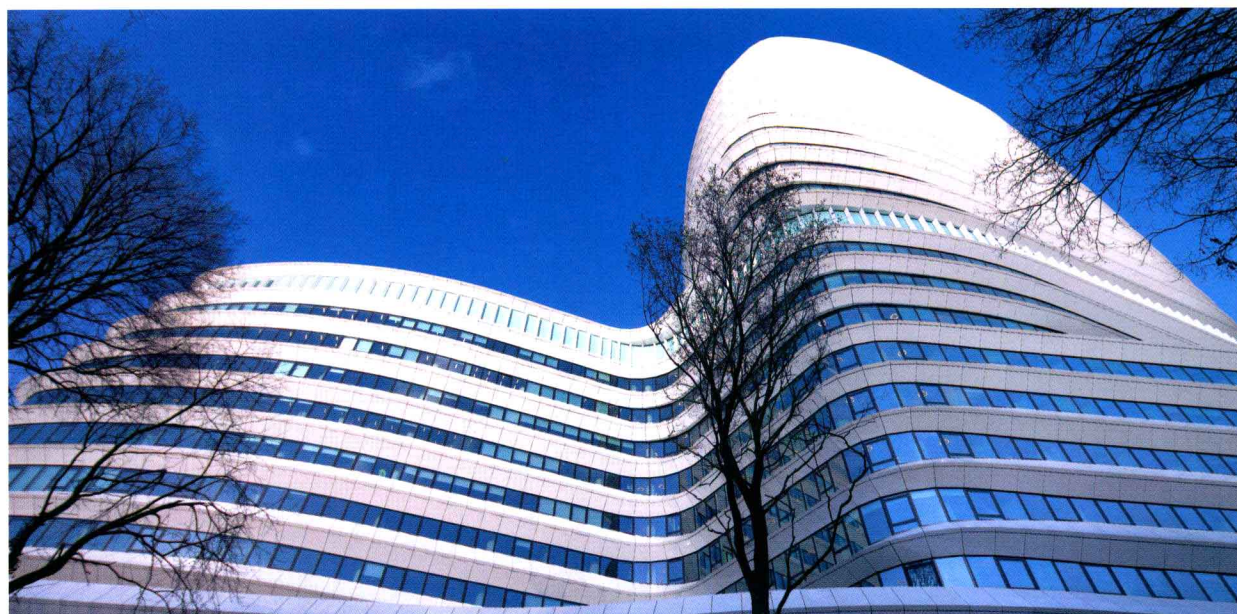


立面图 ELEVATIONS





分析图 DIAGRAM



2011, UNStudio©Ronald Tilleman



2011, UNStudio©Ronald Tilleman

### 项目概况

一座92 m高的造型柔和曲线起伏的综合大楼标明了格罗宁根的天际线。UNStudio的Ben van Berkel与DUO<sup>2</sup>合作，为政府的两个机构建成的教育管理和税务大楼，是欧洲最成功的可持续设计大型办公楼之一。项目包括国家税务办公室和学生贷款管理局两个公共机构的设计、施工和资金管理。项目拟在第一阶段建设一座办公楼，然后建设一座地下停车场，最后建造城市公共花园和一座商用附属多功能大楼。

### 建筑热环境解决方案

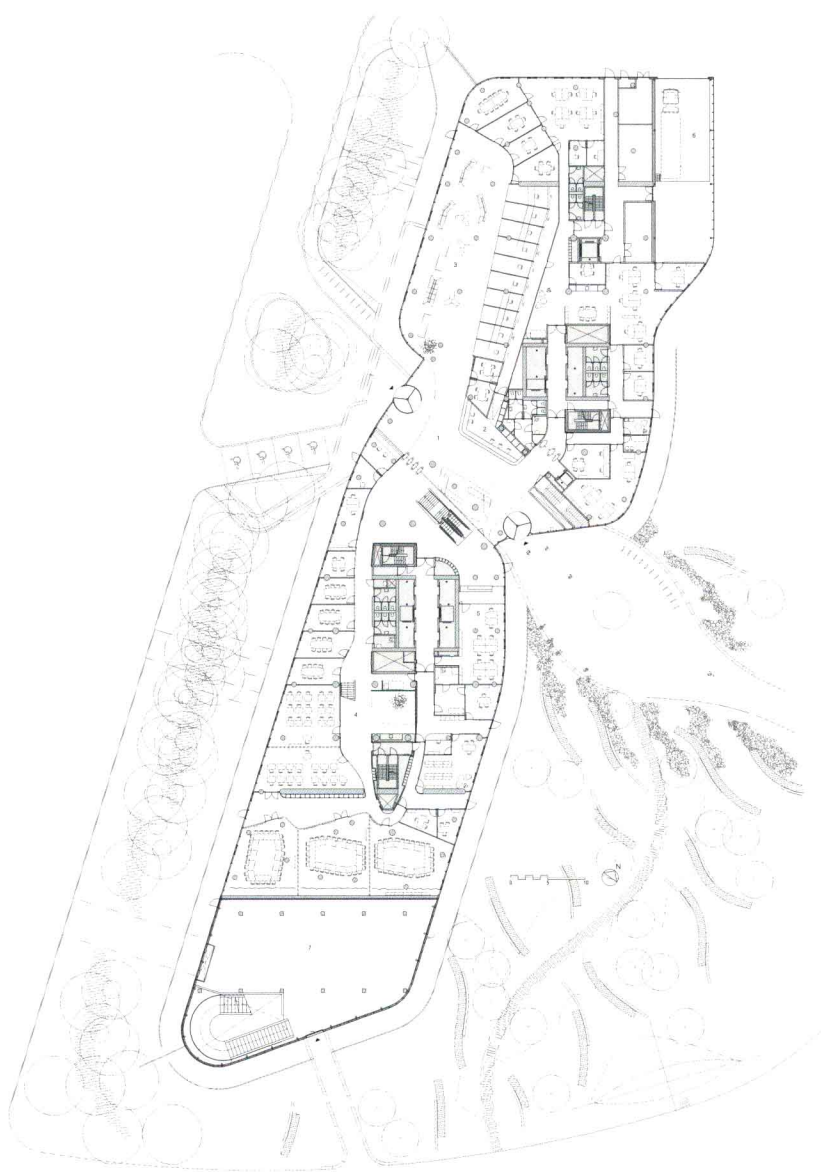
该项目是欧洲可持续性最好的新建大型写字楼之一。建筑从节约能源、减少耗材以及社会发展和环境保护等多方面出发，利用多种主动或被动措施，实现可持续设计的理念，实现了降低能耗（EPC 0.74），并大大降低材料消耗。建筑物内外形成了良好的生物气候，对人类及动植物都非常有益。

可持续性和节能的目标指导了立面设计，采用了对环境影响最小的技术设备。立面设计结合了遮阳、风控、日光渗透和鳍状元件。横翅阻挡了建筑外部大量的热辐射，减少了对制冷的需求。

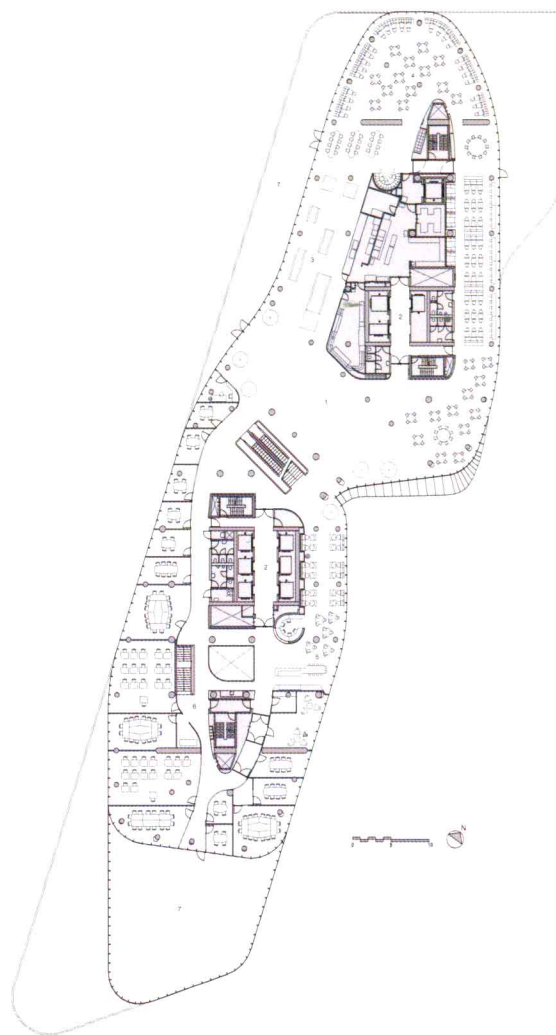
建筑的另一项可持续设计是活化混凝土芯与长时间地下储能的结合，这显著地减少了对外部能源的需求。

各工作区独立控温，创造了一个健康、节能的室内微气候，改善员工工作环境也是设计的重点。室内有充足的自然采光，采用可调节加热，独立工作区的通风和新风入口使整个建筑的工作环境舒适优良。

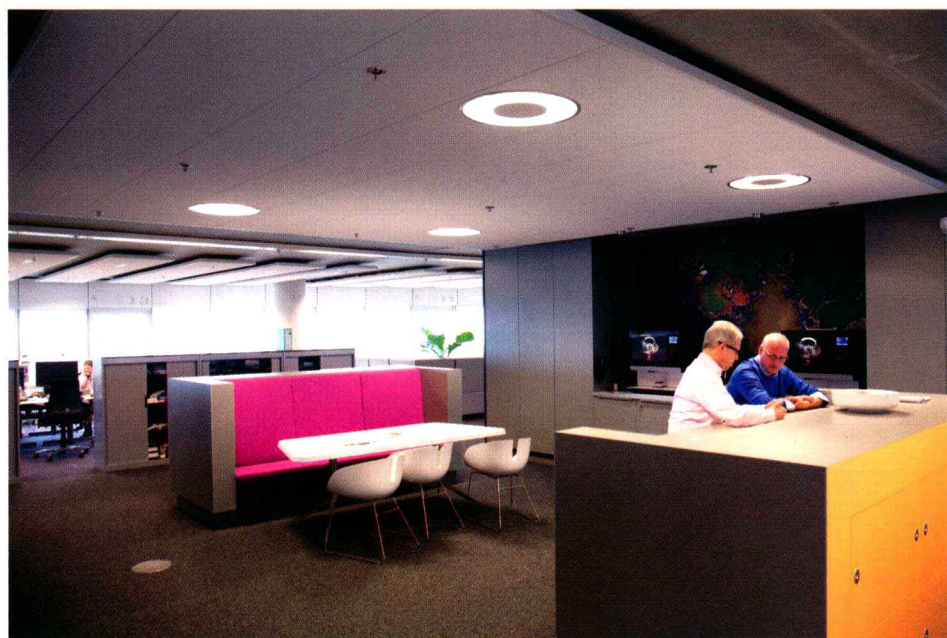
在建筑的第11层，设有高压通风系统，通过设在11楼的主工程轴和立面格栅使自然风进出大楼，从而减少了对人工通风的需求。此外，在后续的施工中，将实现利用数据中心和办公室产生的余热为居室加热。



一层平面图 GROUND FLOOR PLAN



二层平面图 SECOND FLOOR PLAN



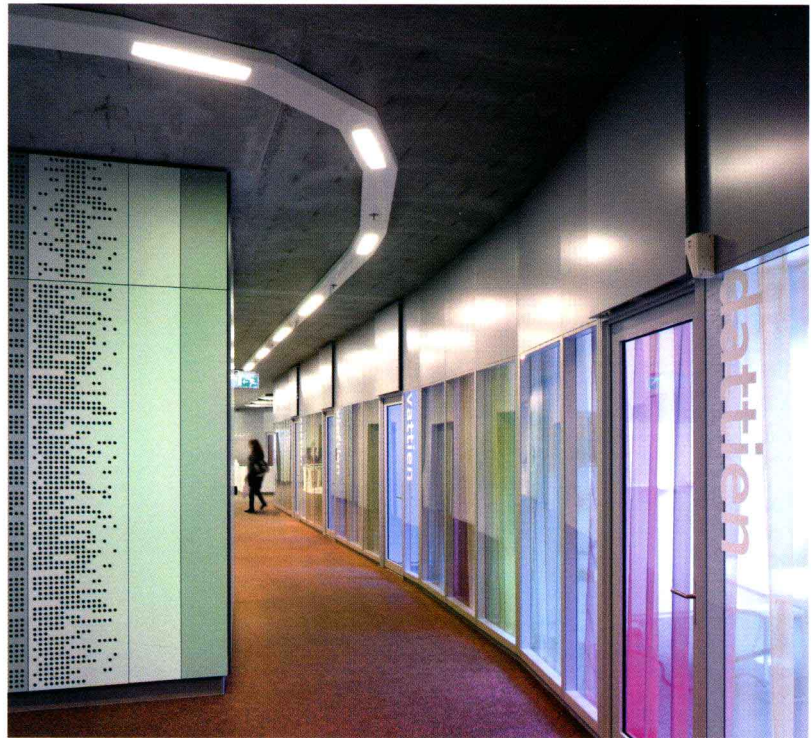




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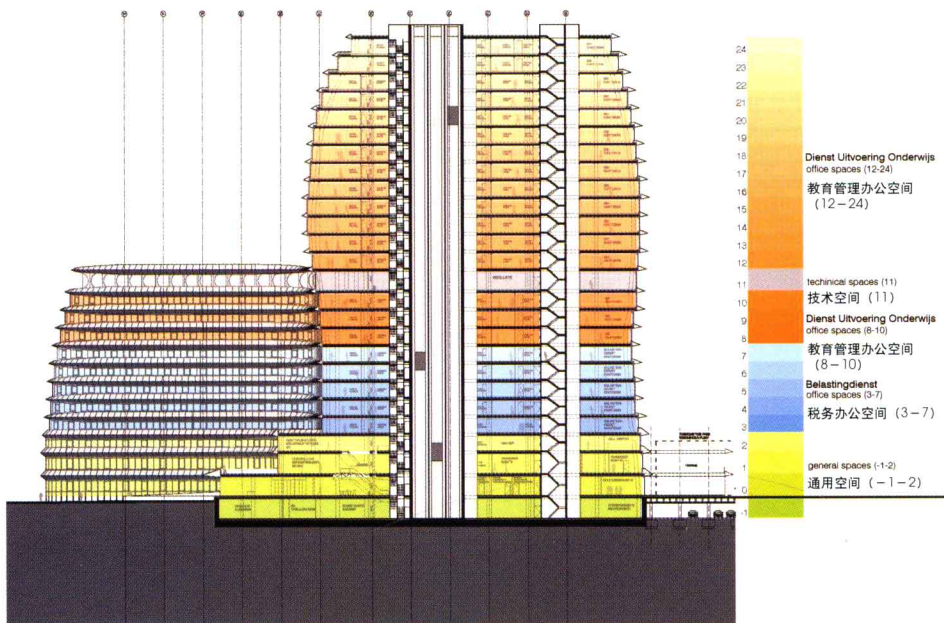
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### Program Description

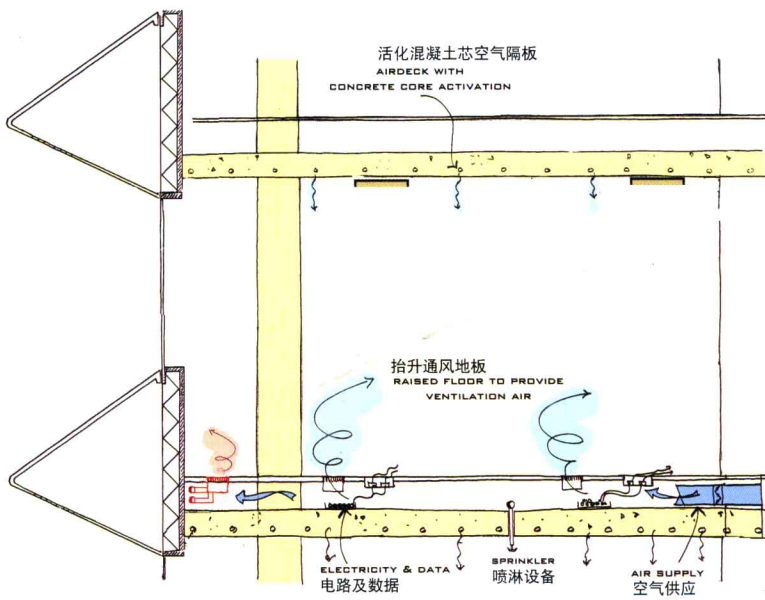
A new, 92 meter tall complex of soft, undulating curves marks the skyline of Groningen. UNStudio/ Ben van Berkel, with consortium DUO<sup>2</sup>, realizes Education Executive Agency & Tax offices, one of the most sustainable large office buildings in Europe for two governmental offices. The project includes the design, construction and financing of two public institutions; the national tax offices and the student loan administration. The program includes: an office building in phase A, an underground parking in phase B, a public city garden, and a multifunctional pavilion with commercial functions in phase C.

### Building Thermal Environmental Engineering Solutions

The project is one of Europe's most sustainable large new office buildings. The architectural response to this has been to strive for an all-round understanding of the concept of sustainability, including energy and material consumption, as well as social and environmental factors using diverse passive and active environmental and energy efficient solutions. Thus the sustainability manifests itself in reduced energy consumption (EPC 0.74), as well as significantly reduced material consumption. Both inside and outside the architecture generates a bioclimate that is beneficial to both humans and the local flora and fauna.



分析图 DIAGRAM



分析图 DIAGRAM

Sustainability and energy reduction have steered the design of the facade, which contains technical installations that are tailored to be durable and cause minimal environmental impact. The facade concept integrates shading, wind control, daylight penetration and construction in fin-shaped elements. These horizontal fins keep a large amount of the heat outside the building, reducing the requirement for cooling.

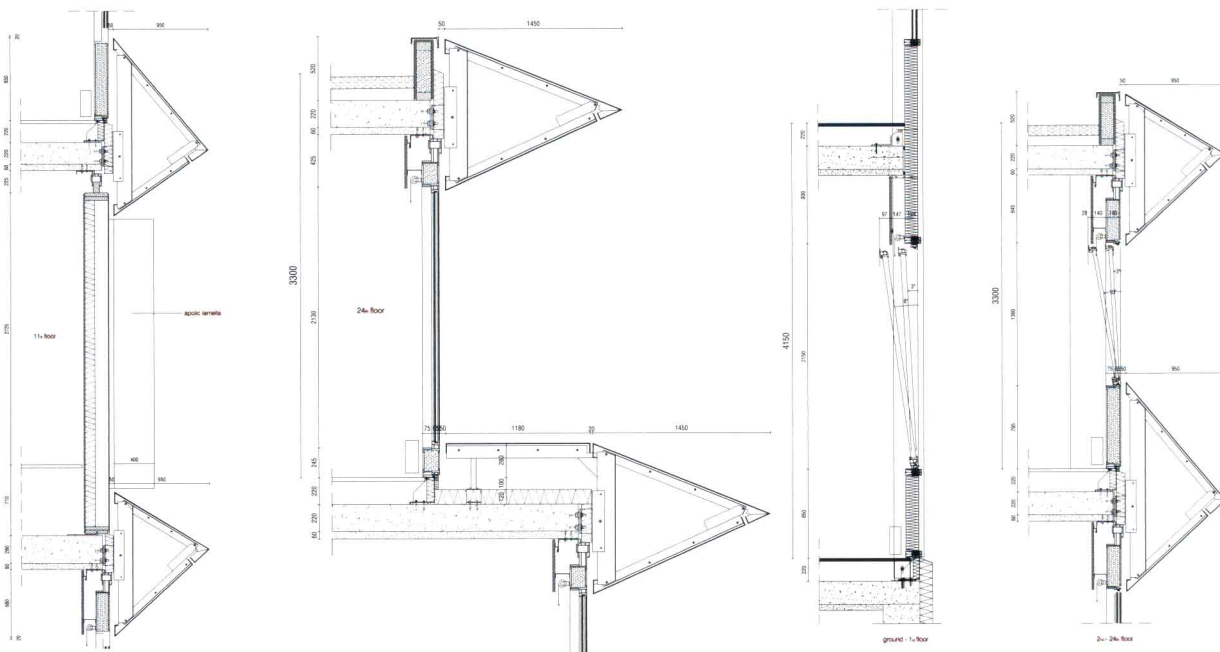
Another technical feature of the building that contributes to its sustainable character is the combination of concrete core activation and underground long term energy storage. This appreciably reduces the demand for external energy sources.

Individual climate control for each workspace. Creating a healthy, energy efficient interior climate and employee workspace comfort was also an important element in the design. Plenty of natural daylight and adjustable heating, ventilation and access to fresh air for individual workspaces contribute to the comfort of the workspaces throughout the building.

A high pressure ventilation system with natural air inflow and outflow via main engineering shafts and the facade grills on the 11th floor reduces the need for artificial ventilation. In addition, the residual energy of the data center and offices can be used to heat the homes that will be realized in the future in the perimeter of the site.



2011, UNStudio©Ronald Tilleman



节点图 DETAILS