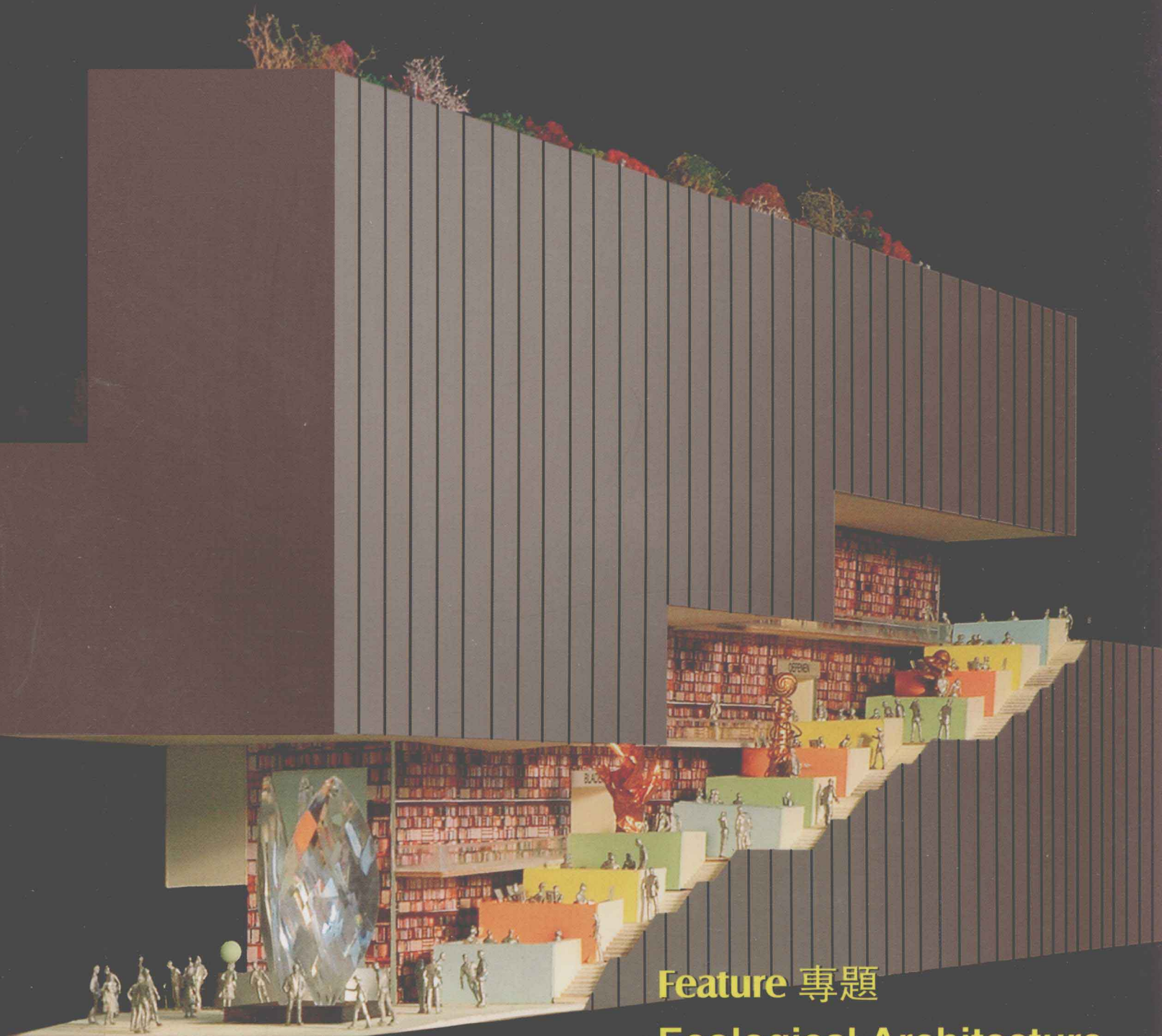


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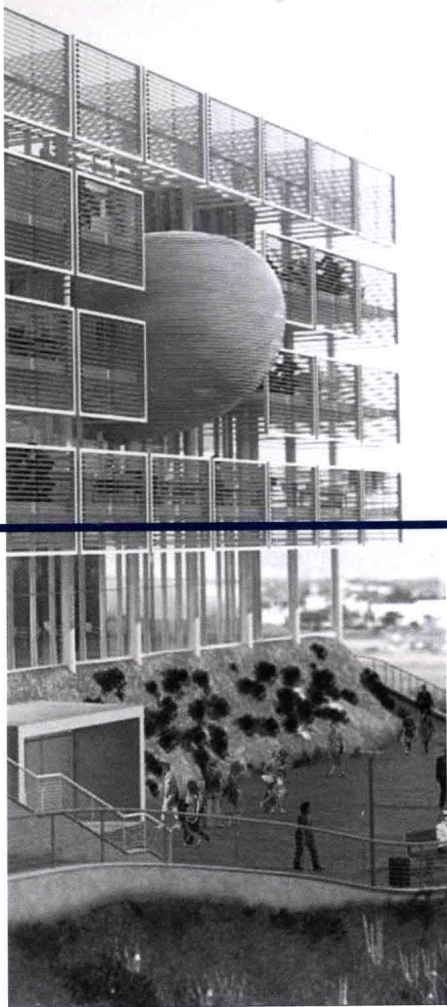
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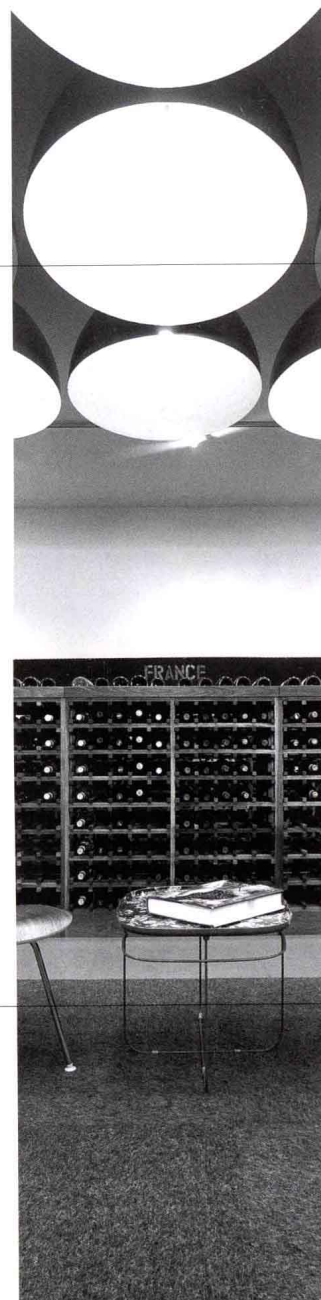
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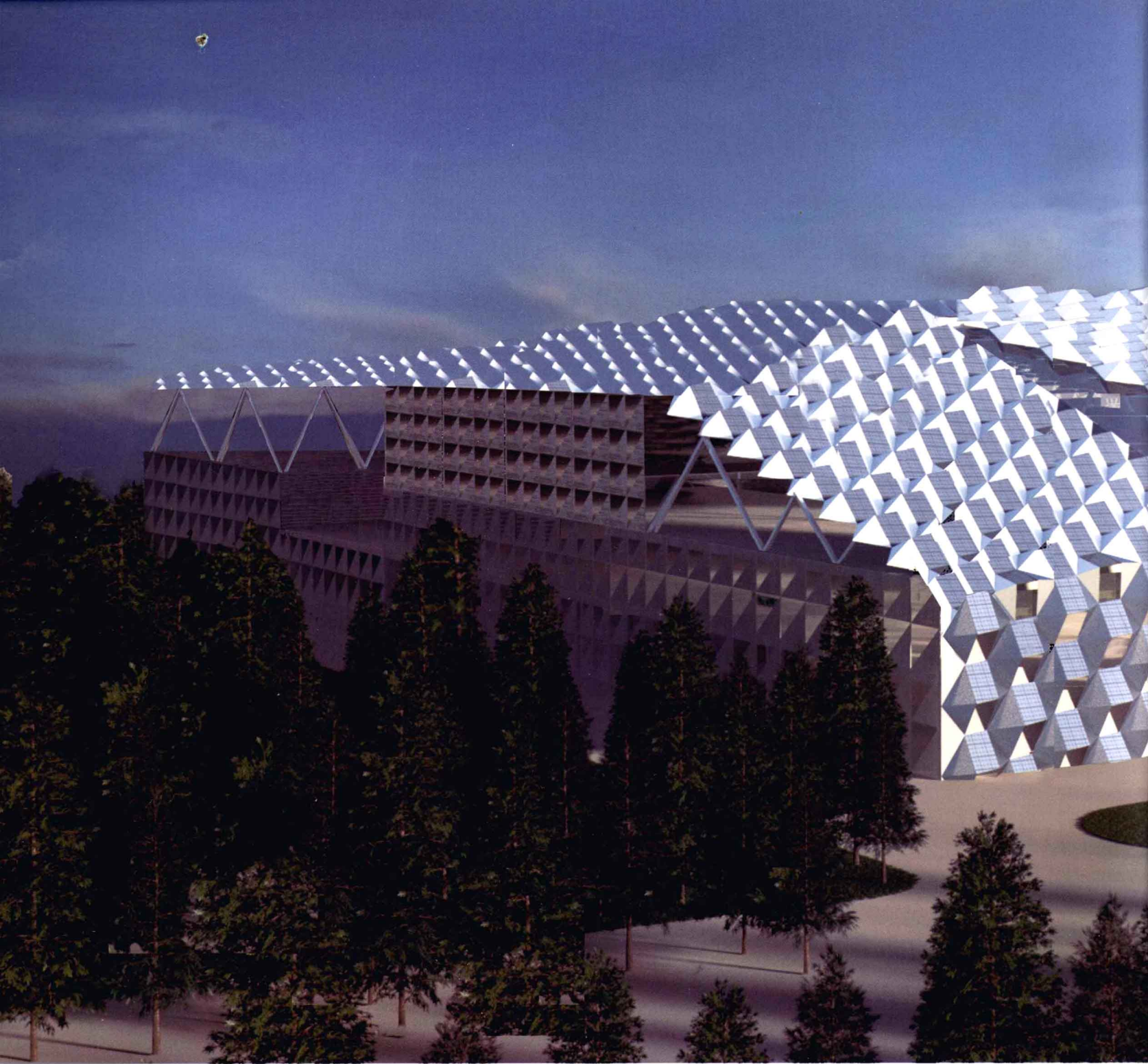
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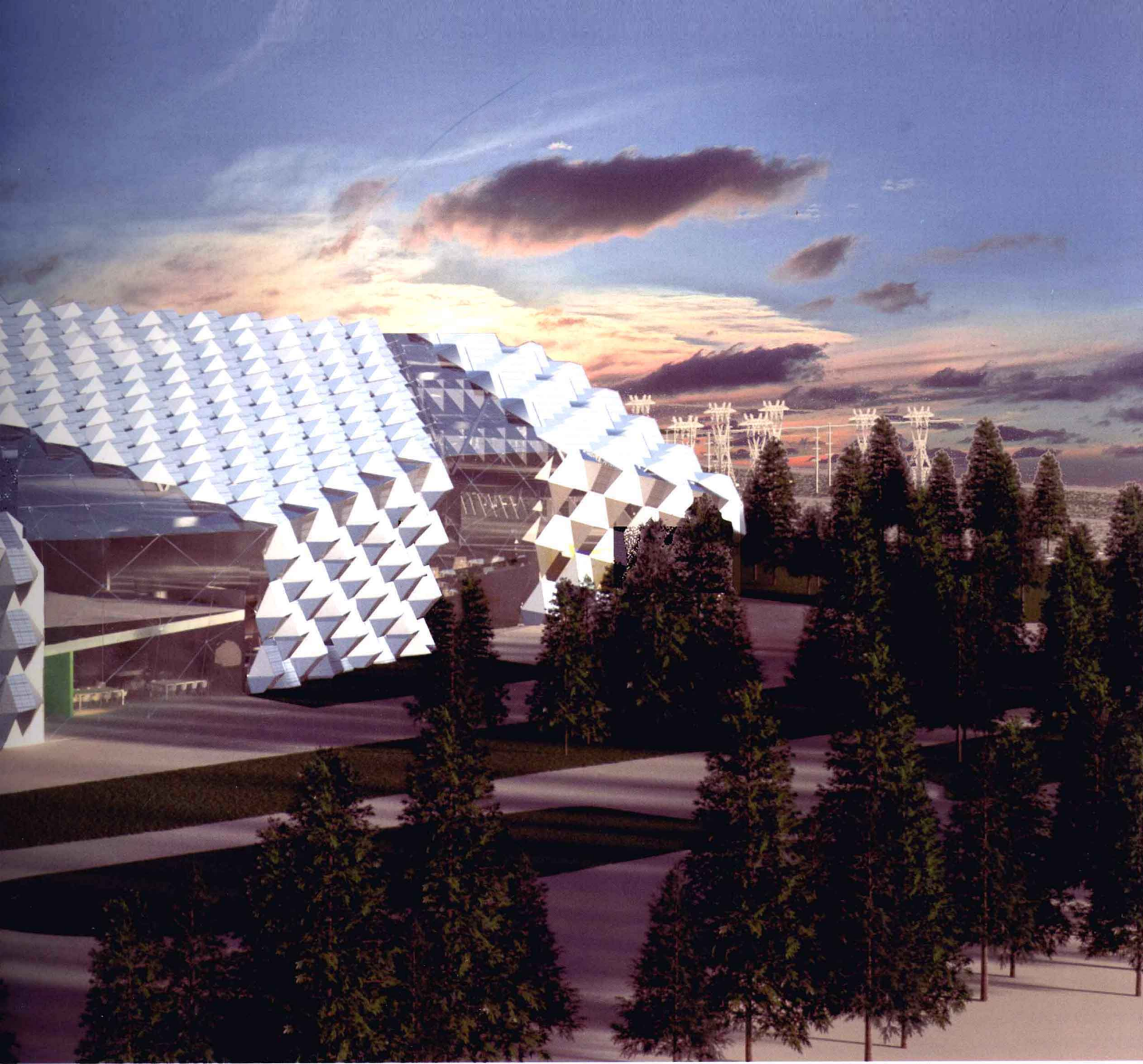


# Solar Power Offices

A Model of Low-carbon Office Building

低碳办公建筑的典范——太阳能办公室 | OFIS |





由太阳能薄膜覆盖的“微城”。  
The miniature city covered with solar membranes.

该建筑和装置的设计都是基于使建筑变得更高效率以及能源的交替使用原则，从而完全达到碳平衡的设计目标。

调查显示全年中平均有187天是晴天，显示了太阳能开采以及太阳能取暖烧水的大范围使用的潜力。凭借着设计目标和年均1402毫米的降雨量，装一个雨水收集装置是很有必要的——它可用作清洁、浇灌和洗车等。能源系统的设计优先考虑开采太阳能、风能及当地的可再生能源来降低能耗和二氧化碳的排放量。此外，这个概念也将被用于加工当地资源，像地下水直接加热或冷却、风能改善自然通风、太阳光照明和太阳能利用、雨水和废水的循环使用。所有这些室内设备都是依据空间占有率和空气质量监控系统自行调节的。通风设备和一个中央控制系统相连，允许人们手动操控通风系统来优化这个系统。

整个设备利用有机材料，设计得既合理又时尚。起着决定性作用的薄膜由

太阳能收集面板结合铝板和绝热层组成。建筑内部由钢结构和木头、织物及铝材等自然材料组成。整个工作区被设计成预制混凝土大厅。

这座建筑被设计成类似于一个校园或者“微城”的概念，可以清晰地反映公司的目标和活动，同时也创造了一个积极的工作环境。在第一阶段建筑从外形上已经形成一个整体，所以第二阶段可以在接下去的任何时间内实施。外面的太阳能薄膜成为了整个建筑和公司的标志，同时产生电力。这些面板的使用可以产生足够的能源来满足第二阶段建设的需要。

这个基地的大小允许每个功能区被分成独立的单元或部门，通过各连接纽带连接中央大厅和各个区域。除了内部交通的功能，这个大厅还允许自然光和自然风渗透进内部空间；他们还在办公区域实施绿化，给建筑营造了一种生机盎然的景象。



## 1 ELES BERIČEVO COMMON USE AREAS

- 1.1. Entrance into the complex
  - 1.1.1. Entrance lobby 100.00 m<sup>2</sup>
  - 1.1.2. Reception desk 2 workspaces 36.00 m<sup>2</sup>
  - 1.1.3. Central Surveillance System (CSS) 20.00 m<sup>2</sup>
  - 1.1.4. Storage room 10.00 m<sup>2</sup>
- 1.2. Educational facilities
  - 1.2.1. Classroom 1 30 persons 65.00 m<sup>2</sup>
  - 1.2.1.a Classroom 230 persons 65.00 m<sup>2</sup>
  - 1.2.2. Library 1 workspace 150.00 m<sup>2</sup>
  - 1.2.2.a Central archive 1 workspace 70.00 m<sup>2</sup>
  - 1.2.3. Reading room 20.00 m<sup>2</sup>
- 1.3. Recreation facilities
  - 1.3.1. Workout room 120.00 m<sup>2</sup>
  - 1.3.1.a Cloakroom - men (showers, restroom) 8.00 m<sup>2</sup>
  - 1.3.2. Cloakroom - women (showers, restroom) 8.00 m<sup>2</sup>
- 1.4. Catering facilities
  - 1.4.1. Canteen
    - 1.4.1.a Dining hall 100 persons 160.00 m<sup>2</sup>
    - 1.4.1.b Kitchen 50.00 m<sup>2</sup>
    - 1.4.1.c Storage and refrigeration rooms for the kitchen 30.00 m<sup>2</sup>
    - 1.4.1.d Bar with a counter 40.00 m<sup>2</sup>
  - 1.4.2. Catering area toilets
    - 1.4.2.a Toilets - men's 15.00 m<sup>2</sup>
    - 1.4.2.b Toilets - women's 15.00 m<sup>2</sup>
    - 1.4.2.c Toilets - handicapped 3.50 m<sup>2</sup>
  - 1.4.3. Catering staff service rooms
    - 1.4.3.a Cloakroom - men's 6.00 m<sup>2</sup>
    - 1.4.3.b Washroom - men's 2.50 m<sup>2</sup>
    - 1.4.3.c Toilet - men's (1 stall - urinal) 4.00 m<sup>2</sup>
    - 1.4.3.d Cloakroom - women's 6.00 m<sup>2</sup>
    - 1.4.3.e Washroom - women's 2.50 m<sup>2</sup>
    - 1.4.3.f Toilet - women's (1 stall) 2.50 m<sup>2</sup>
- 1.5. Service rooms
  - 1.5.1. Conference room 1 15 persons 40.00 m<sup>2</sup>
  - 1.5.2. Conference room 2 15 persons 40.00 m<sup>2</sup>
  - 1.5.3. Conference room 3 15 persons 40.00 m<sup>2</sup>
  - 1.5.4. Photocopy room - photocopying, printing, cutting 1 workspace 20.00 m<sup>2</sup>
  - 1.5.5. Janitor 1 workspace 16.00 m<sup>2</sup>
  - 1.5.6. Mail room (incoming/outgoing mail) 2 workspace 24.00 m<sup>2</sup>
  - 1.5.7. Refreshments (soda dispensers) 30.00 m<sup>2</sup>
  - 1.5.8. Smoking rooms 5.00 m<sup>2</sup>
  - 1.5.9. Toilets
    - 1.5.9.a Toilets - men's 32.00 m<sup>2</sup>
    - 1.5.9.b Toilets - women's 25.00 m<sup>2</sup>
    - 1.5.9.c Toilets - handicapped 13.50 m<sup>2</sup>
    - 1.5.9.d Toilets - handicapped 23.50 m<sup>2</sup>

- 1.6. Technical rooms
  - 1.6.1. Power supply rooms (UPS) 100.00 m<sup>2</sup>
  - 1.6.2. Diesel power generator 50.00 m<sup>2</sup>
  - 1.6.3. Climatic control room / NCC/RCC 80.00 m<sup>2</sup>
  - 1.6.4. Climatic control room / Offices 120.00 m<sup>2</sup>
  - 1.6.5. Climatic control room / Technology rooms 80.00 m<sup>2</sup>
  - 1.6.6. Boiler room 50.00 m<sup>2</sup>
  - 1.6.7. Fire extinguishers 20.00 m<sup>2</sup>

## 2. SYSTEM OPERATION DIVISION

- 2.1. System operation division management
  - 2.1.1. Office (senior management) 2 workspaces 90.00 m<sup>2</sup>
  - 2.1.2. Office (middle management) 4 workspaces 96.00 m<sup>2</sup>
  - 2.1.3. Staff office - noisy 2 workspaces 24.00 m<sup>2</sup>
  - 2.1.4. Conference room 10 stations 50.00 m<sup>2</sup>
  - 2.1.5. Storage room 10.00 m<sup>2</sup>
- 2.2. Operation service
  - 2.2.1. Offices
    - 2.2.1.a Office (middle management) 1 workspace 24.00 m<sup>2</sup>
    - 2.2.1.b Staff office - quiet 11 workspaces 132.00 m<sup>2</sup>
    - 2.2.1.c Staff office - noisy 5 workspaces 60.00 m<sup>2</sup>
    - 2.2.1.d Storage room 10.00 m<sup>2</sup>
  - 2.2.2. Control centre
    - 2.2.2.a National control centre (NCC) 4 workspaces
    - 2.2.2.b Regional control centre (RCC) 3 workspaces 320.00 m<sup>2</sup>
    - 2.2.2.c Visitors' room 20 persons 40.00 m<sup>2</sup>
    - 2.2.2.d Multifunctional crisis room 12 persons 48.00 m<sup>2</sup>
    - 2.2.2.e Reference archive 15.00 m<sup>2</sup>
    - 2.2.2.f Common rest room 18.00 m<sup>2</sup>
    - 2.2.2.g Small rest room 6.00 m<sup>2</sup>
    - 2.2.2.h Small rest room 6.00 m<sup>2</sup>
    - 2.2.2.i Dining hall 6 persons 18.00 m<sup>2</sup>
    - 2.2.2.j Kitchen 16.00 m<sup>2</sup>
    - 2.2.2.k Cloakroom 30 persons 12.00 m<sup>2</sup>
    - 2.2.2.l Bathroom 15.00 m<sup>2</sup>
    - 2.2.2.m Toilets 12.00 m<sup>2</sup>
  - 2.2.3. Operator Training Simulator (OTS)
    - 2.2.3.a OTS centre 2 persons 100.00 m<sup>2</sup>
    - 2.2.3.b Trainer room - glass wall overlooking the OTS 5 persons 40.00 m<sup>2</sup>
    - 2.2.3.c Archive 10.00 m<sup>2</sup>
- 2.3. Operation support service
  - 2.3.1. Office (middle management) 1 workspace 24.00 m<sup>2</sup>
  - 2.3.2. Staff office - quiet 12 workspaces 144.00 m<sup>2</sup>
  - 2.3.3. Staff office - noisy 1 workspace 12.00 m<sup>2</sup>
  - 2.3.4. Storage room 10.00 m<sup>2</sup>

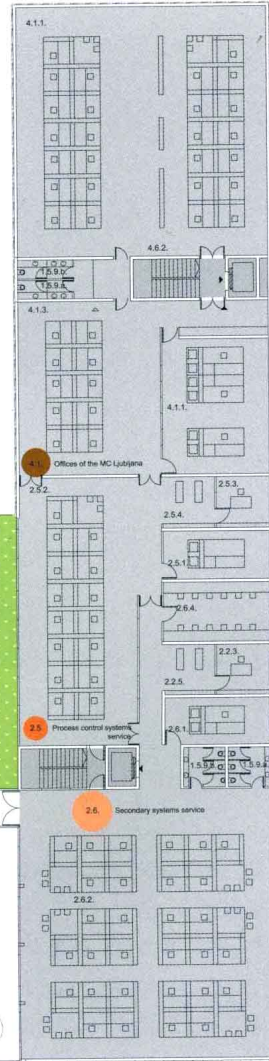
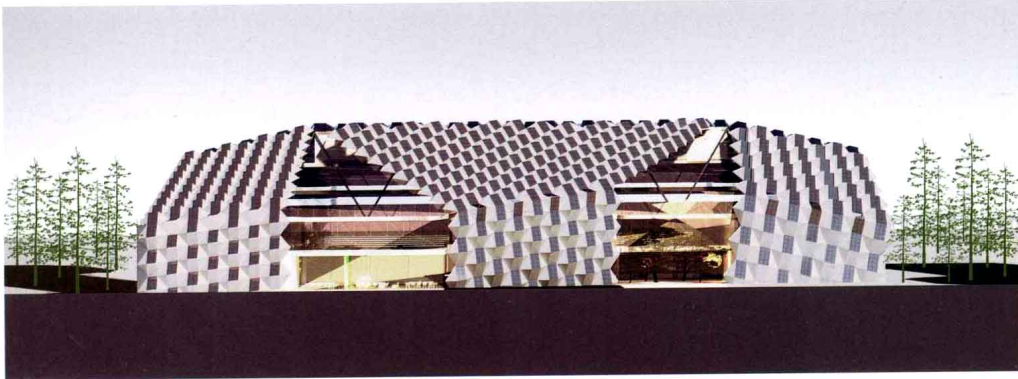
- 2.4. Power system development service
  - 2.4.1. Office (middle management) 1 workspace 24.00 m<sup>2</sup>
  - 2.4.2. Staff office - quiet 12 workspaces 144.00 m<sup>2</sup>
  - 2.4.3. Staff office - noisy 1 workspace 12.00 m<sup>2</sup>
  - 2.4.4. Storage room 10.00 m<sup>2</sup>
- 2.5. Process control systems service
  - 2.5.1. Office (middle management) 1 workspace 24.00 m<sup>2</sup>
  - 2.5.2. Staff office - quiet 15 workspaces 180.00 m<sup>2</sup>
  - 2.5.3. Staff office - noisy 1 workspace 12.00 m<sup>2</sup>
  - 2.5.4. Storage room 10.00 m<sup>2</sup>
- 2.6. Secondary systems service
  - 2.6.1. Office (middle management) 1 workspace 24.00 m<sup>2</sup>
  - 2.6.2. Staff office - quiet 30 workspaces 360.00 m<sup>2</sup>
  - 2.6.3. Staff office - noisy 1 workspace 12.00 m<sup>2</sup>
  - 2.6.4. Safety control center 12 persons 30.00 m<sup>2</sup>
  - 2.6.5. Storage room 10.00 m<sup>2</sup>
- 2.7. Technical and technology rooms
  - 2.7.1. Technical operating infrastructure (TOI) 300.00 m<sup>2</sup>
  - 2.7.2. TOI Administration 3 persons 45.00 m<sup>2</sup>
  - 2.7.3. ICTD, TS office - noisy (desk for 6 persons) 2 workspaces 24.00 m<sup>2</sup>
  - 2.7.4. SPSV storage for EMS equipment 20.00 m<sup>2</sup>
  - 2.7.5. Collocation area for external users 90.00 m<sup>2</sup>
  - 2.7.6. RPS and UPS auxiliary equipment 20.00 m<sup>2</sup>
  - 2.7.7. Secondary systems service storage room 50.00 m<sup>2</sup>
  - 2.7.8. Protection systems laboratory 30.00 m<sup>2</sup>

## 3. MARKET MONITORING DIVISION

- 3.1. Market monitoring division management
  - 3.1.1. Office (senior management) 2 workspaces 90.00 m<sup>2</sup>
  - 3.1.2. Staff office - noisy 1 workspace 12.00 m<sup>2</sup>
- 3.2. Contract and settlement service
  - 3.2.1. Office (middle management) 1 workspace 24.00 m<sup>2</sup>
  - 3.2.2. Staff office - quiet 7 workspaces 84.00 m<sup>2</sup>
- 3.3. Strategy and risk management service
  - 3.3.1. Office (middle management) 1 workspace 24.00 m<sup>2</sup>
  - 3.3.2. Staff office - quiet 5 workspaces 60.00 m<sup>2</sup>
  - 3.3.3. Staff office - noisy 3 workspaces 36.00 m<sup>2</sup>

## 4. MAINTENANCE CENTRE LJUBLJANA (MC LJ)

- 4.1. Offices of the MC Ljubljana
  - 4.1.1. Office (middle management) 3 workspace 72.00 m<sup>2</sup>
  - 4.1.2. Staff office - quiet 10 workspaces 120.00 m<sup>2</sup>
  - 4.1.3. Staff office - noisy 25 workspaces 300.00 m<sup>2</sup>
  - 4.1.4. Archives of the MC Ljubljana 80.00 m<sup>2</sup>
- 4.2. Workshops and warehouse of the MC Ljubljana
  - 4.2.1. Assembly tower 70.00 m<sup>2</sup>
  - 4.2.2. Rack warehouse - ground floor 180.00 m<sup>2</sup>
  - 4.2.3. Rack warehouse - ground floor 120.00 m<sup>2</sup>
  - 4.2.4. Rack warehouse - first floor 300.00 m<sup>2</sup>
  - 4.2.5. Floor warehouse 1,200.00 m<sup>2</sup>
  - 4.2.6. Floor warehouse - surplus, material, miscellaneous 1,200.00 m<sup>2</sup>
  - 4.2.7. Office 1 workspace 32.00 m<sup>2</sup>
  - 4.2.8. Restroom with locker room 16.00 m<sup>2</sup>
- 4.3. GARAGES OF THE MC LJUBLJANA
  - 4.3.1. Garages
    - 4.3.1.a Garage for freight vehicles and trailers 5 parking spaces 250.00 m<sup>2</sup>
    - 4.3.1.b Garage for vans and all-terrain vehicles 15 parking spaces 300.00 m<sup>2</sup>
    - 4.3.1.c Garage for work machinery and trailers 19 machines 300.00 m<sup>2</sup>
  - 4.3.2. Mechanic's shop 120.00 m<sup>2</sup>
  - 4.3.3. Car wash 80.00 m<sup>2</sup>
  - 4.3.4. Mechanic's shop warehouse 80.00 m<sup>2</sup>
  - 4.3.5. Office 2 workspaces 12.00 m<sup>2</sup>
  - 4.3.6. Restroom with cloakroom 16.00 m<sup>2</sup>
- 4.4. DS Beričevo
  - 4.4.1. Office
    - 4.4.1.a DS Foreman's office 1 workspace 24.00 m<sup>2</sup>
  - 4.4.2. Workshops
    - 4.4.2.a Machine workshop with welding station 9.00 m<sup>2</sup>
    - 4.4.2.b Electrical workshop 48.00 m<sup>2</sup>
    - 4.4.2.c DS measuring chamber 42.00 m<sup>2</sup>
  - 4.4.3. Warehouses
    - 4.4.3.a DS small tools storage room 150.00 m<sup>2</sup>
    - 4.4.3.b Flammable materials storage 20.00 m<sup>2</sup>
    - 4.4.3.c Gas storage 6.00 m<sup>2</sup>
  - 4.4.4. Service rooms
    - 4.4.4.a Compressor room 9.00 m<sup>2</sup>
- 4.5. OHL Beričevo
  - 4.5.1. OHL small tools storage room 25.00 m<sup>2</sup>
  - 4.5.2. Storage room, chain saw service station 50.00 m<sup>2</sup>
- 4.6. DS and OHL service stations
  - 4.6.1. DS cloakroom 25 workspaces 120.00 m<sup>2</sup>
  - 4.6.2. OHL cloakroom 25 workspaces 120.00 m<sup>2</sup>
  - 4.6.3. Utility room (washing machine, dryer) 15.00 m<sup>2</sup>
  - 4.6.4. Drying room for clothes, shoes 63.00 m<sup>2</sup>
  - 4.6.5. Facilities (showers, toilet, urinals, washing room) 48.00 m<sup>2</sup>



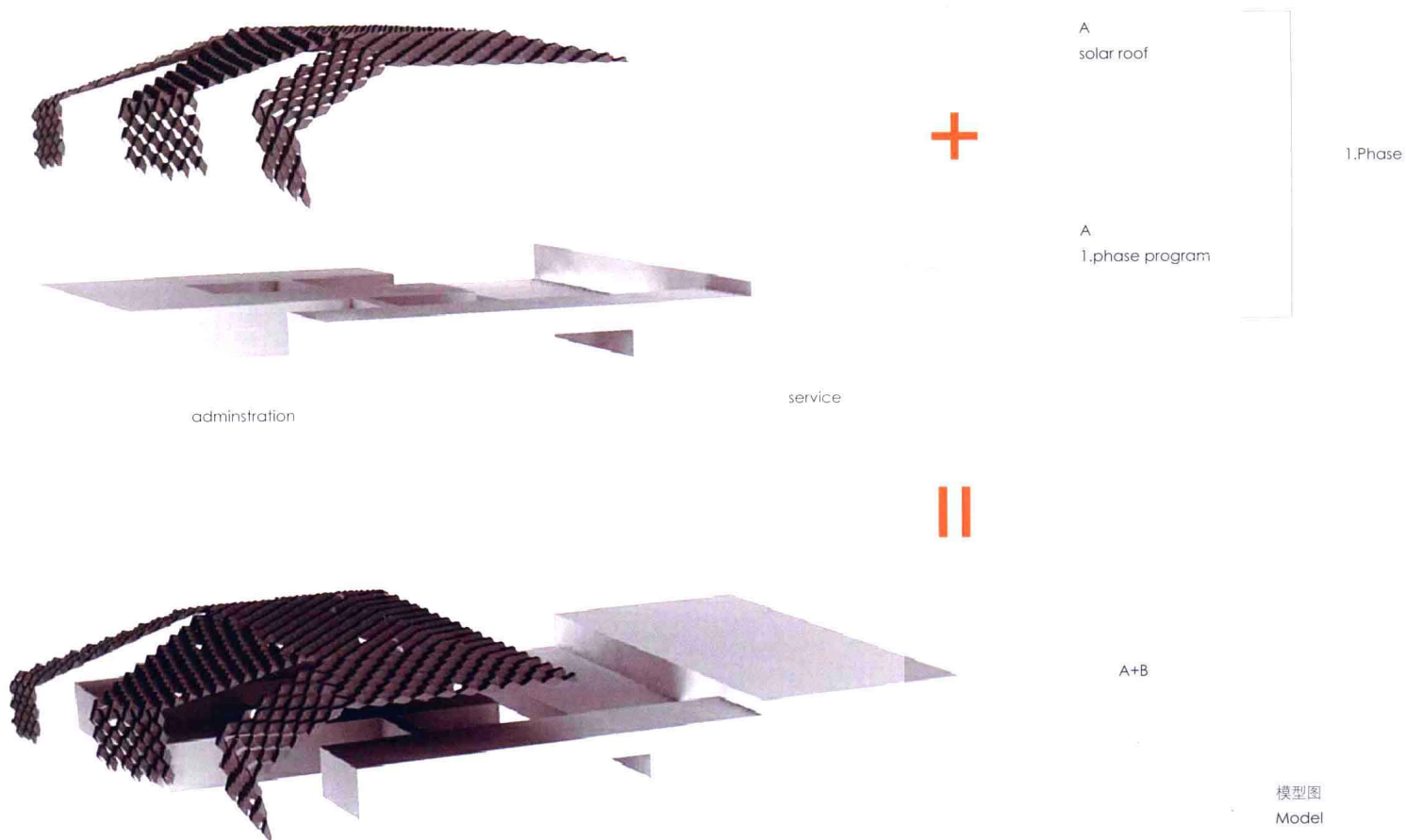
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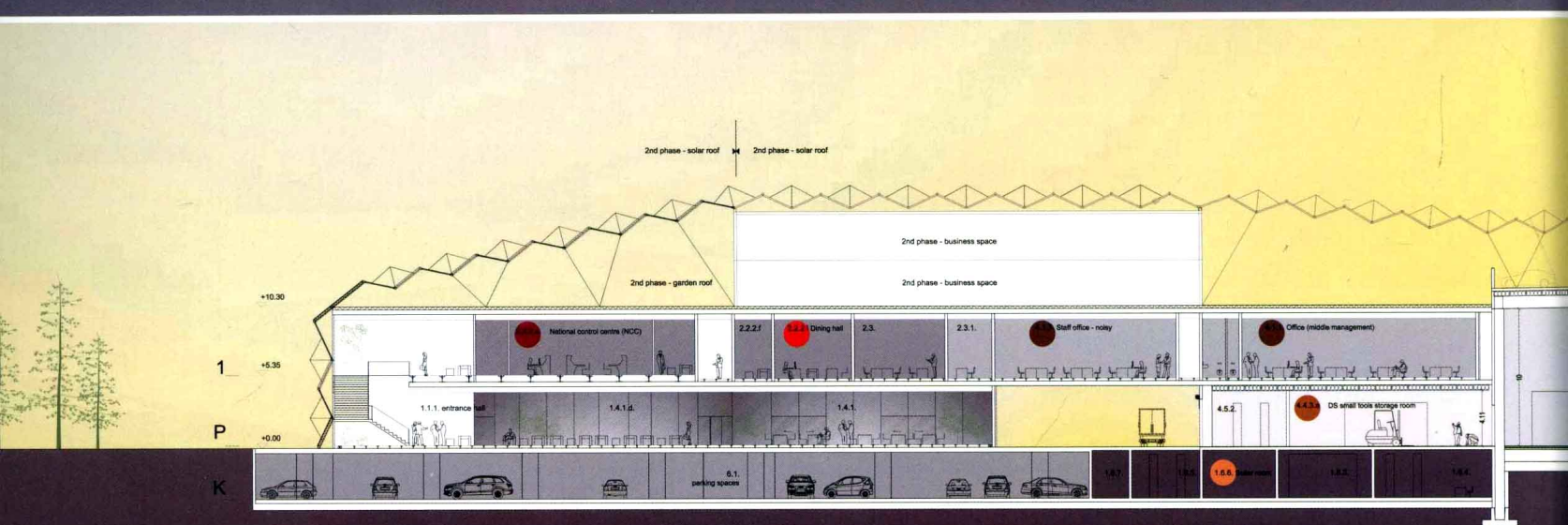
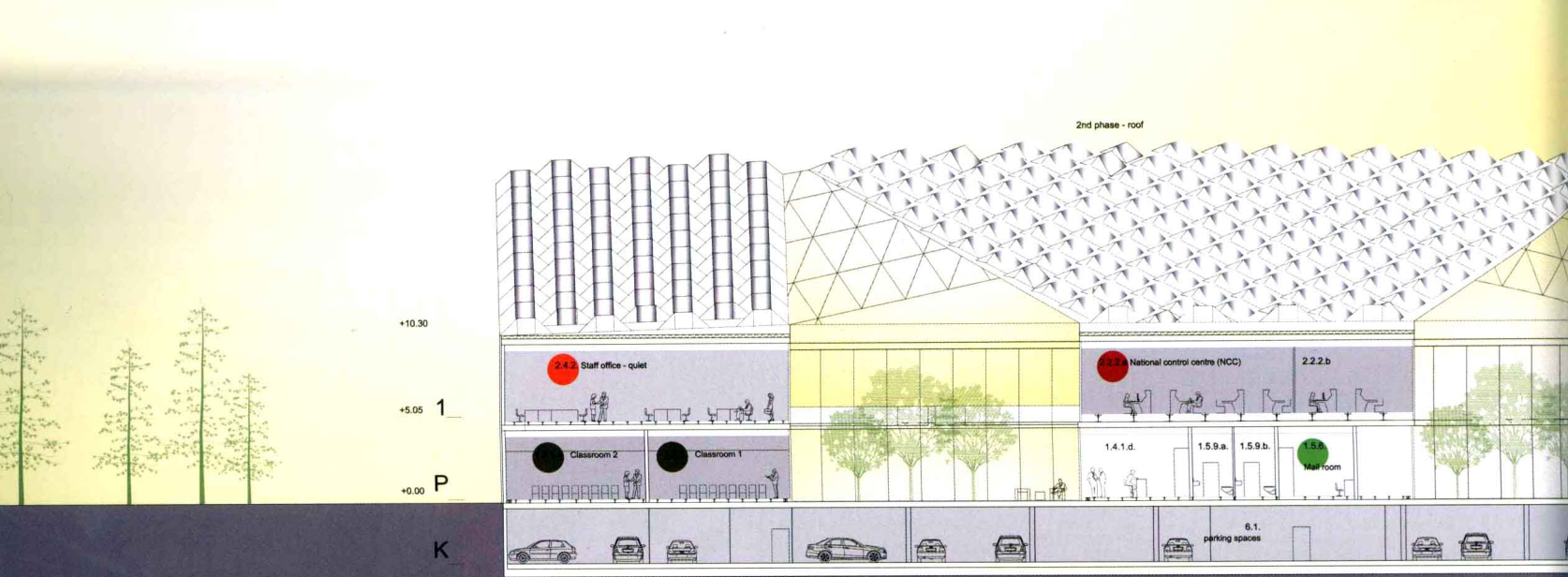


阳光下的太阳能“微城”。

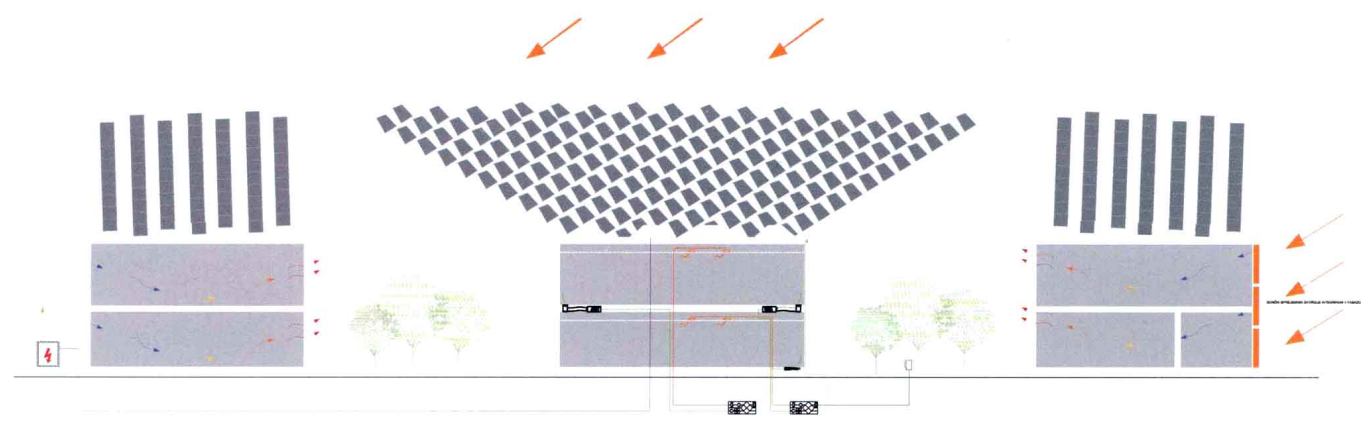
The miniature city of solar power under the sunlight.



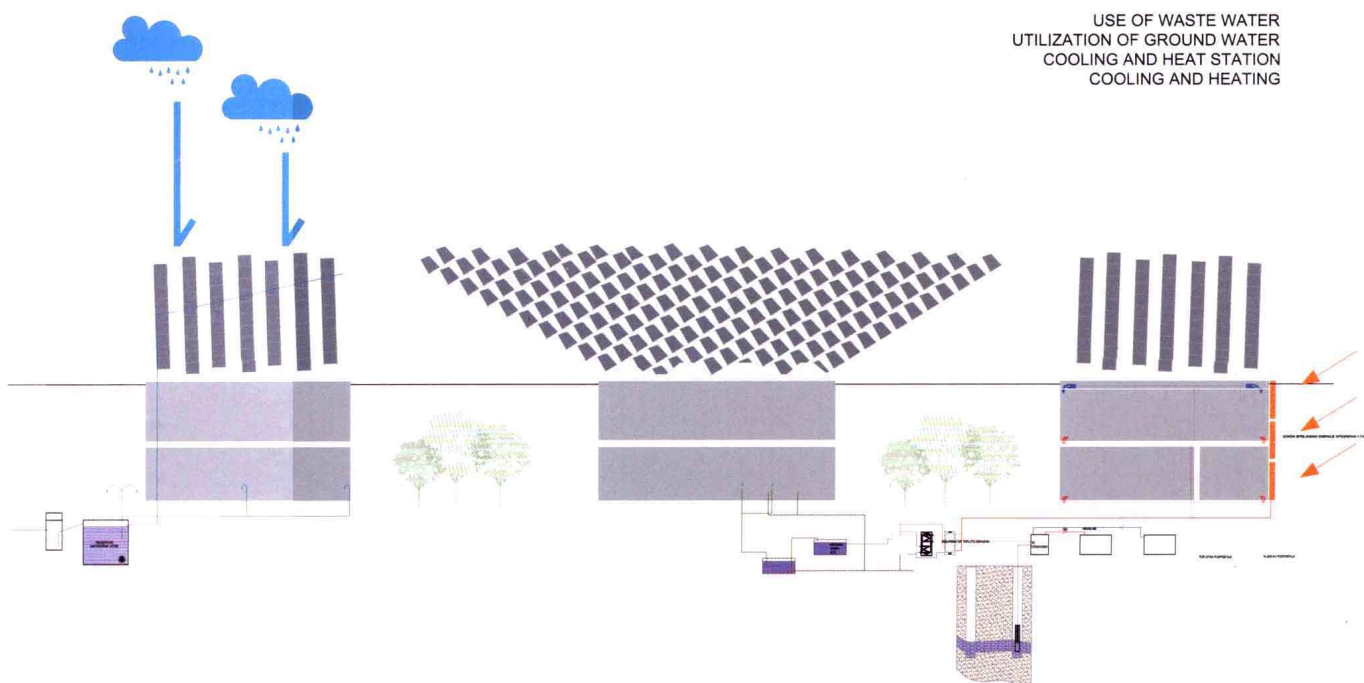
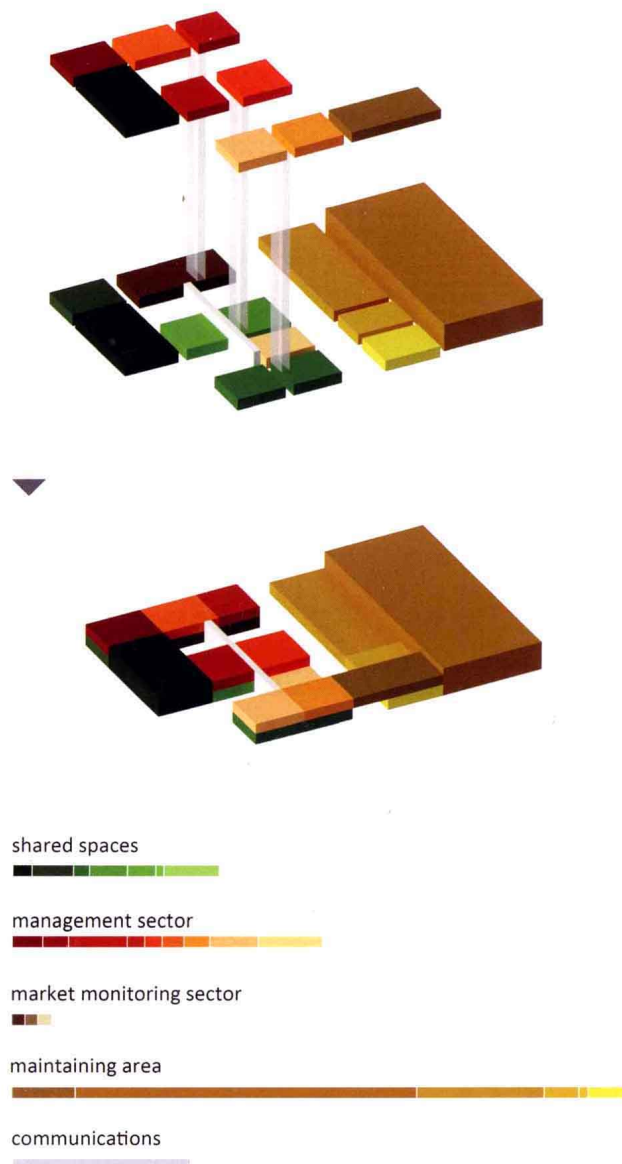
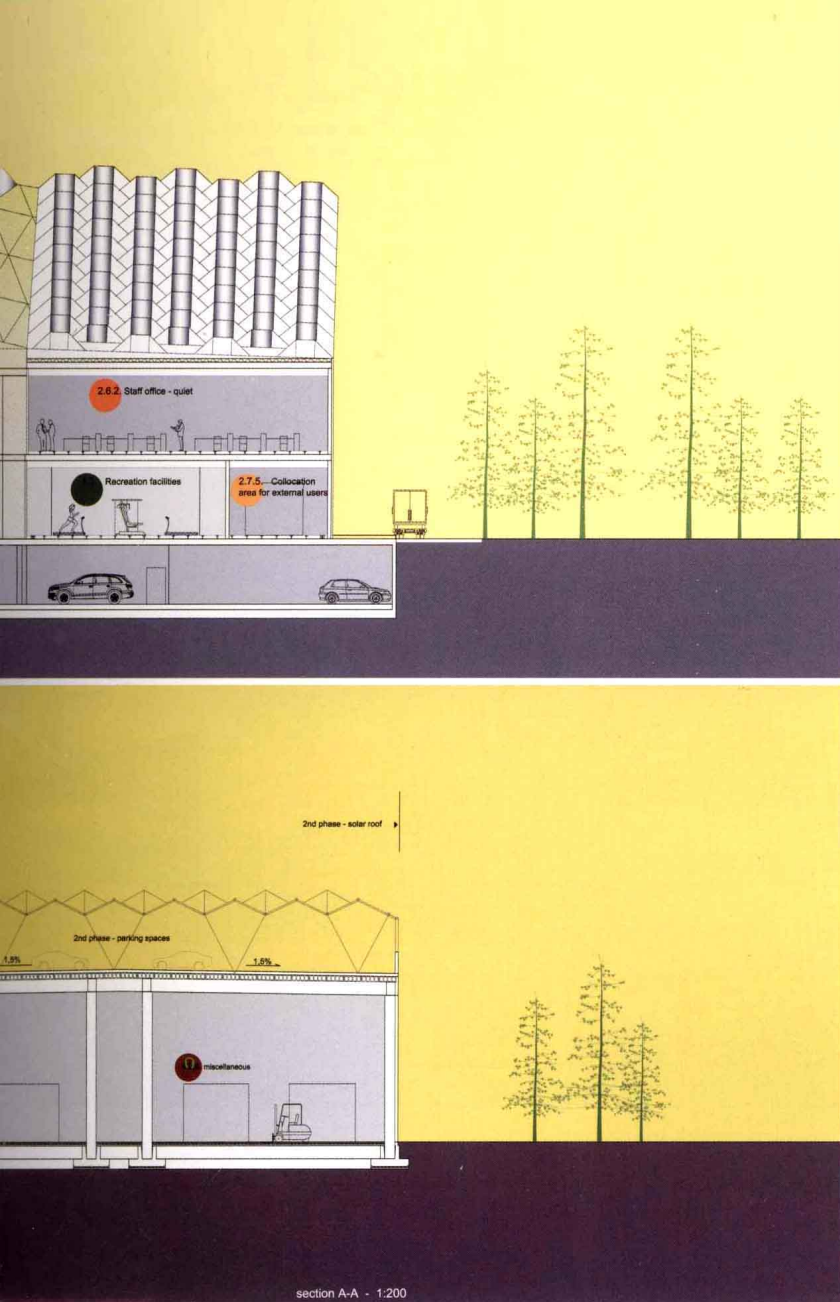




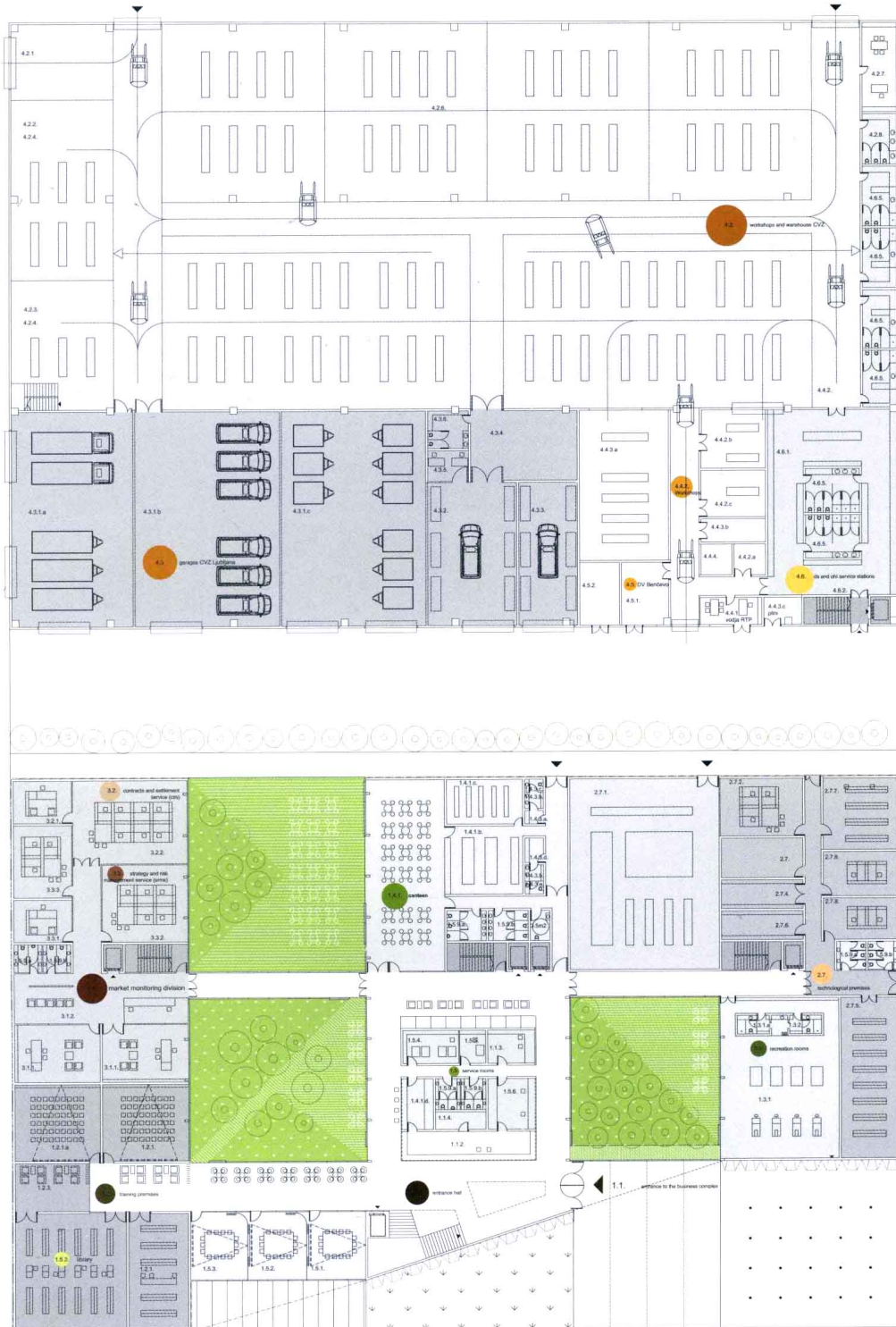
NATURAL VENTILATION  
MECHANICAL VENTILATION  
ACQUISITION OF ELECTRICITY  
RECEIVERS OF SOLAR ENERGY











plan - ground floor - 1:200

## 1 ELES BERIČEVO COMMON USE AREAS

- 1.1 Entrance into the complex
  - 1.1.1 Entrance lobby 100.00 m<sup>2</sup>
  - 1.1.2 Reception desk 2 workspaces 36.00 m<sup>2</sup>
  - 1.1.3 Central Surveillance System (CSS) 20.00 m<sup>2</sup>
  - 1.1.4 Storage room 10.00 m<sup>2</sup>
- 1.2 Educational facilities
  - 1.2.1 Classroom 130 persons 65.00 m<sup>2</sup>
  - 1.2.1.a Classroom 230 persons 65.00 m<sup>2</sup>
  - 1.2.2 Library 1 workspace 150.00 m<sup>2</sup>
  - 1.2.2.a Central archive 1 workspace 70.00 m<sup>2</sup>
  - 1.2.3 Reading room 20.00 m<sup>2</sup>
- 1.3 Recreation facilities
  - 1.3.1 Workout room 120.00 m<sup>2</sup>
  - 1.3.1.a Cloakroom - men (showers, restroom) 8.00 m<sup>2</sup>
  - 1.3.2 Cloakroom - women (showers, restroom) 8.00 m<sup>2</sup>
- 1.4 Catering facilities
  - 1.4.1 Canteen
    - 1.4.1.a Dining hall 100 persons 160.00 m<sup>2</sup>
    - 1.4.1.b Kitchen 50.00 m<sup>2</sup>
    - 1.4.1.c Storage and refrigeration rooms for the kitchen 30.00 m<sup>2</sup>
  - 1.4.1.d Bar with a counter 40.00 m<sup>2</sup>
- 1.4.2 Catering area toilets
  - 1.4.2.a Toilets - men's 15.00 m<sup>2</sup>
  - 1.4.2.b Toilets - women's 15.00 m<sup>2</sup>
  - 1.4.2.c Toilets - handicapped 3.50 m<sup>2</sup>
- 1.4.3 Catering staff service rooms
  - 1.4.3.a Cloakroom - men's 6.00 m<sup>2</sup>
  - 1.4.3.b Washroom - men's 2.50 m<sup>2</sup>
  - 1.4.3.c Toilet - men's (1 stall + urinal) 4.00 m<sup>2</sup>
  - 1.4.3.d Cloakroom - women's 6.00 m<sup>2</sup>
  - 1.4.3.e Washroom - women's 2.50 m<sup>2</sup>
  - 1.4.3.f Toilet - women's (1 stall) 2.50 m<sup>2</sup>
- 1.5 Service rooms
  - 1.5.1 Conference room 15 persons 40.00 m<sup>2</sup>
  - 1.5.2 Conference room 25 persons 40.00 m<sup>2</sup>
  - 1.5.3 Conference room 35 persons 40.00 m<sup>2</sup>
  - 1.5.4 Photocopy room - photocopying, printing, cutting 1 workspace 20.00 m<sup>2</sup>
  - 1.5.5 Janitor's 1 workspace 16.00 m<sup>2</sup>
  - 1.5.6 Mail room (incoming/outgoing mail) 2 workspace 24.00 m<sup>2</sup>
  - 1.5.7 Refreshments (soda dispensers) 30.00 m<sup>2</sup>
  - 1.5.8 Smoking room 5.00 m<sup>2</sup>
  - 1.5.9 Toilets
    - 1.5.9.a Toilets - men's 32.00 m<sup>2</sup>
    - 1.5.9.b Toilets - women's 32.00 m<sup>2</sup>
    - 1.5.9.c Toilets - handicapped 1.50 m<sup>2</sup>
    - 1.5.9.d Toilets - handicapped 2.35 m<sup>2</sup>
- 1.6 Technical rooms
  - 1.6.1 Power supply rooms (UPS) 100.00 m<sup>2</sup>
  - 1.6.2 Diesel power generator 50.00 m<sup>2</sup>
  - 1.6.3 Climatic control room / NCC/RCC 80.00 m<sup>2</sup>
  - 1.6.4 Climatic control room / Offices 120.00 m<sup>2</sup>
  - 1.6.5 Climatic control room / Technology rooms 80.00 m<sup>2</sup>
  - 1.6.6 Boiler room 50.00 m<sup>2</sup>
  - 1.6.7 Fire extinguishers 20.00 m<sup>2</sup>

## 2 SYSTEM OPERATION DIVISION

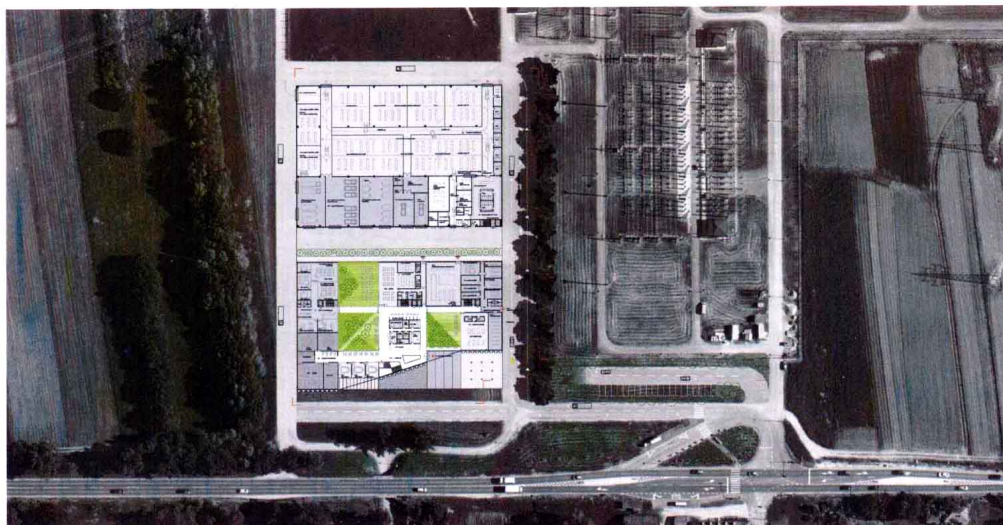
- 2.1 System operation division management
  - 2.1.1 Office (senior management) 2 workspaces 90.00 m<sup>2</sup>
  - 2.1.2 Office (middle management) 4 workspaces 96.00 m<sup>2</sup>
  - 2.1.3 Staff office - quiet 2 workspaces 24.00 m<sup>2</sup>
  - 2.1.4 Conference room 10 stations 50.00 m<sup>2</sup>
  - 2.1.5 Storage room 10.00 m<sup>2</sup>
- 2.2 Operation service
  - 2.2.1 Offices
    - 2.2.1.a Office (middle management) 1 workspace 24.00 m<sup>2</sup>
    - 2.2.1.b Staff office - quiet 11 workspaces 132.00 m<sup>2</sup>
    - 2.2.1.c Staff office - noisy 5 workspaces 60.00 m<sup>2</sup>
  - 2.2.1.d Storage room 10.00 m<sup>2</sup>
- 2.2.2 Control centre
  - 2.2.2.a National control centre (NCC) 4 workspaces
  - 2.2.2.b Regional control centre (RCC) 3 workspaces 320.00 m<sup>2</sup>
  - 2.2.2.c Visitor's room 20 persons 40.00 m<sup>2</sup>
  - 2.2.2.d Multidirectional cross room 12 persons 48.00 m<sup>2</sup>
  - 2.2.2.e Reference archive 15.00 m<sup>2</sup>
  - 2.2.2.f Common rest room 18.00 m<sup>2</sup>
  - 2.2.2.g Small rest room 6.00 m<sup>2</sup>
  - 2.2.2.h Small rest room 6.00 m<sup>2</sup>
  - 2.2.2.i Dining hall 6 persons 18.00 m<sup>2</sup>
  - 2.2.2.j Kitchen 18.00 m<sup>2</sup>
  - 2.2.2.k Cloakroom 30 persons 12.00 m<sup>2</sup>
  - 2.2.2.l Bathroom 15.00 m<sup>2</sup>
  - 2.2.2.m Toilets 12.00 m<sup>2</sup>
  - 2.2.2.n Operator Training Simulator (OTS)
    - 2.2.2.n.a OTS centre 2 persons 100.00 m<sup>2</sup>
    - 2.2.2.n.b Trainer room - glass wall overlooking the OTS 5 persons 40.00 m<sup>2</sup>
  - 2.2.2.o Archive 10.00 m<sup>2</sup>
- 2.3 Operation support service
  - 2.3.1 Office (middle management) 1 workspace 24.00 m<sup>2</sup>
  - 2.3.2 Staff office - quiet 12 workspaces 144.00 m<sup>2</sup>
  - 2.3.3 Staff office - noisy 1 workspace 12.00 m<sup>2</sup>
  - 2.3.4 Storage room 10.00 m<sup>2</sup>
- 2.4 Power system development service
  - 2.4.1 Office (middle management) 1 workspace 24.00 m<sup>2</sup>
  - 2.4.2 Staff office - quiet 12 workspaces 144.00 m<sup>2</sup>
  - 2.4.3 Staff office - noisy 1 workspace 12.00 m<sup>2</sup>
  - 2.4.4 Storage room 10.00 m<sup>2</sup>
- 2.5 Process control systems service
  - 2.5.1 Office (middle management) 1 workspace 24.00 m<sup>2</sup>
  - 2.5.2 Staff office - quiet 18 workspaces 180.00 m<sup>2</sup>
  - 2.5.3 Staff office - noisy 1 workspace 12.00 m<sup>2</sup>
  - 2.5.4 Storage room 10.00 m<sup>2</sup>
- 2.6 Secondary systems service
  - 2.6.1 Office (middle management) 1 workspace 24.00 m<sup>2</sup>
  - 2.6.2 Staff office - quiet 30 workspaces 360.00 m<sup>2</sup>
  - 2.6.3 Staff office - noisy 1 workspace 12.00 m<sup>2</sup>
  - 2.6.4 Safety control centre 12 persons 30.00 m<sup>2</sup>
  - 2.6.5 Storage room 10.00 m<sup>2</sup>
- 2.7 Technical and technology rooms
  - 2.7.1 Technical operating infrastructure (TOI) 300.00 m<sup>2</sup>
  - 2.7.2 TOI Administration 3 persons 45.00 m<sup>2</sup>
  - 2.7.3 ICTD, TS office - noisy (desk for 6 persons) 2 workspaces 24.00 m<sup>2</sup>
  - 2.7.4 SPSSV storage for EMS equipment 20.00 m<sup>2</sup>
  - 2.7.5 Collection area for external users 90.00 m<sup>2</sup>
  - 2.7.6 HPS and UPS auxiliary equipment 20.00 m<sup>2</sup>
  - 2.7.7 Secondary systems service storage room 50.00 m<sup>2</sup>
  - 2.7.8 Protection systems laboratory 30.00 m<sup>2</sup>

## 3 MARKET MONITORING DIVISION

- 3.1 Market monitoring division management
  - 3.1.1 Office (senior management) 2 workspaces 90.00 m<sup>2</sup>
  - 3.1.2 Staff office - noisy 1 workspace 12.00 m<sup>2</sup>
- 3.2 Control and settlement service
  - 3.2.1 Office (middle management) 1 workspace 24.00 m<sup>2</sup>
  - 3.2.2 Staff office - quiet 7 workspaces 84.00 m<sup>2</sup>
- 3.3 Strategy and risk management service
  - 3.3.1 Office (middle management) 1 workspace 24.00 m<sup>2</sup>
  - 3.3.2 Staff office - quiet 5 workspaces 60.00 m<sup>2</sup>
  - 3.3.3 Staff office - noisy 3 workspaces 36.00 m<sup>2</sup>

## 4 MAINTENANCE CENTRE LJUBLJANA (MC LJ)

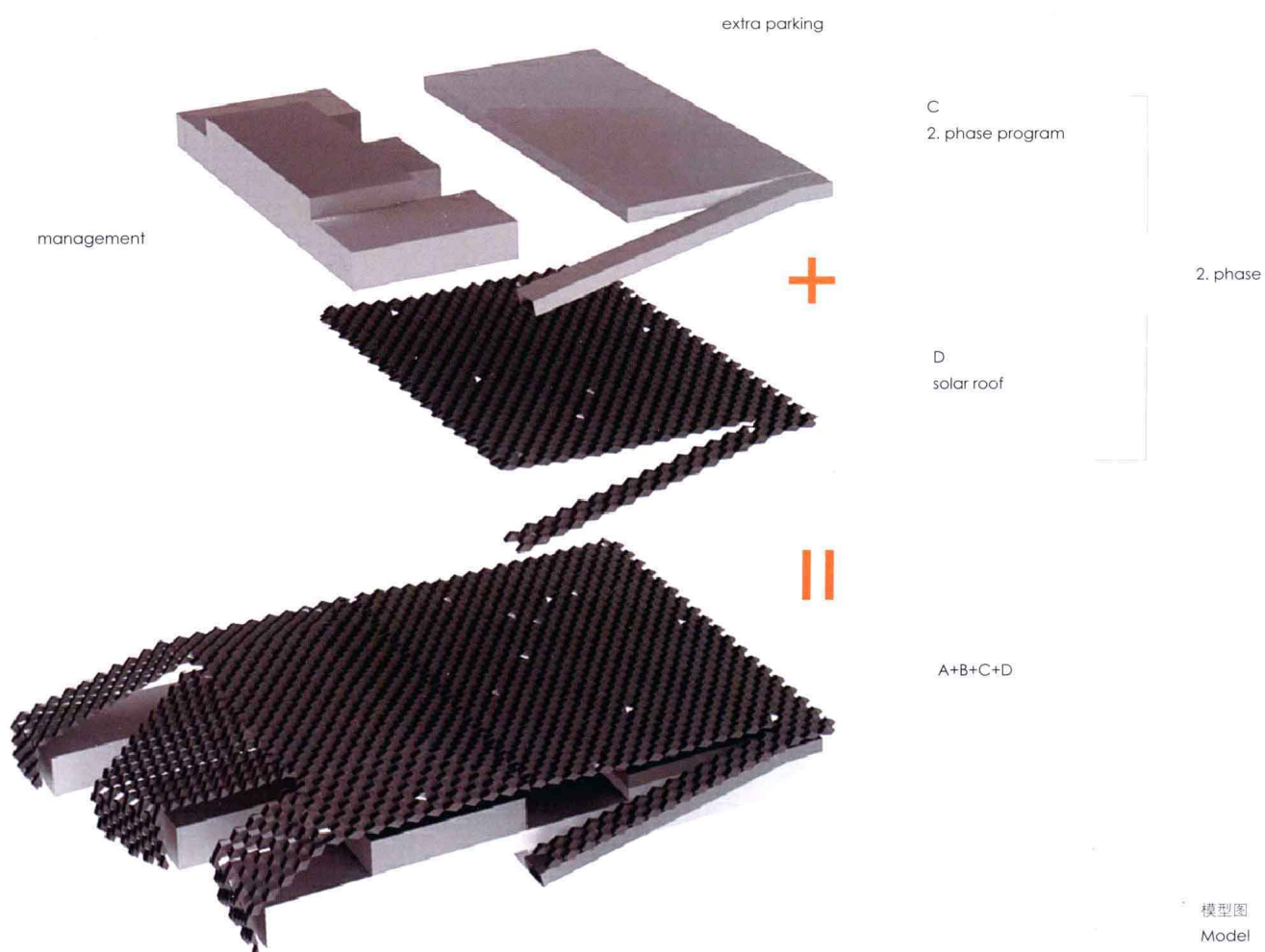
- 4.1 Offices of the MC Ljubljana
  - 4.1.1 Office (middle management) 3 workspace 72.00 m<sup>2</sup>
  - 4.1.2 Staff office - quiet 10 workspaces 120.00 m<sup>2</sup>
  - 4.1.3 Staff office - noisy 25 workspaces 300.00 m<sup>2</sup>
  - 4.1.4 Archives of the MC Ljubljana 80.00 m<sup>2</sup>
- 4.2 Workshops and warehouse of the MC Ljubljana
  - 4.2.1 Assembly tower 70.00 m<sup>2</sup>
  - 4.2.2 Rack warehouse - ground floor 180.00 m<sup>2</sup>
  - 4.2.3 Rack warehouse - ground floor 120.00 m<sup>2</sup>
  - 4.2.4 Rack warehouse - first floor 300.00 m<sup>2</sup>
  - 4.2.5 Floor warehouse 1,200.00 m<sup>2</sup>
  - 4.2.6 Floor warehouse - surplus, material, miscellaneous 1,200.00 m<sup>2</sup>
  - 4.2.7 Office 1 workspace 32.00 m<sup>2</sup>
  - 4.2.8 Restroom with locker room 15.00 m<sup>2</sup>
- 4.3 GARAGES OF THE MC LJUBLJANA
  - 4.3.1 Garages
    - 4.3.1.a Garage for freight vehicles and trailers 5 parking spaces 250.00 m<sup>2</sup>
    - 4.3.1.b Garage for vans and all-terrain vehicles 15 parking spaces 300.00 m<sup>2</sup>
    - 4.3.1.c Garage for work machinery and trailers 19 machines 300.00 m<sup>2</sup>
  - 4.3.2 Mechanic's shop 120.00 m<sup>2</sup>
  - 4.3.3 Car wash 60.00 m<sup>2</sup>
  - 4.3.4 Mechanic's shop warehouse 80.00 m<sup>2</sup>
  - 4.3.5 Office 2 workspaces 12.00 m<sup>2</sup>
  - 4.3.6 Restroom with cloakroom 18.00 m<sup>2</sup>
- 4.4 DB Beričevo
  - 4.4.1 Office
    - 4.4.1.1 DB Foreman's office 1 workspace 24.00 m<sup>2</sup>
  - 4.4.2 Workshop
    - 4.4.2.a Machine workshop with welding station 9.00 m<sup>2</sup>
    - 4.4.2.b Electrical workshop 48.00 m<sup>2</sup>
    - 4.4.2.c DB measuring chamber 42.00 m<sup>2</sup>
  - 4.4.3 Warehouses
    - 4.4.3.a DB small tools storage room 150.00 m<sup>2</sup>
    - 4.4.3.b Flammable materials storage 20.00 m<sup>2</sup>
    - 4.4.3.c Gas storage 8.00 m<sup>2</sup>
  - 4.4.4 Service rooms
    - 4.4.4.1 Compressor room 9.00 m<sup>2</sup>
- 4.5 OHL Beričevo
  - 4.5.1 OHL small tools storage room 25.00 m<sup>2</sup>
  - 4.5.2 Storage room, chain saw service station 50.00 m<sup>2</sup>
- 4.6 DB and OHL service stations
  - 4.6.1 DB cloakroom 25 workspaces 120.00 m<sup>2</sup>
  - 4.6.2 OHL cloakroom 25 workspaces 120.00 m<sup>2</sup>
  - 4.6.3 Utility room (washing machine, dryer) 15.00 m<sup>2</sup>
  - 4.6.4 Drying room for clothes, shoes 63.00 m<sup>2</sup>
  - 4.6.5 Facilities (showers, toilet, urinals, washing room) 48.00 m<sup>2</sup>







太阳能办公室内景。  
The interior view of the solar power office.







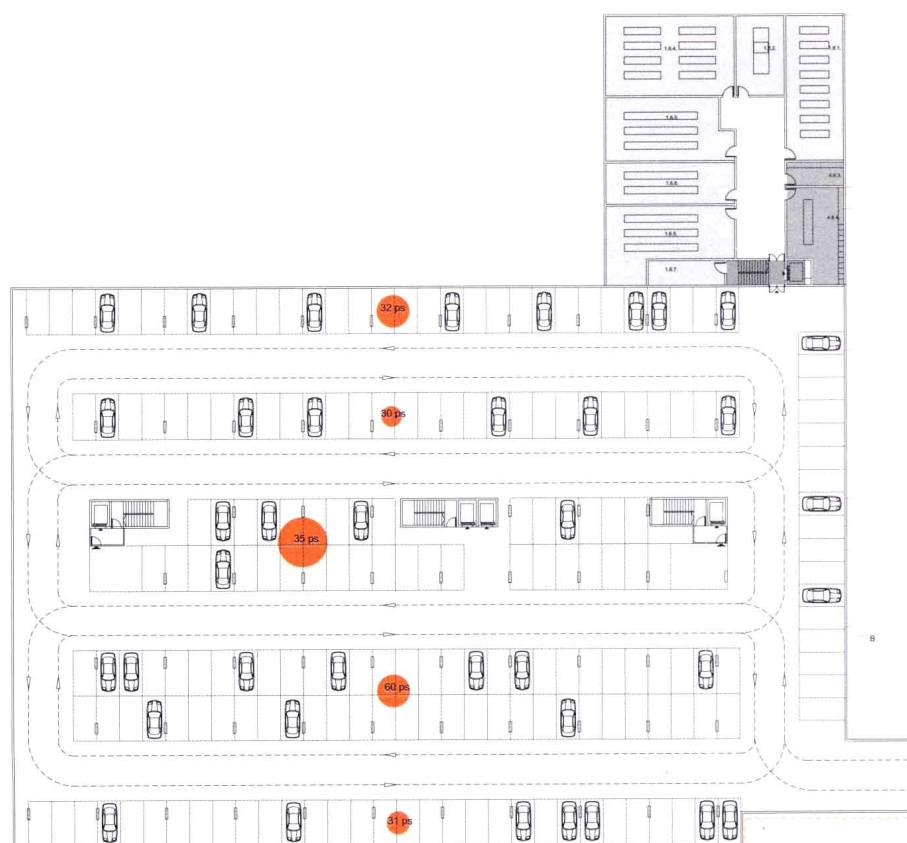
光线透过太阳能薄膜洒进建筑内部。  
Sunlight pours into the office building through the solar membranes.

The layout and appearance of the building reflects both the vision and mission of the company ELES. Both the architectural design and the design of the installations are based on becoming more fuel efficient and on the use of alternative energy sources and have led to a completely carbon neutral design.

It was measured that on average 187 days of the year are sunny, showing potential for the exploitation of solar energy and the large effective harnessing of solar energy for heating and hot water. Depending on the design object and purpose, and average annual rainfall of 1,402 mm per year, it is reasonable to include the installation of rainwater for purposes such as sanitation, watering, car washing...

The design of the energy system gives priority to the exploitation of renewable energy sources such as solar and wind as well as sourcing locally to reduce energy consumption and reduce CO<sub>2</sub> emissions. Therefore, the concept takes into account of local resources such as groundwater (for direct heating and cooling), wind to improve natural ventilation, sun for natural lighting and the use of solar energy, use of rainwater and wastewater recycling. All ventilation systems are equipped with automatic regulation and control in the room depending on room occupancy and room monitoring air quality. Ventilation systems are linked to a central control system which allows us to perform the ventilation system in order to optimize the system.

The facility is designed as modern, rational and with the



basement plan



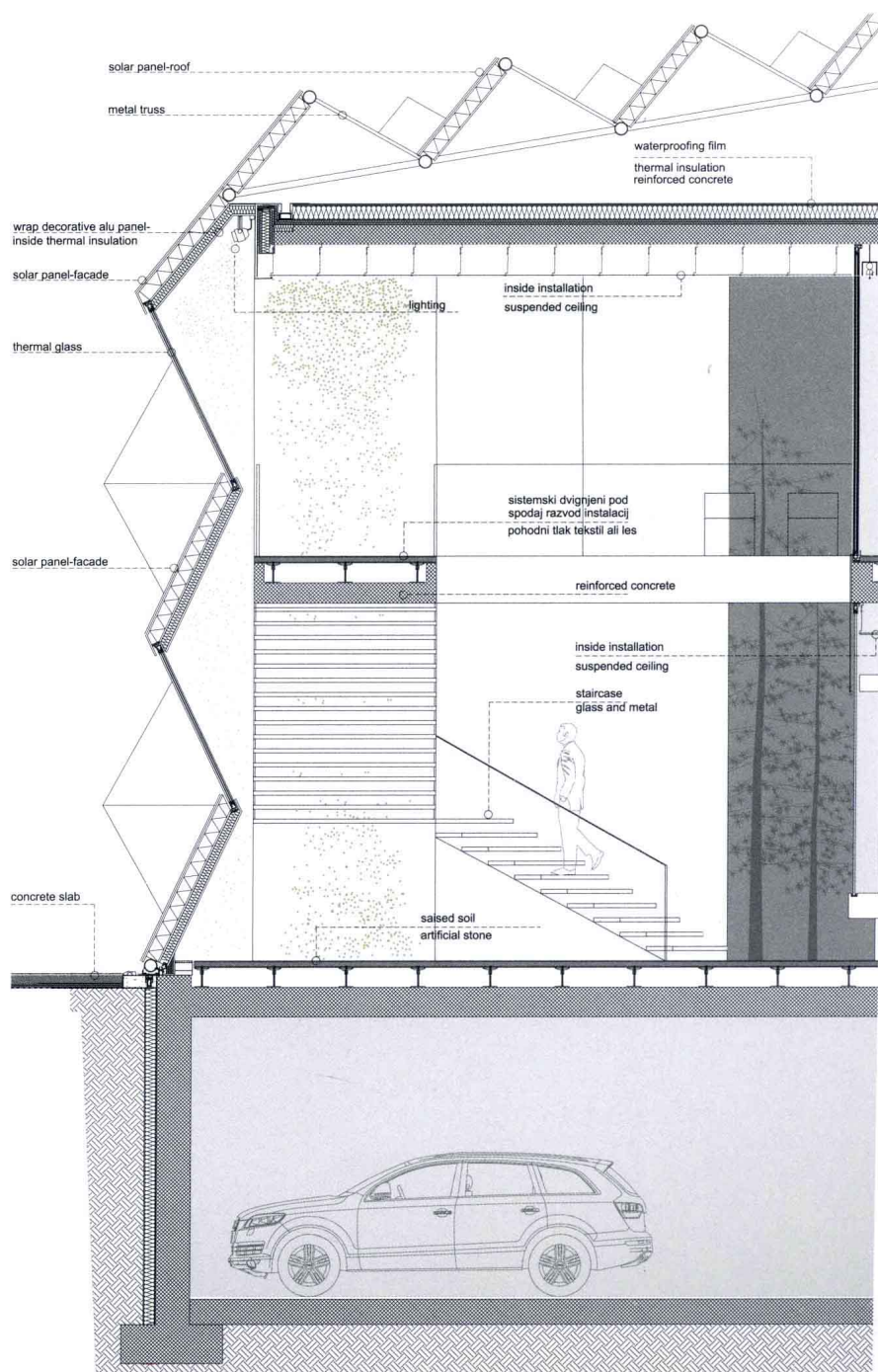
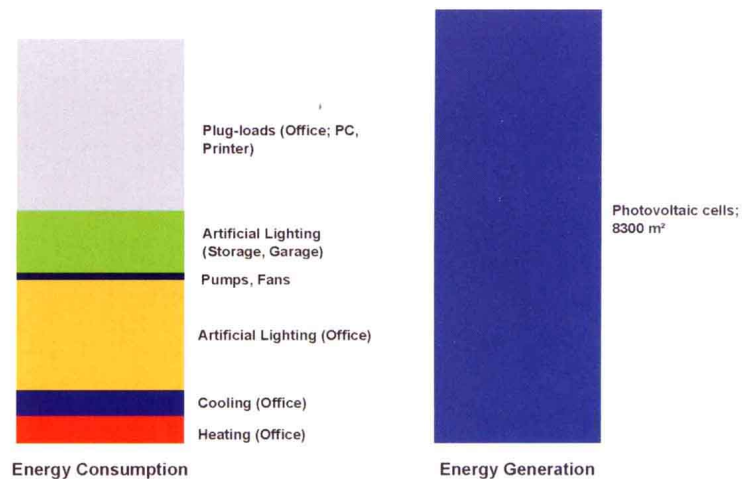


use of organic materials. The defining membranes are formed by solar panels combined with insulation and aluminum plates. The interior of the building will be concrete and natural materials such as wood, textiles and aluminum. The workshops are designed as prefabricated concrete halls.

The building is organized as a campus, or miniature 'city' which clearly reflects the mission and activity of the company. It also creates a positive working environment. The concept envisages the construction phase, as it provides competition. In the first phase of construction the appearance of the building is already formed as a complete unit, so that the second phase can be made at any time at a latter date. The exterior solar membranes serve as the character of the building and the company, whilst also generating electricity. The quantity of panels used is sufficient to produce enough energy to cover the amount consumed by the second phase of construction.

The size of site allows for each program to be classified as it's on individual unit or department, linked together with a collection of ambient atriums, with cross connecting bridges which interconnect the various sections. As well as functioning as the internal circulation, the atriums also allow natural light and natural air flow to penetrate the interior spaces; they also bring nature and greenery to the office space, which provides the building with a certain ambience.

# Potential: CO<sub>2</sub> Neutral Building Operation Energy Balance - Office (6734 m<sup>2</sup>), Storage and Garage (5000 m<sup>2</sup>)









Designers:

Project Team:

Rok Oman  
Spela Videcnik  
Janez Martinčič  
Katja Aljaz  
Janja del Linz  
Andrej Gregorič  
sergio silva santos  
marco mazzotta  
grzegorz ostrowski

团队:

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Spela Videcnik  
Janez Martinčič  
Katja Aljaz  
Janja del Linz  
Andrej Gregorič  
sergio silva santos  
marco mazzotta  
grzegorz ostrowski

Location: Slovenia

地址: 斯洛文尼亚

Date: 2010

时间: 2010年

Area: 32,500 m<sup>2</sup>

面积: 32 500平方米

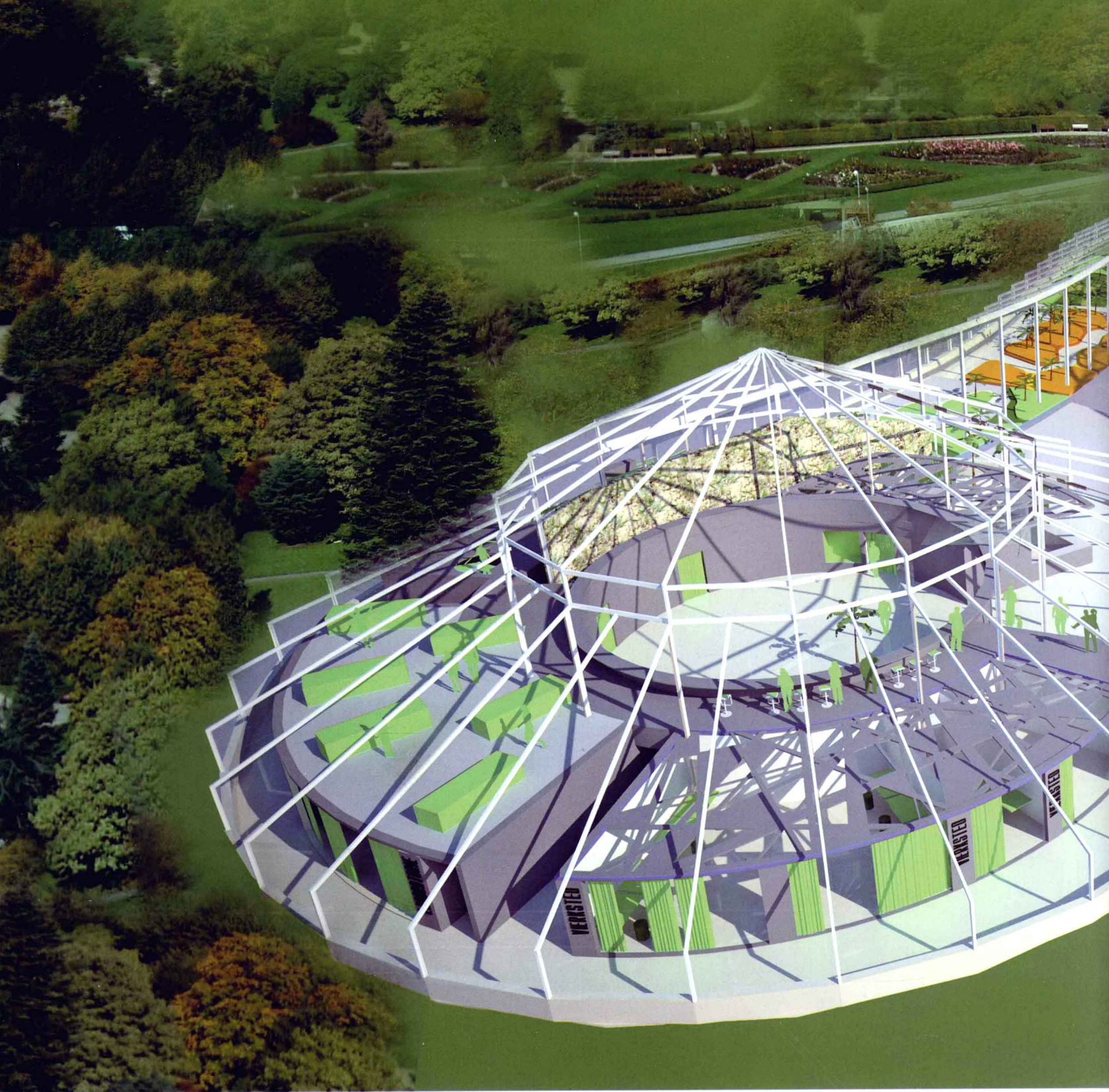
Type: Offices/Services

类型: 办公/服务

SMT

The image is a large architectural rendering of a modern building's interior. The space is characterized by a complex, geometric design with a ceiling and walls composed of large, angular, metallic-looking panels in shades of grey and blue. A prominent feature is a large, multi-level staircase with a wide, open design. In the foreground, a long, low, light-colored bench is visible. Two people are walking through the space: a woman in a light-colored dress on the left and a man in a dark suit on the right. The lighting is dramatic, with strong highlights and shadows, creating a sense of depth and volume. The overall aesthetic is minimalist and industrial.





# A Sustainable and Ecological Space

for Human and Plants – Aarhus University Hothouse

人与植物共生的可持续性生态空间——奥尔胡斯大学植物园温室

| C. F. Møller Architects |





新的温室形成了一个独立的、但又与现有结构相连接的结构，转化成了一个植物学知识中心。  
The new hothouse forms an independent, but connected addition to the existing structure,  
which in turn is converted into a botanical knowledge center.

**编辑寄语 Editor's Tips:**

C. F. Møller建筑事务所和Søren Jensen Rådgivende Ingeniør公司合作，在为奥尔胡斯大学植物园建造一个新的温室的建筑竞赛中获胜。可持续的设计理念、新的材料和先进的科技应用到了温室的有机形式中。

C. F. Møller Architects, in co-operation with Søren Jensen Rådgivende Ingeniørfirma, has won the architectural competition for a new hothouse in Aarhus Botanic Garden. Sustainable design, new materials and advanced computer technology went into the creation of the hothouse's organic form.