

## Nanjing LANDSEA Ling Long Island Building 1-3/5/17

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**Building Type** : Collective housing > 50m

**Construction Year** : 2013

**Delivery year** : 2015

**Address 1 - street** : 211113 ,

**Climate zone** :

**Net Floor Area** : 286 682 m<sup>2</sup>

**Construction/refurbishment cost** : 380 000 000 ¥

**Number of Dwelling** : 1 909 Dwelling

**Cost/m<sup>2</sup>** : 1325.51 ¥/ m<sup>2</sup>

#### Certifications :



## General information

The project is located in the Economic and Technological Development Zone of Jiangning District, Nanjing, with Linhe Road in the east and Qianhe Road in the north. The total planned land area of the project is 74557.3m<sup>2</sup>, and the total construction area is 286682.35m<sup>2</sup>, of which the residential building area is 206454.46m<sup>2</sup>, and the underground building area is 71861.86m<sup>2</sup> (including the underground garage area of 51755.68m<sup>2</sup> and the residential basement area of 20106.18m<sup>2</sup>). The scope of the “Green Solution Award” for this application is No. 1-3, 5, and 17 buildings of the project. The design practice of the project in four sections and one environmental protection is summarized as follows:

The site selection of the project complies with the relevant regulations. The surrounding traffic facilities are relatively completed. There is also a subway Xiaolongwan station near the project. A kindergarten is located on the west side of the project. The surrounding supporting commercial services basically meet the daily needs of users. The overall green space rate of the community reached 45.44%, and the multi-layer greening design of the shrubs and shrubs was adopted to provide users with outdoor leisure and sports venues.

In terms of building energy efficiency, the whole project starts from the energy saving of the building itself, and strengthens the thermal insulation performance of the envelope structure, including 55-80mm insulation board on the outer wall and roof, double-layer hollow Low-E plastic steel window, and combined adjustable external shading. Measures such as reducing summer solar radiation have resulted in an overall energy saving rate of 66.46%-76.74%.

In terms of air-conditioning system, building 1-3 and building 5 all adopt user-type centralized air-conditioning system, the cold and heat source adopts air-cooled heat pump, the end adopts capillary ceiling radiation & floor replacement fresh air, and the air-conditioning cold heat source and new air blower group are placed on the balcony of outdoor equipment. Unit refrigeration COP3.33W/W, heating COP3.50W/W, IPLV (C) 4.20W/W; No. 17 residential

building adopts ground source heat pump centralized air conditioning heating system, and adopts ceiling radiation & floor replacement fresh air, equipment room is located in the underground of Building 17.

In terms of renewable energy utilization, building 1-3 and building 5 use the household solar hot water system, and building 17 uses the ground source heat pump to provide air conditioning heating and domestic hot water.

Domestic water in the project uses district water supply design, and the local super sub-branch equipped with a pressure reducing valve. Indoor water appliances meet the water-saving design requirements, and the same layer of drainage is used to reduce the noise impact. All the units of the project are fully renovated and delivered, and integrated design and construction. In construction, both concrete and commercial mortar are used for concrete and mortar. The construction also uses three grades of steel as the main reinforcement, and the proportion of steel for tertiary steel reaches 81.7%.

In the indoor environment, the project's layout design is conducive to indoor natural light and natural ventilation, and the window to floor ratio can reach 1/5. The indoor use of the external window with good air tightness, the overall indoor background noise can meet the high limit requirements of the national standard, the sound insulation performance of the outer wall can also meet the high limit requirements, and the interior of the hardcover delivery adopts the overhead floor design. The impact of the floor impact sound is reduced, and the sound insulation of the floor impact sound can also reach the high limit requirement. All units are designed with radiation + fresh air end design, which guarantees the indoor temperature and humidity environment.

## Data reliability

3rd part certified

## Stakeholders

### Contractor

Name :

### Construction Manager

Name :

### Stakeholders

Function : Designer

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<http://www.landsea.cn/>

Shanghai LANDSEA Planning & Architecture Design Co., Ltd. as the whole process green design service provider in the project, first participated in the green positioning of the project and determined the green technology adopted by the project. Secondly, c

## Owner approach of sustainability

The Project is the first generation of the Landsea household air-conditioning system. It is a major attempt to adjust from centralized operation to household separation. First of all, from the perspective of energy, the right to use the air conditioner is returned to the user. The user decides whether to consume energy in exchange for comfort according to his or her sense of body. It is a simple and effective behavioral energy saving from equipment/operational energy saving. Secondly, good building performance is still a prerequisite for reducing energy consumption. Although the project has changed the system form, the energy conservation of the building itself is still an important feature of the project. At the end, capillary radiation & replacement fresh air is used to cope with the delay effect when the system starts and stops. However, when the indoor temperature and humidity are stabilized, the indoor temperature and humidity uniformity and the low wind speed environment provide a relatively comfortable experience compared with the convection system. In addition, in terms of renewable energy utilization, solar hot water is designed in Building 1-3 and Building 5, and ground floor heat pump air conditioning heating and domestic hot water are used in Building 17, which reduces energy consumption to some extent.

The project's attempt is an important embodiment of Langshi's differentiated products. The whole system is a complete system from the building itself to the system design. She has better energy-saving performance, more comfortable indoor experience, and considers renewable energy in the same kind of products. Use, is a more comprehensive set of products.

## Architectural description

The first consideration of the project is passive energy-saving technology, which makes the building's performance to a good level. It is combined with the household-type HVAC system to become a design system. It can achieve energy-saving operation and reduce energy consumption.

Starting from indoor comfort, the radiation system is operated to create a uniform indoor temperature environment; in addition, the household fresh air system provides 24 hours of clean fresh air to the residents, taking away moisture and pollution, ensuring high quality air quality indoors; The house is freely adjusted according to climatic conditions, personal preferences, etc., and implements an energy-saving operation mode in which the user pays.

Renewable energy has also been utilized in this project. On the one hand, it meets the demand for hot water in some residential houses. On the other hand, it also considers a certain degree of energy conservation, resulting in good economic and social benefits.

## Building users opinion

Landsea invited Gallup to conduct a customer satisfaction survey on the project, including system, design of the house and public area, aesthetic appearance, reasonable design of the public area, room lighting effect, sound insulation effect, and room design rationality.

According to the survey of the pipeline layout, the scores of 85 points or more were obtained in terms of appearance, room lighting and pipeline layout, and the design of the public area and the type of the room were second.

In the community environment and planning links, the overall layout, greening and landscape, activity facilities, internal road convenience, and floor space are basically 80 or higher.

In the late stage property maintenance, the community clean, green maintenance, public facilities maintenance, vehicle management, etc. are also more than 80 high scores.

Evaluation from customers: The overall size of the apartment is compact and cost-effective.

With a south-facing balcony, it is very transparent in the north and south. The kitchen is located at the entrance to the room with a window that reduces fumes from other rooms. The bathroom is located between the two bedrooms, easy to use, dry and wet separation, to avoid the air is too humid, easy to clean and work in the future. Both the main and the second are facing south, which also improves comfort.

## Energy

### Energy consumption

Primary energy need : 14,76 kWhpe/m<sup>2</sup>.

Primary energy need for standard building : 16,68 kWhpe/m<sup>2</sup>.

Calculation method : Other

Final Energy : 20,96 kWhfe/m<sup>2</sup>.

Breakdown for energy consumption :

HVAC: 44 Kwh/m2/year

General lighting socket equipment: 17.59 Kwh/m2/year

### Envelope performance

Envelope U-Value : 0,62 W.m<sup>-2</sup>.K<sup>-1</sup>

More information :

Roof: 0.56

Window: 2.00

Building Compactness Coefficient : 0,40

Indicator : GB/T 7106-2008

Air Tightness Value : 6,00

## Renewables & systems

### Systems

Heating system :

- Heat pump

Hot water system :

- Heat pump
- Solar Thermal

Cooling system :

- Reversible heat pump

Ventilation system :

- Double flow

Renewable systems :

- Solar Thermal

Solutions enhancing nature free gains :

The overall residential building orientation is 18° south to the east. In addition to the thermal insulation performance of the envelope structure, the combination of self-shading and adjustable external shading is also considered.

## Environment

### Urban environment

The Project is located in the Economic and Technological Development Zone of Jiangning District, Nanjing, east to Linhe Road and north to Qianhe Road. The surrounding area of the project is mainly residential land, and there are a few universities and office areas, with a radius of 1km. Within the opening, the opening is more mature, basically no space, and the

overall supporting maturity.

The bus network around the city is relatively perfect. There are two bus stations within 500m, one subway station (Xialongwan Station on Line 1), and several bus lines, such as 719 Road, 810 Road, 829 Road, etc.

On the west side of the residential area, the walking distance of about 700m can reach the completed 21st Century Sun City Shopping Center, which integrates commercial, catering, supermarket, banking, entertainment and other integrated services to meet the daily needs of users. The Xiaolongwan subway station on the north side of the residential area is about 500m walking distance and equipped with a fitness swimming center. A kindergarten is built on the west side of the community. Also Emerald Park is about 2km walking distance from the project.

## Land plot area

Land plot area : 74 557,30 m<sup>2</sup>

## Green space

Green space : 12 000,00

## Parking spaces

There are 97 vehicles Parking area on the ground, 2093 underground parking, total 2190 parking lots, and 1.15 parking spaces per household in the community;

The non-motor vehicle garage is set under the building unit for 3,517 non-motor vehicle.

## Products

### Product

Gree integrated inverter central air conditioner

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<http://www.gree.com.cn/>

Product category :

Gree integrated inverter central air conditioner, cooling capacity 6000W, heating capacity 7000W; refrigeration COP3.33W/W, heating COP3.50W/W, IPLV value 4.2W/W.

Gree's products have higher quality standards than national and international standards. For example, general air conditioners are designed for a climate with a maximum annual temperature of 43°C, while Gree's air conditioners have a normal temperature of 52°C.

According to national standards, as long as the surface temperature of the capacitor reaches 70°C, it can pass 600 hours of normal operation. Gree's capacitor must be operated under this condition for 1000 hours.

In addition, Gree provide free repair for six years.



## Costs

### Construction and exploitation costs

Renewable energy systems cost : 14 930 000,00 ¥

Total cost of the building : 380 000 000 ¥

## Building Environmental Quality

### Building Environmental Quality

- biodiversity
- renewable energies
- integration in the land
- mobility
- products and materials

## Health and comfort



## Water management

Consumption from water network : 402 355,00 m<sup>3</sup>

Water Consumption/m<sup>2</sup> : 1.4

Water Consumption/Dwelling : 210.77

## Carbon

### GHG emissions

GHG in use : 554,80 KgCO<sub>2</sub>/m<sup>2</sup>/

Methodology used :

"Standards for building carbon emission calculation" Exposure Draft

GHG before use : 218,78 KgCO<sub>2</sub> /m<sup>2</sup>

Building lifetime : 50,00

, ie xx in use years : 0.39

GHG Cradle to Grave : 701,07 KgCO<sub>2</sub> /m<sup>2</sup>

## Contest

### Reasons for participating in the competition(s)

Compared with previous generations of residential products, Linglong Island will pay more attention to people's own needs and create high-quality residential and community for residents to develop healthy, comfortable, energy-saving and environmentally balanced development.

In the health dimension, Linglong Island provides an adjustable fresh air system, and the corresponding decontamination measures are implemented to control the indoor CO<sub>2</sub> and take away the common viruses, bacteria and insects in air.

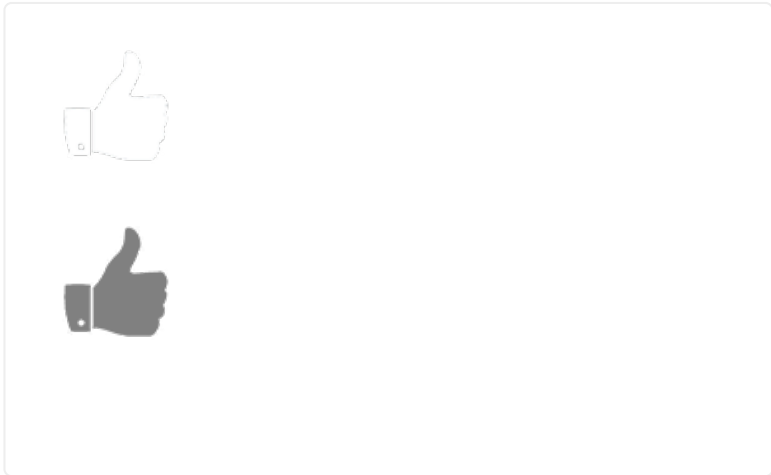
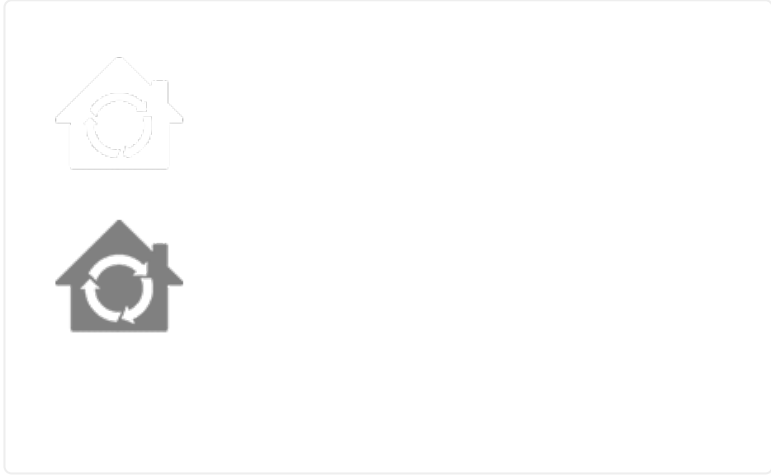
In terms of comfort, the project can maintain the indoor temperature at 18-26°C through the excellent thermal insulation performance of the building itself, combined with high air tightness, plus a uniform radiation end and a fresh air system that can control temperature and humidity. The relative humidity is maintained between 40% and 60%, providing customers with a moist and dry environment.

In the energy-saving and environmental protection dimension, the project has reduced

building energy consumption and reduced environmental impact through building energy conservation and new wind heat recovery. Through “passive building technology” and “renewable energy technology”, it has achieved more than 75% in the later stage. The building energy efficiency rate far exceeds national standards.

With the constant pursuit of a better life, healthy housing and technology housing have become the mainstream of residential products. The project is an innovation, which is the exploration of traditional residential development to truly integrate technology into daily life and provide a green and healthy living space.

### Building candidate in the category



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