Modern and myriad city•MOMA

Picture

Fig.1 Appearance of the building

Basic Information

Location:	NO.1, Xiang he yuan road, Dong Cheng district, Beijing
Climate:	North China, Continental Monsoon
Project brief:	“Modern and myriad city” is a big scale community project dominating in top grade dwelling houses and apartments, includes 17 multi-storey dwelling houses, two offices buildings, one kindergarten and underground parking places, etc. MOMA is the two towers project inside the community, designed by designer from Austria. Because it adopts advanced technologies, it is attracting attentions.
Client:	Beijing Dang Dai Hong Yun Real Estate development co., Ltd
Architect:	Dietmar Eberle, Austria
Timetable:	End date project: August 2006

Area: 0.66 million m^2
Cost: RMB 35 hundred million

Design features

Bioclimatic features: Simple and compact form, passive use of solar energy, additional thermal insulation, airtight envelope, insulating double Low-E glazing, adjustable exterior sun shading devices.

Materials/ Construction: Brick and reinforced concrete for walls and roof

Technical features: Cooling and heating system: ceiling radiant cooling and heating system
Hot water supply system: 24 hours mechanical circulation hot water system from urban hot water network, with temperature 130/70℃ in winter and 70/50℃ summer.
Rain water reclaim system
Reclaimed water system
Individual organic waste smash system
Natural ventilation system

U-values: k=0.4 w/m^2k for walls
k=0.2 w/m^2k for roof
k=2.0 w/m^2k for low-E glazing

Project Details

Context and site: The project is located near CBD district, office building and commercial building is standing in surrounding with great numbers. MOMA offers various house sizes from 150 m^2 to more than 300 m^2 with big size living room and toilet, a series housework and closet is planed, the function is reasonable. No obstruction traffic is designed based on design code.

Function & form: High-rise (26 floors); residential apartment

Structural system: Steel frame and core shearing force walls

Energy efficiency control:

Thermal insulation of building envelope: <u>Exterior façade:</u>
Core Shearing Wall with flexible layout and centralized pipelines;
410 mm exterior walls with benzene board insulation layer;
There is an air gap between insulation layer and the cladding, and rain leading hole is specially designed for heat insulation and dryness;

Cladding in ceramic glazing with black and white color;
Ceramic glazing with black and white color combined with purple copper window cover, which builds a baldachin-like braveness effect, with good vision effect.

Window:
12 mm High performance low-E glazing, filled with argon gas. Silicon gel molecule screen ensure the dryness of the argon gas;
Metal coat is attached on the glazing surface, improving the insulation of ultraviolet radiation with good effect of heat, noise insulation and health protection;

Sun shading devices: Adjustable exterior sun shading device with metal roll hanging

Space heating cooling, ventilation, air conditioning:

To create comfort and stable indoor environment, ceiling radiant cooling and heating system (Fig.2) is adopted. The ducts hide inside the structure ceilings, with 20~22℃ cold water in summer and 26~28℃ hot water in winter.

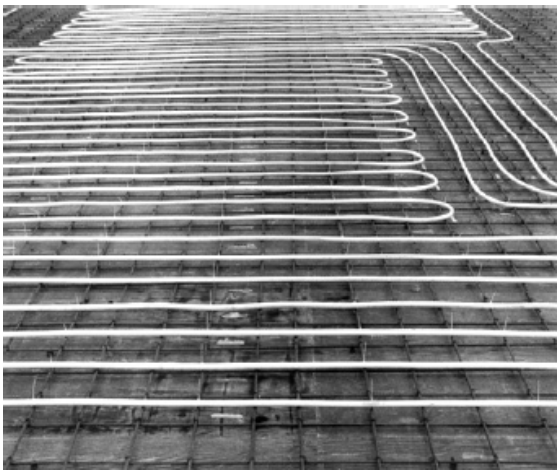

Fig.2 Ceiling radiant cooling and heating system

Heat recovery natural ventilation system: The fresh air is induced from upper air with 80 meters, after infiltration, condensation, heating etc, the air enter the rooms with low speed (0.3 m/s) . After mixing with indoor air, the mixing air is discharged from holes in kitchen and toilet.

Centralized dust collecting system

Lighting system: Fully use of natural lighting; energy efficiency lighting system for public areas

Water system: 24 hours mechanical circulation hot water system from urban hot water network; Water temperature is 130/70℃ in winter and 70/50℃ summer;

Green site approach:

Partition wall in 12 mm steel keel gesso board and filled with fire & noise protection cotton, good noise insulation effect.

Reclaimed water is used for irrigating plant, cleaning road and supplementing evaporation water in manual lake, thus water resource is saved;

Rain water is reclaimed for similar use with reclaimed water.