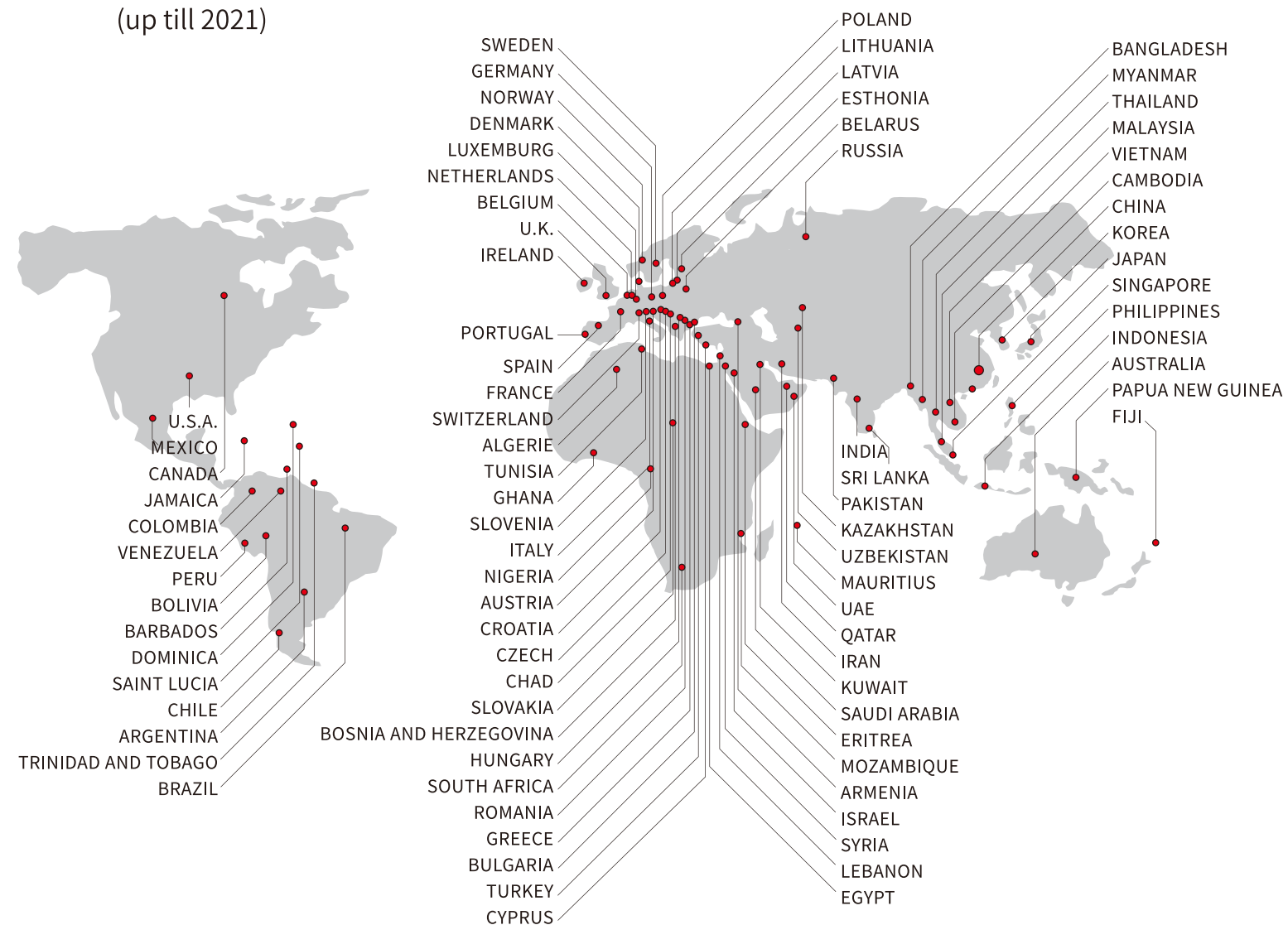


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BROAD Global Market (up till 2021)



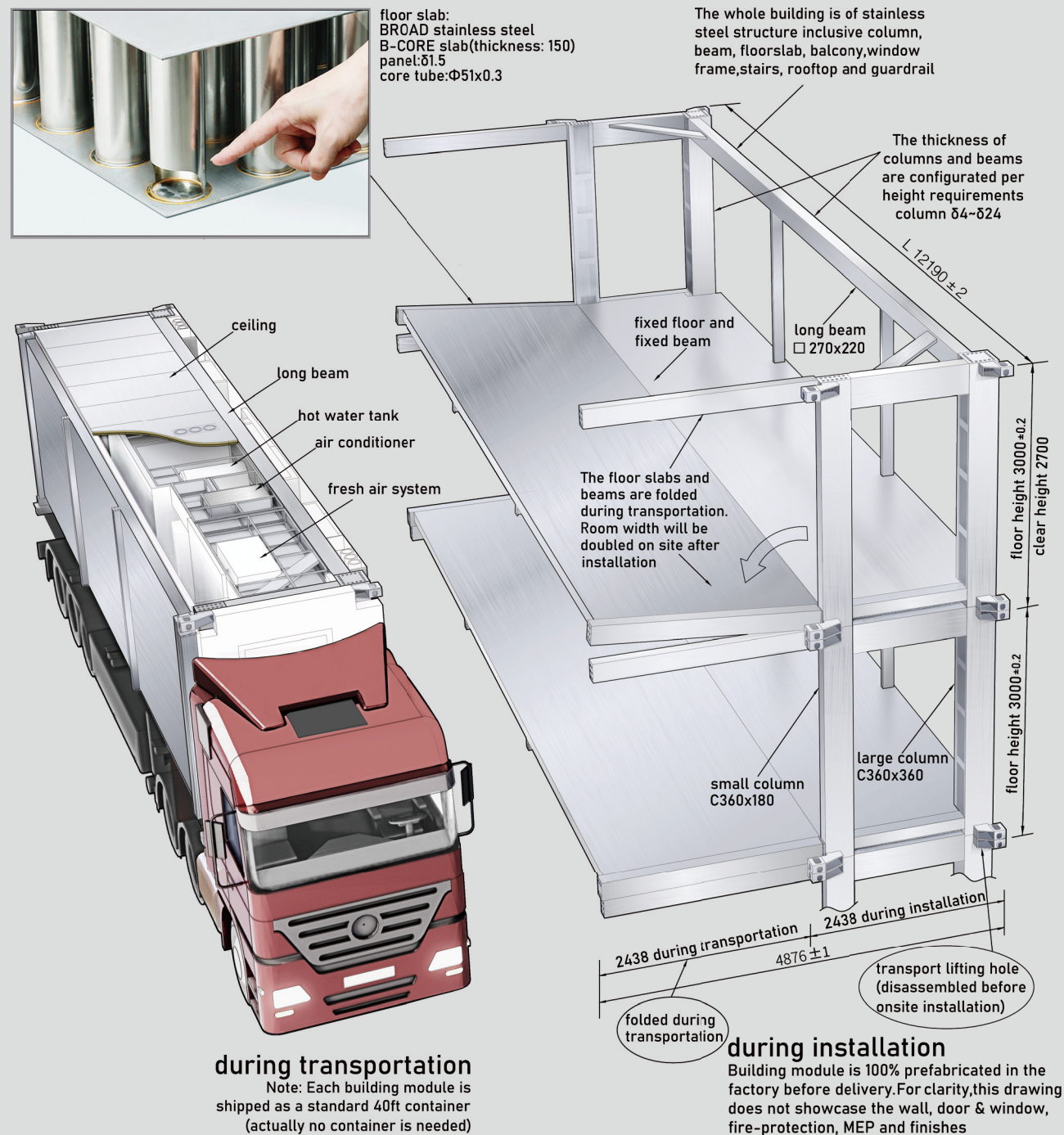
About Holon Building & Human Evolution

In 1590, Englishman Sir J. Harrington invented the world's first flush toilet, humans evolve from the lifestyle.
In 2020, BROAD invented the world's first stainless steel factory-made "Holon Building", which may evolve humans from life attitude

If a person checked in a Holon Building, he would feel comfortable, quiet and clean every day, which is different from other housing. After a long time, he would have found that the housing was the same inside and outside, as he had never encountered a malfunction. After that, he would no longer stay in or even look at other dirty or flashy housing, and would become picky about things other than housing. -- the person's attitude towards life has changed. If thousands of people, hundred millions of people had lived in Holon Buildings, there would have been a population change, and then humans would evolve



Holon Building's improvement to building assets: makes human assets a generational legacy



The future of 1000 years at the cost of 13-year R&D inputs

Holon Building is a "stainless steel factory-made building" that BROAD Group has invested RMB 8+ billion & 1000+ employees for 13 years. The floor slab is made of BROAD's original "stainless steel B-Core slab", and the columns and beams are made of section stainless steel. It is the world's first stainless steel building. Thanks to the "super-strong and ultra-light" characteristics of stainless steel B-Core slabs which can cut steel consumption drastically, what's more, the efficient streamlined production can convert expensive stainless steel buildings into economically acceptable ones. Importantly, the life span of a Holon Building structure can reach 1,000 years. Even if it were demolished, the steel could be recycled, making it possible to become a generational legacy

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Holon Building's improvement to the building industry: making the complicated disorder controllable



5-Controllable Building

Structures, decorations and MEP are 100% factory-made. The only procedure to be conducted on site is bolt connection. 3 floors/day. Holon Building is the world's first "5 C building": quality controllable, construction time controllable, cost controllable, CO₂ controllable and global transport controllable

Holon

Factory made

Quality is assured;
zero pollution during construction;
short construction time, 3F/ day

Stainless steel

1000-year life span, a generational legacy
recyclable after disposal.
Ductile materials,
strong earthquake resistance

Flexible

Large space of non-load bearing
structure (11.7x4.8m), walls,
doors and windows can be removed or
revised after completion

More comfort, lower consumption

"Nearly Zero Energy Building Standard" and
"Passive House Standard" are adopted
90% higher energy efficiency
(A/C noise level reduced by 90%)

100 times cleaner than outdoors air

When BROAD Clean
Fresh Air Machine is used, 100% fresh air,
filtering PM2.5 by 99.9%

Complete isolation

4-paned glass windows,
22cm rock wool for exterior walls.
Ventilation through fresh air machine
isolates outdoor noise from outside

VS

Traditonal

Method

Site work

Hard to control quality; heavy construction
pollution ; Long construction period;
the delivery time is hard to control

Structure

Reinforced concrete

50-year life span, waste family assets and
human resources, The earth is stuffed with
construction waste after buildings are
disposed . Brittle materials, buildings collapse
easily in case of earthquakes

Space

Fixed

Limited space of non bearing structure
(The length and width: generally less than 4m)
no alteration allowed after walls, doors and
windows are completed

Comfort & energy efficiency

Less comfort, higher energy consumption

Poor thermal insulated exterior wall,
A/C high energy consumption, very noisy

Air quality

Air can be worse than outdoor air

Normal ventilation by windows,
When A/C is on, windows are usually closed,
indoor air quality is poor

Outdoor noise

Transfer into building

Poor sound isolation of windows,
Ventilation by windows can't isolate the
indoor noise from outside



Holon Building's improvement to householder's psychology: Free space shapes free thoughts

Psychological factors and key improvement programs:

1. Space comfort - **Column-free space is huge, flexible room layout**
2. View comfort - Ultra clear glasses ensure perfect outdoor views
3. Sunlight comfort - Long sunshine time, interior and exterior shades control lighting at random
4. Furnishing aesthetics - Wall PE baking paint, color last for decades
5. Switch comfort - Auto-power generated wireless switch, room layout is convenient



1 Space comfort standard

- 1) Big interior space: Room clearance 11.7m x 4.8m, rooms can be configured at random except the location of bathroom drain pipes, it is much larger than any residential building in the world without columns or no bearing walls
- 2) The indoor clearance is extremely high: Apart from the bathroom area for setting fresh air, A/C, hot water, electric fittings and with a suspended ceiling, other spaces are 2.7m high flat ceiling. Ceiling with beams, lamps and cables and a variety of sensors, fire sprinklers can also be equipped if needed. As the in-depth research work carried out by Holon Building is comparable to a large passenger plane, the 3m floor height, with floor slab, ceilings to ensure sound insulation, extremely complicated MEP, which is astonishing to free up 2.7m of clear height
- 3) Very high space utilization efficiency: Due to the steel structure and in-depth research and development, the load-bearing structure occupies less than 1% of the space, space utilization efficiency is 3-6% higher than that of traditional concrete buildings.

2 View comfort standard

- 1) Casement window & bay window 2.57 x 2.4m, bay window with 180 degrees view
- 2) All windows are of ultra clear glasses, 4-paned glasses are more clear than 1-paned glass, colorless, can ensure the original good views outside
- 3) Window glass is very airtight hollow glass, argon charging $\geq 92\%$ to ensure no fogging

3 Sunlight comfort standard

- 1) Super clear glass for all windows, the sun does not change color or get weak when it shines into rooms
- 2) The sun shines into a bay window from sunrise to sunset, increasing the sunlight duration significantly. In winter, building can absorb a lot of sunlight to save energy
- 3) Exterior sunshades can be put up and down freely & adjustably per the sunlight
- 4) The interior shade is able to block more than 99% of light, when you sleep in the daytime you would feel as if it were at night

4 Furnishing aesthetics standard

- 1) PE painted wall and ceiling will not change color for decades. The paint surface is dirt-proof and wear-resistant, can be wiped and washed
- 2) Floor, door and window cover and door page are made of original bamboo material, beautiful and strong

5 Switch comfort standard

- 1) All lights and shade switches are wireless and can be positioned at the convenience of occupants anywhere
- 2) When a room is vacant, the light, A/C, and fresh air will be off automatically within 1 hour
- 3) Stair lights, entrance lights and night lights are automatic
- 4) The A/C and fresh air will be automatically off after opening windows or balcony doors within 30 minutes
- 5) Each room is equipped with WiFi-reliable network signal, and TV set can be set anywhere

6 Touch comfort standard

- 1) All switches, buttons and handles are ergonomically designed
- 2) All parts touched are smooth and will not scratch hands
- 3) Door and window opening/shutting strength is appropriate, not too heavy or too light

7 Lamplight comfort standard

- 1) Light color temperature $3100 \pm 100k$ (slightly warm and pleasant)
- 2) 3 to 5 lighting switches for each room with room lightness adjustable
- 3) Toilets are installed with low-positioned night lights

8 Socket convenience standard

- 1) Each room is equipped with 2~5 power sockets to fully meet the needs of electric charging, table lamp, TV and kitchen electricity
- 2) If rooms are changed, more sockets are needed, wires can be dragged out from the baseboard to add more sockets

9 Finely crafted interior decor standard

- 1) Thanks to streamlined production of interior and exterior decoration, the fineness of decoration is guaranteed by equipment and quality system, which makes the decoration bid farewell to the stubborn disputing disease of traditional construction mode
- 2) The flatness and color difference of walls, floors, and ceilings are not visible with naked eyes.
- 3) All corners and edges are neatly and uniformly connected with an accuracy deviation $< 1mm$
- 4) Glue width of all joints $4 \pm 1mm$, delicate and beautiful

10 Vibration isolation comfort

- 1) Floor slab vibration acceleration $< 0.05 m/s^2$. No vibration from walking or movement. Each floor is an independent structural module that does not transfer vibration
- 2) Wind vibration acceleration $< 0.2m/s^2$, no feeling of building swing in case of gale



Notes: photos are real scenes of Holon Building

Holon Building's improvement to householder's physiology: Healthy air cultivates healthy bodies

Physiological impact factors and key improvement programs:

1. Air freshness - Sufficient fresh air ($4\text{m}^3/\text{m}^2\cdot\text{h}$), and no mixed return air
2. Air cleanness - Fresh air filtration, **indoor air 100 times cleaner than that outdoors**
3. Airflow comfort - A/C airflow is reduced by 70%, air outlets avoid people
4. Thermal comfort - The building is thoroughly insulated to avoid cold radiation and thermal radiation
5. Bath comfort - Hot water comes out within 5 seconds, water distributor under constant pressure
6. Quietness comfort - With 4-paned soundproof windows, 90% A/C noise is reduced



1 Air freshness standard

- 1) Fresh air 100% from outdoor to indoor with no mix of return air eliminates odor cross contamination, prevents virus infection
- 2) Fresh air volume $\geq 4\text{m}^3/\text{m}^2\cdot\text{h}$ to ensure an indoor CO_2 concentration level $\leq 900\text{ppm}$
- 3) Each household can have an option: to buy a CO_2 sensor to monitor oxygen content in real time
- 4) Fresh air is sent into rooms with positive pressure, dirty air from outside and corridors can not get indoors through seams, no more worries of mosquito bites
- 5) After staying for a period, residents shall realize the beauty of life without opening windows. In most cases, compared with opening windows, the indoor air would be fresher when windows are closed, as the fresh air machine supplies fresh air 24/7, ensuring more natural ventilation than window opening

2 Air cleanness standard

- 1) BROAD fresh air machine is used, which filters PM2.5 by 99.9%, achieving the following:
 - a. Indoor air is 100 times cleaner than that outdoors, enhancing human health drastically
 - b. Desks can be dust-free, avoiding cleaning for every month, and finishes for walls and ceilings look like new for decades
 - c. As the fresh air is filtered, fresh air outlet is 1000 times cleaner, ensuring clean indoor air and the pipes, A/C and the fresh air machine do not collect dust or breed bacteria
- 2) The fresh air machine is equipped with an electrostatic cleaner for disinfection and sterilization, so that outdoor viruses and pollen will not enter rooms, while ensuring indoor ozone level lower than outdoors
- 3) Fresh air is sent into rooms and vented from bathrooms and kitchens. The bathrooms and kitchens will always maintain a negative pressure so that unpleasant moisture and odors will not drift into rooms
- 4) Each drainage outlet in bathrooms and kitchens is equipped with a water seal $\geq 50\text{mm}$. It will not be dry in 10 days, ensuring no air return no unpleasant odor and no contagious virus
- 5) The joints between bamboo floors are filled with sealant, no dirt at all
- 6) Decorative materials and glue in line with European E1, China E0 standards, no formaldehyde and other harmful substances
- 7) The super insulation performance of the exterior walls and windows guarantee no condensation and no mildew breeding
- 8) Water and electricity holes between floors and between each household are fully blocked to prevent rats, cockroaches and ants from entering rooms
- 9) Range hood equipped with glass cover, eliminating lampblack to spread by 90%
- 10) Each household can have an option: to buy a PM2.5 detector which detects indoor and outdoor PM2.5 level within 30 seconds

3 Airflow comfort standard

- 1) Outlet of A/C, fresh air need to avoid blowing directly towards places where people frequently stay
- 2) Airflow of A/C can be cut at least 70% thanks to the A/C load less than 90% load and no more dry skin

4 Thermal comfort standard

- 1) High thermal insulation (22cm rock wool for exterior wall insulation, which is equivalent to 9m thick concrete wall), 4-paned windows, in summer no heat radiation, no worries of a western sunshine exposure, in winter no cold radiation
- 2) When the sun shines into rooms in summer, the sunshade will go down automatically
- 3) When there is no one in rooms in cold or hot season, or when people are sleeping, the interior shade will go down automatically (the interior shade is equivalent to a concrete wall of 2m thick)
- 4) The fresh air machine is equipped with a hi-efficiency heat exchanger, which can recover 80% of exhaust heat. The temp difference between the fresh air and the indoor temp is around 2°C
- 5) Every household is equipped with an A/C, adjusting temperature as desired

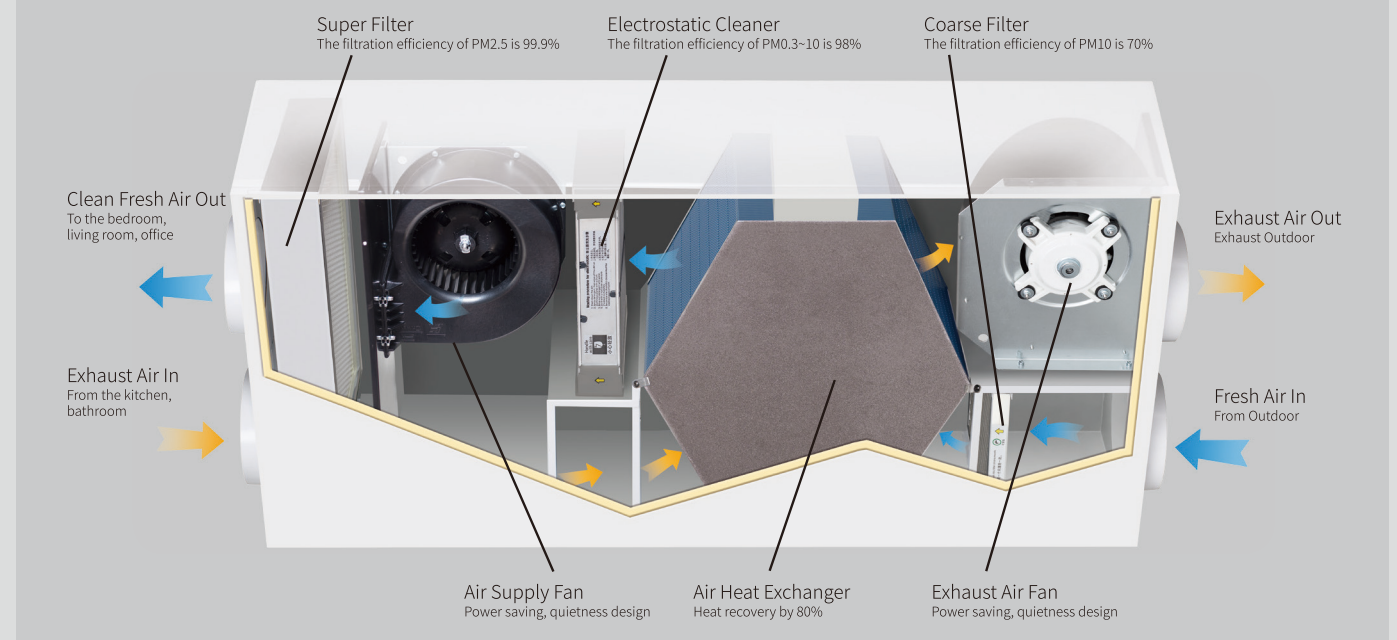
5 Bath comfort standard

- 1) S apt and larger unit are with independent hot water system, hot water supply 24/7
- 2) Hot water comes out within 5 seconds from all hot water faucets, which removes waiting worries
- 3) The pressure of hot and cold water has the same origin, and the temperature does not fluctuate while turning on a faucet in neighboring rooms

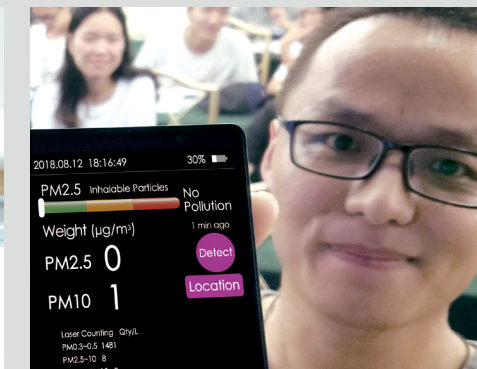
6 Quietness comfort standards

- 1) Completely isolate outdoor noise (more rigid than Chinese National Standard)
 - a. Double steel plates and 22 cm rock wool for exterior walls. Sound level 50dB
 - b. 4-paned windows. 3-layer sealing strips for windows, balcony doors and entrance door. Sound level 55dB
- 2) 2 steel plates and 7.5 cm rock wool for interior walls. 35dB for rooms and 45dB between households
- 3) 2 steel plates and 15cm rock wool for floor slabs, with 3.75cm ceiling below floor slab, sound level 55dB
- 4) All seams around walls, windows and floor slabs are sealed with silicon adhesives on both sides. Photos should be taken for hidden glued places for the ceiling decoration strips and baseboards to ensure that the installation quality meets the design standard
- 5) A/C and fresh air machine are ceiling-mounted in living rooms to avoid interfering with sleep
- 6) Minimal A/C load, accounts for 10% traditional buildings, low noise
- 7) Drain pipes are separated by 2 steel plates and 5cm rock wool partition walls. No noise is heard in bedrooms
- 8) Room lock is equipped with cushioning rubber mat, There will be no clatter of the locking tab when opening the door

The key to clean air technology in Holon Building is the use of "BROAD fresh air machine", which was invented in 2008 and has won wide acclaim worldwide



Fresh Air Machine is on ceiling-mounted, and it only takes one minute to open the cover, remove and wash the filter



Indoor PM2.5



Outdoor PM2.5

Why do Holon Buildings have strict comfort standards?

People spend 90% of their life inside buildings, and the quality of buildings determines their mental and physical health. Therefore, the Holon Building sets 16 strict comfort standards (which can be written into the purchase contract), so that the residents, including the rich and the poor, can enjoy the high quality of living life. Unfortunately, traditional buildings cannot meet these standards, no matter in design, materials, construction, or cost, they are out of reach. Not that BROAD Group is much better, but streamlined car production is 100 times better than manual labour method

Holon Building's improvement to householder's benefits:

One time investment, everlasting benefit

Benefit related factors and key improvement solutions:

1. Operational energy saving - Nearly zero energy building standard, ultra thermal insulation, 90% higher energy efficiency
2. Assets value maintained - Complete stainless steel structure, **value like gold and silver jewelry can be maintained**
3. Easy Maintenance - The exterior wall uses wash-free fluorocarbon paint. All concealed work can be accessible
4. Easy to change: Walls, doors, windows & balconies can be easily moved. A whole building can be moved
5. Safety in use: A steel structure is super strong earthquake resistance. A building external fire escape ladder doubles fire prevention



1 Operational energy saving

- 1) Holon Building is designed, produced, accepted and operated per "Nearly Zero Energy Building Standard" GB/T 51350-2019 and German "Passive House Standard" (Version 10A). It is the most energy efficient building except the one with renewable energies
- 2) Holon Building mainly adopts 5 thermal insulation measures: 22cm rock wool for exterior walls, 4-paned glass windows, exterior shade and interior shade, fresh air heat recovery, 90% less energy consumption than that of conventional buildings
- 3) For example, a 68m² Holon Building for a family of three in Shanghai can save 6915 kWh/year compared with traditional buildings (per the following "Energy Efficiency Calculations")
- 4) In addition, solar panels are also used on rooftop. The renewable energy obtained is not calculated within the above energy-saving indicators. For areas rich in solar energy resources, solar power generation may be more than the power consumption of the Holon Building, it becomes a zero or negative energy consumption building.

2 Assets value maintained

- 1) The whole building is composed of stainless steel structure, including column, beam, slab, balcony, window frame, stairs, roof and bannister, retaining a 1000-year life span. The depreciation cost of Holon is extremely low, due to the material longevity and the fact that the construction materials can be 100% recycled for future use even if the building is scrapped ahead of schedule. Therefore, Holon Building leaves a precious legacy for our future generations--It's better to have Holon Building than to deposit gold and silver jewelry
- 2) Exterior wall uses galvalume slab and fluorocarbon paint, wall seams are glued with silicon weather-resistant sealant. The Empire State Building has been in use for 90 years and is still intact
- 3) Interior wall is made of galvalume slab and PE paint, life design is 100 years
- 4) Water supply pipes are of stainless steel, extremely durable

3 Easy maintenance

- 1) Exterior walls use fluorocarbon paint, and fluorine is non-stick dirt resisting material. The exterior wall will not be dirty even no wall washing for 10 years
- 2) Fresh air machine and A/C can be easily opened and filters inside can be easily cleaned
- 3) Easy access door for electric equipment and pipeline maintenance
- 4) Holon Building is 100% factory-made, only bolt connection and seam gluing of walls are required on site. Eliminating quality defects caused by negligence of on-site inspection management
- 5) Hanger rod around roofs, which can hang 1200kg hanging basket. It is convenient for the maintenance and reconstruction of facades (such as adding balconies)
- 6) Maintenance manual is complete and clear. Make maintenance easier

4 Easy to change

- As a long-cycle facility, it is essential for buildings to change its functions
- 1) All interior and exterior walls are non-load bearing walls. After construction is completed, walls, doors and even the windows can be easily moved if necessary
 - 2) The position and dimension of balcony and bay window can be changed after construction is completed. If necessary, rooms with depth ≤ 4 m, large balcony, swimming pool or botanic garden can be inserted into the building(The load shall be calculated by the structural engineer if the added load is over 20t)
 - 3) Floor slab is made of BROAD's stainless steel B-CORE slab with no concrete at all. The slabs are easily sliced or drilled for adding kitchen and bath pipelines, stairs and elevators. If necessary, the whole floor slab can be removed for retrofitting to a duplex. (A structural engineer needs to do the stability calculation if it's a high rise)
 - 4) Exterior and interior walls use steel plate paint with adhesion 2Mpa strength. Finishing such as wall papers, ceramic tiles and marbles can be applied easily
 - 5) Closets, TVs and furnishings ≤ 20 kg/m² and can be easily pasted or mounted(by nails)
 - 6) Wood floor, ceramic tile and marble can be applied to the floor slab
 - 7) Storeys can be added to low-rise buildings (The basic structure of Holon Buildings can be built up to 12 floors, it needs to be multi-layer stacked and resist wave swaying during sea transport.)
 - 8) If needed, the whole building can be disassembled and rebuilt in another location(Achieve nondestructive disassembly and reassembly)

5 Safety in use

- 1) Complete stainless steel structure with high ductility. Reinforced concrete elongation is nearly zero, whereas stainless steel $\geq 20\%$. No matter how strong the earthquake, Holon structure can deform, but will never collapse
- 2) To meet official fire code regulations, each floor is equipped with a building external fire escape ladder, which is more effective than any other fire protection measures to ensure safety
- 3) Bathrooms are equipped with anti-slip PVC floors, protecting the old against slips and falls
- 4) Balconies, handrails and windows are designed to prevent children from climbing
- 5) Stainless steel is a good conductor. If a lightning strike happens, it goes directly from the column to the ground without affecting the building occupants
- 6) The power supply is equipped with a leakage protector to prevent electric shock
- 7) Exterior walls are made of double-layer steel plates, which isolates the ubiquitous electromagnetic radiation outdoors
- 8) All edges of windows and door frames, window hinges, sanitary fittings and mirrors are smooth, preventing scrapes
- 9) It will alarm automatically when windows are forgotten to be closed on rainy days or toilets overflow

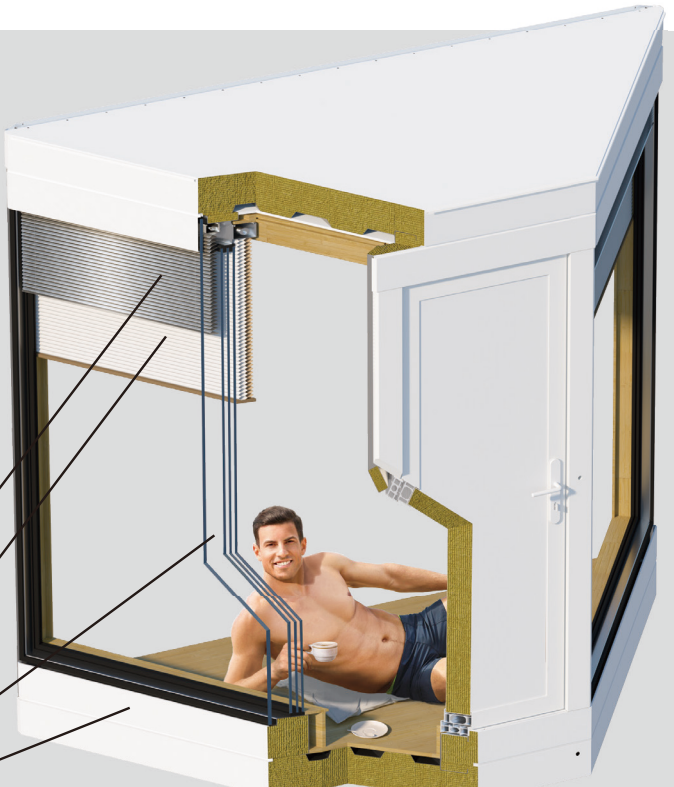


Holon Building structure is 100% stainless steel, leaving precious assets for future generations

The world's most stringent thermal insulation measures are adopted for Holon Buildings (take the bay window as an example)

exterior shade
interior shade
4-paned glass windows (ultra-clear glass)

22cm rock wool for exterior walls (δ 0.7 galvalume steel plate sandwiched with rock wool)

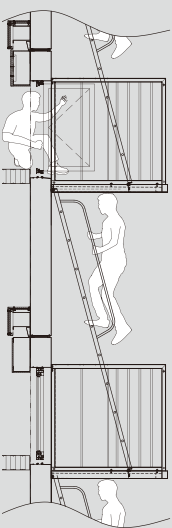


Energy Efficiency Calculations For example, a household with a building area of 135m²

Climate zone		Severe cold		Cold		Hot summer & cold winter		Hot summer & warm winter		Warm	
		Harbin, Moscow		Beijing, New York, Tokyo		Shanghai, Changsha, Rome		Guangzhou, Taipei, Dubai		Kunming, Sydney, Nairobi	
Heating & cooling demand	Item	Parameter	summer	winter	summer	winter	summer	winter	summer	summer	winter
	Exterior wall	66m ² K=0.2W/m ² K	17	1443	92	1074	167	685	277	2	359
Electrical	Window	36m ² K=1.4W/m ² K	65	622	986	546	1431	244	2443	135	35
	Fresh air	200m ³ 80% heat recovery	70	554	225	319	669	185	355	23	13.6
	Lighting	100W LED 3.3W/m ²	59	-110	128	-92	200	-62	578	52	-15
	Personnel	500W /5 people	84	-99	187	-91	296	-68	416	39	-13
	Electrical	600W Including kitchen and home appliances	124	-204	271	-191	423	-135	797	74	-29
Total		kWh/a	419	2205	1890	1566	3186	851	4867	324	351
Heating & cooling demand / m ²		kWh/m ² a	3.1	16.3	14	11.6	23.6	6.3	35.9	2.4	2.6
A/C power cons.	Total	kWh/a	1361		1395		1299		1568	202	
	Annual average	kWh/m ² a	10.1		10.3		9.6		11.6	1.5	
Fresh air power cons.	Total	kWh/a	235								
	Annual average	kWh/m ² a	1.7								
Total annual		kWh/a	1596		1630		1534		1803	437	
Annual / m ²		kWh/m ² a	11.8		12.0		11.3		13.3	3.2	
Equivalent to primary energy		kWh/m ² a	30.6		31.3		29.4		34.6	8.3	

Note:
Holon Building is designed, produced, accepted and operated per "Nearly Zero Energy Building Standard" GB/T 51350 and German "Passive House Standard" (Version 10A). This standard is 90% more energy efficient than that of conventional buildings. An energy saving example of a household: 135m²/ apartment in areas with hot summers and cold winters) in Holon Building, annual electricity saving: 13830 kWh, CO₂ reduction by 11894kg yearly. Assuming that one tree absorbs 18.3kg CO₂ emissions yearly, it equals to planting 650 trees.

A building external fire escape ladder ensures safety more effectively



Under the premise of meeting the official fire regulations, Holon Building is equipped with a "building external fire escape ladder" on each floor, which is more effective than any other fire protection measures to protect the safety of residents

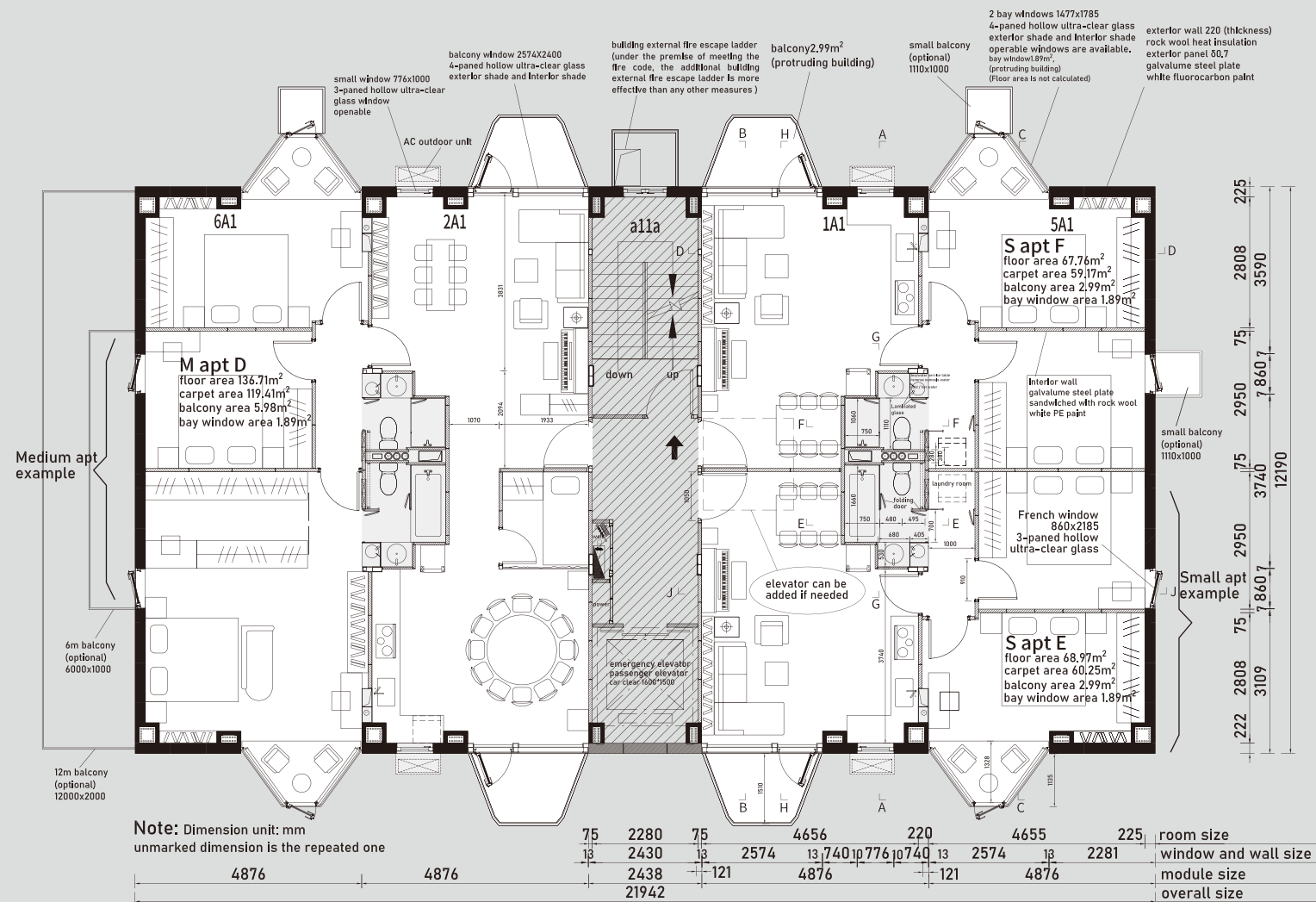
According to the statistics of fire cases in countries around the world for decades, more than 2/3 of the burning buildings and stairwells are blocked by toxic smoke

According to decades of experience in the United States and Japan, the use of escape ladders or escape ropes outside the building is the most effective measure to ensure a successful escape

Standard building models:

Plate Housing A4.5

268m²/F (without calculating bay window and balcony)
Version 15.0,same as below



Small
Apartment
Cross-section

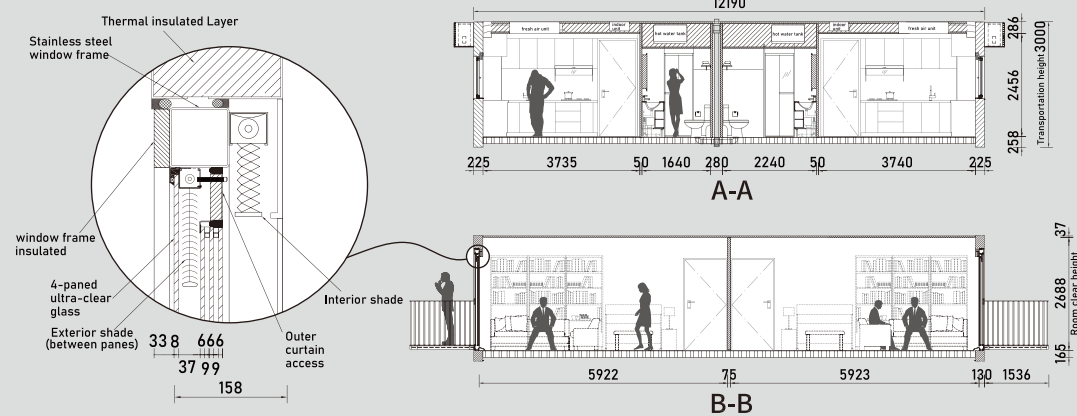
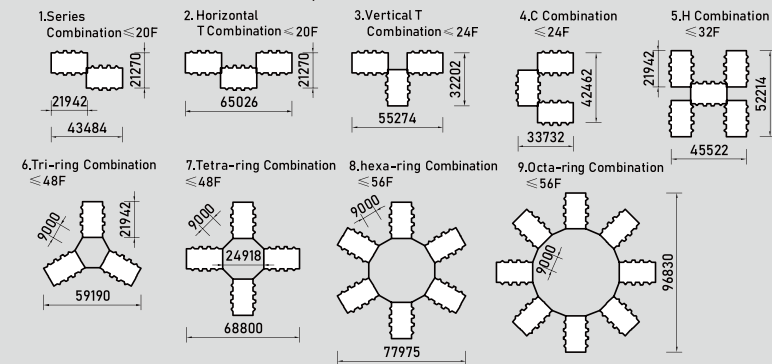


Plate Housing A4.5 Features

- 1) Small size, extremely convenient room layout. Fewer households on each floor, less interference. Higher space utilization efficiency
- 2) Daylight design is convenient thanks to bay windows, buildings can be configured from any angle, every household enjoys the sunshine
- 3) Disadvantages: Too small to build tall buildings (unless the combination of multiple buildings)
- 4) Floor numbers: 10-16 floors are recommended (30m-48m). Buildings lower than 10 floors are less economical, and under 6 floors are not economical at all

A4.5 Combination Examples

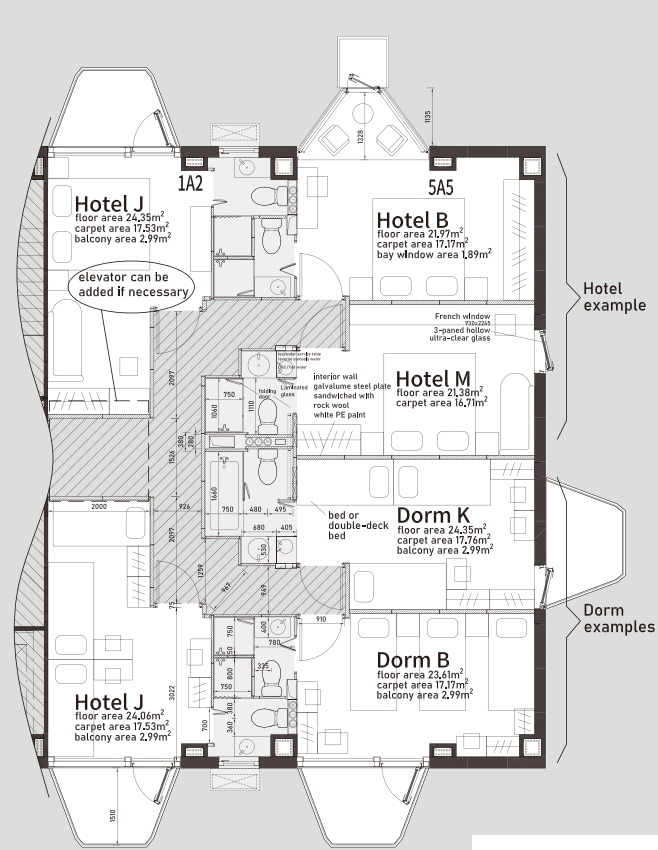
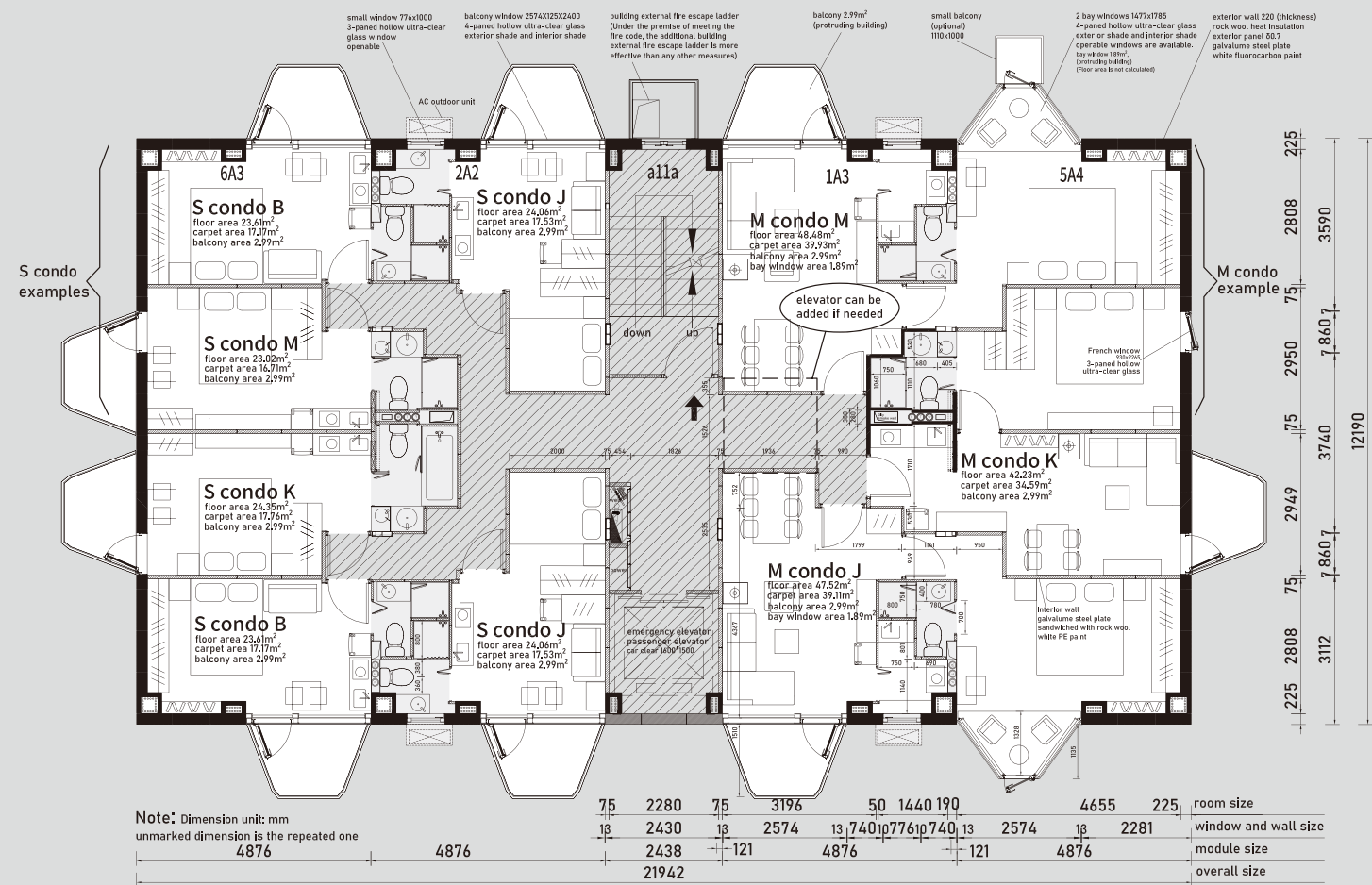


Notes: photos are real scenes of Holon Building



Standard building models:

Plate public building A4.5 268m²/F (without calculating bay window and balcony)



Notes: photos are real scenes of Holon Building

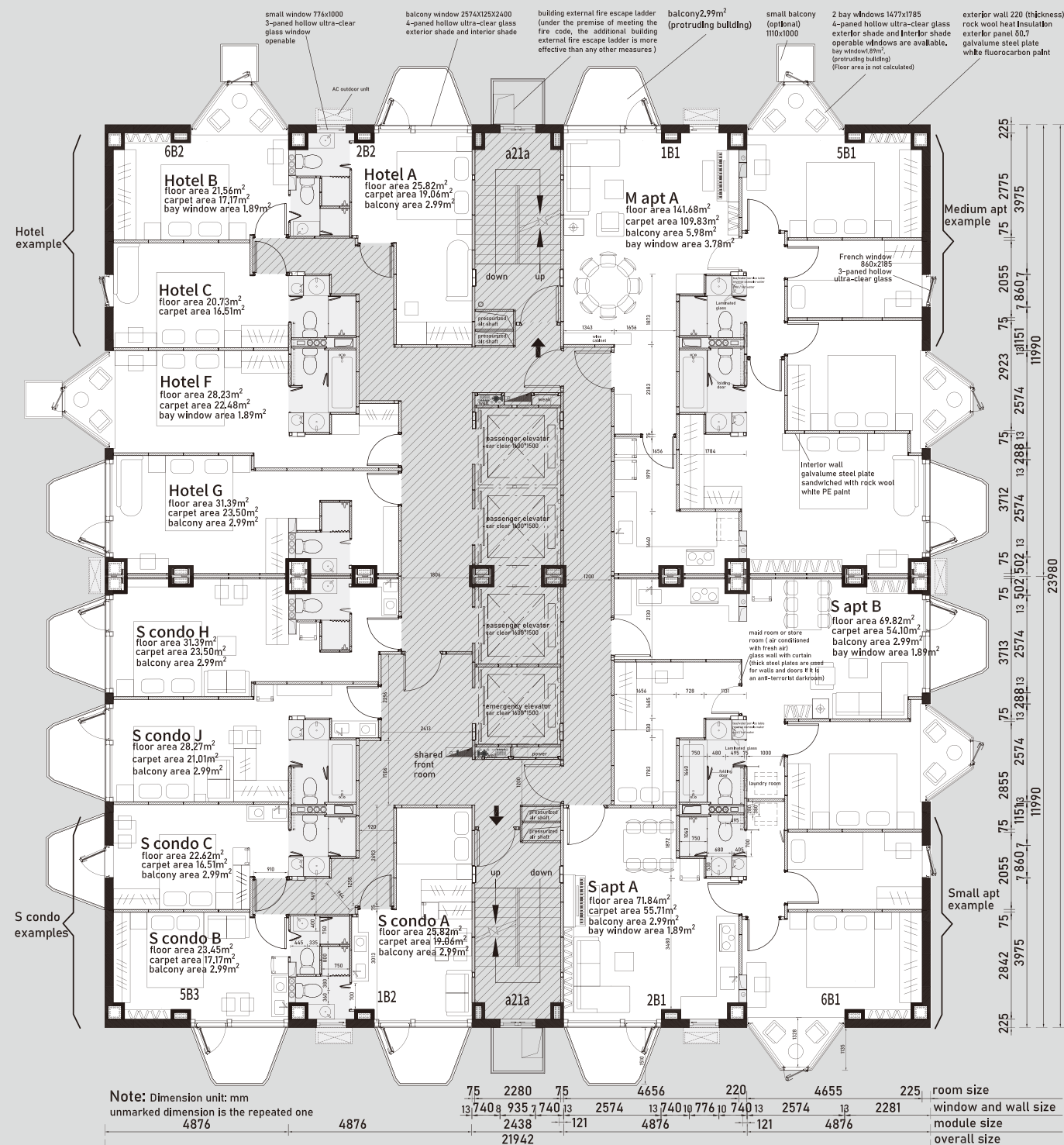
Standard Housing Selection Keys

- Combination:**
Standard building models include small, medium and large apartment, condo, hotel, dorm. One, two or a variety of unit layouts can be set up on one storey or in the whole building, as long as the location of the tube well remains unchanged. Please refer to "Building Model Overview" for specifications
- Functions:**
 - Electromechanical equipment: AC, fresh air and hot water system are ceiling-mounted in every household. Independent metering, and online payment available
 - Kitchen: Lampblack pipe, water supply, hot water and drainage are equipped in each household. Kitchen can be placed anywhere near the bathroom
 - Bathroom: Sanitary fittings, water supply, hot water and drainage are equipped. Toilet position cannot be changed, but other parts can be designed if there is an urgent need
 - Room: Standard configuration of interior walls and doors is shown in the drawing, which can be adjusted per clients' needs (interior walls and doors can be adjusted inside the module of 11.7×4.8m)
 - Windows and balconies: Standard configuration is shown in the drawing. If users want to change the balcony into bay window (or vice versa), needs shall be proposed in advance(modification cost is higher afterwards)
- Constraints:**
To meet the need of factory production, the sizes and positions of the following parts are unchangeable:
 - Wells
 - lampblack well
 - bathroom
 - staircase and fire passage
 - exterior wall, window
 - column fire protection layer
 - Kitchen is near the bathroom, which is convenient for connecting the lampblack and water pipes
- Extensions:**
 - Except 3, other internal walls and doors can be changed if needed
 - The standard color of the exterior wall is white, which can be changed if the customer needs, with significantly prolonged construction period and increased cost
 - Multiple buildings can be combined to reduce occupied area, improving lateral load resistance to build higher buildings, which is applicable to the country extremely lack of lands and buildings
 - As Holon Buildings weigh about 10 times lighter than reinforced concrete buildings, the requirements on foundation strength is greatly reduced, and Holon Buildings can be built directly on the foundation after old buildings are dismantled (load calculation is required)

Windowless Kitchen & Bath

- It is a common practice in developed countries nowadays to set kitchen and bathroom in dark areas and leave limited lighting areas for living room and bedroom. If windows in a kitchen and bathroom are opened for ventilation, its dirty air will blow into the living room and bedroom. It was the unhealthy and outdated method before mechanical ventilation was invented
- BROAD Fresh Air Machine is used in Holon Building with 80% heat recovery and 99.9% filtration of PM2.5, supplying 100% fresh air in living rooms and bedrooms 24/7/365. Dirty air is expelled from kitchens and bathrooms to keep the bathrooms dry and make indoor air healthy with a good smell. Fresh air is sent into the bedrooms and living areas while dirty air is vented from bathrooms. This is a standard procedure in all 5-star hotels worldwide. Additionally, 100% fresh air system with windows closed is required by European "Passive House" and China's "Technical Standard for Nearly Zero Energy Building", which is healthy, saves energy and insulates noise, is the trend of future architecture
- Holon Building can have a kitchen besides the window to use gas, but we recommend electricity. It is stipulated in many countries that natural gas should not be used by law. China's 14th Five-Year Plan for green buildings mandates the use of electricity for cooking and household hot water instead of gas. It makes sense, for it is impossible that the gas stoves and pipings never fail with human faults in decades. As people are used to keeping the windows closed in cold days, any tiny gas leakage is prone to an explosion. If an explosion takes place, steel structured buildings may get deformed and reinforced concrete buildings may collapse. Collapse tragedies and deaths take place everyday all over the world which is a threat that should not exist in modern society
- In recent years, great progress on the electric stove technology has been made in many countries. Many 2kW electric stoves can reach the fire intensity of a gas stove. It's not a problem at all even Chinese are used to cooking with high fire. Some good electric stoves can be recommended. Advantages of replacing gas with electricity: ①safe ②Healthy. No carbon monoxide, nitrogen oxides, heavy metals and other carcinogens ③Clean: less smoke stains in the kitchen and utensils
- Sanitary fittings are all standard Holon Building supplies. Cabinets are optional. Clients can purchase by themselves. The illustration is recommended for your reference. BROAD suggests an open kitchen design for convenient use. Some people are concerned that the oily smoke in an open kitchen will diffuse into the room. BROAD has devised a smart solution: add a U-shape glass cover beneath the range hood, which does not obstruct cooking but reduces the smoke by 90%+. People are no longer choked, and the room is no longer smoky
- Many things in life we get used to must be changed, especially is health and safety related to everyone

Standard building models:
Tower building B9 526m²/F (without calculating bay window and balcony)

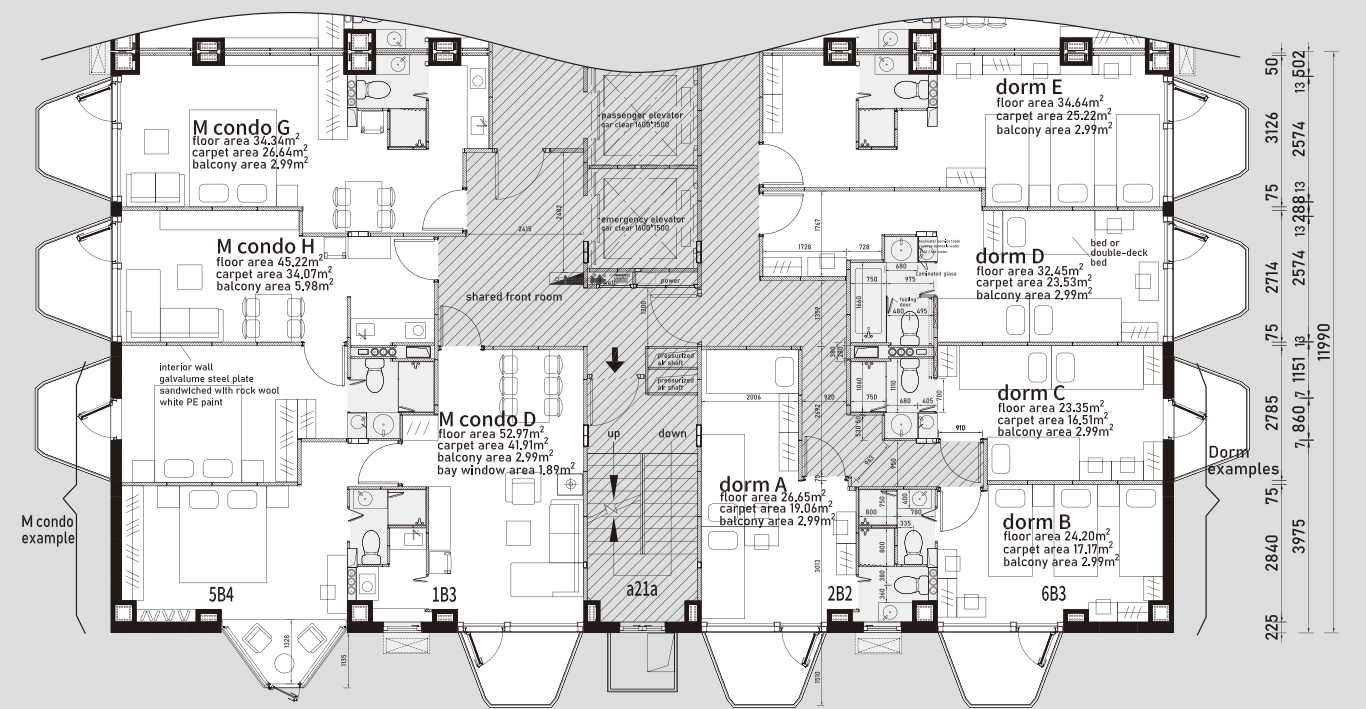
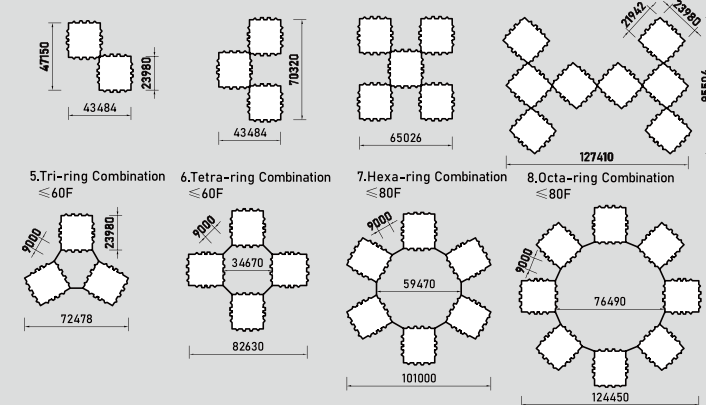


Tower B9 Features

- 1) With a square shape, tower-type occupies small areas, large shaped, which is suitable for high-rise buildings. Extremely high space utilization efficiency
- 2) Sufficient elevator numbers with short waiting time. Elevator configuration: $\geq 24F$ 4 elevators, $\geq 16F$ 3 elevators, $\geq 12F$ 2 elevators
- 3) Daylight design is convenient thanks to bay windows, buildings can be configured from any angle, every household enjoys the sunshine
- 4) Disadvantage: large shaped with a small part of dark area
- 5) Floor Numbers: 20-32 floors are recommended (60-69m). Buildings lower than 20 floors are less economical and under 10 floors are not economical at all

B9 Combination Examples

1.Series Combination $\leq 42^{\circ}\text{F}$ 2. T Combination $\leq 42^{\circ}\text{F}$ 3. X Combination $\leq 48^{\circ}\text{F}$ 4.H Combination $\leq 48^{\circ}\text{F}$



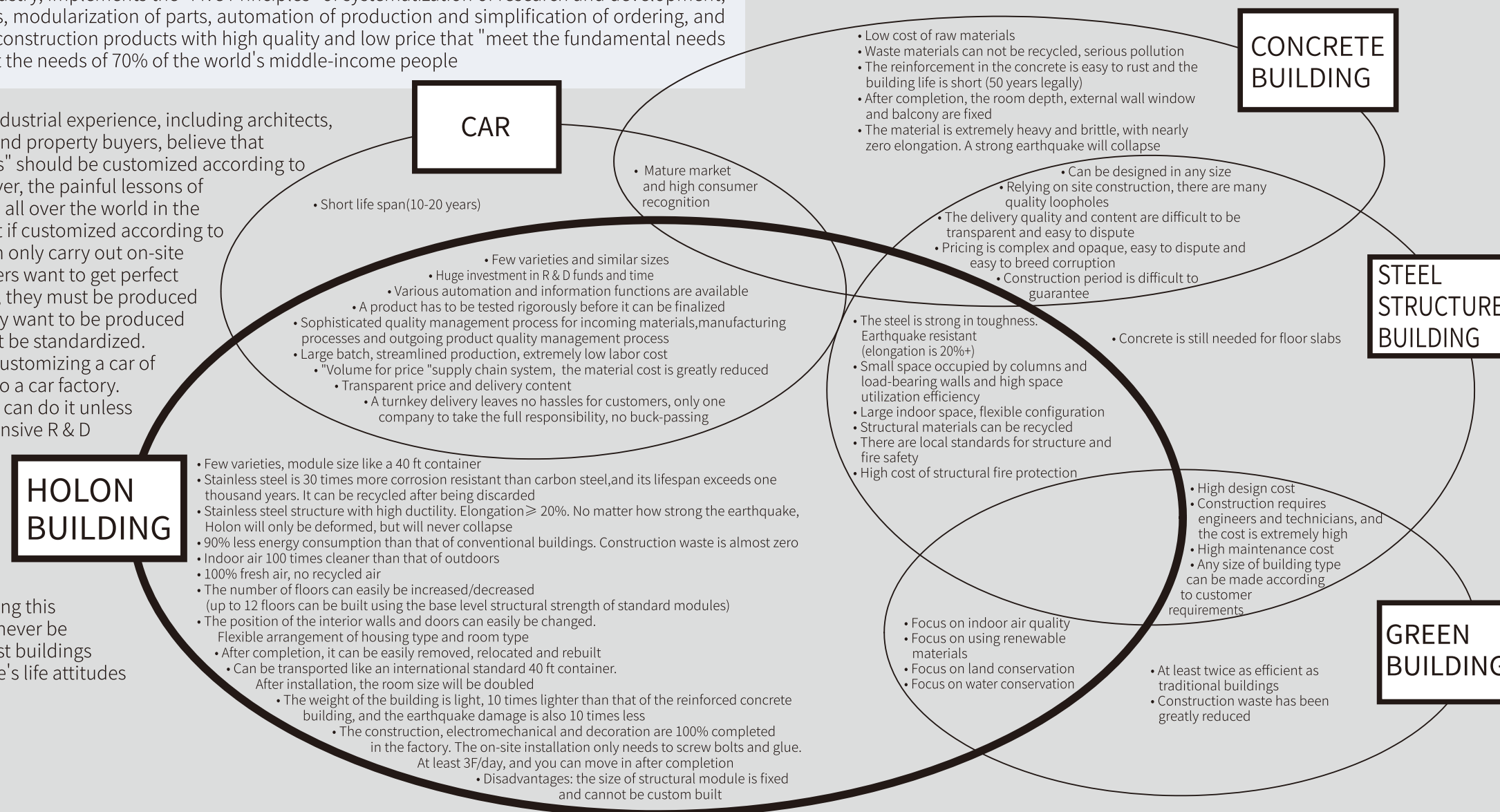
The essence of industry: Standardization

Only through standardization, it can be possible for the general public to live in high quality buildings. Make human life attitude evolve

The automobile industry is the most successful industry in modern times. The secret of its success lies in standardization: few varieties and large quantities. Holon Building comprehensively draws on the experience of the automotive industry, implements the "Five Principles" of systematization of research and development, generalization of parts, modularization of parts, automation of production and simplification of ordering, and creates standardized construction products with high quality and low price that "meet the fundamental needs of customers" to meet the needs of 70% of the world's middle-income people

Many people without industrial experience, including architects, real estate developers and property buyers, believe that "prefabricated buildings" should be customized according to customer needs. However, the painful lessons of prefabricated buildings all over the world in the past 60 years tell us that if customized according to customer needs, we can only carry out on-site construction. If customers want to get perfect and affordable housing, they must be produced in the factory, and if they want to be produced in the factory, they must be standardized. This is like a customer customizing a car of special size and shape to a car factory. No clever manufacturer can do it unless the customer pays expensive R & D fees and mold fees

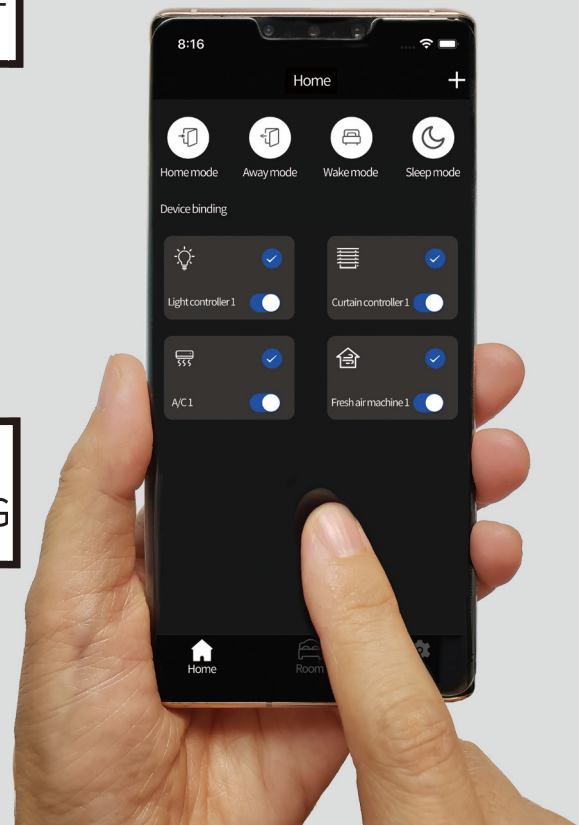
Importantly, more than 70% of people actually have the same demand for buildings, just like their demand for cars. Without changing this cognition, there would never be high quality and low cost buildings in the world, and people's life attitudes would not evolve



Only standardization can make it intelligent

In today's digital age, people have put forward many demands to make buildings intelligent. Traditional building intelligent control system requires engineers to spend a lot of time on-site installation and debugging, and the cost is very high, so it is difficult to popularize

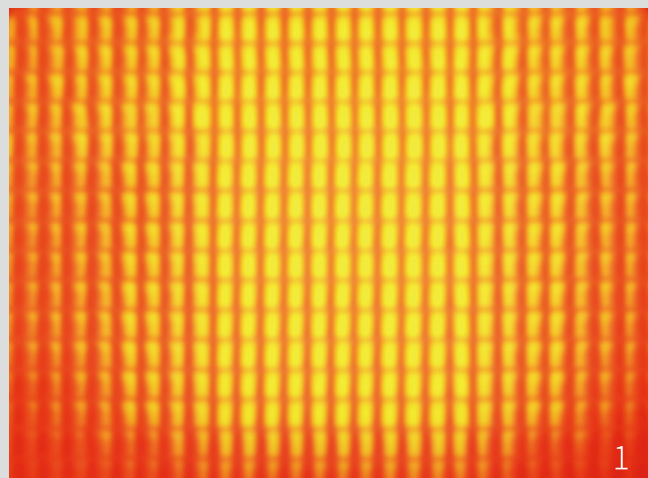
The "BBA intelligent control system" of the Holon Building fully meets the needs of users for convenience, comfort and energy conservation, and the cost is more than 10 times lower than that of the traditional intelligent control system of the building, because it is produced and tested on the standardized assembly line



Only standardization can realize the mass and continuous production on the streamlined production

In 2022, BROAD Holon Co., Ltd. has built the first automatic streamlined production for Holon Buildings with an annual yield of 2.7 million m². The factory occupies an area of 50,000m², adopts more than 100 robots and dozens of intelligent facilities. On average, 1000 workers can produce 10m² Holon Building /day. The Holon Building's construction efficiency is 30 +times higher than that of conventional buildings and quality defects are almost zero, which actualizes the aspiration of "the flag bearer of modern architecture" Le Corbusier 100 years ago: "to build a house with the same Ford car principle I bought"

BROAD plans to set up 37 streamlined production lines with global partners within 3 years to achieve an annual capacity of 100 million m² Holon Buildings after summarizing the experience and lessons of the first line and optimizing the design



1. 1100°C hot air copper brazing of B-Core slabs
2. B-Core slabs out from the copper brazing oven
3. B-Core slab laser trimming and hole opening
4. Column & beam laser cutting & welding
5. Holon Building general streamlined production
6. Holon manufacturing base is located in Xiangyin, Hunan, and occupies an area of 230,000m².

Note: photos are real scenes of Holon Buildings streamlined production

Only standardization can realize the barrier-free and low cost transportation worldwide



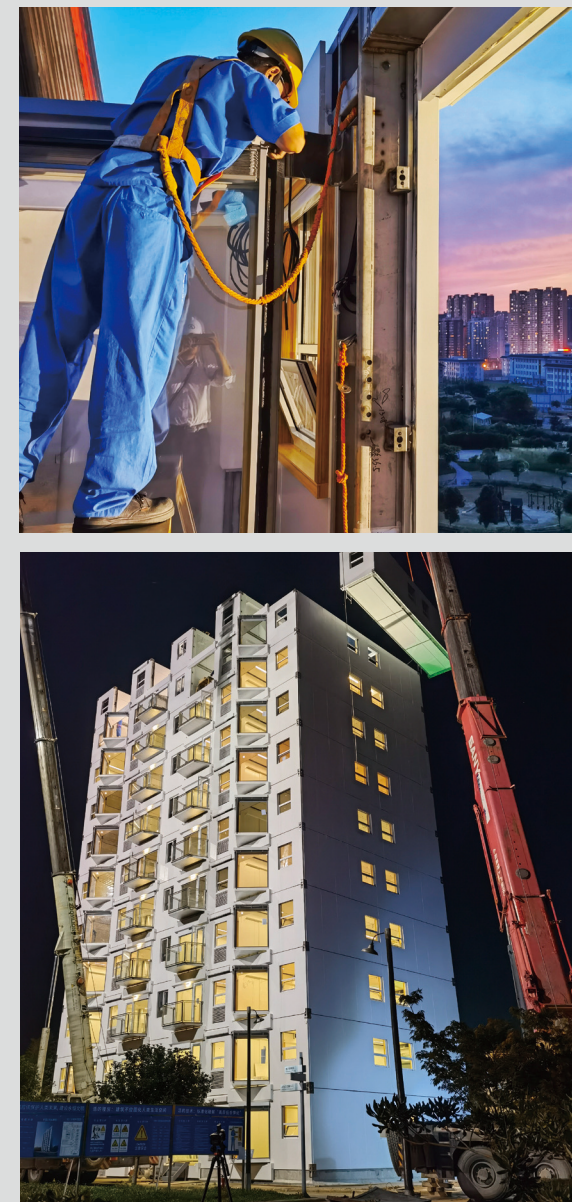
Transport & Erection

No	Model	Height (m)	Area (m ²)	No. of trucks	Lifting Equipment	Fast Installation			Normal Installation		
						Crane	Workers	Days	Crane	Workers	Days
1	A4.5-11	33	3000	56	Truck crane 120t	2	70	4	2	30	10
2	A4.5-16	48	4400	81	Truck crane 120t	2	90	5	2	60	15
3	A4.5-24-T3	72	19700	363	Tower crane 14t	6	250	7	3	120	20
4	B9-24	72	12900	242	Tower crane 14t	4	200	7	2	60	23
5	B9-32	96	17200	322	Tower crane 14t	4	200	9	2	60	28
6	B9-60-O3	180	9700	1806	Tower crane 14t	8	400	25	6	120	80

Notes: 1. Transportation by 40ft standard container truck, train and vessel, Transport weight 11-15t
2. The installation includes installation, commissioning & acceptance of structure, decoration, MEP, sanitary fittings, kitchen cupboard(kitchen cupboard is optional)

Only standardization can realize the high quality, high efficiency and low cost of installation

On-site installation is extremely simple
1. Structures are bolt screwed
2. Wall seams between B-Core slab connections are glued
3. Part interior walls are bolt screwed and glued
4. Connect utility hook-ups



Notes: photos are real scenes of Holon Building

Rated parameters, Material specifications, Technical standards

Building Rated Parameters

No	Items	Parameters	Notes
1	Room module transport dimensions	L12,190 W2,438 H3,000 mm	Shipped as a standard 40ft container (actually no container is needed)
2	Room module installation dimensions	L12,190 W4,876 H3,000 mm	The installation and transport dimensions for stair modules are the same
3	Module transport weight	Room ≤ 15t, stair ≤ 11t	Stowage materials and tools are included
4	Building floor height	3 m	indoor clear height 2.7m
5	Structural material	Stainless steel (30 times more corrosion resistance than carbon steel)	Floor slabs are made of BROAD B-CORE slab while Columns and beams are section stainless steel
6	Adapted standard	China standards	/
7	Life design	1000-year structure	Other parts per EU Standards
8	Insulation K-value	Rock wool in exterior wall 220 0.2 W / m ² ·K (Roof K-value=0.18 W / m ² ·K)	/
9	Window K-value	4-paned large windows: 1.4 W / m ² ·K 3-paned small windows: 1.8W / m ² ·K	Additional insulation measures: exterior sunshade, interior thermal shade(if the interior thermal shade is used 50%, window K-value will be decreased by about 40%)
10	Energy metering	Each household is separate	Water, electricity, fresh air system and A/C consumption are calculated independently for each household
11	Indoor temperature	Winter 22 °C, Summer 24 °C	S apt and building models as above , independent metering of water and electricity
12	Fresh air volume	4m³ / m²·h	CO₂ ≤900ppm
13	Air freshness	100% fresh air	No mixed return air (fresh air heat recovery rate 80%)
14	Fresh air cleanliness	PM2.5 filtration efficiency 99.9%	Indoor air is 100 times cleaner than outdoor air
15	Building energy consumption	Per the "Nearly Zero Energy Building Standard" 90% less energy consumption than that of traditional building	A/C & Fresh Air annual power consumption kWh/m² a: Severe cold area 12, cold area 12, hot summer and cold winter area 12, hot summer and warm winter area 14, warm area 4
16	Standard delivery items	Turnkey project: including building construction, MEP, and decorations	Excluding foundation and other engineering works outside the building

Project Documents

No	Name	Submission Deadline	BROAD	User	No	Name	Submission Deadline	BROAD	User
1	Purchase Order	P/O signing day	▲	▲	19	Building Modules packing Site Plan	30 days before shipment	○	▲
2	Architectural Drawing	P/O signing day	▲	▲	20	Installation plan	30 days before shipment	▲	○
3	Technical Parameters Table	P/O signing day	▲	▲	21	Foundation Acceptance Report	30 days before shipment	○	▲
4	Building Standard	P/O signing day	▲	▲	22	Acceptance Report of Outside Roads, Water, and Electricity	30 days before shipment	○	▲
5	Comfort Standard	P/O signing day	▲	▲	23	Installation Condition Confirmation Table	30 days before shipment	○	▲
6	Smart Control Specifications	P/O signing day	▲	▲	24	Production Inspection Report	2 days before shipment	▲	▲
7	Scope of After-Sales Responsibilities	P/O signing day	▲	▲	25	Modules Stowage List	The day of shipment	▲	▲
8	Main materials list	P/O signing day	▲	▲	26	Packing List	The day of shipment	▲	▲
9	Furnishings List	P/O signing day	▲	▲	27	Delivery Checklist	2 days after arrival	○	▲
10	Mechanical & Electrical Devices List	P/O signing day	▲	○	28	Assembly Inspection Report	7 days after installation	▲	▲
11	Structural Calculation Workbook	20 days after the contract takes effect	▲	○	29	Indoor Air Quality Detection Report	7 days after installation	▲	○
12	Building Appearance Rendering	20 days after the contract takes effect	▲	○	30	Construction Supervision Report (third party)	7 days after installation	▲	▲
13	Foundation Plan	20 days after the contract takes effect	▲	○	31	As-Built Drawing	7 days after installation	▲	○
14	Building Exterior Water and Electricity Supply Plan	20 days after the contract takes effect	▲	○	32	Completion Acceptance Report	7 days after installation	▲	▲
15	Foundation Construction Drawing	60 days after the contract takes effect	○	▲	33	Building Operation Guide	7 days after installation	▲	▲
16	Construction Drawing of Exterior Roads, Water, and Electrici	60 days after the contract takes effect	○	▲	34	Building Maintenance Technical Manual	7 days after installation	▲	▲
17	Construction Permit (official)	60 days before installation	○	▲	35	Supporting Equipment Maintenance Documents	7 days after installation	▲	▲
18	Transport Plan	30 days before shipment	▲	○	36	Official Approval Documents	30 days after installation	○	▲

Adopted Standard

China National Standards	
Name of the standard	Code of the standard
• Technical standard of stainless steel core plate building structure	T/CSUS 14-2021
• Technical specification for stainless steel structures	CECS 410:2015
• Load code for the design of buildings	GB 50009-2012
• Code for seismic design of buildings	GB 50011-2010
• Technical standard for assembled buildings with steel-structure	GB/T 51232-2016
• Code for welding of steel structures	GB 50661-2011
• Mechanical properties of fastenersstainless steel bolts, screws & studs	GB/T 3098.6-2014
• High strength stainless structural steel for constructions	GB/T 37430-2019
• Code for fire safety of steel structures in buildings	GB 51249-2017
• Code of design on building fire protection and prevention	GB 50016-2014 (2018 version)
• Uniform standard for design of civil buildings	GB 50352-2019
• Standard for electrical design of civil buildings	GB 51348-2019
• Design code for heating ventilation and air conditioning of civil buildings	GB 50736-2012
• Standard for design of building water supply and drainage	GB 50015-2019
• Common Specifications of building energy efficiency and renewable energy utilization	GB 55015-2021
• Technical standard for nearly zero energy buildings	GB/T 51350-2019
• Design Standard for energy efficiency of residential buildings in severe cold and cold zones	JGJ 26-2018
• Double skin metal faced insulating panels for building	GB/T 23932-2009
• Standard for acceptance of construction quality of steel structures	GB 50205-2020
• Container inspection code	2021 version

Foreign Standards	
Name of the standard	Code of the standard
• Specification for Structural Steel Buildings	AISC 360-16
• Seismic Provisions for Structural Steel Buildings	ANSI/AISC 341-16
• Safety standard for fire testing of building structures and materials	ANSI/UL 263-2003
• Structural Welding Code-Stainless Steel	AWS D1.6
• Fasteners for use in Structural Application	ANSI/ASME B18.2.6-2006
• Building Construction and Safety Code	ANSI/NFPA 5000-2006
• Safety Standard for fire resistance test in building adiabatic walls	ANSI/UL 1040-2001
• Limit States Design of Steel Structures (A National Standard of Canada)	CAN/CSA-S16-09
• Eurocode 3: Design of steel structures. Part 1-2	EN 1993:2005
• Eurocode 8: Design of structures for earthquake resistance. Part 1	EN 1998-1:2004
• Execution of steel structures and aluminum structures. Part 2	EN 1090-2:2018
• Execution of steel structures and aluminum structures. Part 4	EN 1090-4:2018
• Fire classification of construction products and building elements. Part 1	EN 13501-1:2018
• Fire classification of construction products and building elements. Part 2	EN 13501-2:2016
• Building hardware-Gasket and weatherstripping for doors, windows, shutters and curtain walling. Part 1	EN 12365-1-2003
• Glass in building- Glazing and airborne sound insulation- Product descriptions and determination of properties	EN 12758-2002
• Structural use of steelwork in building(British Srandard)	BS 5950
• Fire precautions in the design, construction and use of buildings. Part 5	BS 5588-5:2004
• Code of practice for fire safety in the design, management and use of buildings	BS 9999-2008
• German Code for Steel Structures	DIN 18800

Main Material Specs

CAT	No	Item	Main Material	Specification	Note
Structure	1	column	S32001	C360x180/C360x360 x6、8、10、12、16	wall thickness of columns and beams is determined by structure calculation BXG1000 applies for super high-rise
	2	beam	S32001	wall thick:2.5、4、6、8、10、12	
	3	floor	panel: QN1804, core tube: SS 304, filling rock wool 120kg/m³	A1.5 L:11380 W: 2 m / 2.6 m	BROAD B-CORE slab plate δ 1.5\ core tube φ 51 x 0.3
	4	ceiling frame	galvanized pipe	□120x20x0.7/1.5	/
	5	balcony	floor : S30408 guardrail: SS	2446x1490 □80x40x2、 □40x20x1.5 □120x20x0.7	/
Wall	1	fire resistance layer	calcium silicate board, galvalume steel plate rockwool 120kg/m³ fire retardant coating	δ9+δ9 650 thin	for column wrap all structures except columns
	2	exterior wall	galvalume steel plate rockwool 120kg/m³	exterior δ0.7, interior δ0.4 δ220	fluorocarbon paint (UV-Proof) hydrophobic
	3	interior wall	galvalume steel plate, magnesium oxide board rockwool 120kg/m³	δ0.4、 δ5 δ75、 δ50	PE Paint hydrophobic
Door & Window	1	balcony window	Frame: SS interior:3-paned tempered glass exterior:tempered ultra clear glass	□100x100x1.5 ultra clear glass (1380x2088x36) 1380x2176x8	interior: filling with polyurethane; exterior: extruded board for insulation δ 25 6+9Ar+6+9Ar+6
	2	bay window	top and bottom panel:galvalume steel plate frame: S32001 interior:3-paned tempered glass exterior:tempered ultra clear glass	δ0.7 □180x40x2 ultra clear glass (1380x1630x36) 1455x1788x8	6+9Ar+6+9Ar+6
	3	small window casement window balcony glass door	window frame: aluminum alloy frame of broken bridge glass: 3-paned tempered insulating glass	776x1000, 5+9Ar+5+9Ar+5 935x1000, 5+9Ar+5+9Ar+5 860x2185, 5+9Ar+5+9Ar+5	70 series fluorocarbon powder ultra clear glass
	4	door & window frame	galvalume steel plate	δ0.4	PE Paint
	5	window frame	bamboo	δ9	class E ₀ 、 E ₁
	6	elevator door pocket	S30408(brushed)	δ0.8	/
	7	exterior shade	aluminum alloy shades	slice width 25	wireless & smart control, motor noise < 40dB
	8	interior shade	multi-cavity honeycomb curtain aluminum foil on the back	THIK:50	
	9	entrance door	steel, PE paint	1050x2415	class B fire resistant
	10	stair door			
	11	room door	bamboo wooden door	910x2700	class E ₀ /E ₁
	12	bath door	aluminum alloy, resin plate	700x2000	folding door, class E ₀ /E ₁
Pipes	1	air duct	Double-sided aluminum foil phenolic board, galvalume steel plate Aluminum foil glass flexible pipe	δ10、 δ0.8	FR B1
	2	water supply pipes	S30408	Φ8/16x0.8,Φ20/25x1.0, Φ32/50.8x1.2,Φ76x1.5, Φ101.6x2	water pressure test 3Mpa
	3	drainage pipes	PVC-U	dn20、 dn32、 dn50、 dn75、 dn110、 dn160	water pressure test 0.1Mpa Incl. sewage, waste & rain water

Model Overview

Building Model	Floor area / F	No.	Name	Floor area / apartment	Bathroom	Max bedrooms	Suitable residents	Dining room	Apartments/F	Recommended floor / building	Recommended floor / combined building
A 4.5	273m² 21942x12190	1	Plate single room	23m²	1	1			12	16F	56F
		2	Plate double room	47m²	1	1			6		
		3	Plate-type S apt	68m²	1	2	1		4		
		4	Plate-type M apt	137m²	2	4	1	1	2		
		5	Penthouse	273m²	4	8	2	2	1		
A 6.5	394m² 31694x12190	6	Wide plate apartment	196m²	4	4	1	1	2	16F	56F
		7	Plate duplex apartment	392m²	8	8	1	1	1		
B 9	538m² 23980x21942	8	tower single room	22~35m²	1	1			20	32F	80F
		9	tower double room	36~54m²	1	1	1		12		
		10	tower S apt	59~69m²	1	2	1		8		
		11	tower M apt	130~136m²	2	4	1	1	4		
B 13	777m² 23980x31694	12	Wide tower apartment	190~196m²	4	4	1	1	4	32F	80F
		13	tower duplex apartment	380~392m²	8	8	2	2	2		

Note: Single room can be used as hotel, condo, dormitory

Brief History of BROAD Factory-made buildings

- In 2009, BROAD started developing the factory-made steel-structured building, achieving a construction speed of three storeys per day
- In 2010, BROAD built a 6-storey BROAD Pavilion at Expo Shanghai within one day
- In 2015, BROAD built a 57-storey complex in just 19 days
- BROAD built 58 factory-made buildings in 6 years, achieving the sustainable goal of Magnitude 9 earthquake resistance, 5 times higher energy efficiency, and indoor air quality 100 times cleaner than outdoor air
- In 2018, BROAD developed the stainless steel B-CORE slab, replacing carbon steel with stainless steel and halting production of carbon steel structure buildings
- In 2020, BROAD successfully developed factory-made stainless steel building- Holon Building



Residence (the first one) built in 1 day
• BROAD Town in Hunan



BROAD Pavilion at Expo 2010 built in 1 day
• Shanghai



COP16 Cancun BROAD Pavilion built in 1 day
(Mexican President cut the ribbon) • Mexico



A complex building built in 13 days • Shanxi



A corporate HQ built in 4 days
• Shandong



A condo building completed in 3 days
• Hubei



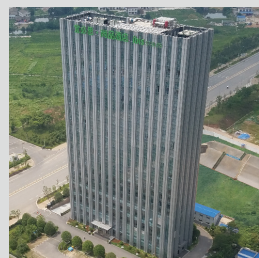
Cultural & Innovation Center built in 3 days • Fujian



Office building built in 9 days
• Ningxia



Urban complex built in 19 days • Hunan



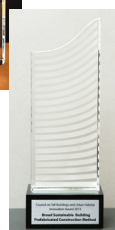
Hotel built in 8 days
• Hunan



Hotel built in 7 days
(the 58th building) • Shaanxi



At the World Modular Building Institute's Annual 2022 in US, on April 28, 2022 China's BROAD Group won the first prize "Awards of Distinction" in the Multifamily 25,000+ sq.ft. category from 141 candidates, the first time a Chinese company has won the award.



Medal:
Council on Tall Buildings and Urban Habitat Innovation Award 2013
BROAD Sustainable Building Prefabricated Construction Method

On April 27, 2022, BROAD Holon Building won the Innovation Award 2022 awarded by Council on Tall Buildings and Urban Habitat, the first time a Chinese company has won the awards

An introduction to BROAD Group and BROAD Holon Co., Ltd.

BROAD Group is a privately-owned enterprise founded in 1988 in China with RMB 30,000. The company has developed hundreds of hi-tech products and has never copied any technology of its peers since inception. The mission of BROAD Group is "For Humanity's Future: the original low carbon & durable technology for the earth, the original clean and safe technology for humans." Headquartered in Changsha, BROAD Group has exported products to over 80 countries. BROAD wholly owns 12 subsidiaries, including Broad Air Conditioning Co., Ltd., BROAD Clean Air Technology Co., Ltd., BROAD Sustainable Building Co., Ltd., BROAD Holon Co., Ltd., etc

BROAD Holon Co., Ltd. was established in 2009, its factory is located at BSB Town, Xiangyin, Hunan. Workshops cover 230,000m², with over 1000 employees



BSB Town



BROAD Town