

Sparrow

A compact mini kitchen designed for the new lifestyle

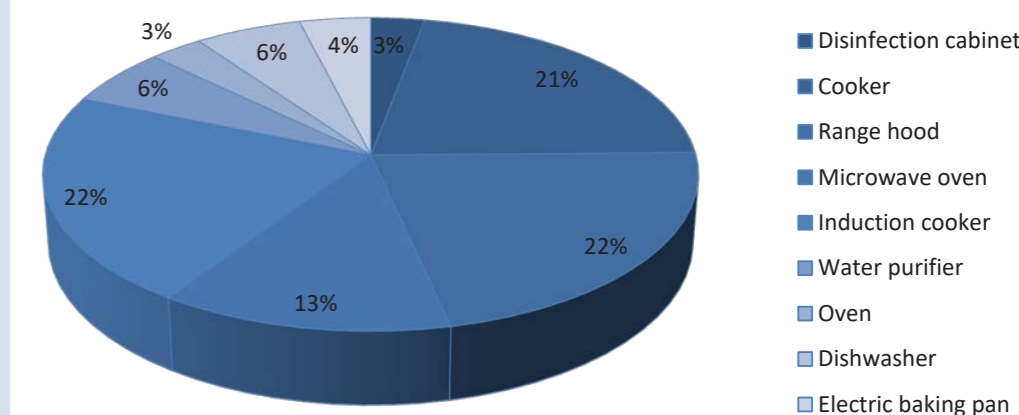
Why Mini?

Top 10 cities with the highest residential prices in the world in 2019

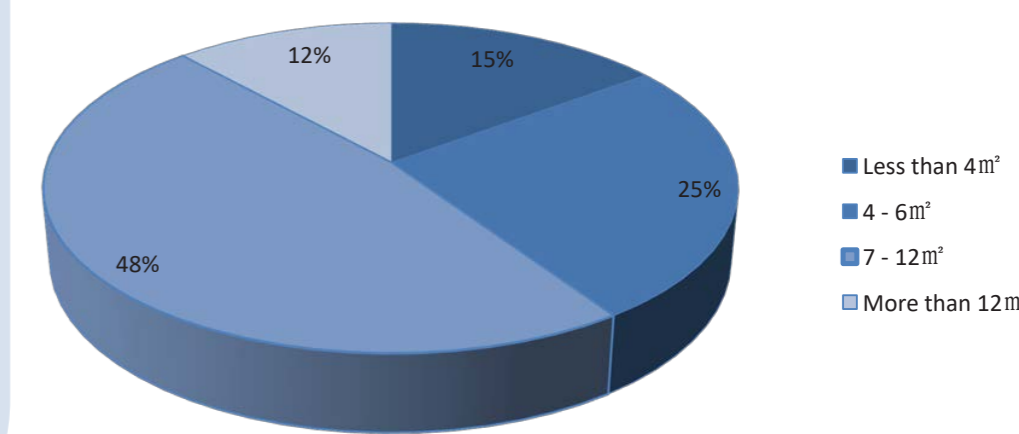
Today, more and more young people work in large cities, such as Beijing, the capital of China, with an immigrant population of 8 million in 2017. Most of them live in small apartments and can only use open kitchens. Today, the takeaway restaurant industry is highly developed in China, making most people use the kitchen less often. Among the "15 most expensive house prices in the world in 2019", seven cities were selected from among including Beijing, Shanghai and Shenzhen.

Top 10 cities with the highest residential prices in the world in 2019		
City	Average house price dollar	Average price per square foot dollar
Hongkong	1,235,220	2,091
Singapore	874,372	1,063
Shanghai	872,555	714
Vancouver	815,322	711
Shenzhen	680,283	726
Los Angeles	679,220	466
New York	674,500	526
Lodon	646,973	776
Beijing	649,276	575
Paris	625,299	985

Percentage of appliances used in Chinese kitchens in 2017



Home kitchen area in first- and second-tier cities in 2017



When the types and number of electrical appliances placed in the kitchen increase, it is easy to cause:

- 1) Insufficient kitchen space;
- 2) The kitchen is prone to clutter and disorder, which affects the appearance;
- 3) Increased water, electricity, gas and other pipeline lines are likely to bring more safety hazards. At the same time, China's kitchen area is significantly smaller than in Europe and the United States. In 2013, the kitchen area of newly built residential buildings in the United States was 18-39 m², with an average area of 28 m². According to the 2017 "White Paper on Chinese Dream Kitchen", **14.9%** of the family kitchens in first- and second-tier cities in China, the kitchen area is **less than 4m²**. And there are **4 - 6 m²** accounted for **25.6%**, **7-12 m²** accounted for **47.7%**, far lower than the United States. With such a limited kitchen area, people's demand for maximizing the utilization of kitchen space is becoming stronger.

Units types that often appear in rental housing



- Separate bedroom, can be spaciouly placed a bed, a desk, a sofa, a wardrobe
- Private bathroom
- Simple kitchen

Area size: generally around 20 m²

The difference from the ordinary one-room one-room type is that the kitchen and bathroom in the Studio are in an open space.

One Bedroom Apartment

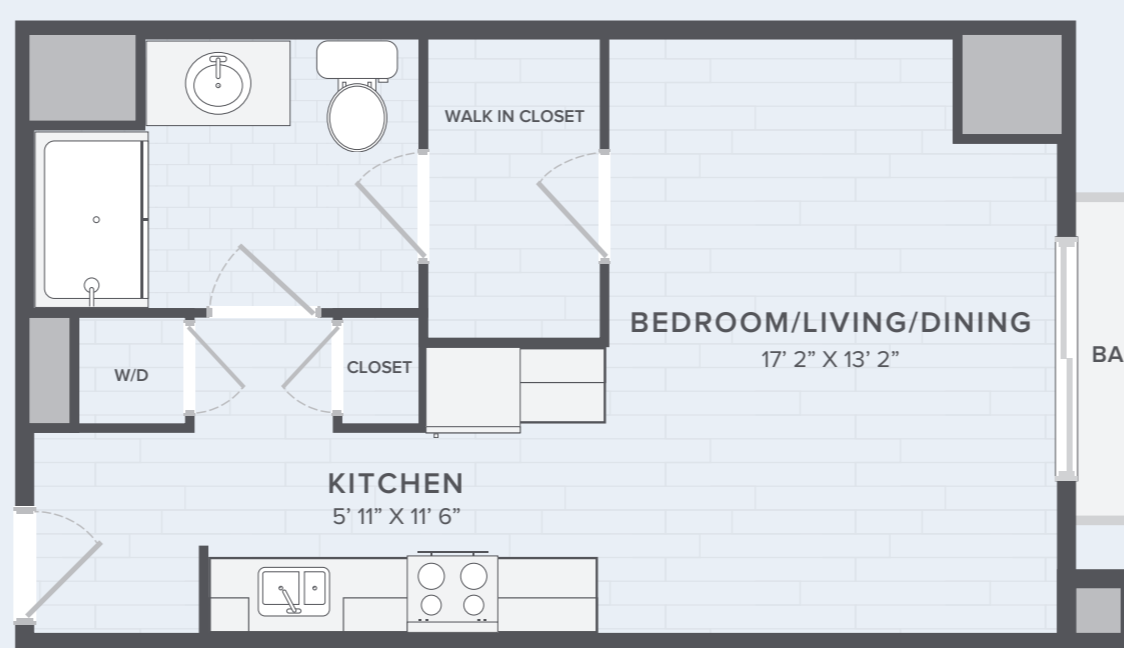


- A separate living room
- A separate bedroom with a bed, table and wardrobe
- Private bathroom
- Private kitchen

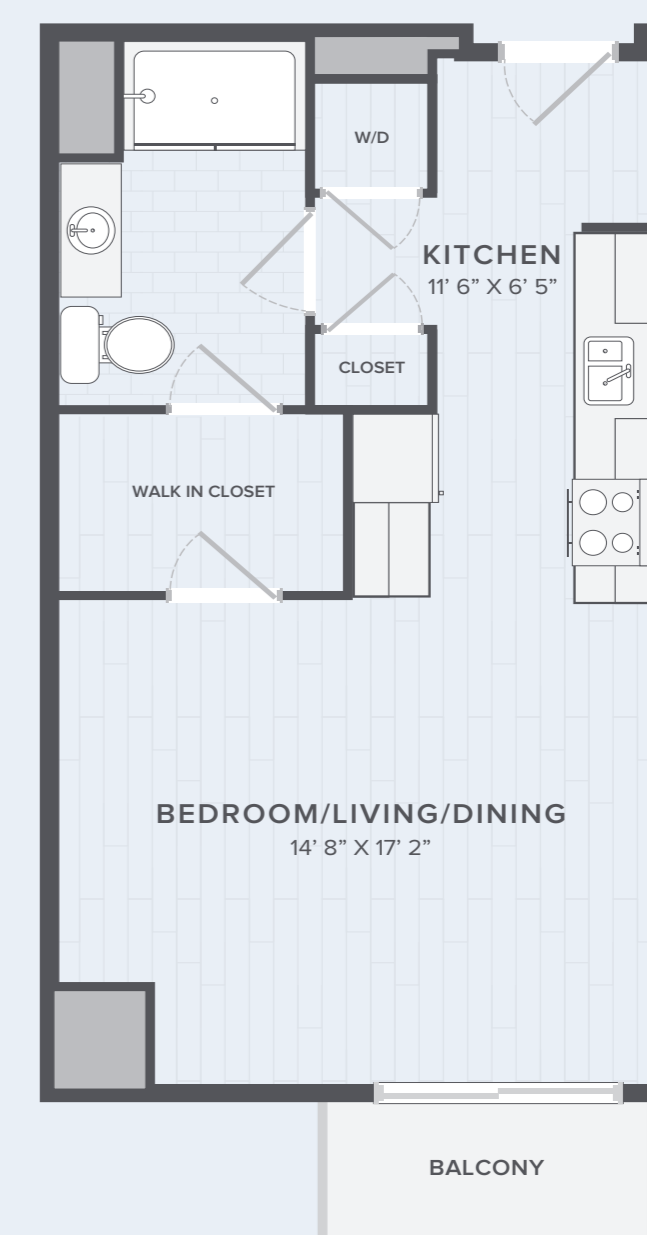
Area size: generally around 20 m²

One Bedroom Apartment, similar to the domestic single apartment, has a separate living room, bedroom, bathroom and kitchen. It can be understood as a studio with a wall separating the kitchen from the bedroom.

Studio apartment Floor plan



- The total area: 52m²
- Area of kitchen: 5m²



- The total area: 55m²
- Area of kitchen: 7m²

There are more and more types of kitchen utensils, but in densely populated cities, the **40%** of kitchen area is less than **6 m²**. Under such a limited kitchen area, people's demand for maximizing the utilization of kitchen space is becoming stronger. Since 2014, various Chinese brand companies have launched compact overall kitchen decoration solutions. Including the real estate industry, in recent years, with the increase of foreign young workers in large cities such as Beijing, Shanghai, Shenzhen and so on, **one-bedroom, one-hall and studio apartment-style units** have become increasingly popular. However, the size of one-bedroom, one-hall or studio apartment type is mostly **38-43m²**, and the kitchen area is not less than **5m²**. So the compact kitchen has become an essential choice.

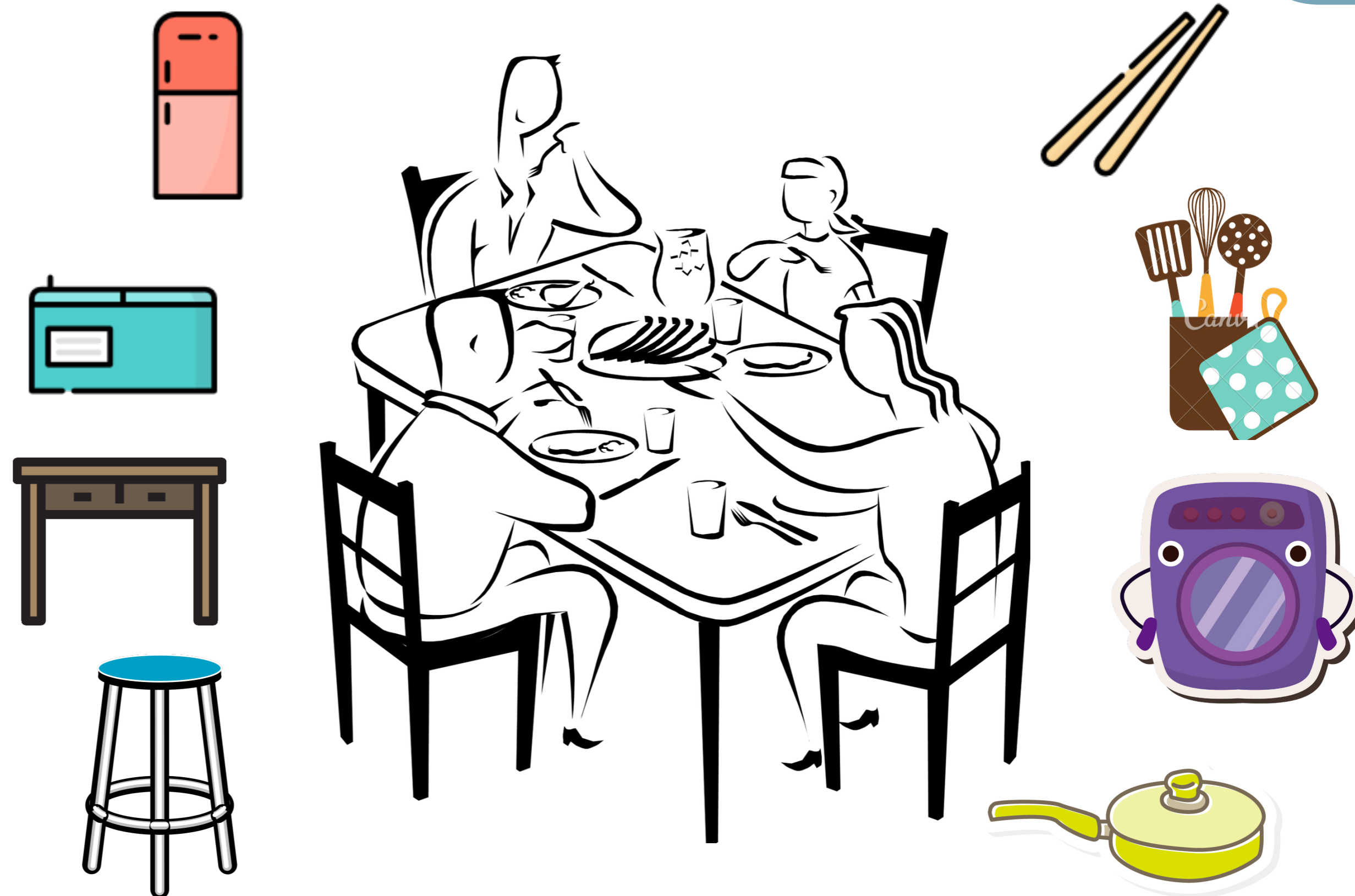
According to the lifestyle of contemporary youth in **2019**, we can see that **43%** will choose to cook dinner at home, but there are also many people who do not cook dinner at home for other reasons, so young people are no longer the traditional kitchen design style for the kitchen. Requirements, no longer require the diversification and perfection of the kitchen as before, only **need high-use and basic cooking tools**. No more large-scale renovation of the kitchen, so for contemporary young people, or people living in small apartments, the **compact kitchen** has become the preferred design product.

The problems caused by the new generation of houses and lifestyles

Why kitchen?

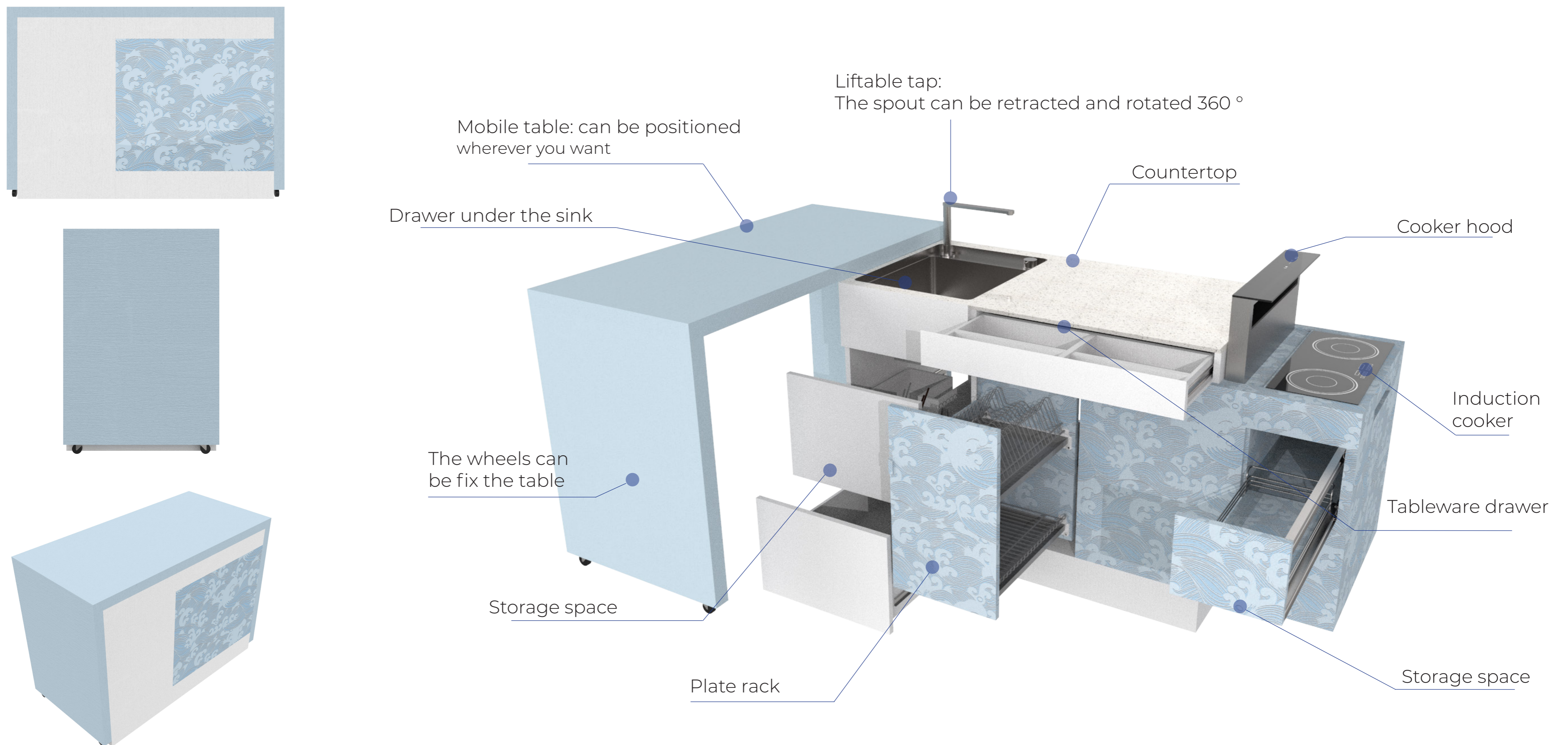
Eating is a very important part of our life, "Food is the heaven of the people." Is a very famous phrase of the ancient Chinese. The kitchen is the place where food is created, and good cooking can stimulate the art of cooking.

According to the previous survey data, we know that house prices are becoming more and more expensive, houses are getting smaller and smaller, the development of the catering industry and the lifestyle changes of young people, compact kitchens have become an important part. Compared to other countries, people in China, a country with a long history of food culture, generally spend more time cooking. Although people are more inclined to eat and eat outside, cooking is still the center of family life.

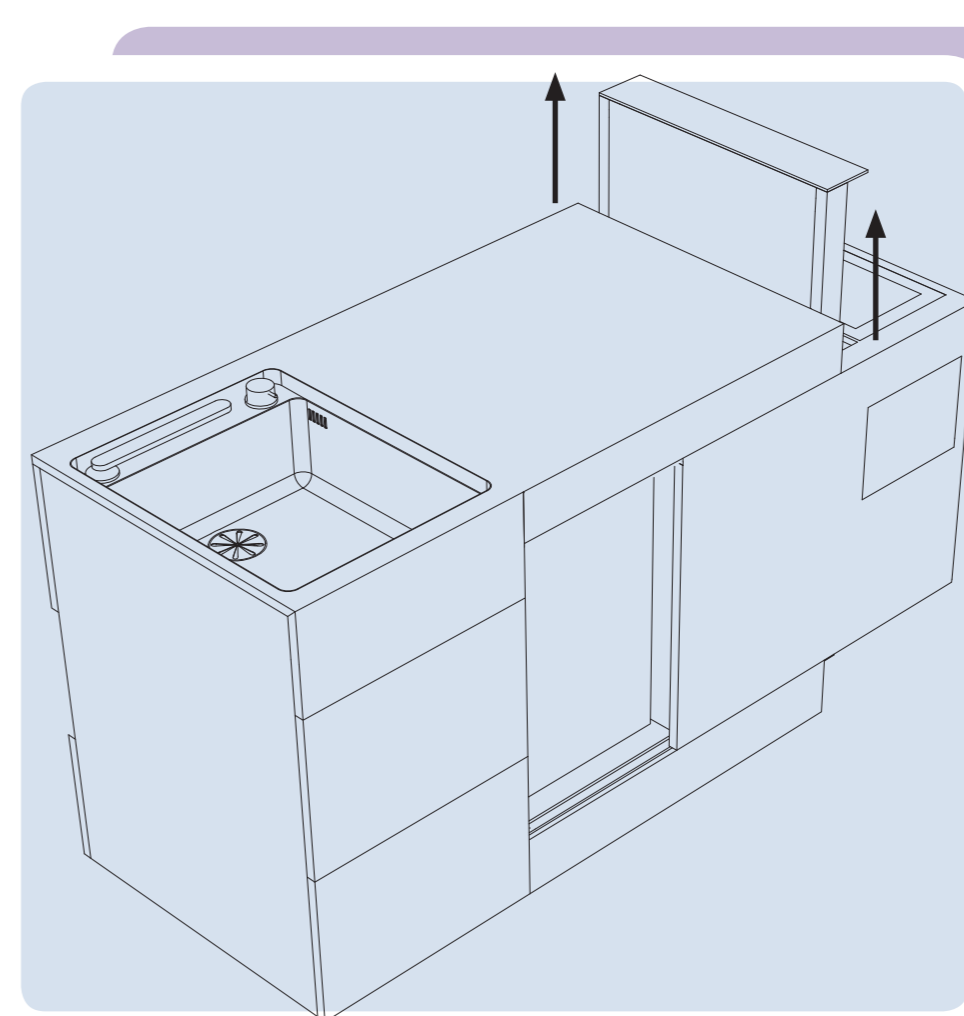
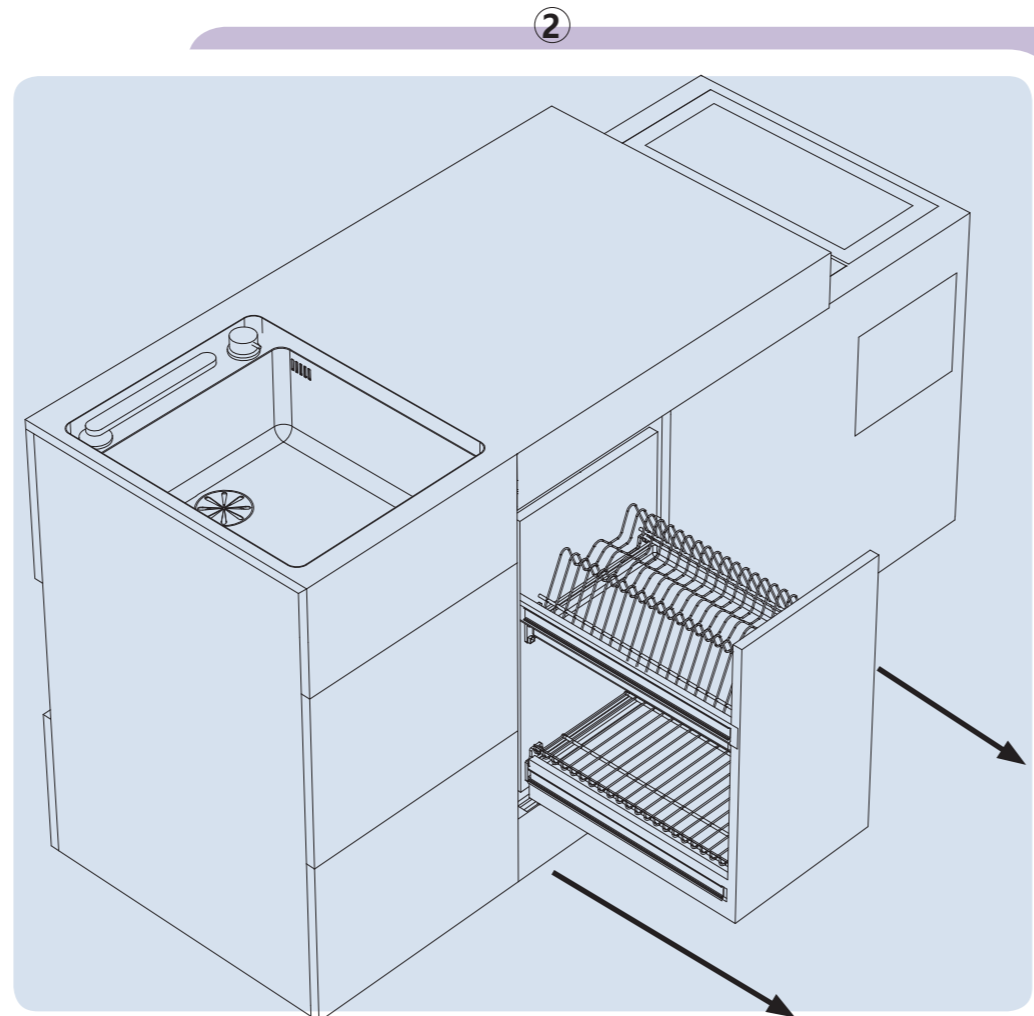
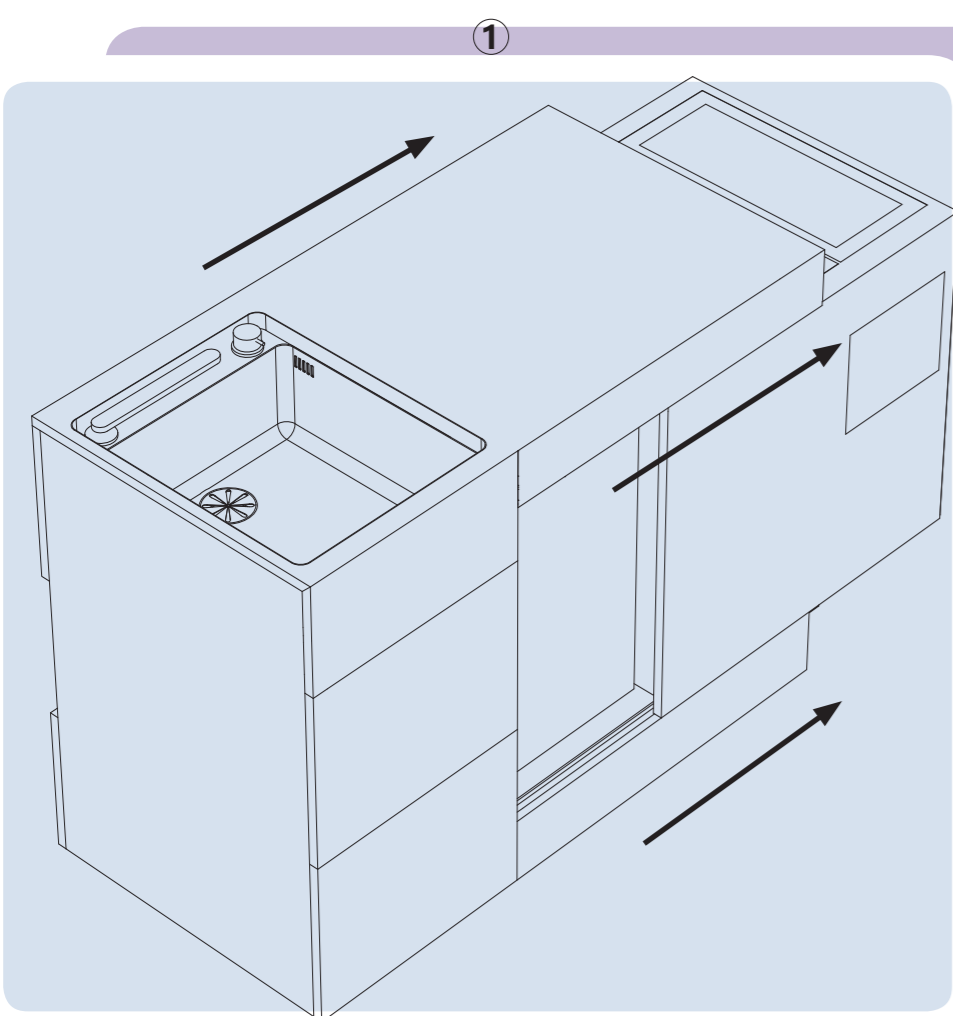


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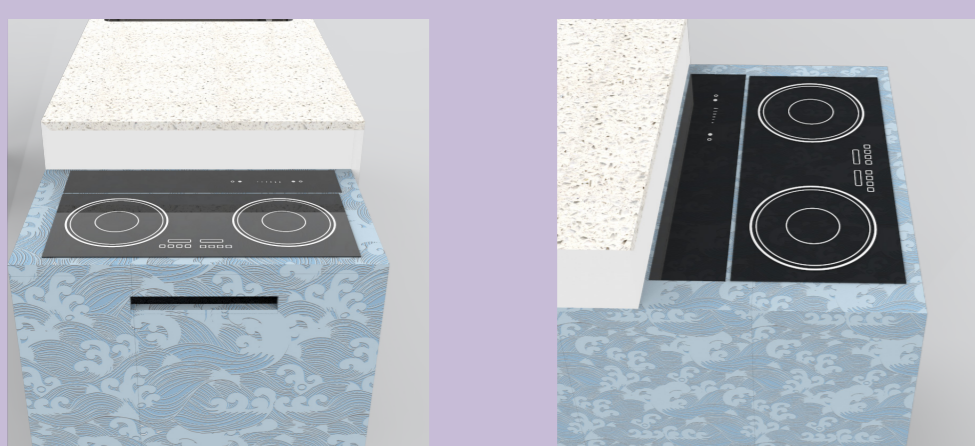
A compact mini kitchen designed for the new lifestyle



Ways to open dish racks and appliances

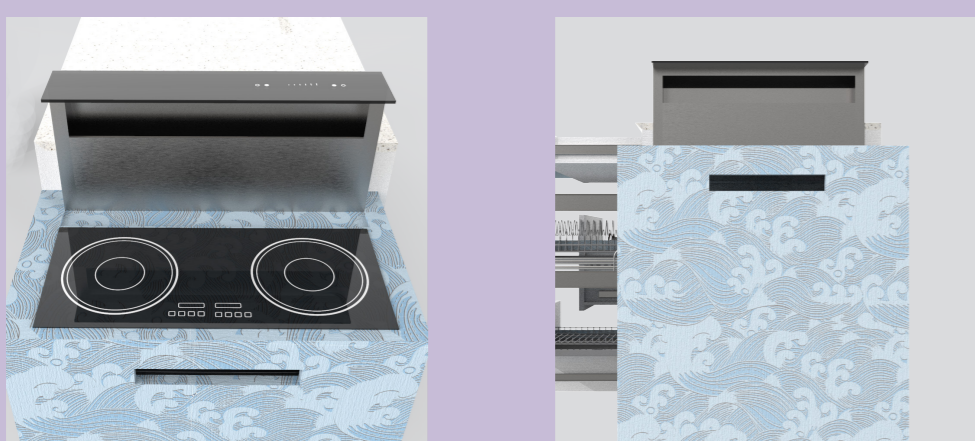


When used, pull to the right to open the induction cooker and the range hood, with the hidden dish rack in the middle.



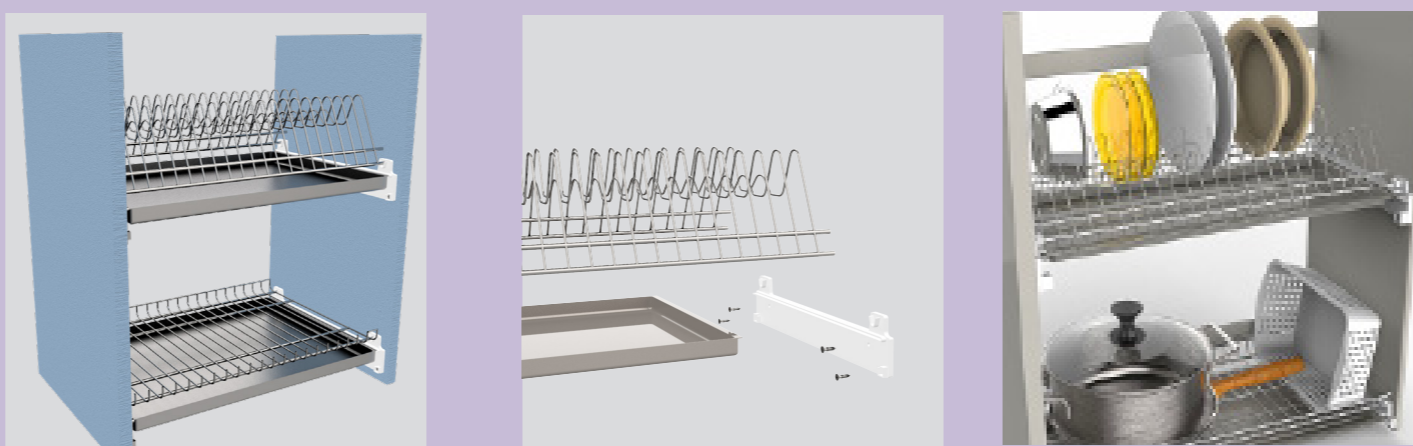
Induction cooker

Side profiles in stainless steel Induction hob
L: 250 W -vetroceramica



Cooker hood

Composed of an internal body recessed in the plane and motor that governs the descent and ascent of the horizontal panel prepared for aspiration, Fabula shows only its most agile and light part. When the hood is in the off position, the panel disappears most of the Touch Control controls positioned on the thin glass panel which creates a homogeneous surface with the burners. A LED bar illuminates the kitchenette creating a comfortable and extremely functional corner.



Wall cabinet with dish drainer

A dish drainer compartment has been inserted inside
Make dish drainer
Connection guides Exploded view

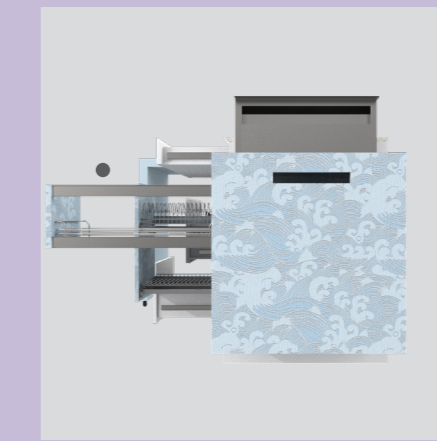


Drawer under the sink

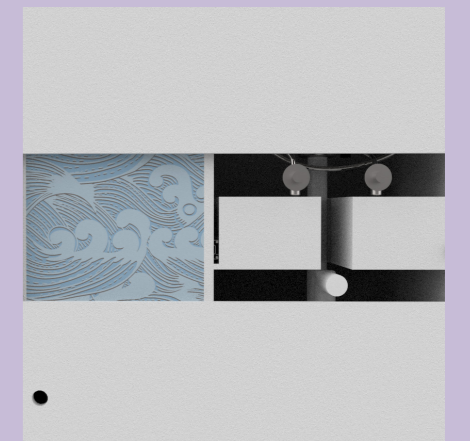
The back of the drawer
The drawer will be inserted in the appropriate joint, visible in the adjacent image. This was designed to avoid dirtying the entire drawer. Incorporate a cutlery basket.



Tap movement



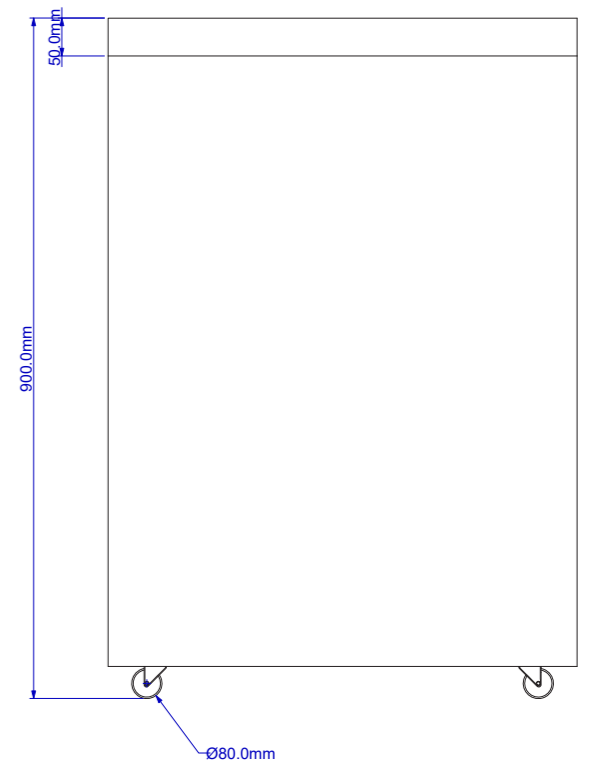
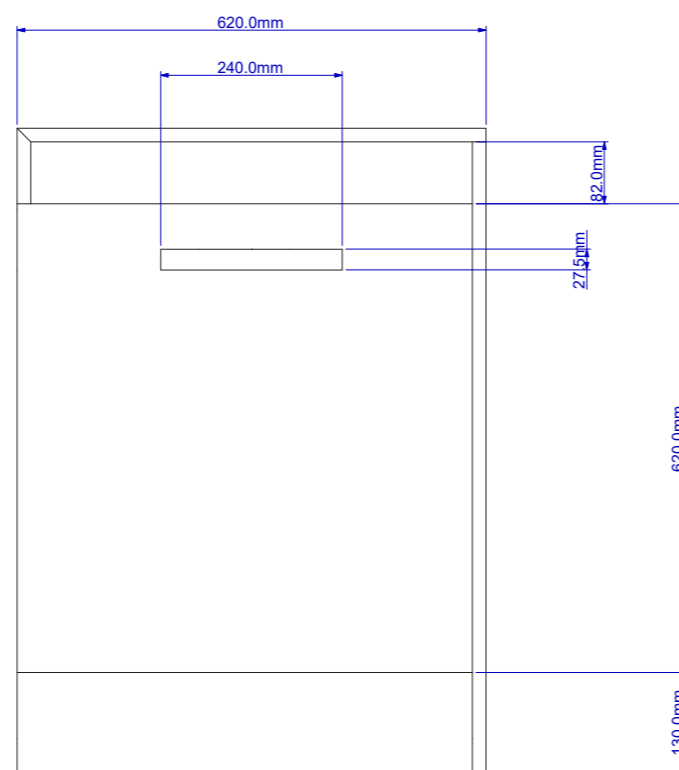
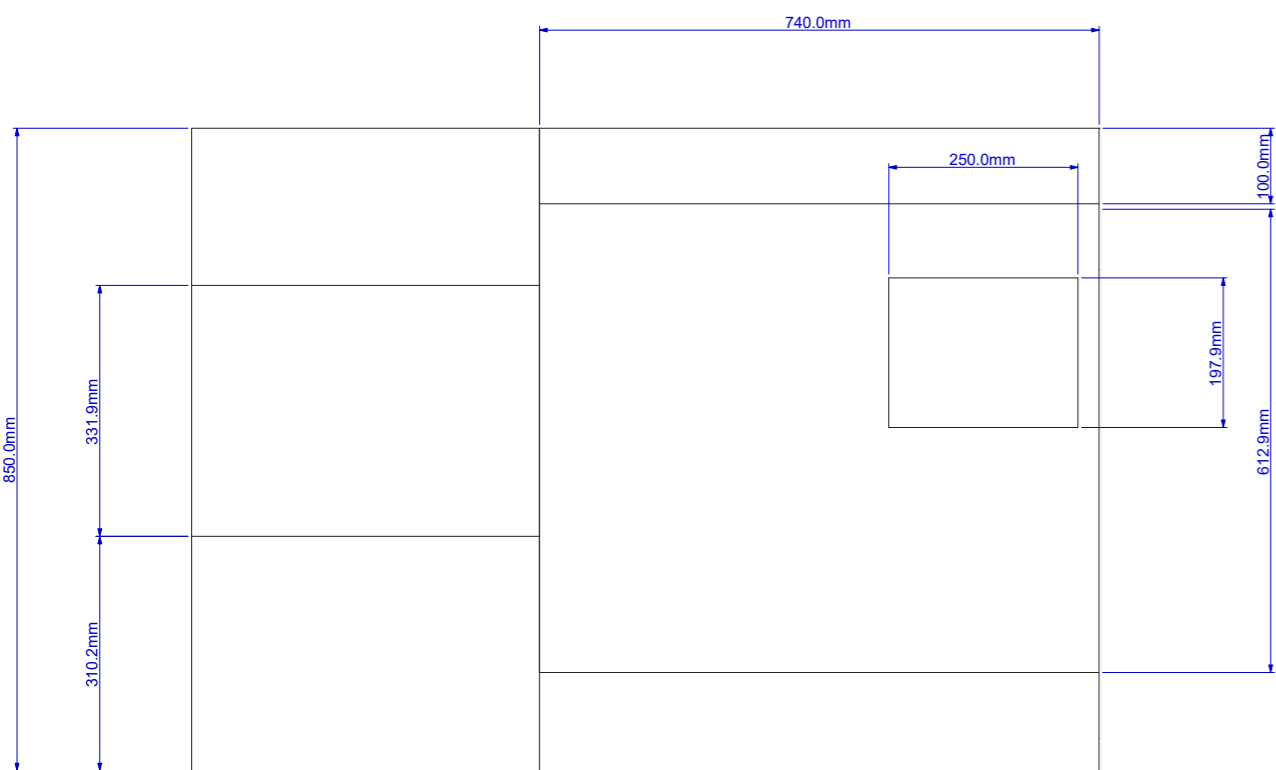
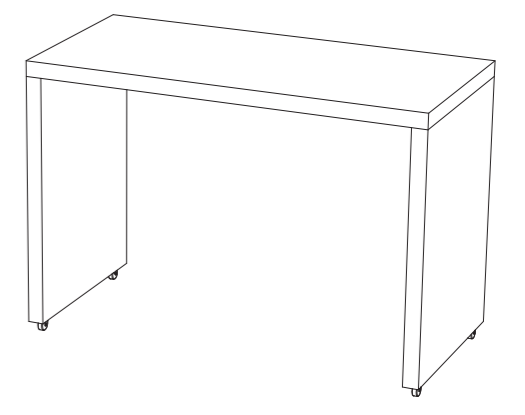
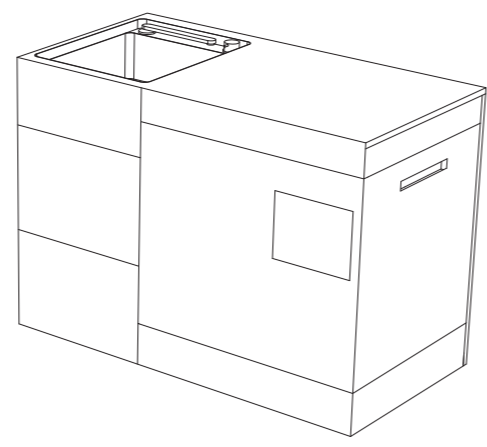
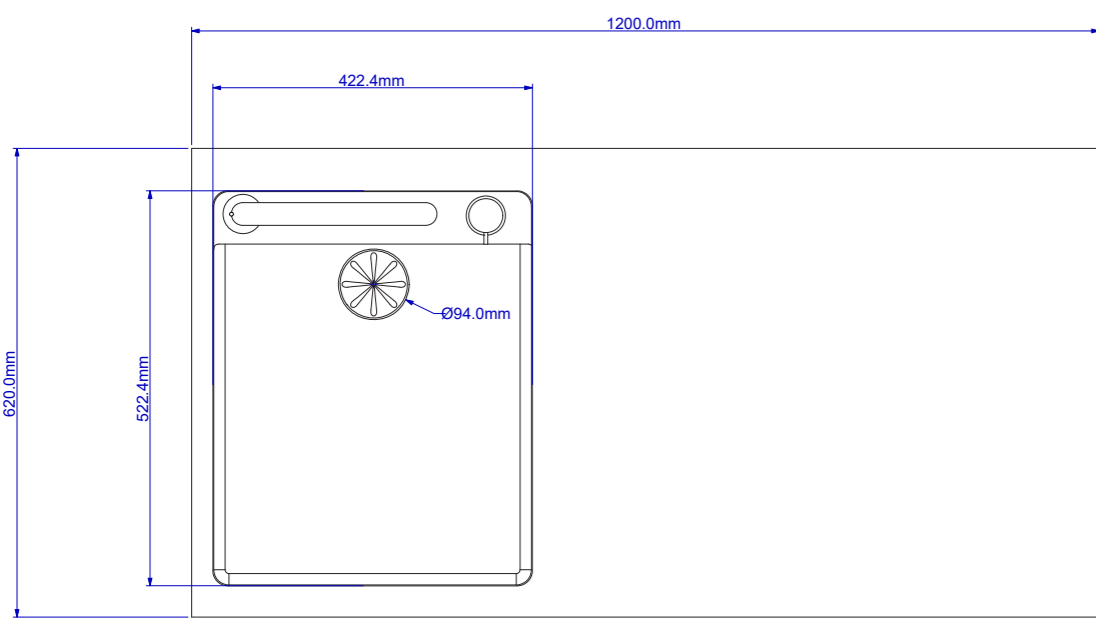
Right view



Rear view

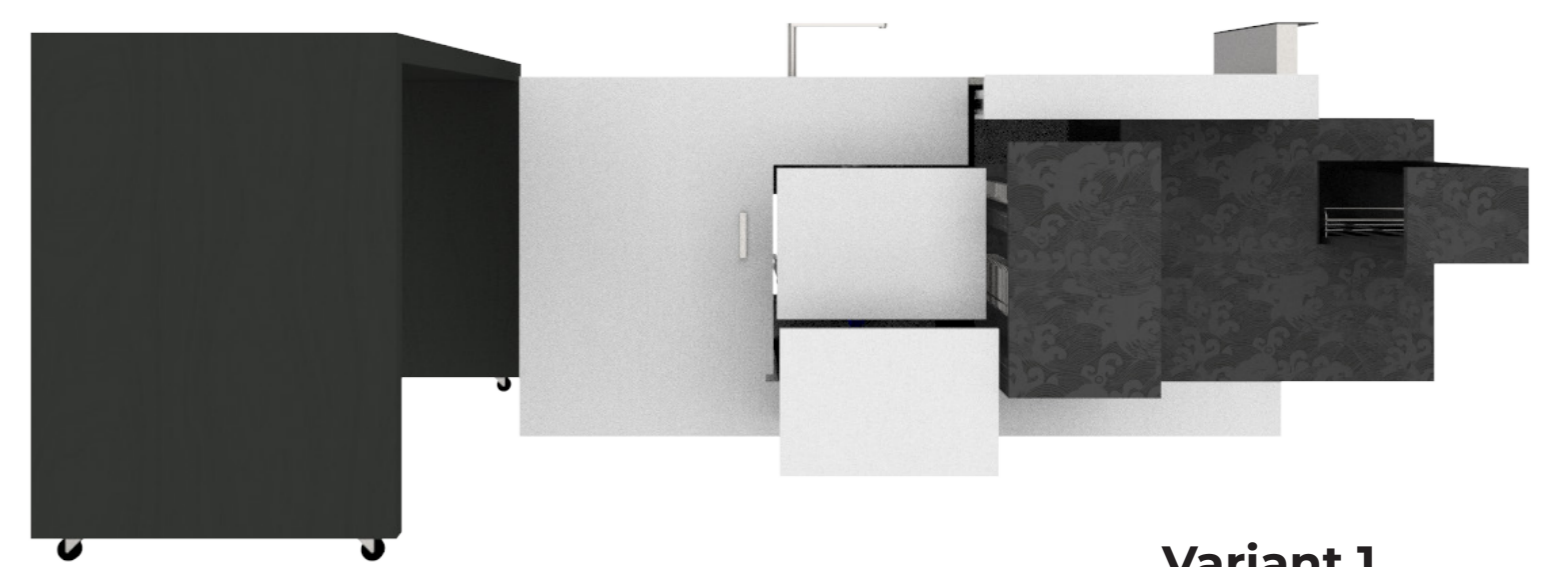
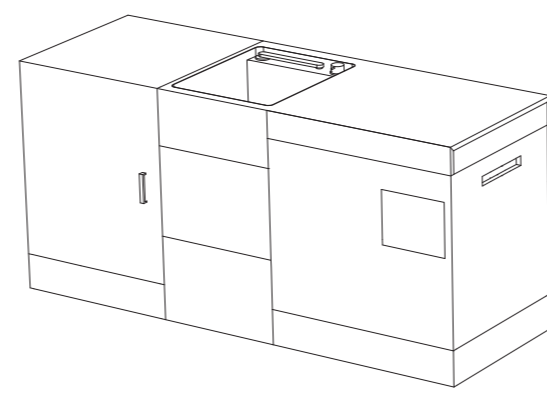
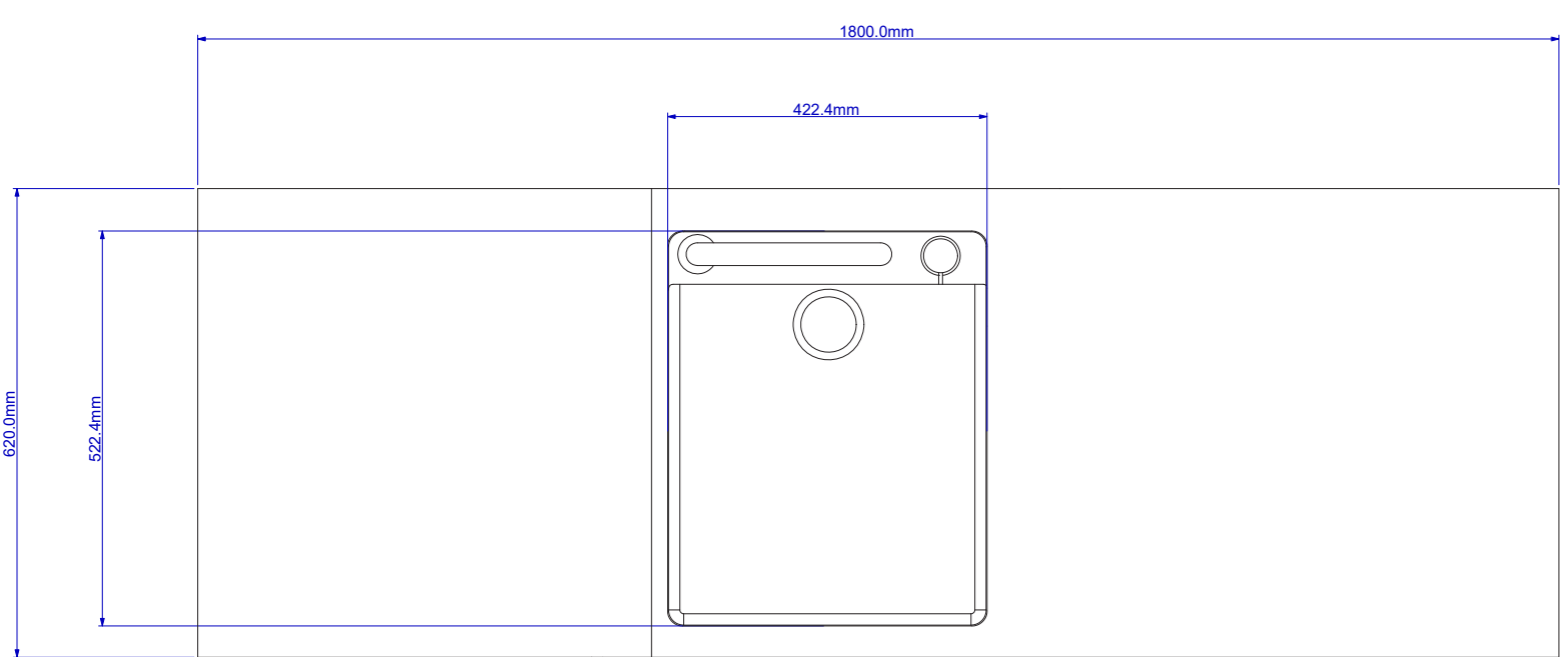
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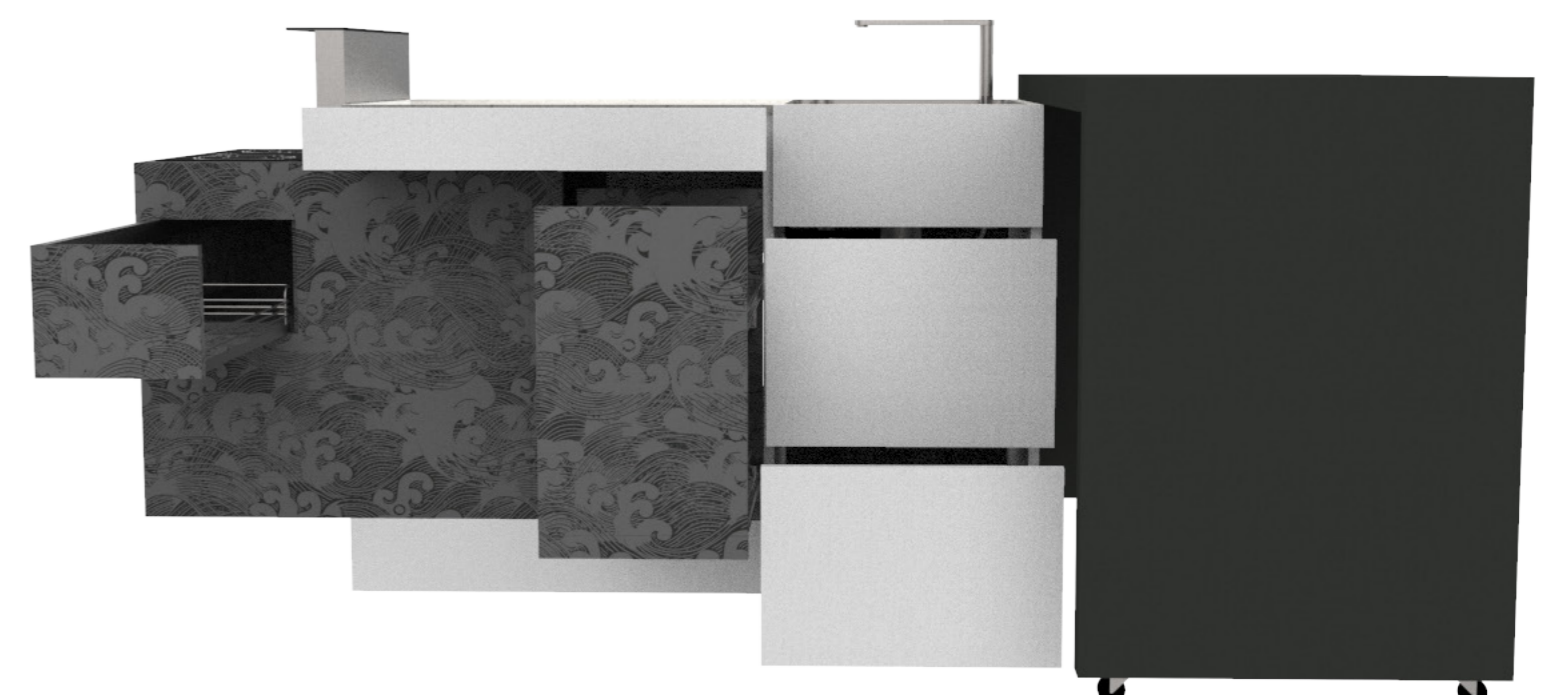
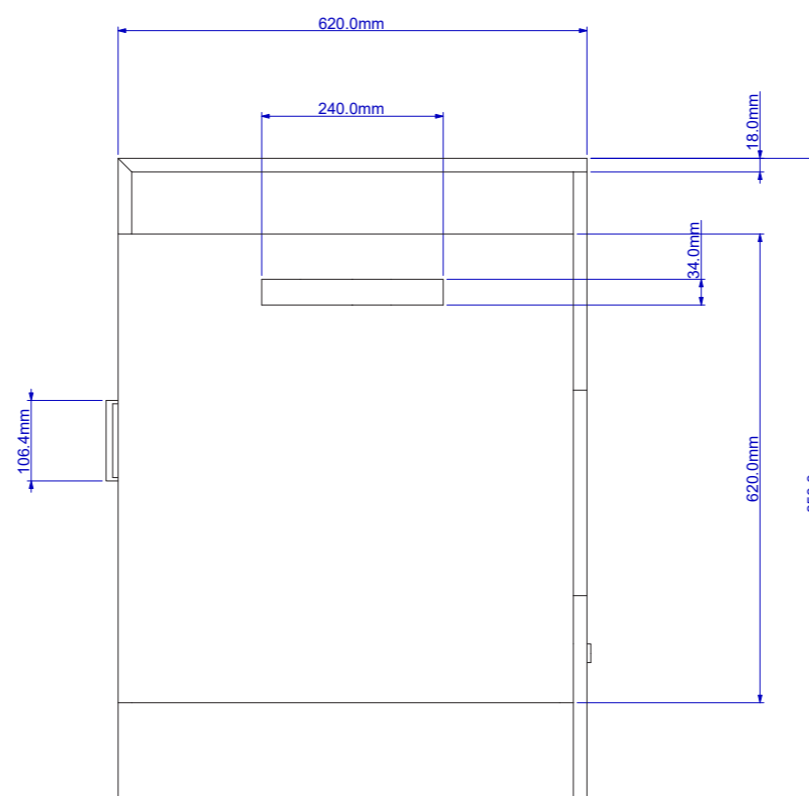


Rendered image in studio apartment

It can be seen that the characteristics of the kitchen in the studio apartment: the small footprint does not affect the integrity of the room, the table is placed freely, and the table can be placed according to different space arrangements. The hidden nature of the kitchen does not work in the space Will affect emotions.



Variant 1



Variant 2

Variant 1: A refrigerator with a size of 60 * 60 * 60 cm is added to the side of the sink.

Variant 2: Design plan: turn on the appliance on the left.



S A A D

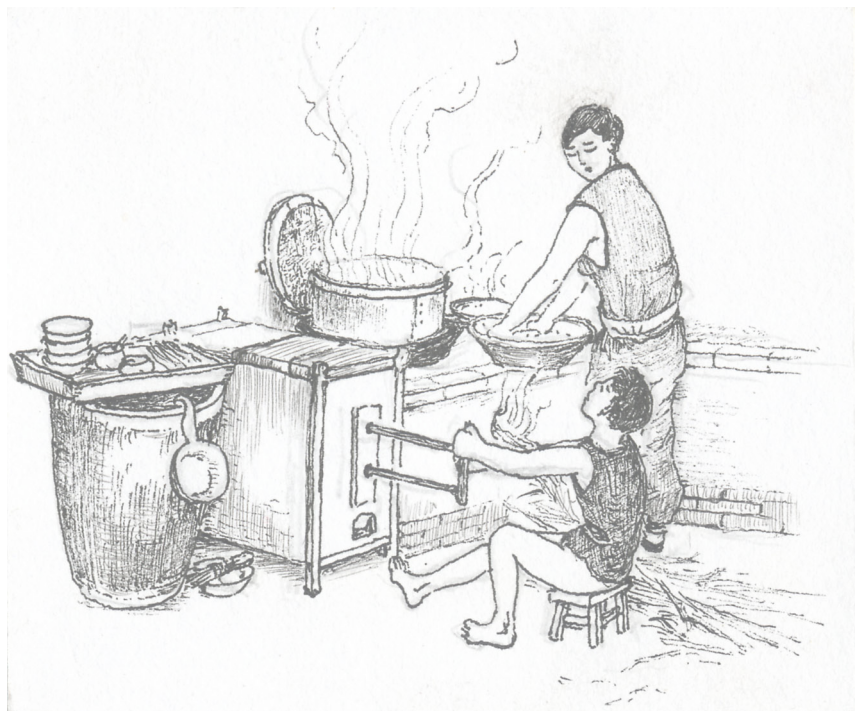
Scuola di Ateneo
Architettura e Design "Eduardo Vittoria"
Università di Camerino

Sparrow

Small but complete.

The sparrow may be small but all its vital organs are there; small but complete in every detail.

—Chinese Idioms



Università degli Studi di Camerino Facoltà di
Architettura
Corso di Laurea Disegno industria--le a ambientale
Anno accademico : 2018-2019

Sparrow

mini kitchen

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Relatore: Carlo Vannicola
Correlatore: Manuel Muratori
Candidato: Zixin Zheng

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01

ANALYSIS

The evolution of the kitchen

Large US agricultural exports. Cast iron stoves became available in the 1850's. Early starts of the revolution of industrial food processing. Factory line production methods start progressing. The Gilded Age was an era of rapid economic growth in USA. First apartment buildings. Second industrial revolution.

The kitchen was generally the least interesting place in a house. Kitchen began to be conceived not as a servant run domain confined to a basement or annex but as a space central to daily life and social encounters. It became a necessity to economize housework. Working families in the city lived in crowded studio-apartments.

1860-1910

After World War I, the economic and social systems went through deep transformations and architects were faced with the challenge to consider these new circumstances in their designs. The focus became the working class. The typical bourgeois lifestyle became outmoded and a new approach seemed necessary. As stated by Corrodi (2015) women began making a public issue the need for a "liberation from the housework".



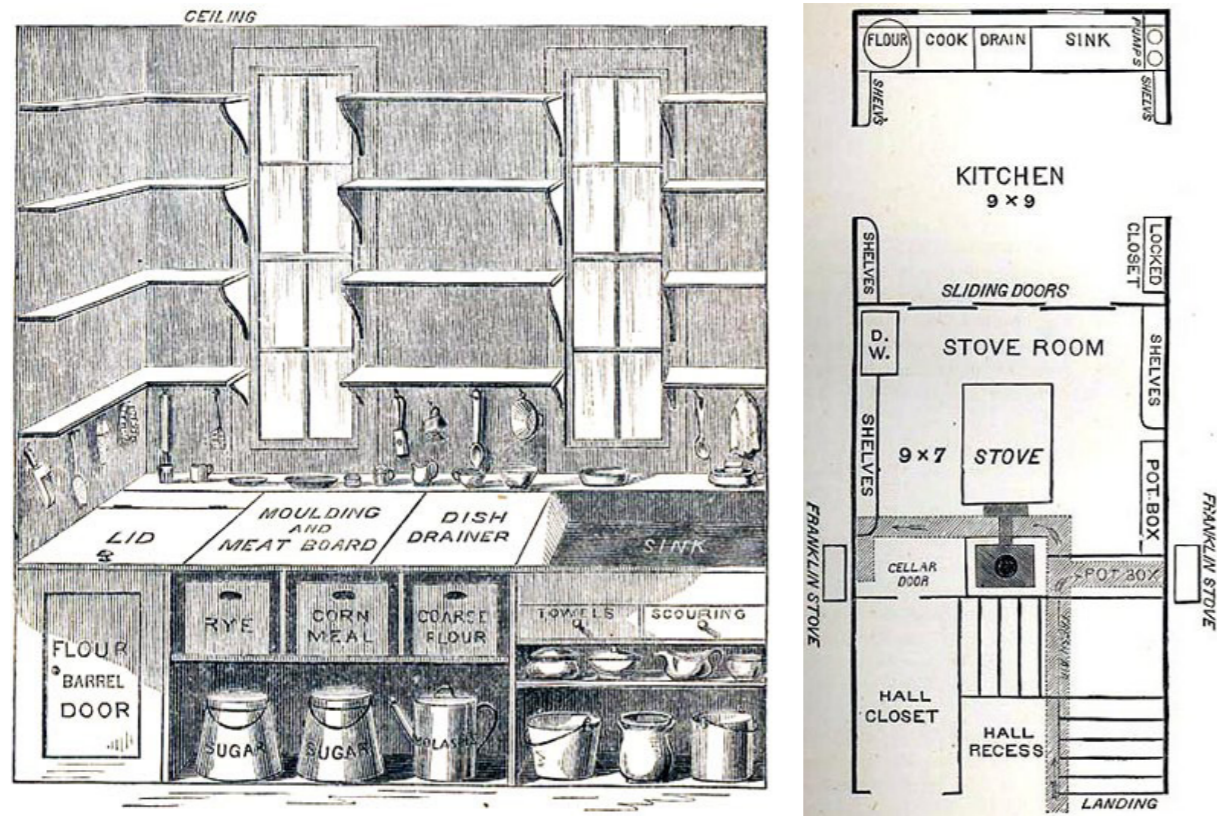


Figure 4: The beginning of the fitted kitchen by Catherine Beecher, in which every element corresponded to the consumer behavior of 1869. (Beech

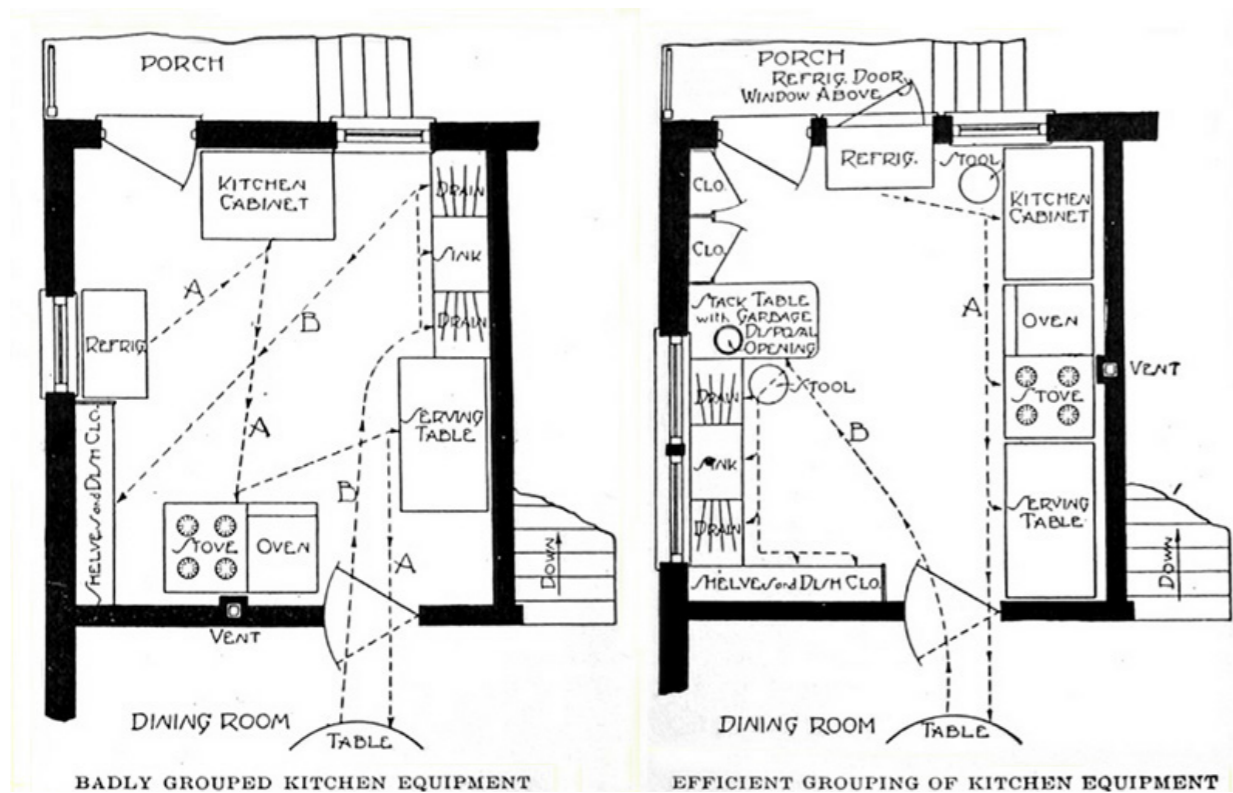


Figure 5: Inefficient and efficient kitchen layouts were diagrammed by home economist Christine Frederick in 1913. Her findings were followed by builders making new standards for the following years. (Frederick, 1919)

The rationalization became the goal and a new reorganization of the floor plan in the kitchen became one specific aim. Architects were influenced by the Taylorist methods applied in the work spaces of United States. Following this movement, Catherine Beecher, an American social worker, designed in 1869 an ideal kitchen based on functional units. She reorganized the cooking process into: storage, preparation and cleaning and her design followed this sequence. (see Fig 4)

Dwelling at that time was seen as a serial of specific activities such as sleeping, eating, cooking and washing and therefore the layout of the domestic space followed this principle by providing rooms with one specific function.

A few decades later, Christine Frederick in 1913 wrote "The New Housekeeping: Efficiency Studies in Home Management" where she addressed issues of household rationalization. In her studies, bodily movements and circulation patterns were analyzed to create new principles for household design. (Corrodi, 2015)

Her book influenced several architects, who then applied ideas on rationalization efforts in the domestic space and therefore these spaces really corresponded to the lifestyle of the inhabitants in that period. (see Fig 5)

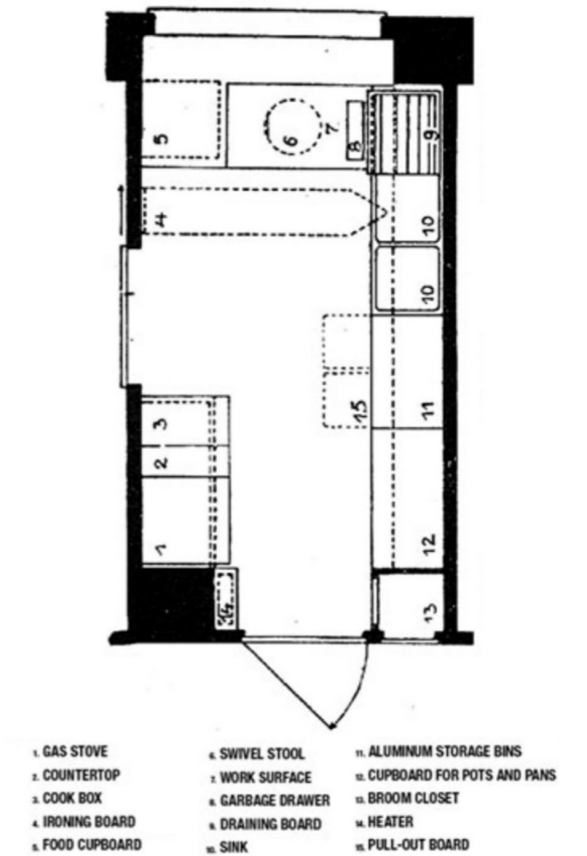
Frederick's studies inspired the Austrian architect Margarete "Grete" Schütte-Lihotzky. Schütte-Lihotzky used to work with Adolf Loos in Vienna where they shared an interest in optimizing strategies for rationalization of the domestic space. She was convinced that "women's struggle for economic independence and personal development meant that the rationalization of housework was an absolute necessity." (Moma, 2010)

In 1926, Schütte-Lihotzky received a very important commission: she was hired to design the kitchen for a new housing development in Frankfurt, Germany that aimed to assist the housing shortage after World War I. What seemed like a not so extraordinary task, led to a revolution in the history of the domestic space. In her design, every element was analyzed in order to minimize unnecessary steps that could save time and provide comfort as a separated space.

The Frankfurt Kitchen was a direct reflection of Christine Frederick studies and even though this design was not the first fitted kitchen, it gained great popularity as it was mass produced to satisfy a demand of 10,000 new housing units. It became a symbol of the principles of a scientific approach to the domestic workspace.

(Briganti & Mezei, 2012) After this model, it became a regular notion that a kitchen should be fixed and stuck to the wall.

In the following years, new ideas regarding the design of the kitchen started to appear. There was a strong debate whether it was better to design a functional working kitchen with minimal floor space or multifunctional live-in kitchen for the working class. The working kitchen aimed for hygiene and functionality. In contrast, the live-in kitchen argued that by implementing a need-oriented space, a superior form of dwelling could occur. (Corrodi, 2006) Adolf Loos was a supporter for the live-in kitchen option, arguing that it would have benefits for the housewife since she could be more integrated in the other activities that occurred in the house while she was cooking. Eventually other models emerged such as "The Munich Kitchen" with a square plan and a permeation of the living room into the kitchen by a glass wall division. After this model, the Live-in kitchen gradually succeeded in the market.



The modern usage of the term "middle class". Mass production. World War I - Housing short- age - Construction of affordable housing. 1917 Russian Revolution. Taylorism. The focus became the working class. The typical bourgeois lifestyle became outmoded and a new approach seemed necessary. Electricity. Reduction of domestic labor.

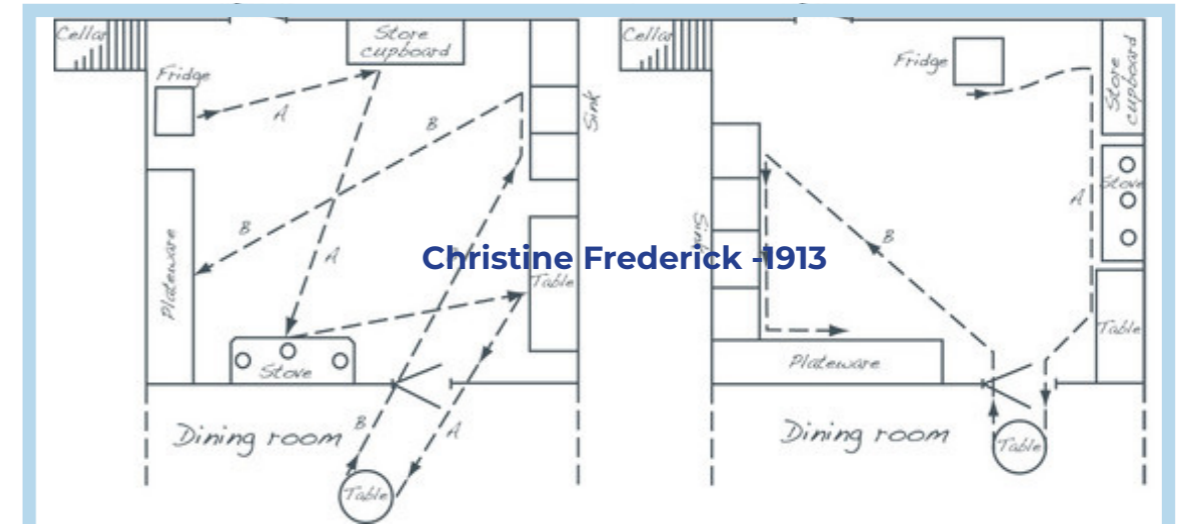
Ergonomics. Rationalization. Functionality. The beginning of the fitted kitchen. Experimentation of the live-in kitchen.

After World War II, the economic boom allowed the society to increase the living space per capita. The live-in kitchen and the new models didn't correspond to rationalization anymore, but on individual preferences. The fitted kitchen presented progress, but somehow became the standard image of how a kitchen should be designed.

1910-1940

The housing boom and manufacturing advancements of post-World War II made a huge impact on the "modern" kitchen. There was an increased demand for kitchen technology and equipment that inspired homeowners to tear down the walls that once hid their utilitarian kitchens. The kitchen was becoming quieter, cleaner, better organized and easier to work in; a source of pride, and slowly a place worthy of entertaining guests.

A kitchen was no longer a collection of freestanding pieces, but a unit, with space for appliances built into the cabinetry, which now covered the upper and lower walls of any sized kitchen.



Christine Frederick -1913



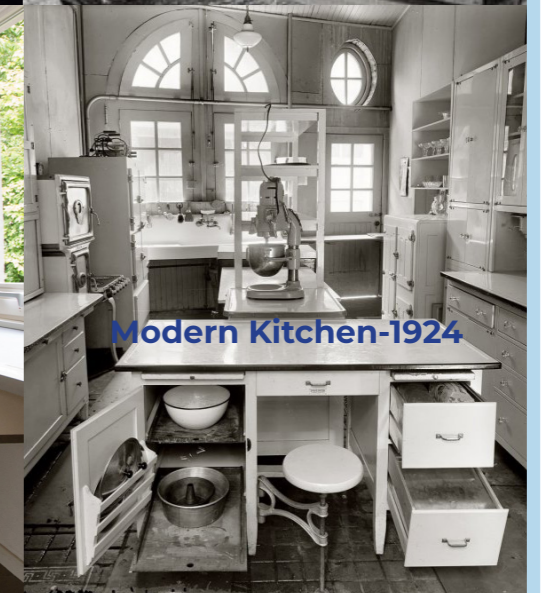
Frankfurt Kitchen-1912



Christine Frederick -1913



Bauhaus Kitchen-1923



Modern Kitchen-1924

As noted by Barbara Miller (2010) during the war, several American companies such as General Electric, Westinghouse and Motorola were major producers of defense weapons. But after it was over, these companies directed their production towards domestic appliances. Economic forces transformed “from missiles to washing machines” (Colomina, 2007) As appliances were being mass produced, another revolution in the kitchen habits was taking place: “Pre-cooked, ready mixed, canned and frozen foods started to appear in the market, and therefore induced radical transformations in meal preparation, cooking habits and grocery buying patterns.” (Adams & Toromanoff. 2016. p.2).

Many electrical appliances were unnecessarily developed and marketed with the promise of easing the housewife’s chores beyond imagination. (Kürüm, 2009) The consumer culture in the United States was fed by endless advertisements promoting the ideal lifestyle and targeted to create the illusion that with their acquirement, housewives would finally have spare time.

Furthermore, these appliances required more money to buy and operate, which eventually forced housewives to find a job outside, doubling her burden (Hayden, 1981).

The marketing strategies not only depicted an unlikely real lifestyle, but they were an active force behind the stereo-type that the kitchen was a female domain. Beatriz Colomina (2007) underlines that these endlessly repeated images of a picture-perfect domestic environment were also created to mask Cold War anxieties



Figure 10: Kitchen in defense worker's housing, 1941.

Figure 11: Around 1940, When assembling the kitchen, individual components can be replaced, such as chrome steel channels, Switzerland

Figure 12: Futuristic ideas of the Kitchen started to appear in the 50s. With a press of a button, a birthday cake would be baked in minutes. However, even in this fantastic utopic scenario, the woman was still the protagonist and it somehow depicted the same experience, just made more efficient and fast. (Frigidaire, 1956)



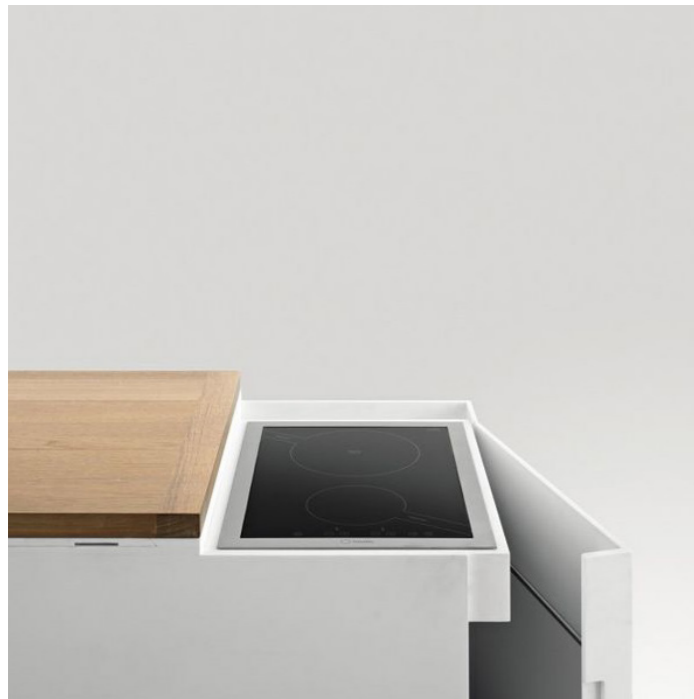


World War II. Domesticity as a goal. Rapid suburbanization. Media depicted the ideal American family. Awakening. Optimism & hope for a better future. Uncertainty. United States' economy experienced a "boom" and rapidly came to dominate the world market in consumer goods. Cold War. Capitalism. Consumer culture emerged. Housewife ideals. Ideas of the Kitchen of Tomorrow, In the mid 50s, 63 hours per week were put into domestic chores in Germany and 49 in America. Freezers. Appliances become streamlined, with rounded edges and chrome finishes. Appearance of Formica. Food industry revolution.

1940-1970

Kitchen renovations became more and more common as a reflection of the innovations in materials and technology. Electrical appliances became more affordable, since they were mass produced. When the 70s arrived, refrigerators and freezers had successfully conquered the household. This specific appliance had a strong impact on the domestic lifestyle and consumption practices, since grocery shopping journeys could be reduced considering food was able to remain fresh for a longer period of time. It also made possible to eliminate seasonal availability of food and therefore generated new habits and rituals on the diet of consumers. Traditional methods for food conservation started to disappear and packaged food began to be more common on every kitchen. The traditional "family meal" was no longer the rule, since it became really easy to grab a frozen packaged dinner and have an individual meal on anytime. As Spechtenhauser (2016, p.55) pointed out: "The responsibility for one's own nutrition was passed on, and cooking degenerated into following the preparatory instructions on the package."





Name: Mini Kitchen

Designer: Joe Colombo

Years: 1963

Introduction:

This mobile mini-kitchen includes two burners, a refrigerator, a cutting board, electrical outlets for small appliances, and multipurpose storage compartments. "Things have to be flexible," said Colombo in 1966. "My kitchen can be moved around or out of a room and when you are finished with it, it closes up like a box." This design represents in microcosm Colombo's signature idea of the modern home: "The problem today is to offer furnishings that are basically autonomous, that are independent of their architectonic housing and so interchangeable and programmable that they can be adapted to every present and future spatial situation."

Manufacturer

Boffi S.p.A., Cesano Maderno, Italy

Material:

Plywood with varnished coniferous wood veneer, aluminum, steel, plastic, laminate, electrical components

Dimensions: 35 x 45 x 25 1/2" (88.9 x 114.3 x 64.8 cm)



Name: Spazio Vivo (Living Space) Mobile Kitchen Unit (Mobile Kitchen Unit)

Designer: Virgilio Forchiassin

Years: 1968

Introduction:

This hinged, mobile kitchen on castors incorporates a stove, small refrigerator, pull-out cutting board, and a surprising abundance of storage space. It was shown in MoMA's landmark 1972 exhibition Italy: The New Domestic Landscape, which celebrated innovative, flexible designs responsive to new ideas about casual and adaptable living.

Material:

Steel, plastic laminate and plywood

Dimensions:

36 1/4 x 48 7/8 x 48 7/8" (92 x 124.1 x 124.1 cm)

1930's and 1940's: Technology, ergonomics and war open up the kitchen

The idea of the "fitted kitchen," wherein appliances were becoming more integrated within cabinetry, was an important transformation for the kitchen in the 1930's and 1940's. Fitted cabinetry and appliances helped create a more purposeful, and beautiful interior design, and the workflow within the space became easier to use. The invention of labor-saving devices, time-saving tools, with better kitchen designs and more stylish, matching options made the kitchen a source of pride. Many of these advancements were a bi-product of war efforts and technology. Women, having a taste of working outside the home during WWII, returned after the war and desired better design in their kitchen.

The manufacturing advancements and housing boom of post-World War II made a huge impact on the kitchen of today. There was an increased demand for kitchen technology and equipment. Innovations in quiet ventilation hoods, shiny ovens with matching refrigerators, dishwashers and designed countertops inspired homeowners to tear down the walls that once hid the utilitarian kitchen.

The kitchen was becoming quieter, cleaner, better organized and easier to work in. In essence, the kitchen was becoming a source of pride, and slowly becoming a place worthy of entertaining.

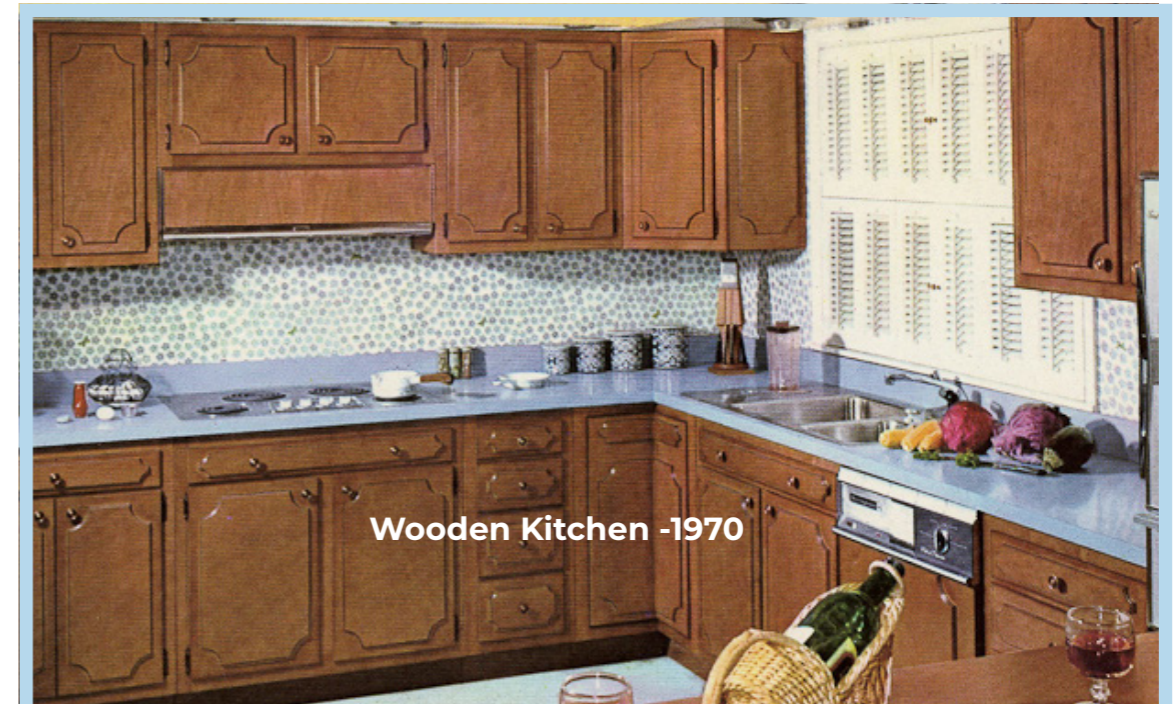
The 1960's and beyond: The at-home chef and designer kitchen

In the 1960's and 1970's other societal changes were taking place that impacted the style of the kitchen. A renewed interest in home cooking, fetishizing kitchen utensils and entertaining meant that life was happening, once again, in the kitchen. The kitchen became a source for honing culinary crafts, displaying designer cookware and served as the hub for social activity. By the 1980's, the idea of a completely open kitchen, with appliances designed to show off, came into being. The trophy kitchen was born.

New experimental ideas and hypothesis. Feminist movement. The Feminine Mystique by Betty Friedan. Political awareness and economic liberty of women. New Domestic Landscape 1972. Advances in technology. In 1991 the World Wide Web became publicly available. Julia Child. Food preparation as an spectacle. The Microwave. The kitchen incorporated in the living and dining space. In the 1980s the perfection of the extractor hood allowed the triumph of the open layout. Cooking not as an obligatory task, but an enjoyable and communicative activity. Adjustable and interchangeable structures.

1970-2000

The kitchen has assumed a "trophy" status within the house, but in contrast to all of the other rooms "it is not a freely definable living space, but is closely linked to the building services and entire mains network" (Kessel-ring, 2006. p.113) Even with all technological progress and changes presented in history it is still dependent of certain elements that as described by Kirsten Algera (2017) creates an invisible city under our kitchen. As Oldenziel & Zachmann (2009, p.16) put it: Electrical grids, gas networks, water systems and the food chain all come together in the floor plans that connect kitchen to housing, streets, cities and infrastructures. The Kitchen is thus simultaneously the sum total of artifacts, an integrated ensemble of standardized parts, a node in several large technological system and a spatial arrangement.



Wooden Kitchen -1970



Luigi colani 1970



Living Space Kitchen-1968



Ettore Sottsass-1972



Bulthaup living space-1984

Advances in technology. Laptop culture. The smartphone. Google. WIFI. Bloggers and Entrepreneurs. Iron Chef. Millennials. Single households. Shared Economy. Digital Nomads. Social media. Healthy lifestyles as goals. Life on the go. Kitchen islands. Surface textures. High-tech appliances. Kitchen became “a showpiece and a status symbol”. For millennials cooking at home is an infrequent leisure time activity. Take away food culture. Sensory comforts come in mind. Kitchen design is based on standardization and classical solutions.

2000-2020

The kitchen has been located and dislocated throughout centuries over dichotomies such as slave/freeman, servant/master, man/woman, front/back, upstairs/downstairs, inside/outside, etc. (Kürüm.2009. p.18)

The speculative scenarios of the future of this space show more efficient appliances and interconnectivity with our phones and the rest of our house. However, it is somehow the same experience fixed to one specific space. The IKEA kitchen of the future (see Fig.18) presents a very similar layout that the one we have seen for decades, except that in this scenario our fridge will send us text messages to buy more carrots.





Name: A la carte II system
Company: Stadtnomaden
Designer: Oliver & Linda Krapf
Years: 2014

Introduction:

This attractive combination of three includes one sink module, one storage module and one device module with cooktop and compact oven. High efficiency for limited space: The function modules cover all basic requirements- rinsing, cooking, baking, cooling, storing and disposing. Many repository- sets for the active zone between the worktops ensure effective operations in the kitchen. In a stylish way the A la carte II system breaks down the conventional kitchen structure into individual task modules.

Characteristic:

Free-standing
 Save space

Material: Beech

white HPL [high pressure laminate]

Dimension: Module H 95 (+2) x W 74 x D 60 cm



Name: The liberation of the kitchen

Designer: Alejandra Calderon

Years: 2015

Introduction:

The designer designed three movable module structures, which contain all the necessary elements for cooking, including: two induction cookers, storage space, food preparation space, a refrigerator, and one with three recycling bins sink. Each module structure can be used with a stackable system of many different components. Each component is equipped with a folding stand, which can be used alone as an independent item or can be stacked in multiples to be combined according to user needs.

Characteristic:

Can be combined freely
Save space

Material:

Polywood
Steel



Name: AM 01

Designer: Atelier Mendini

Years: 2017

Introduction:

AM 01 is a kitchen block made of wood panels with curved doors that can be positioned against the wall or free-standing. A surprising contrast appears when the cabinet is opened revealing glossy glass surfaces and stainless steel. The kitchen has a stainless steel sink and induction cooker, there is a dish rack above, and there is also a space for storing kitchen utensils below. Usually it can be closed without affecting the beauty of the space, only occupying a small part of the space.

Characteristic:

Free-standing
Save space
Multifunction
Convenient

Material:

Polywood
Glass
Stainless steel.



Name: QB 01

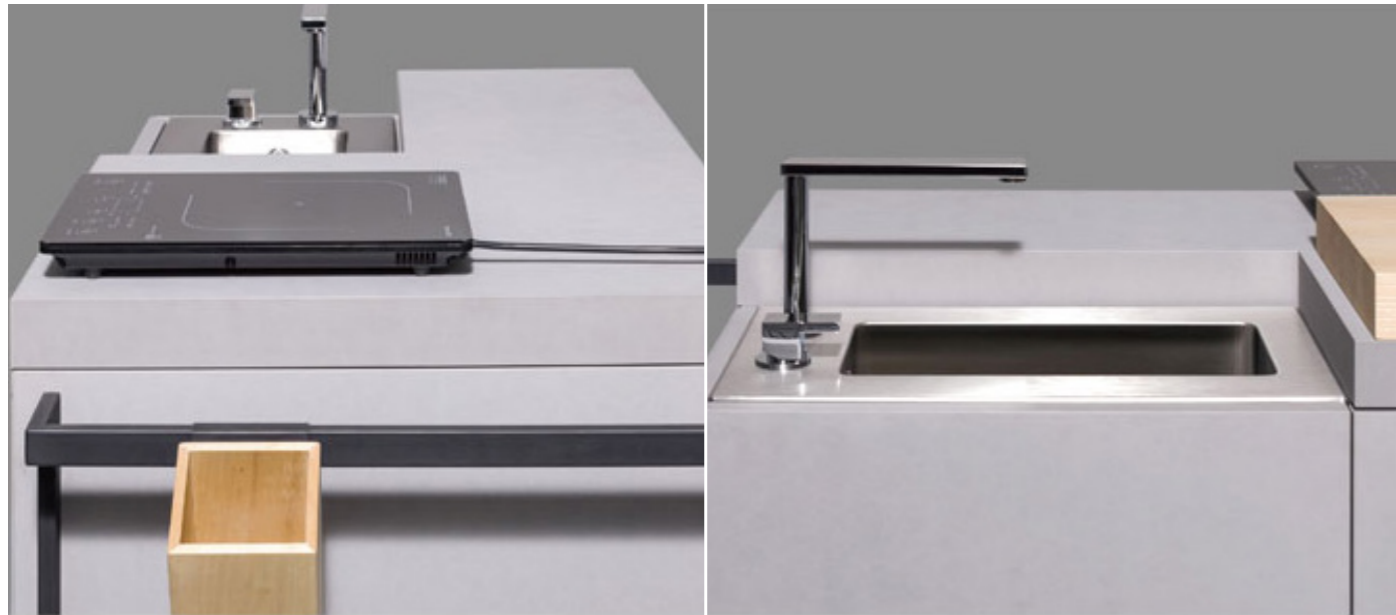
Designer: Bestetti Associat

Years: 2018

Introduction:

QB 01 is a compact mobile volume on wheels that eliminate boundaries of the home, perfect for outdoor use. Every element is minimal, yet functional: a cutting board hiding a sink, a compact fridge and a cutlery storage all cleverly stored inside.

It solves the limitation of the way of using the kitchen. It can be used not only outdoors, but also in small apartments or studios.



Characteristic:

- Free-standing
- Save space
- Multifunction
- Convenient

Evolution of Chinese traditional kitchen form

The Evolution of Chinese Traditional Kitchen Shape .

Abstract: Kitchen has an important role in the development of human history, China's kitchen culture is a long history especially. The contemporary Chinese home kitchen is influenced by the western integrated kitchen cabinet, but it is not completely applicable to the Chinese family. The searching of Chinese kitchen culture from the evolution of Chinese traditional kitchen, exploring the integrated kitchen design for China and creating more comfortable Kitchen life are the core of this study.

Ancient independent kitchen

The fire pond is located in the middle of the house, without partitions, which causes the smoke of coal to spread throughout the house, which greatly harms human health. In order to solve the problem of smog, began to gradually move the fire pond from the center of the house to the corner of the house.

From the Qin and Han Dynasties to the Song Dynasty, it was an important process for the evolution of Chinese kitchens. This period experienced two major changes:

1. Get out of the house
2. The kitchen is different, and the division of cooking is clear

From the **Qin Han** to **Song dynasties**, people had mastered the fires of different sizes, and there were water wells in the courtyards of family homes, which were convenient for taking water for cleaning and cooking. And sheds for breeding livestock.



Kitchen in ming and qing dynasty

The Ming and Qing Dynasties was a mature period for the development of ancient Chinese kitchens. The use space of the kitchen has become larger, and dining has been integrated into the function, realizing the integration of the kitchen and the kitchen. At this time, kitchen stoves mostly used Gundam soil stoves, which combined functions such as burning wood, cooking, warming dishes, and offering sacrifices. Kitchen furniture mainly involved dining tables, benches, cupboards, and kitchen cabinets. In addition, the kitchen has water tanks, hanging racks, chopping boards, etc.

The Kitchen in Modern China

Kitchen in tube-shaped apartment

In the 1950s, the common kitchen was composed of a stove and a sink. Its fuel was coal and firewood. The decline of China's economic strength and the policy restrictions on the construction of national housing, people's residential area became smaller, and a group of employees appeared to solve the problem. If the housing is difficult, the housing is accurate, whether it is a residential house or an employee house. At this time, the residential area is extremely small, and the internal design is also very simple. The tube house is the product of this era. The kitchen is shared, full of cooking utensils, disorderly, and poor sanitary conditions.

The 1970s and 1980s were a major turning point in the evolution of modern kitchens in China, and independent small kitchens gradually appeared. In the late 1980s, the artificial board industry has developed to a very mature state, so small-scale production of kitchen furniture began. Kitchen furniture at that time was very monotonous, lacking beauty, and simple in structure. With the development of China's economy in the 1990s, the domestic market gradually became in line with that of Western developed countries. The Chinese market has begun to show the overall cabinets imported from the West, with its atmosphere, beauty and many excellences



Analysis of house type and lifestyle data

Graphic illustration of 7 international cities

Living area per capita

Notes on per capita living area of each city:

1) Per capita living area is an index that can compare the physical living density of the city, and can show the living quality, based on the dedicated area.

2) The per capita living area is based on 2014, Tokyo uses 2013, Beijing uses 2010, and Paris uses 2015 data.

3) The calculation method of per capita living area can be divided into the sum of the total residential area (si) divided by the total number of households (ni) and the calculation method and the residential use area of individual households (si) divided by the number of individual households. The obtained values are calculated by averaging these values. The former is a full survey and the latter is a specimen survey, so there will be errors in the specimen. In the latter case, because the living area of individual households can be calculated, it is possible to grasp the distribution of the per capita living area of each household in each area and each occupation form, and the per capita living area of a certain scale (for example: 10 companies or less) It can be said that the characteristics of households possessed are more suitable at the level of numerical utilization. Calculated in the latter way will appear 3 ~ 4 m more.

4) The per-capita living area in Seoul is based on the actual living survey method, which is the value obtained by dividing the residential use right (si) of individual households by the number of individual households (ni), and then averaging these values.

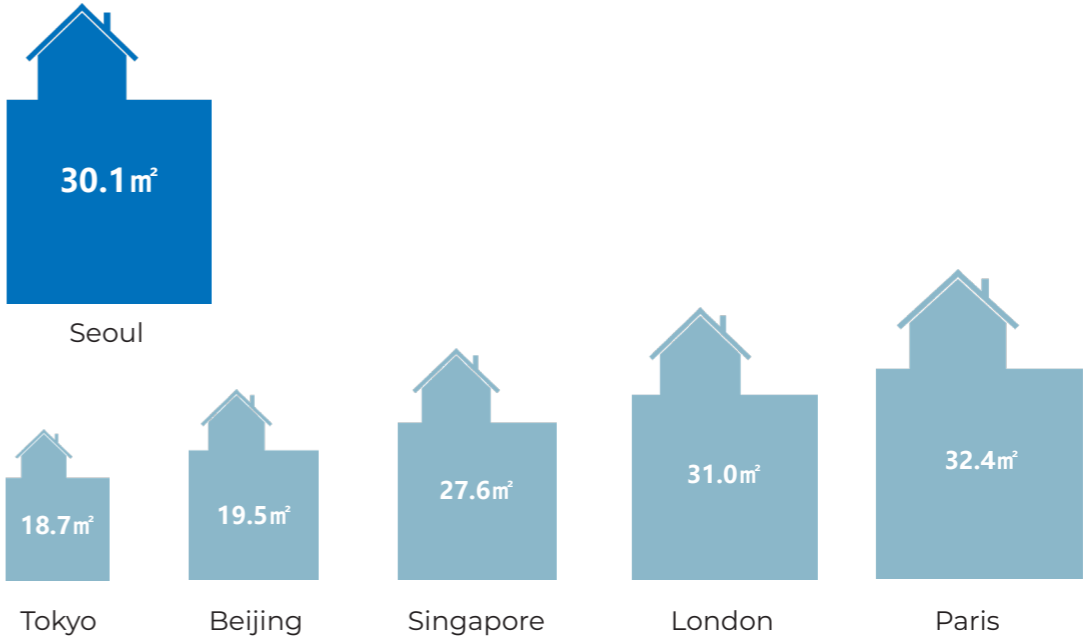
5) Tokyo's per capita living area is the value directly calculated by dividing the average area per house by the average number of people per house calculated by the total number of households and the total number of houses.

6) Beijing's per capita living area is calculated based on the metropolitan area.

7) The average housing construction area of urban residents used by the Beijing Statistics Bureau is the value of the sample survey of households in urban areas.

The stipulated range of the household survey in urban areas is the value of 5000 urban residents after 2008. County 5 Po Singapore's per capita living area is a value obtained by dividing the residential use area (si) of individual households by the number of individual households, and then averaging these values 8). Use HDB residential benchmark living area data.

9) The per capita living area in Paris is the value quoted from Insee data.



Data Sources:

Seoul: Ministry of Land, Infrastructure, Transport and Tourism, 2014, 2014 Annual Living Status Survey, 2014 Baseline Change.

Tokyo R: <http://www.e-stat.go.jp/SG1/estat/List.do? Bid = 000001056226 & cocode = 0>, 2013 benchmark data.

Beijing: Beijing Municipal Bureau of Statistics, 2013, 8-1 Basic Conditions of People's Livelihood (1978-2010), Beijing Statistical Yearbook 2013, 2010 Benchmark Data

Singapore: <http://www.teoalida.com/singapore/hdbstatistics/>(Teoalida E, HDB ENNIA)

London: London Data Store internal data, 2014 benchmark data.

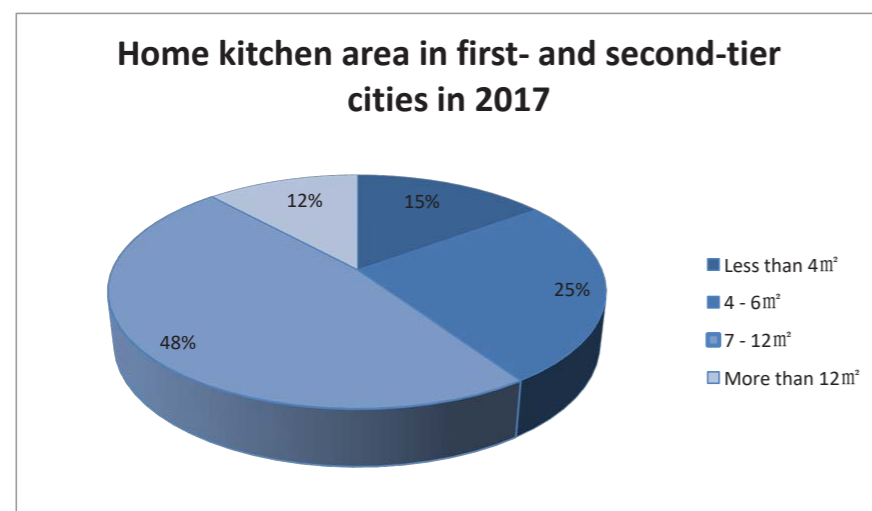
Paris: <http://www.directmatin.fr/france/2015-04-28/paris-un-habitant-vit-en-moyenne-dans-31-m2-703598> (Direct Matin homepage, INSEE information re-quoted), 2015 benchmark information

Home kitchen area in first- and second-tier cities in 2017

When the types and number of electrical appliances placed in the kitchen increase, it is easy to cause:

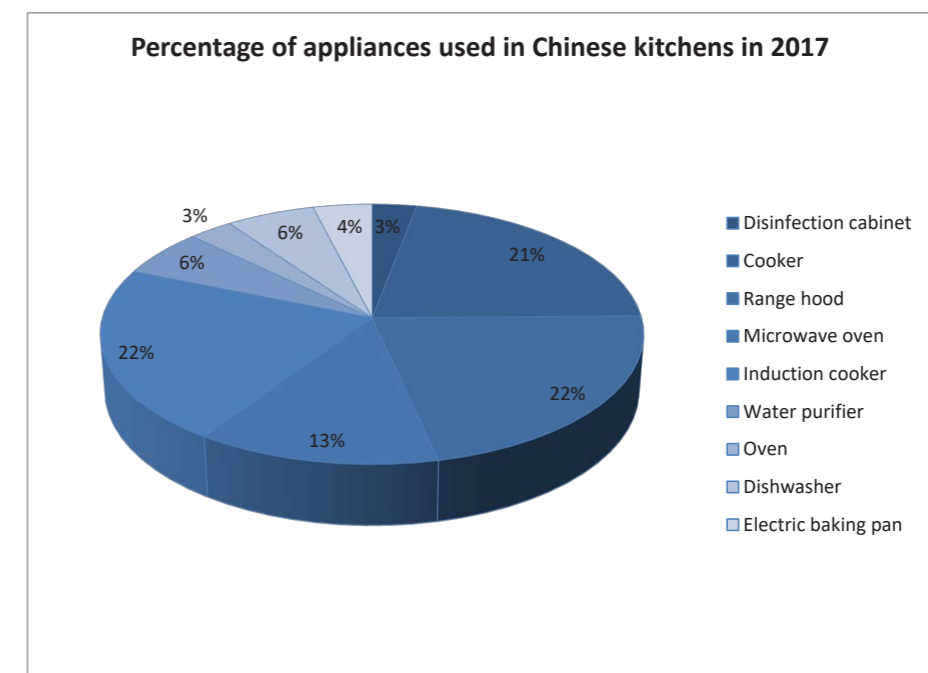
- 1) Insufficient kitchen space;
- 2) The kitchen is prone to clutter and disorder, which affects the appearance;
- 3) Increased water, electricity, gas and other pipeline lines are likely to bring more safety hazards. At the same time, China's kitchen area is significantly smaller than in Europe and the United States. In 2013, the kitchen area of newly built residential buildings in the United States was 18-39 m², with an average area of 28 m². According to the 2017 "White Paper on Chinese Dream Kitchen", 14.9% of the family kitchens in first- and second-tier cities in China accounted for 14.9%, 4 -6 m² accounted for 25.6%, 7-12 m² accounted for 47.7%, far lower than the United States. With such a limited kitchen area, people's demand for maximizing the utilization of kitchen space is becoming stronger.

At this time, the necessity of the overall kitchen has become increasingly prominent, and its advantages in the optimization of space layout, stylish and beautiful design, and safety and environmental protection can well solve the problems caused by the increasing number of kitchen appliances. Coupled with the increase in people's awareness of health and environmental protection, the pursuit of convenience, time saving and labor saving brought about by the increased pressure or intensity of work or life have led to an increase in the demand for the overall kitchen.



Investigation on the utilization rate of kitchen appliances

In recent years, there are more and more types of kitchen appliances. According to usage / function, the kitchen appliances on the market can be simply divided into four categories: kitchen environment health, cooking, auxiliary labor, and food storage and preservation. As can be seen from the 2017 statistical table, in the utilization rate of electrical appliances in China, the top three stoves, range hoods and induction cookers.

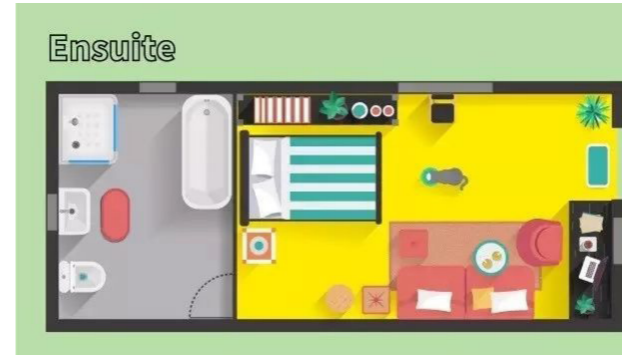


Top 10 cities with the highest residential prices in the world in 2019

Today, more and more young people work in large cities, such as Beijing, the capital of China, with an immigrant population of 8 million in 2017. Most of them live in small apartments and can only use open kitchens. Today, the takeaway restaurant industry is highly developed in China, making most people use the kitchen less often. Among the "15 most expensive house prices in the world in 2019", seven cities were selected from among including Beijing, Shanghai and Shenzhen.

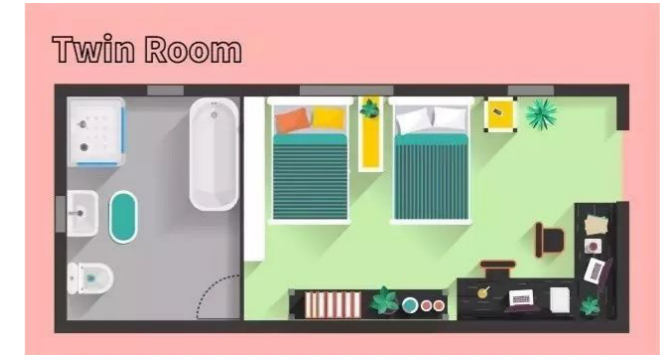
Top 10 cities with the highest residential prices in the world in 2019		
City	Average house price dollar	Average price per square foot dollar
Hongkong	1,235,220	2,091
Singapore	874,372	1,063
Shanghai	872,555	714
Vancouver	815,322	711
Shenzhen	680,283	726
Los Angeles	679,220	466
New York	674,500	526
Lodon	646,973	776
Beijing	649,276	575
Paris	625,299	985

Units typethat often appear in rental housing



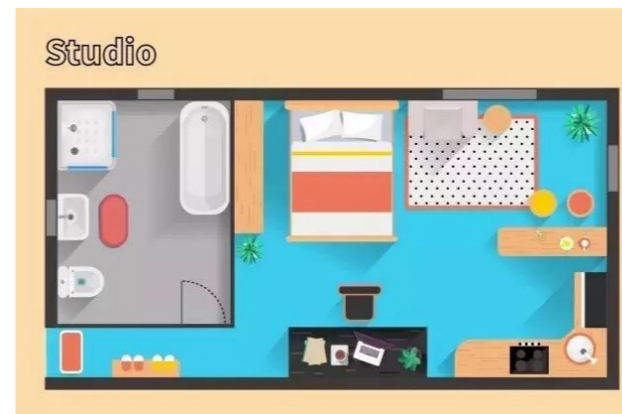
- Separate bedroom, can be spaciouly placed a bed, a desk, a wardrobe
- Private bathroom
- Shared kitchen

Area Size: En-suite room is about 13-15 m²
Double En-suite Room 20 m²



- Separate bedroom, spacious room for 2 beds, 2 desks, 2 wardrobes
- Private bathroom shared by two
- Shared kitchen

Area size: generally around 20 m²



- Separate bedroom, can be spaciouly placed a bed, a desk, a sofa, a wardrobe
- Private bathroom
- Simple kitchen

Area size: generally around 20 m²

The difference from the ordinary one-room one-room type is that the kitchen and bathroom in the Studio are in an open space.

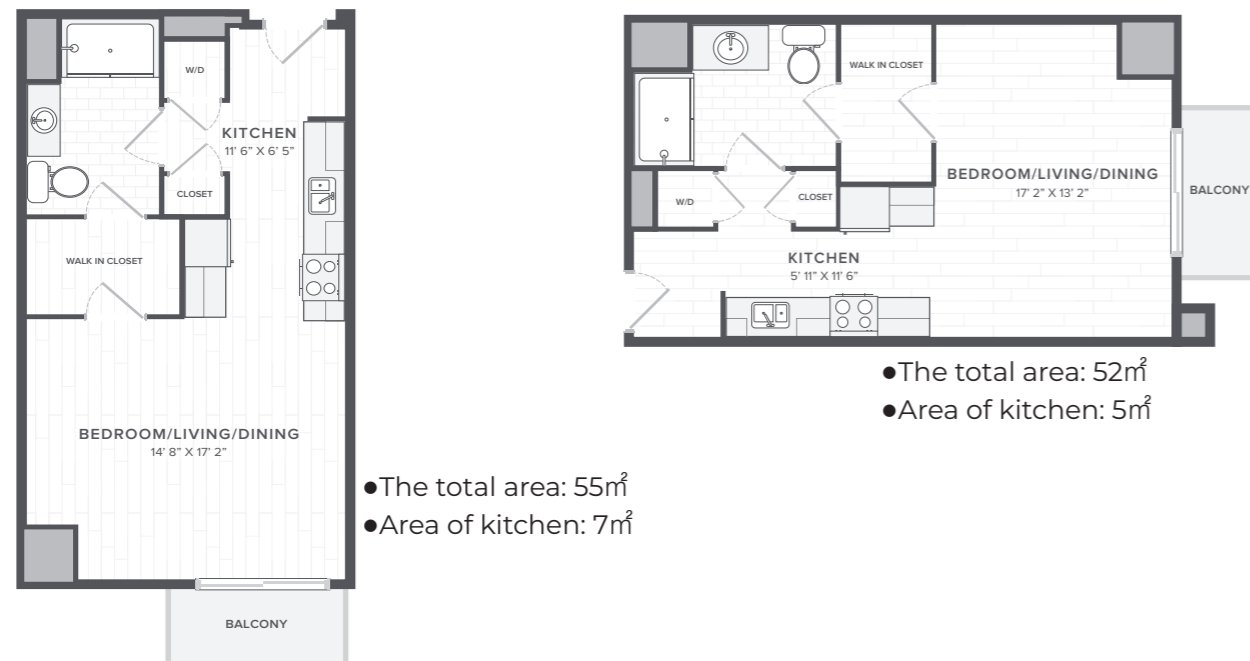


- A separate living room
- A separate bedroom with a bed, table and wardrobe
- Private bathroom
- Private kitchen

Area size: generally around 20 m²

One Bedroom Apartment, similar to the domestic single apartment, has a separate living room, bedroom, bathroom and kitchen. It can be understood as a studio with a wall separating the kitchen from the bedroom.

Studio apartment Floor plan



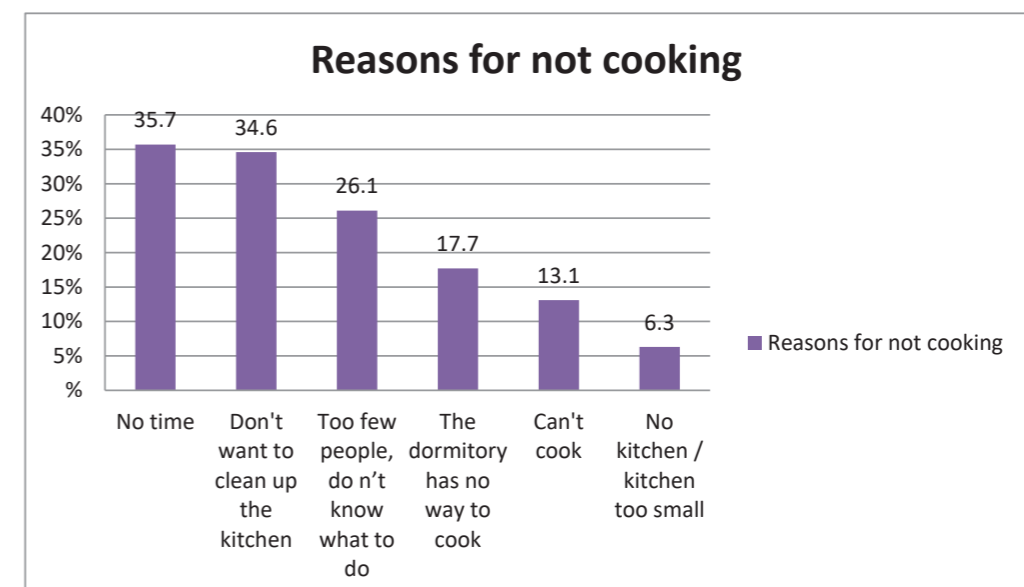
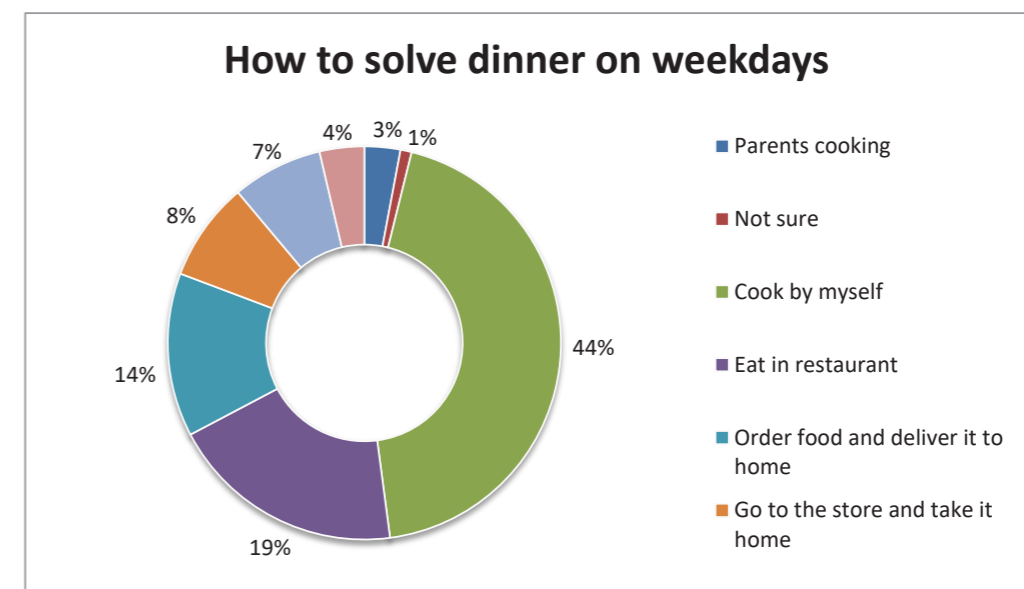
It can be seen from the studio apartment floor plan in the picture, the kitchen size is 5-7 m². In the studio apartment, all are open kitchens.



The new generation apartment types in Shenzhen have an area of 36 m² and 38 m². The maximum size of other types of apartments is no more than 45 m². The kitchen area ranges from 3.2 m² to 4 m².

2019 Contemporary Youth Lifestyle

With the development of today's society, more people are not confined to the way of cooking, and they don't waste too much time in the kitchen. After all, the previous way of life requires the cooking time to be around one hour, and young people can save more time for work and social use, rather than for cooking, lifestyle changes and stressful working conditions, let more people choose simple dining methods. The diversity of food delivery and restaurants also leads to the weakening of kitchen functions. The open kitchen has coffee, breakfast and other cultural diversity just in line with the characteristics of young people's lives. Young people redefine home design. The open kitchen is becoming a way of life, and the kitchen and dining room are gradually integrated into a more open one. For young people, cooking is not a chore, but a hobby and a way for family members to gather emotions. *Statistics from China Sina News Network.*





The problems caused by the new generation of houses and lifestyles

There are more and more types of kitchen utensils, but in densely populated cities, the **40%** of kitchen area is less than **6 m²**. Under such a limited kitchen area, people's demand for maximizing the utilization of kitchen space is becoming stronger. Since 2014, various Chinese brand companies have launched compact overall kitchen decoration solutions. Including the real estate industry, in recent years, with the increase of foreign young workers in large cities such as Beijing, Shanghai, Shenzhen and so on, **one-bedroom, one-hall and studio apartment-style units** have become increasingly popular. However, the size of one-bedroom, one-hall or studio apartment type is mostly **38-43m²**, and the kitchen area is not less than **5m²**. So the compact kitchen has become an essential choice.

According to the lifestyle of contemporary youth in **2019**, we can see that **43%** will choose to cook dinner at home, but there are also many people who do not cook dinner at home for other reasons, so young people are no longer the traditional kitchen design style for the kitchen. Requirements, no longer require the diversification and perfection of the kitchen as before, only **need high-use and basic cooking tools**. No more large-scale renovation of the kitchen, so for contemporary young people, or people living in small apartments, the **compact kitchen** has become the preferred design product.

02

CONCEPT

According to the previous survey data, we know that house prices are becoming more and more expensive, houses are getting smaller and smaller, the development of the catering industry and the lifestyle changes of young people, compact kitchens have become an important part.

All over the world, people seem to spend less and less time cooking. What is the reason? Frantic lifestyles and ways of working make it difficult for people to spend time buying food and preparing meals.

Now, no matter where you go, you can find fast food, street snacks, excellent restaurants, takeaway dishes and ready-to-eat foods in grocery stores.

Online food delivery services are developing globally, not just in North America. In 2016, one in ten Chinese ordered meals online. Online ordering is popular across Europe, with a market share of around 56% in Sweden and 43% in Austria. In India, the value of online meal order transactions is expected to reach \$12 million in 2023, surpassing that of the United States. Garner Insights predicts that from 2017 to 2023, the global online order business will have an annual growth rate of over 31%.

Compared to other countries, people in China, a country with a long history of food culture, generally spend more time cooking. Although people are more inclined to eat and eat outside, cooking is still the center of family life.

There is always someone in the kitchen

Food and Wine magazine cited the results of a survey conducted on over 27,000 people in 22 countries. When asked about cooking habits, the results showed that the average overall cooking time was 6.5 hours, compared to 3.7 hours / week for South Korea.

Design goals

My project aims to solve the kitchen problem for small apartments and people new lifestyle.

Definition of concept

A kitchen that saves space and has basic functionality.

My project is a combination of furniture and appliances. I designed a multifunctional mini kitchen for the home and offices.

Why kitchen?

Eating is a very important part of our life, "Food is the heaven of the people." Is a very famous phrase of the ancient Chinese. The kitchen is the place where food is created, and good cooking can stimulate the art of cooking.

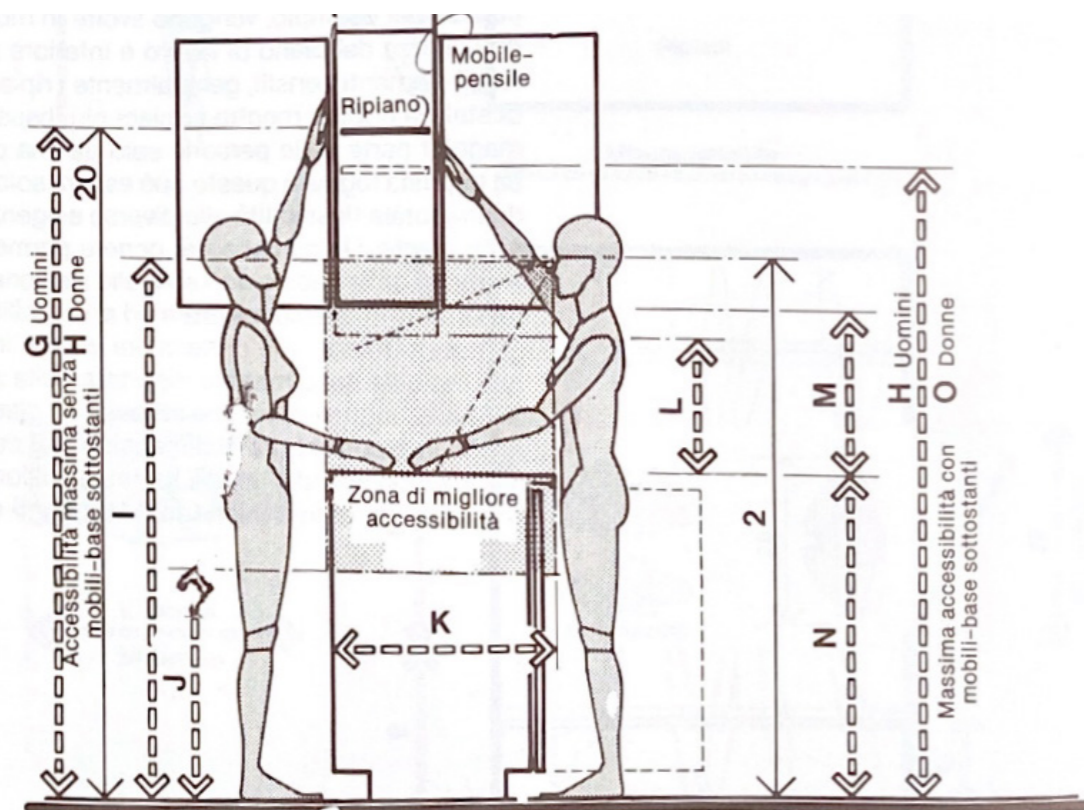
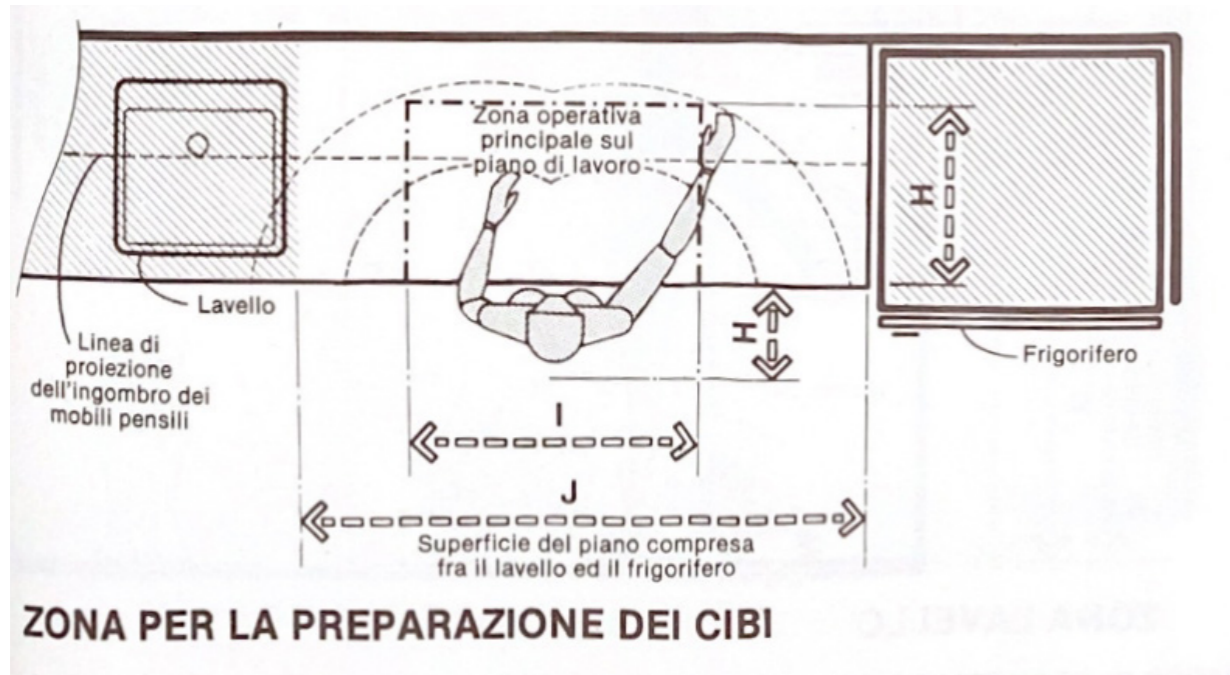
Why mini?

Residential prices in a big city are very expensive. This is why small houses are becoming increasingly popular, so it is very important to save space.

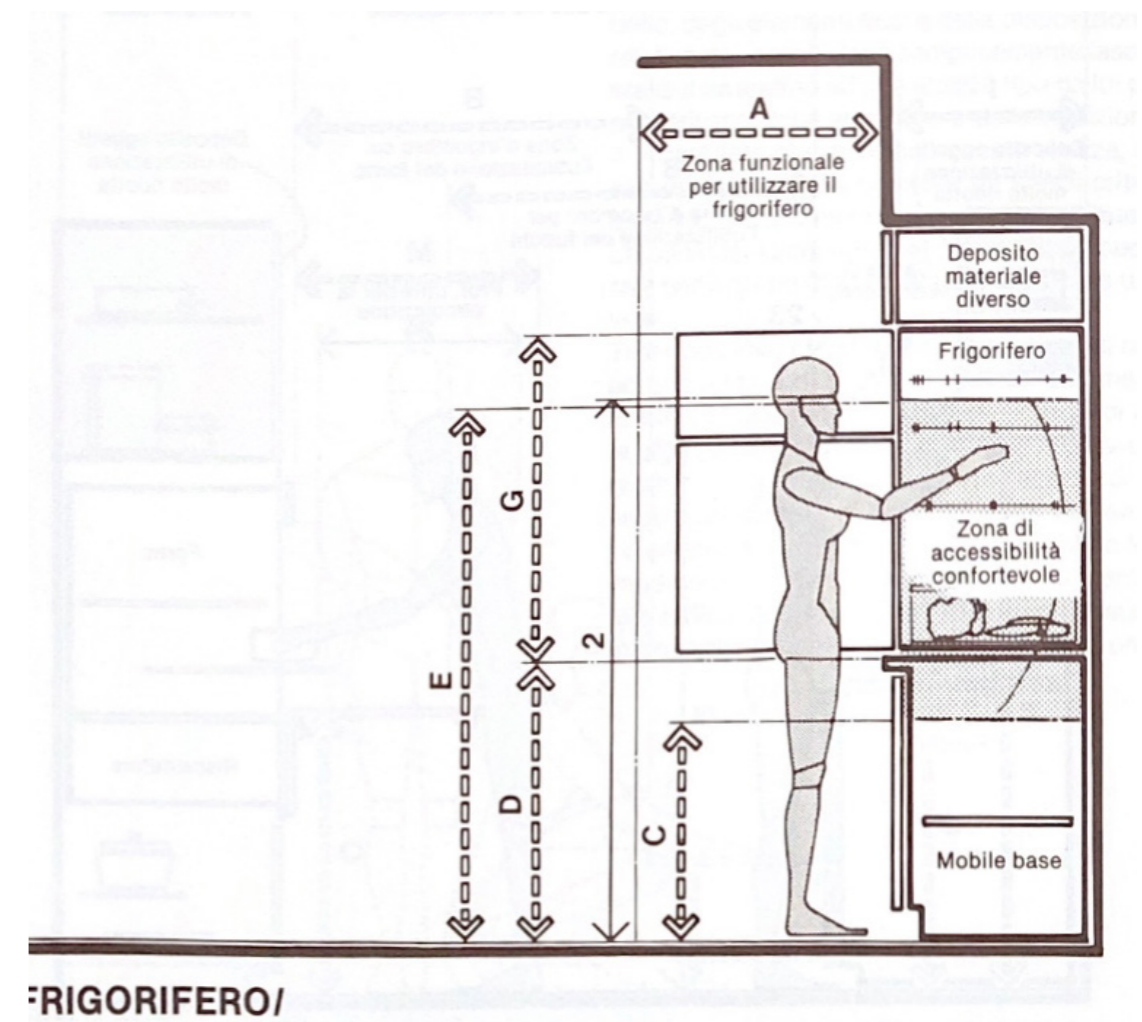
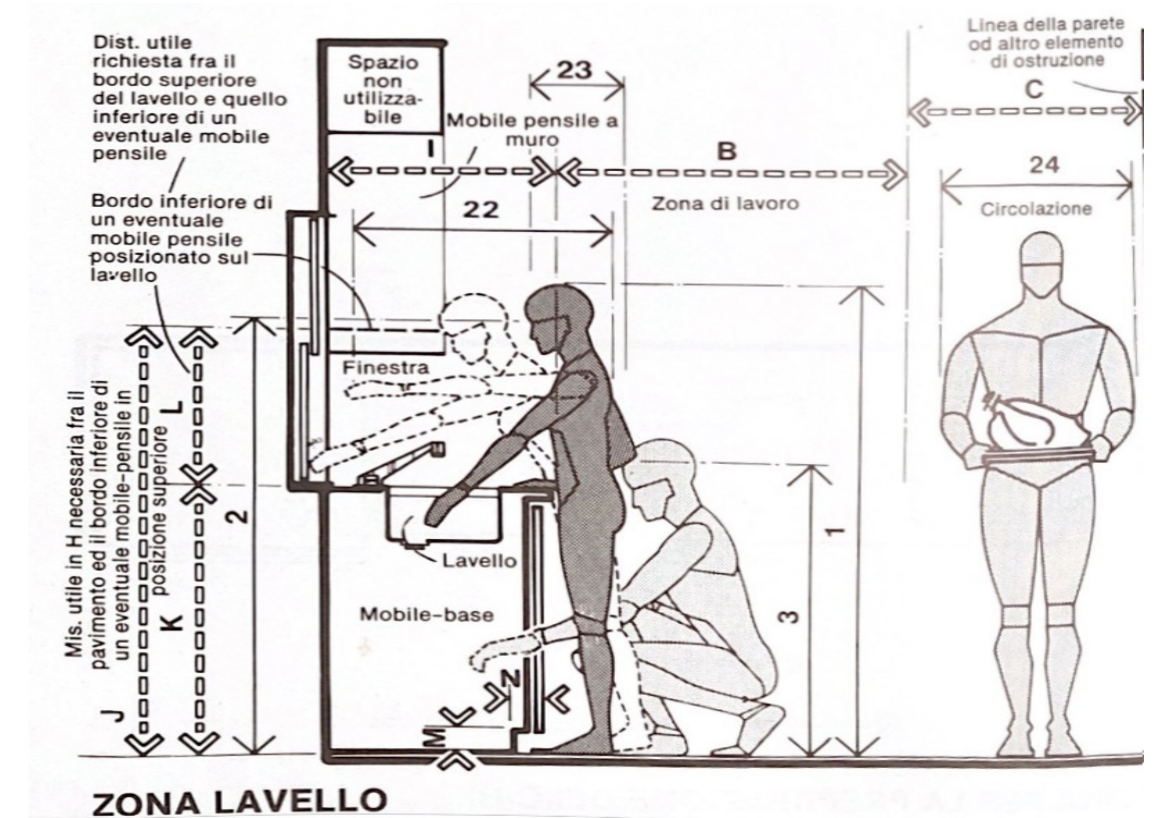


Research on human-sized spaces

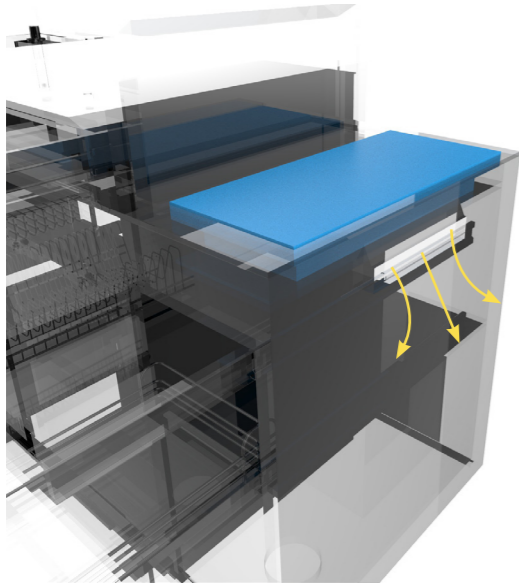
In spaces on a human scale, as regards the kitchen environment, the normal width of the cupboard counter is 60 cm, the most comfortable height of the bar or breakfast counter is 90 cm and the height of the comfortable work surface is between 85 and 90 cm, which is more suitable for storing the mini kitchen. The storage area is a drawer, which is more convenient for moving objects.



ACCESSIBILITÀ AI RIPIANI/COMPARAZIONI

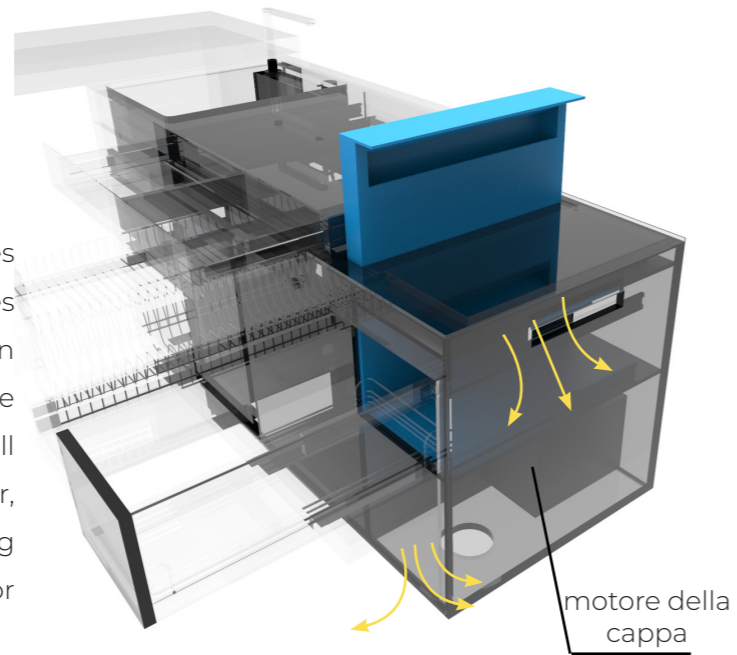


Research on electrical appliances



The induction cooker needs heat dissipation when working, and the exhaust vent is designed here. **The handle**, leaving room for heat dissipation during machine operation, and can come out of the handle.

The internal circulation system does not require piping, but requires considerable internal circulation space. In order to make the machine work safely, there is only a small drawer under the induction cooker, and other spaces are closed, leaving only a round hole at the bottom for heat dissipation.



Active cotton filter fume

No need for pipes, internal circulation filtration



Filtered aluminum mesh front



The back is activated cotton
Effectively filter oil fumes



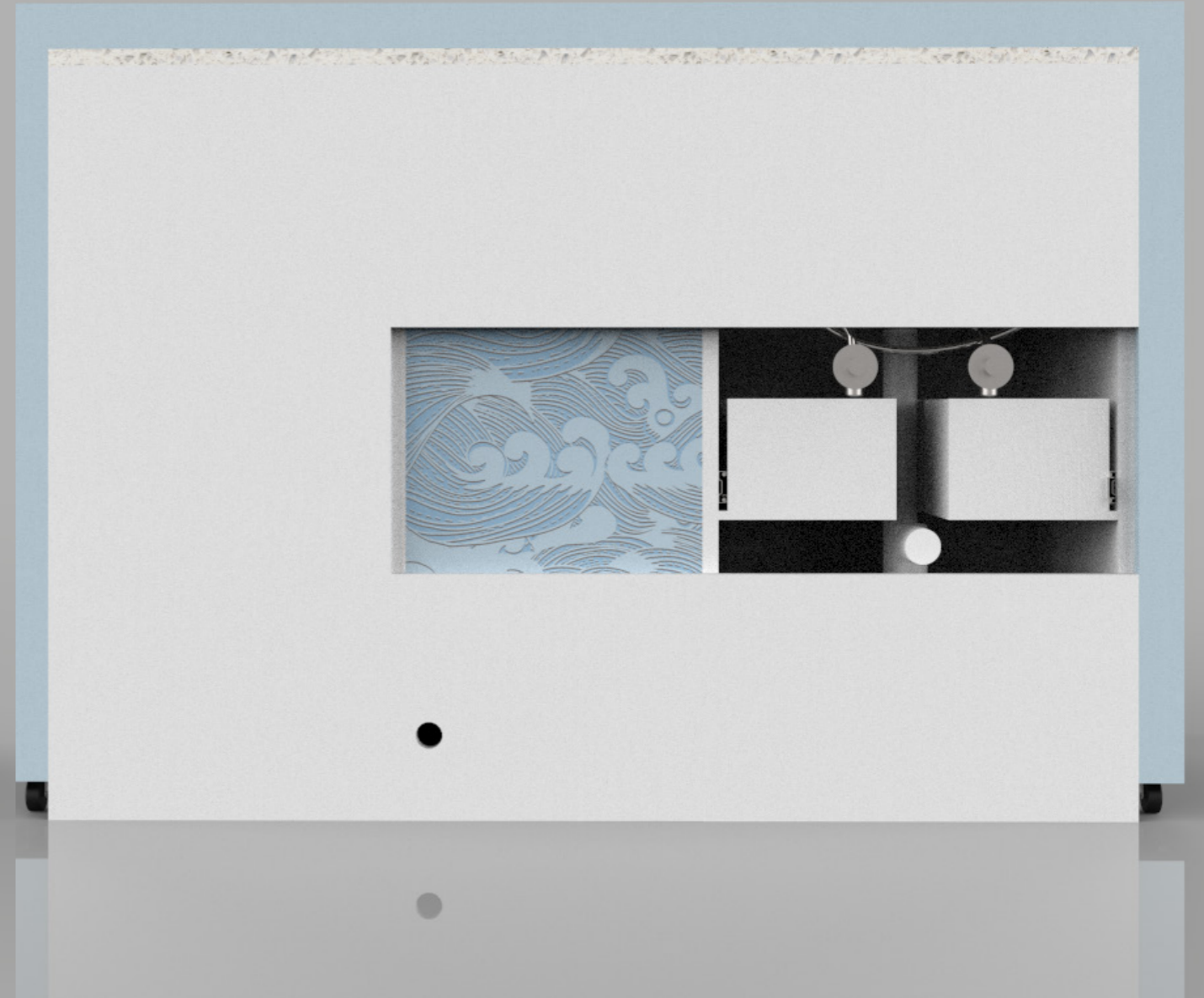
03

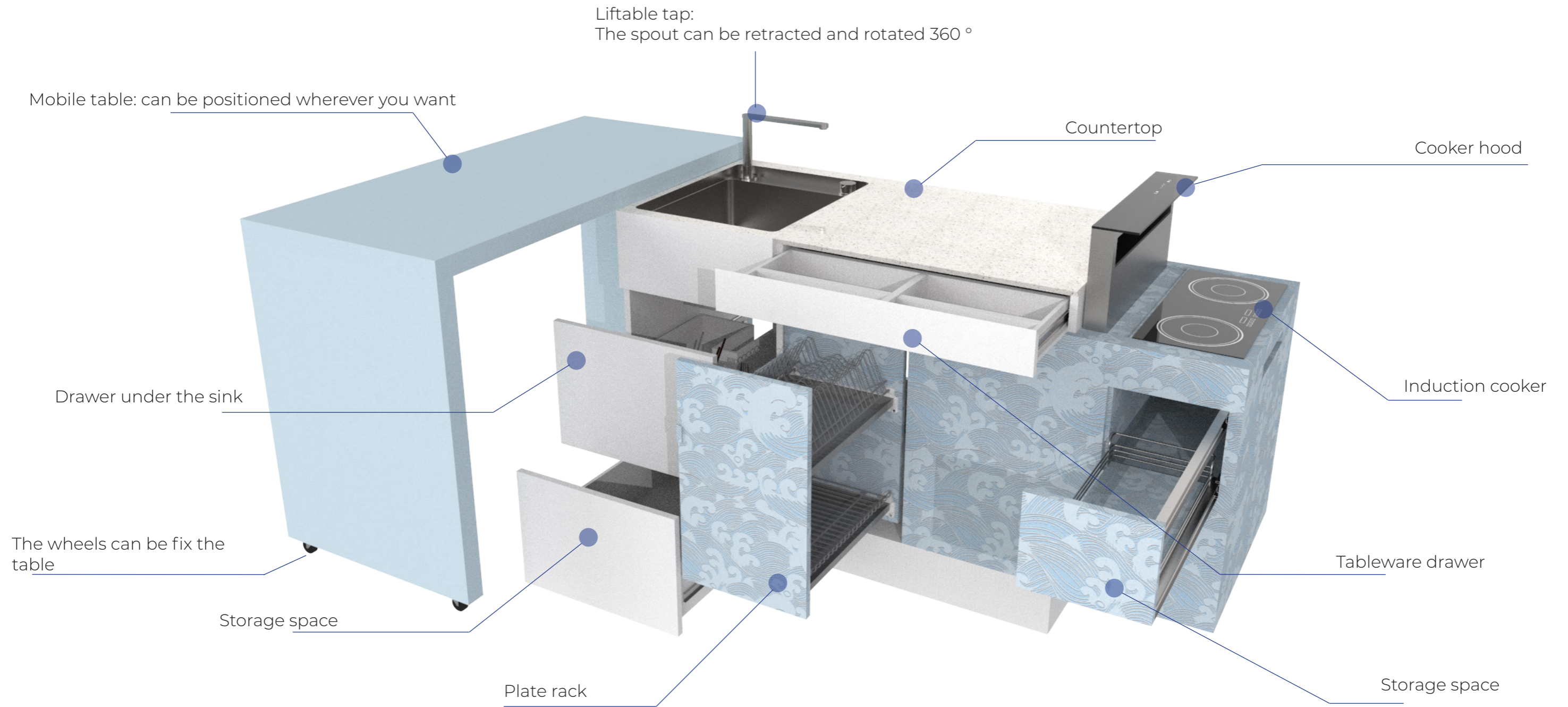
PROGETTO

Front view



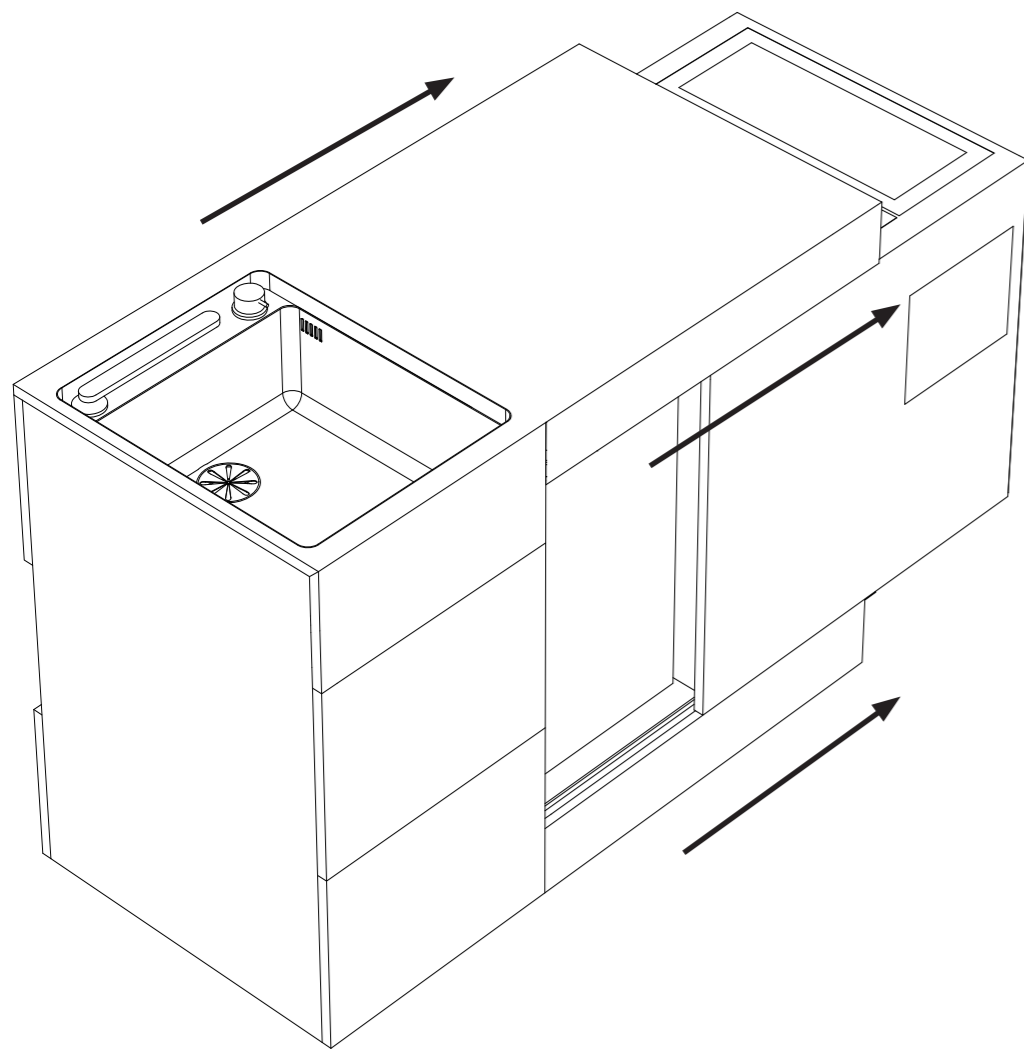
Back view



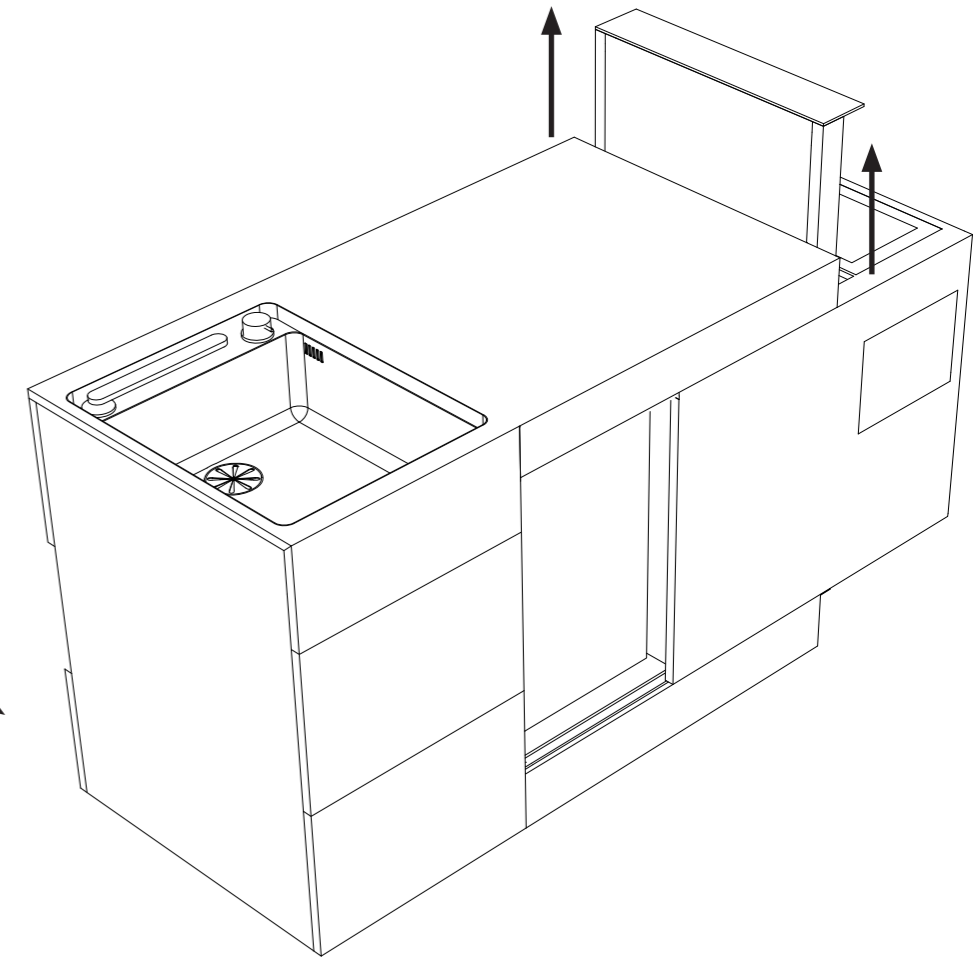
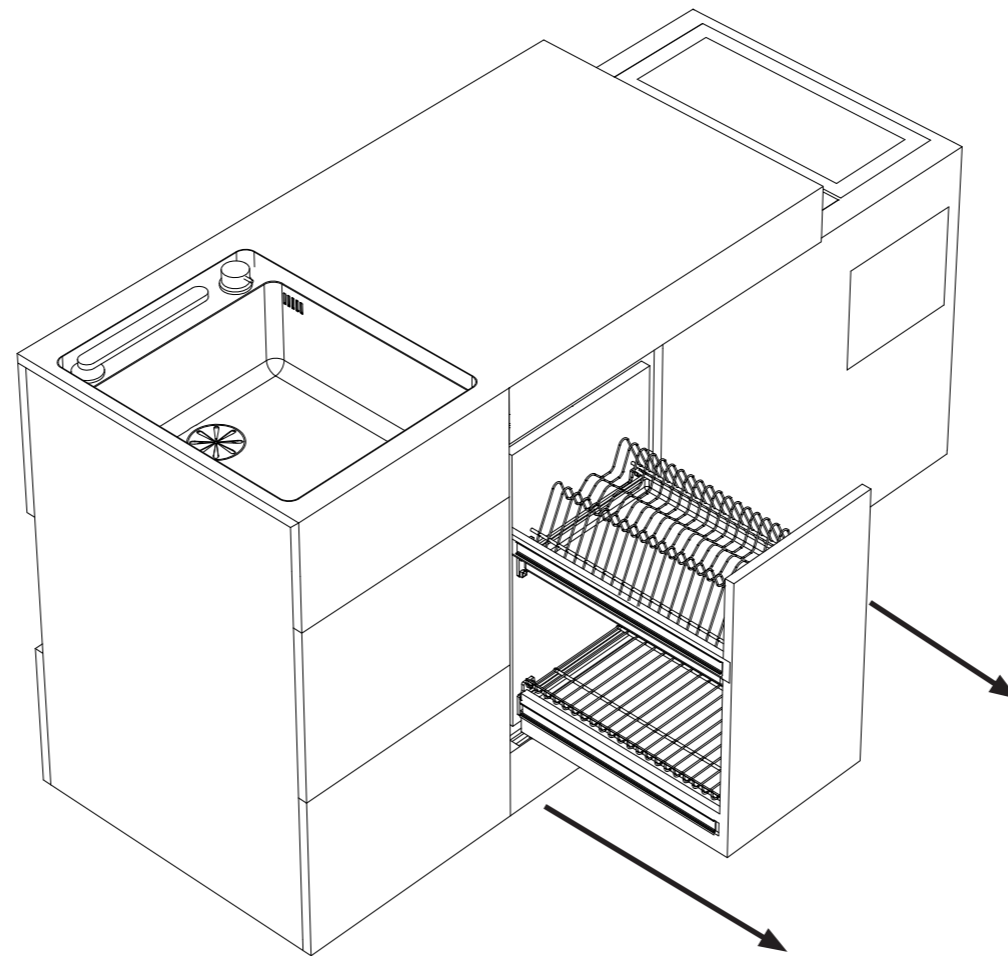


Ways to open dish racks and appliances

①



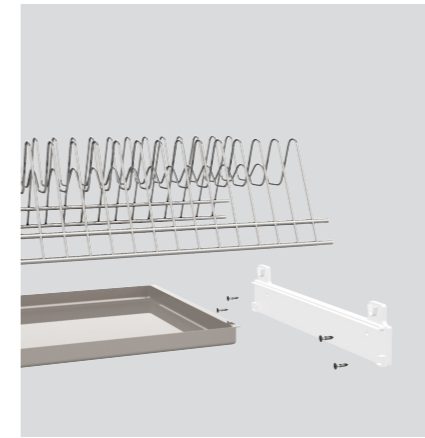
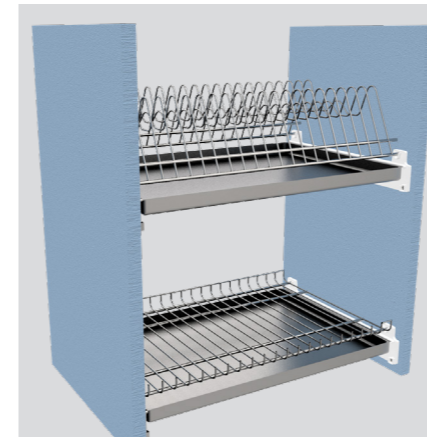
②





Induction cooker

Side profiles in stainless steel Induction hob
250 W -vetroceramica



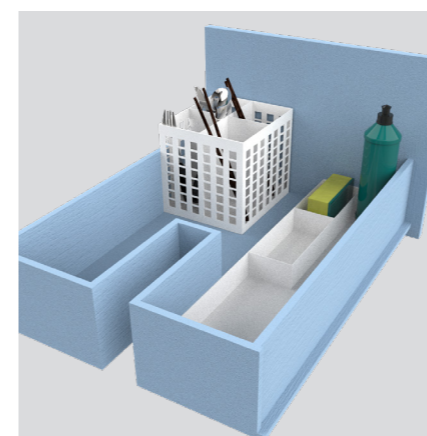
Wall cabinet with dish drainer

A dish drainer compartment has been inserted inside
Make dish drainer
Connection guides Exploded view



Cooker hood 270w

Composed of an internal body recessed in the plane and motor that governs the descent and ascent of the horizontal panel prepared for aspiration, Fabula shows only its most agile and light part. When the hood is in the off position, the panel disappears most of the Touch Control controls positioned on the thin glass panel which creates a homogeneous surface with the burners. A LED bar illuminates the kitchenette creating a comfortable and extremely functional corner

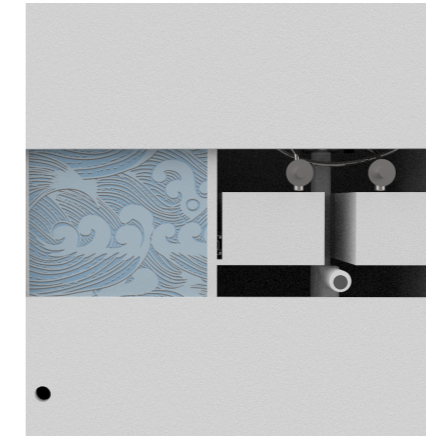
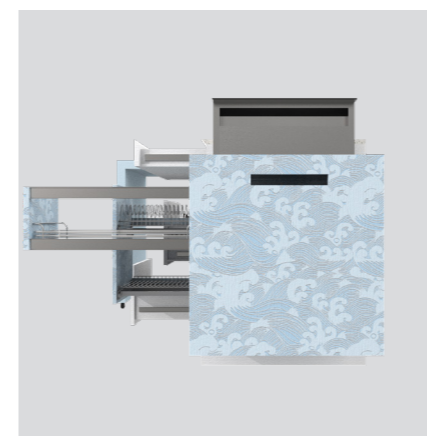


Drawer under the sink

The back of the drawer
The drawer will be inserted in the appropriate joint, visible in the adjacent image. This was designed to avoid dirtying the entire drawer. Incorporate a cutlery basket



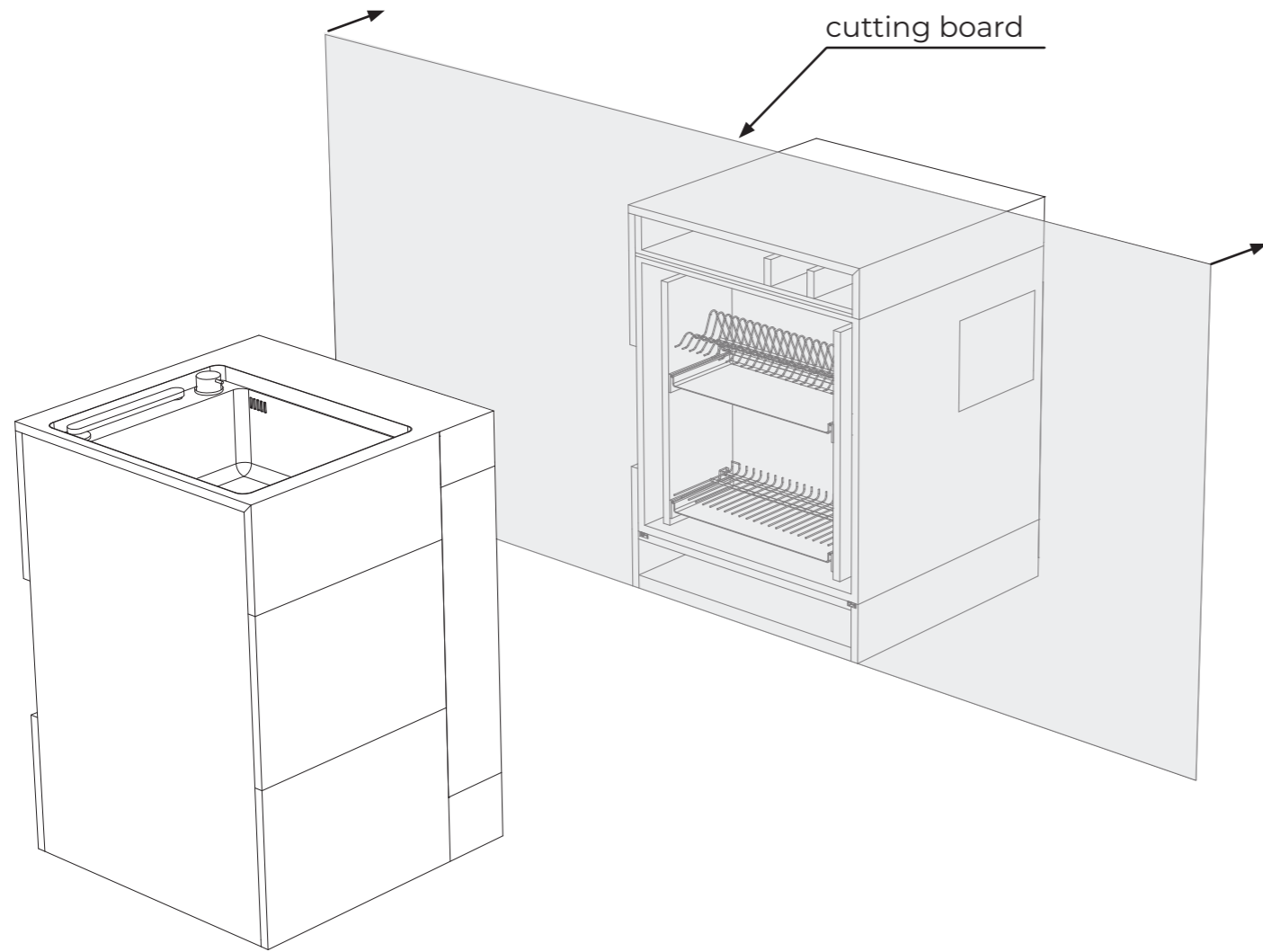
Tap movement



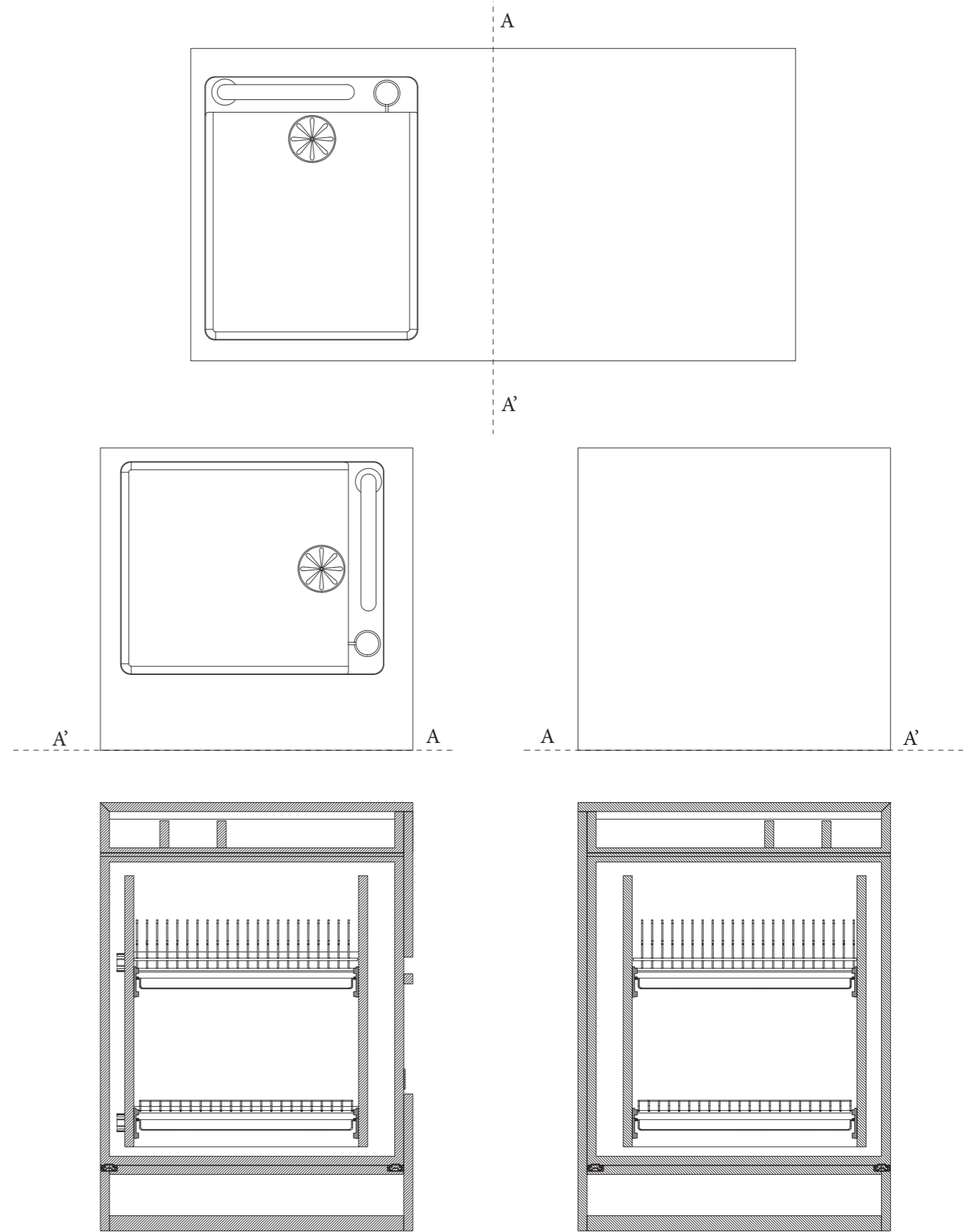
Right view

Rear view

Sectional view

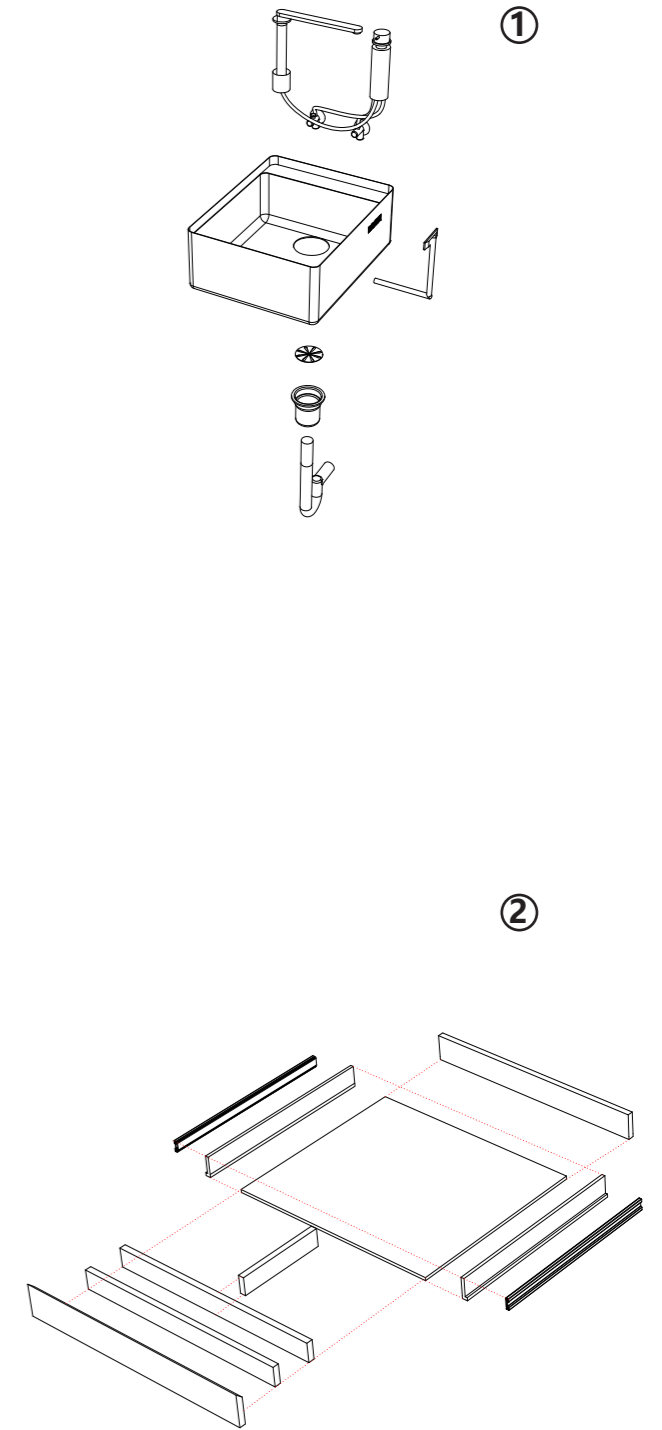
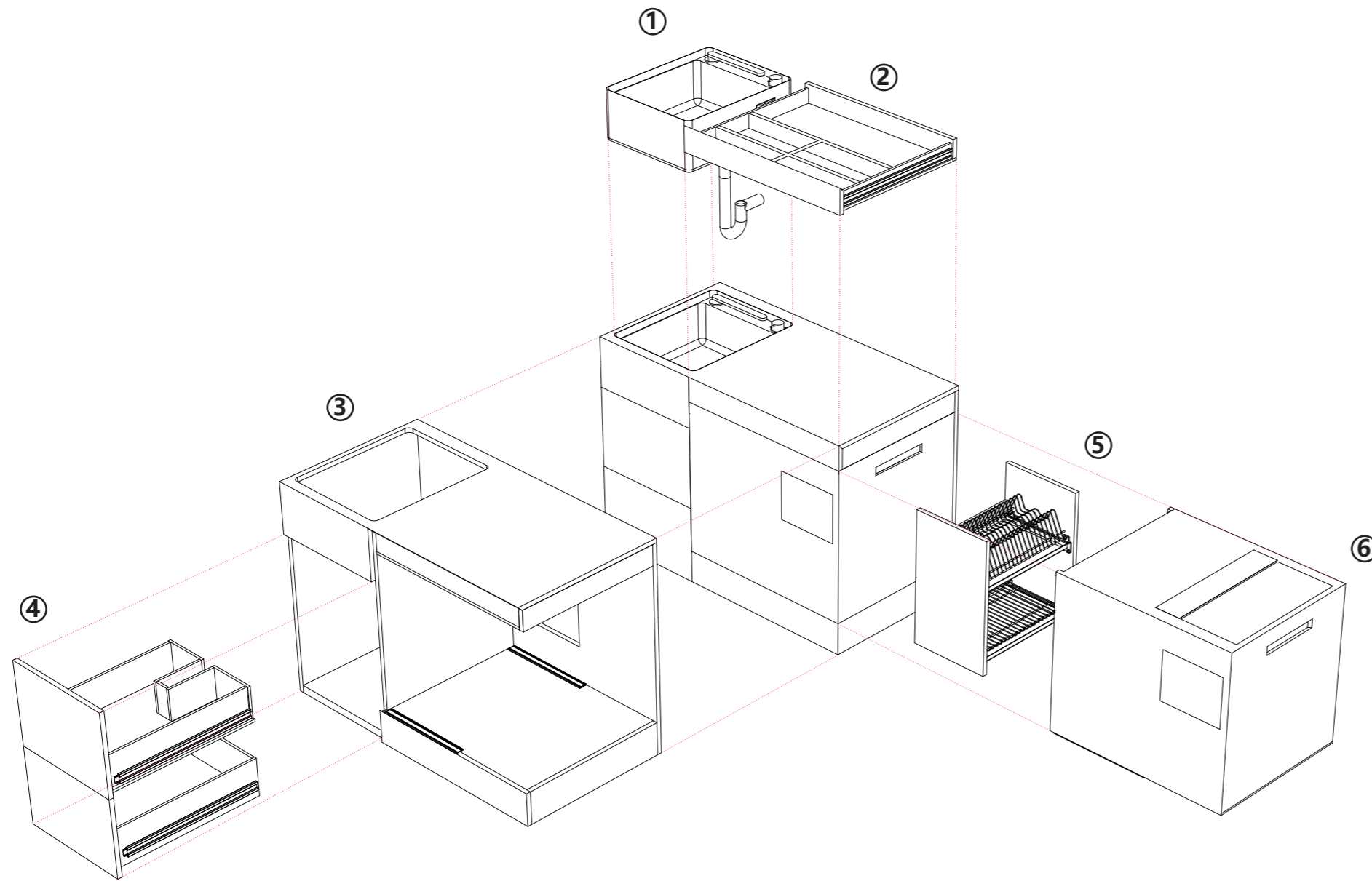


pictorial view

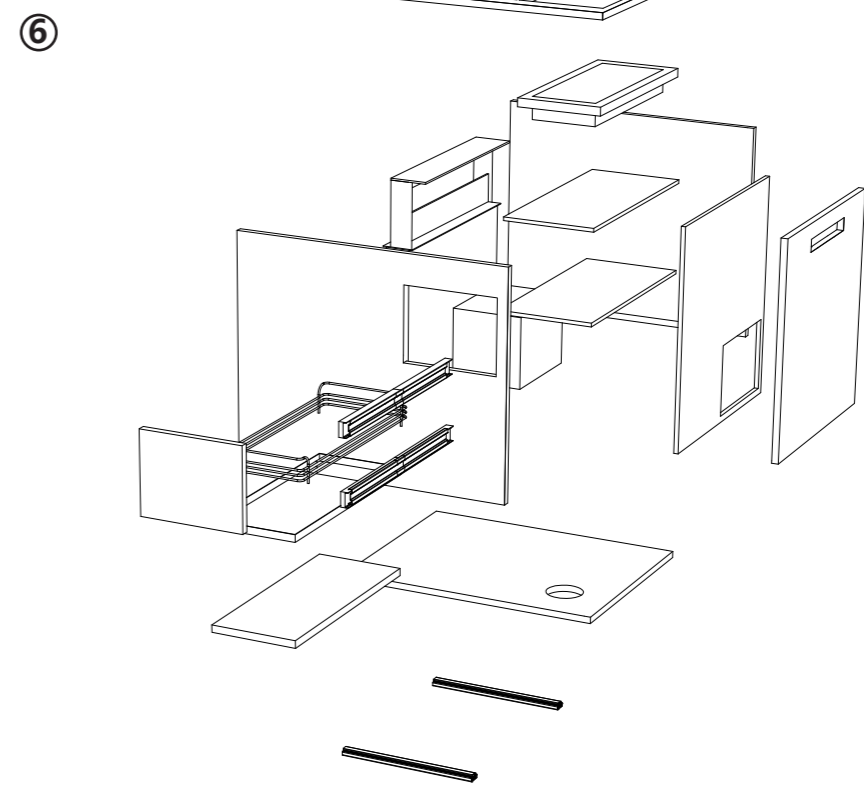
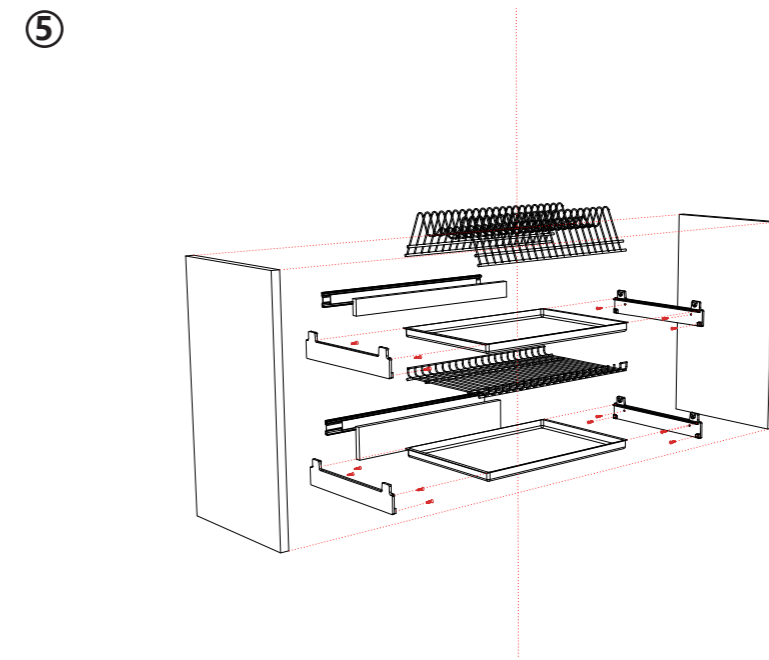
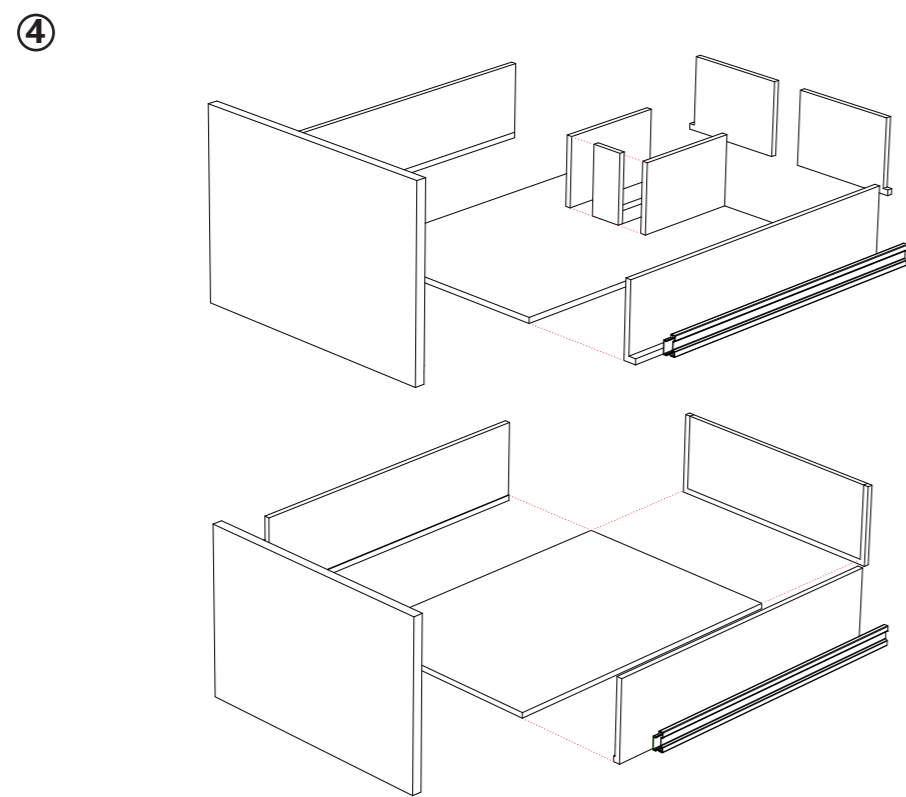
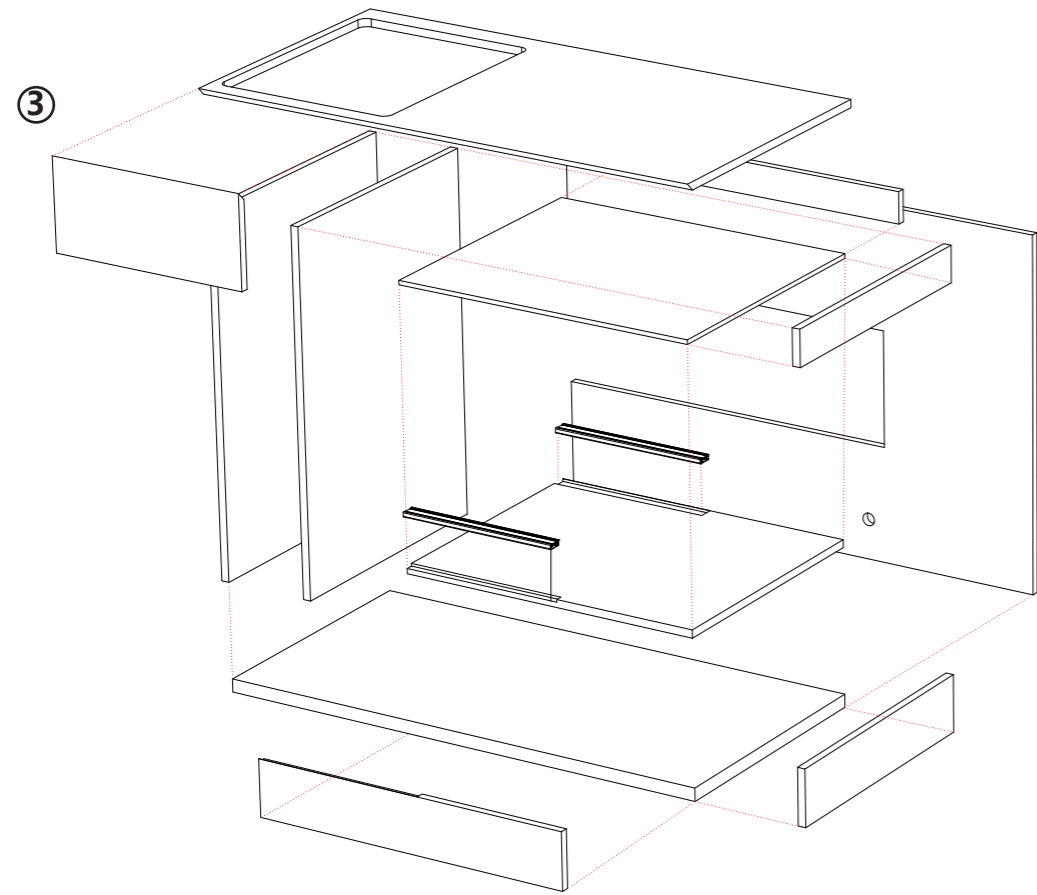


SCALA:1:10

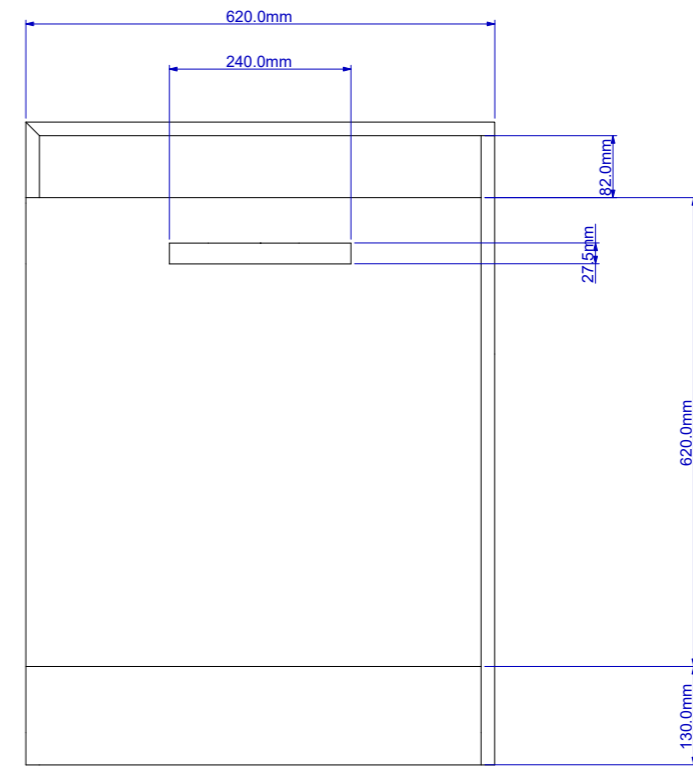
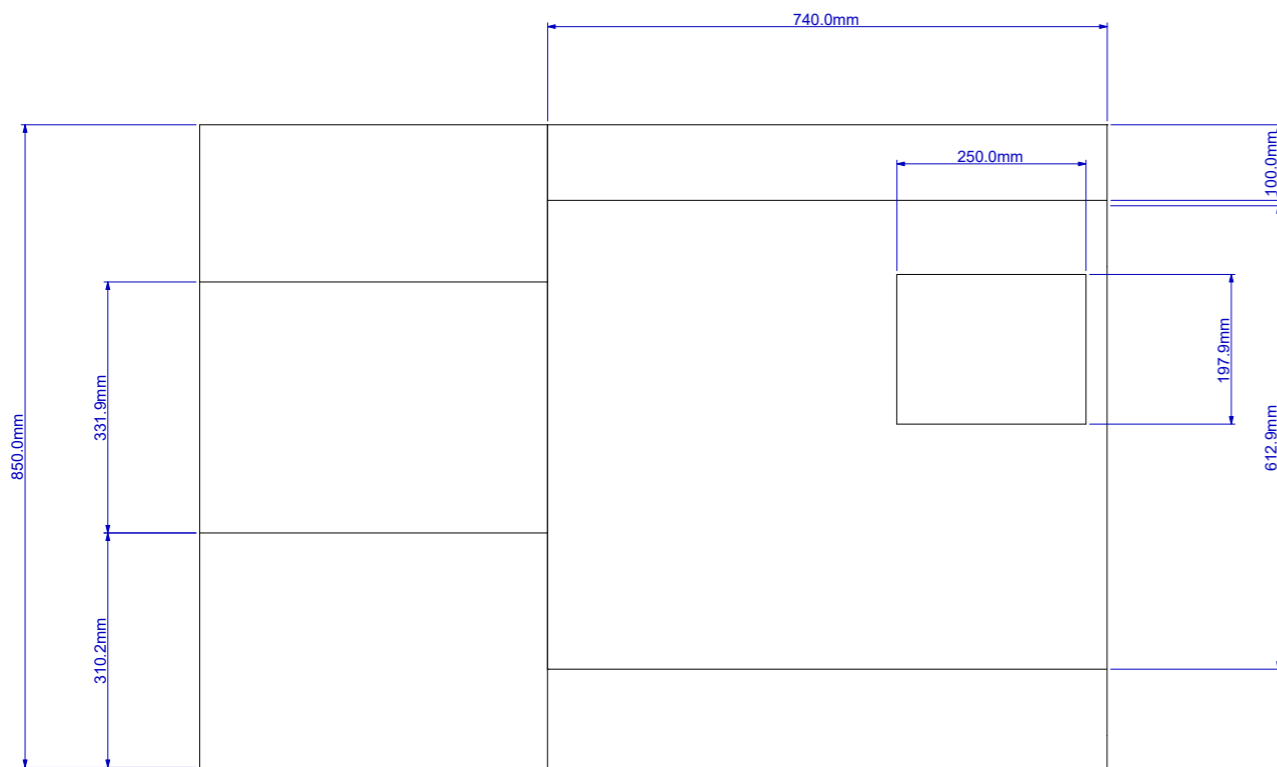
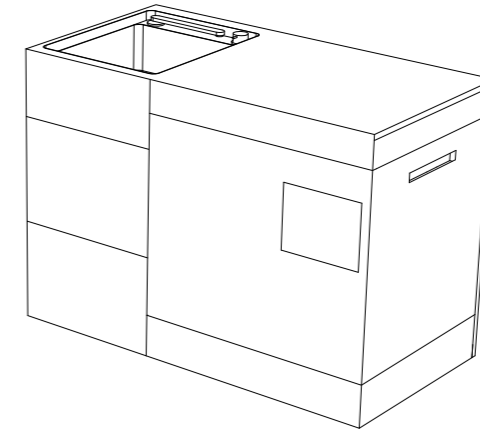
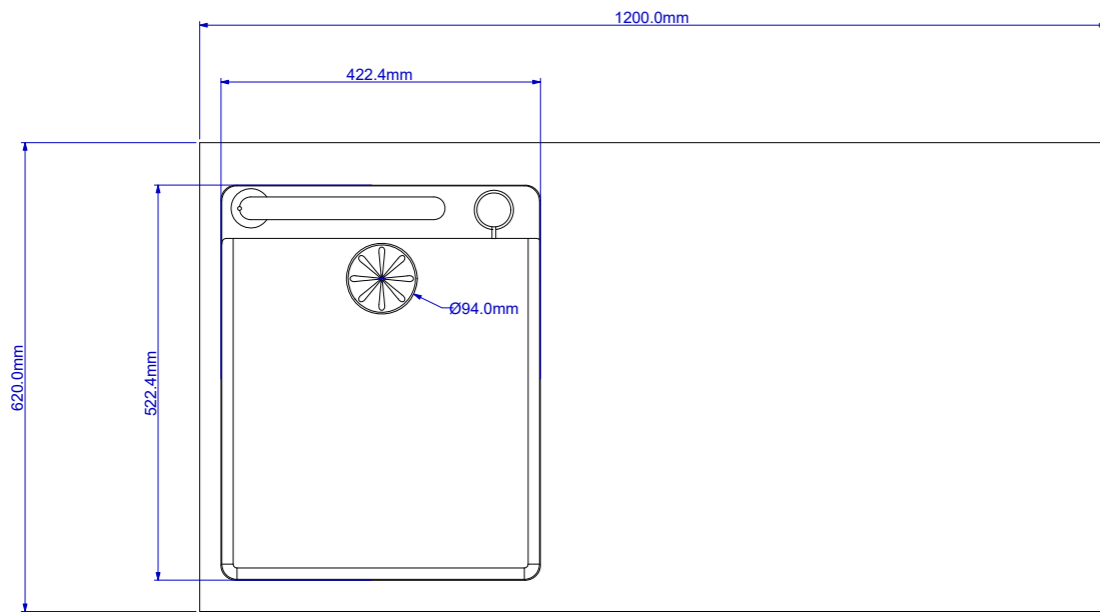
Exploded view



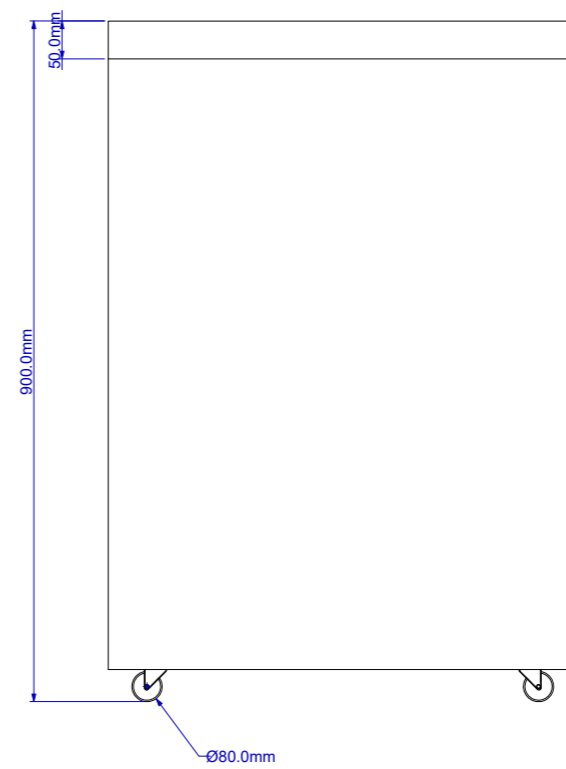
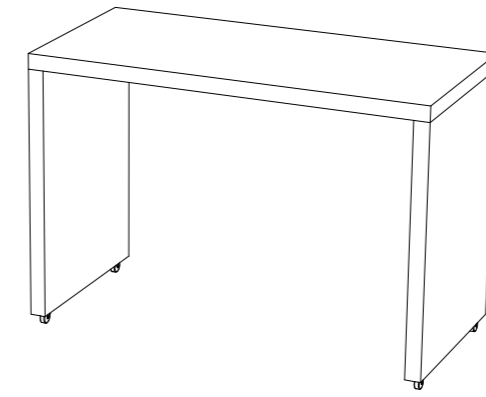
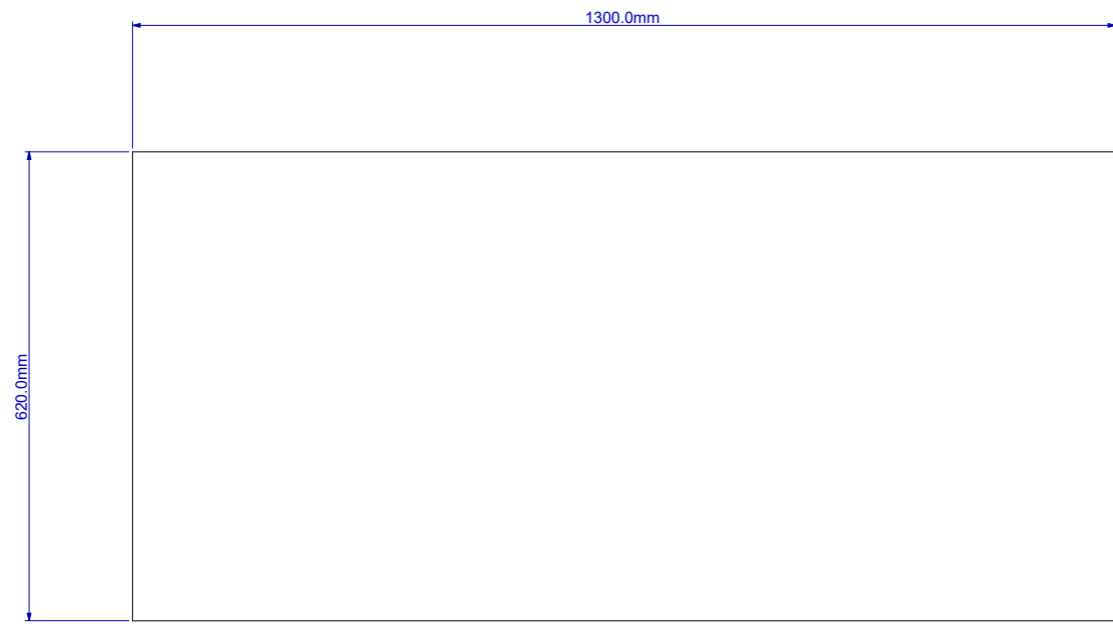
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Dimension

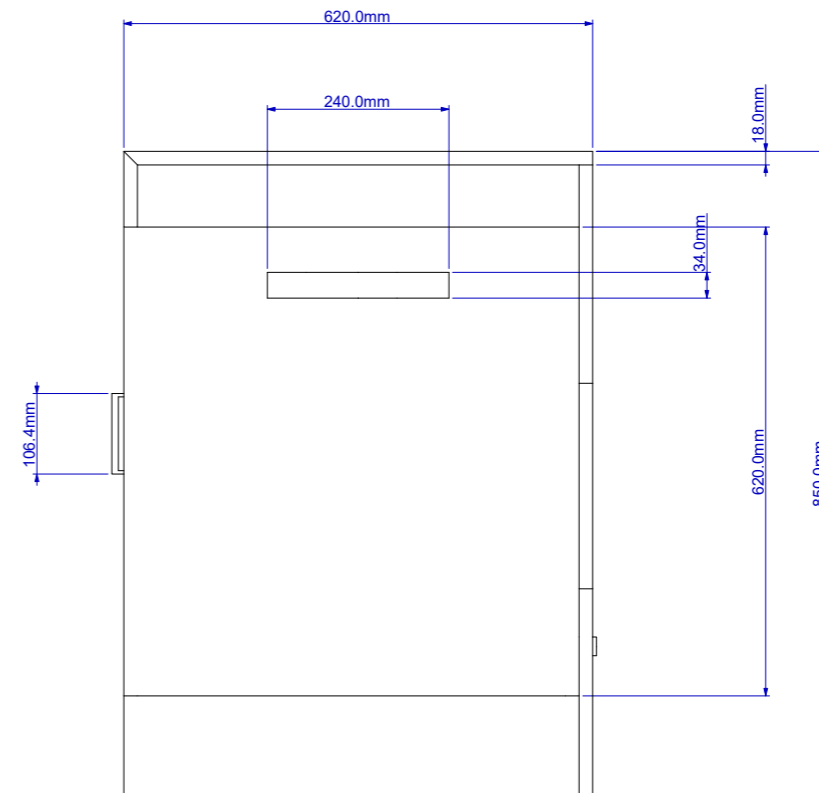
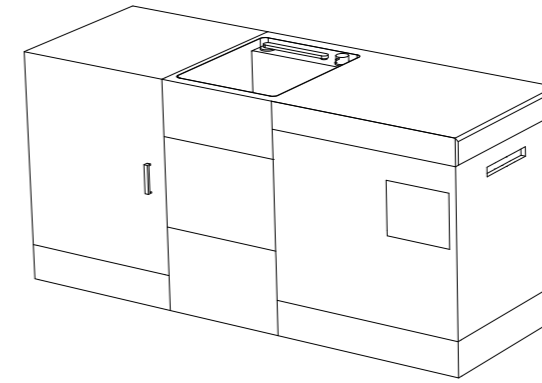
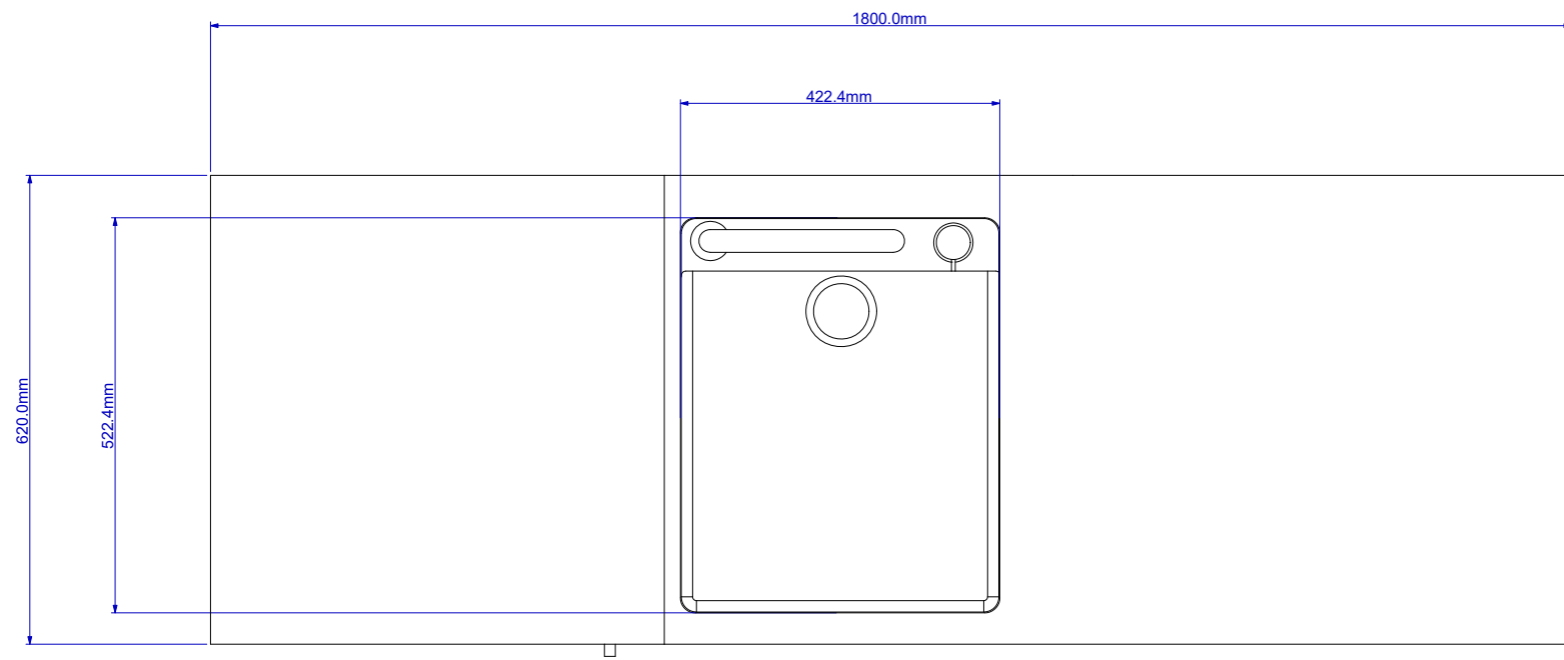


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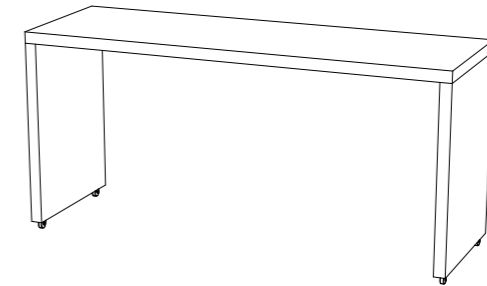


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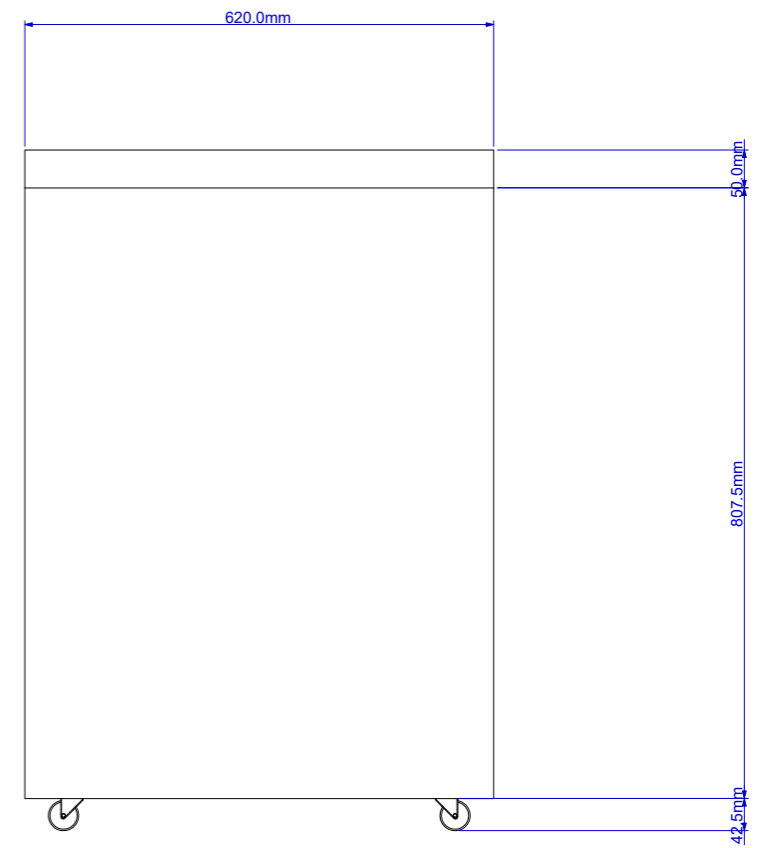
Dimension of Refrigerator version



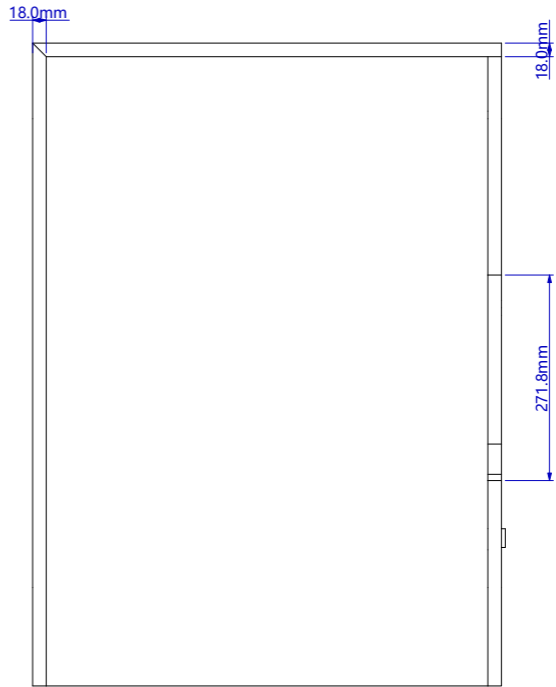
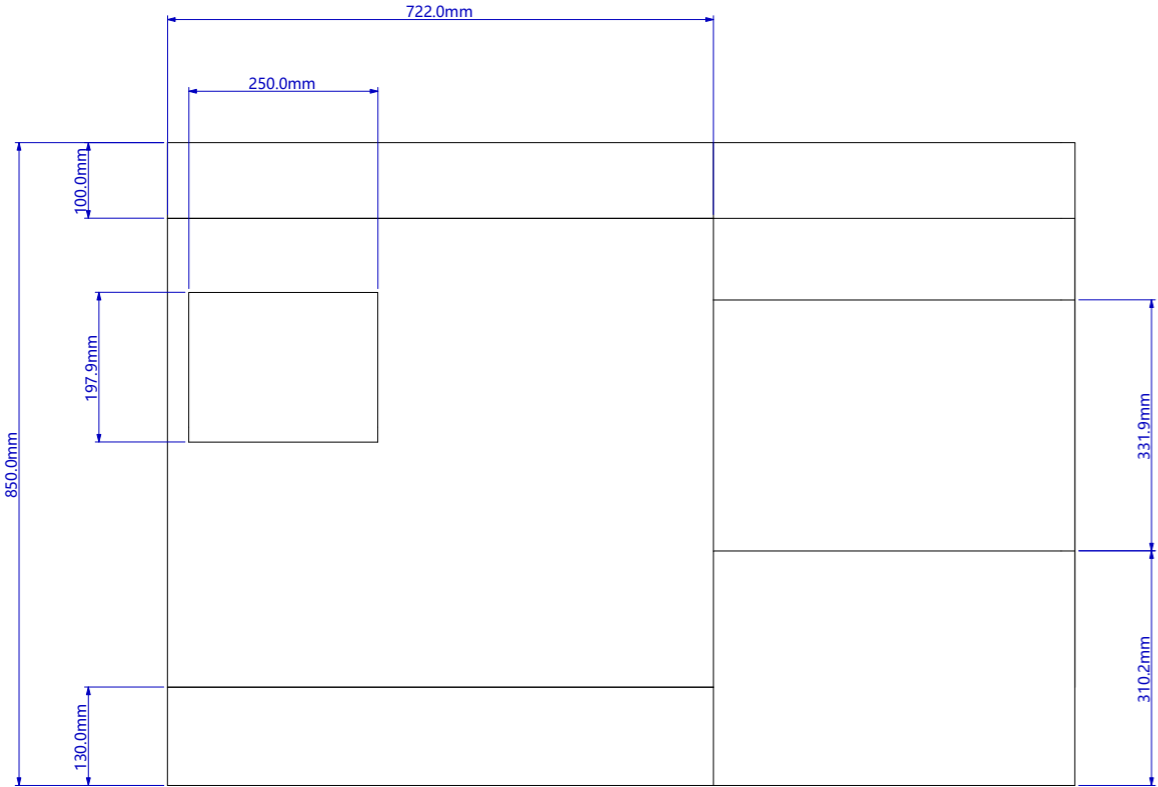
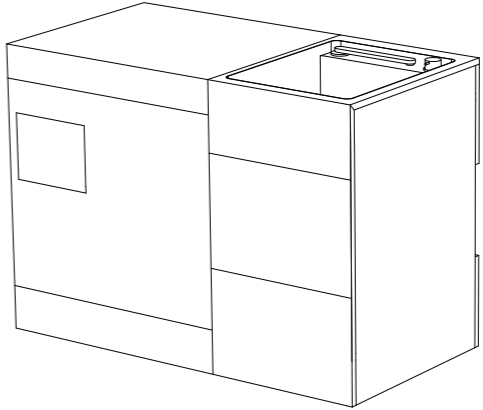
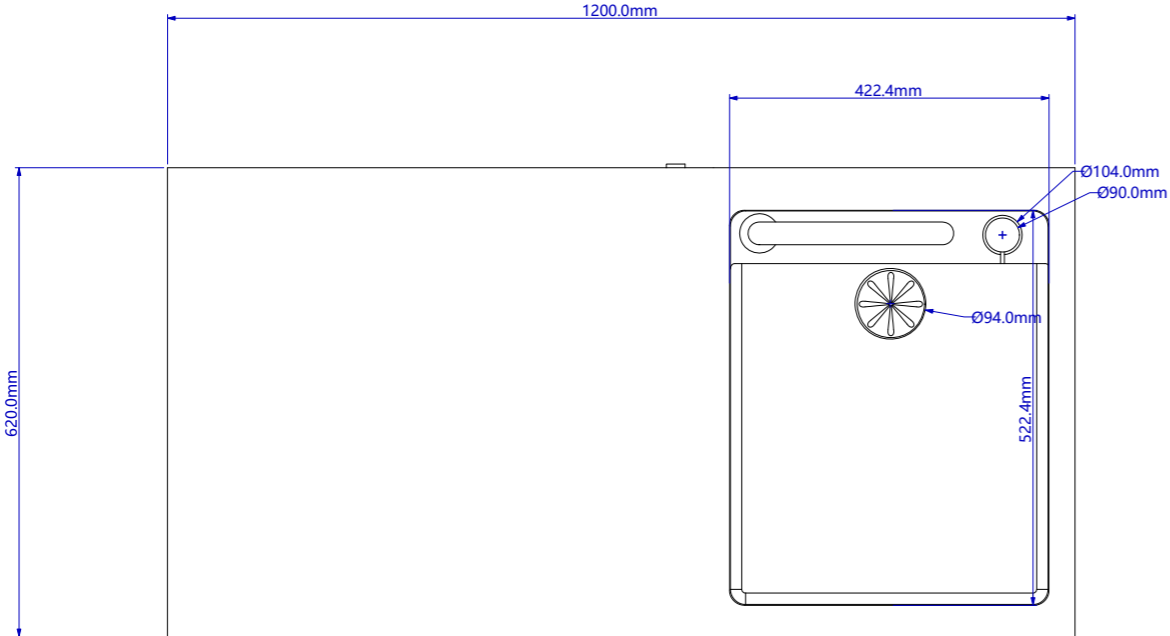
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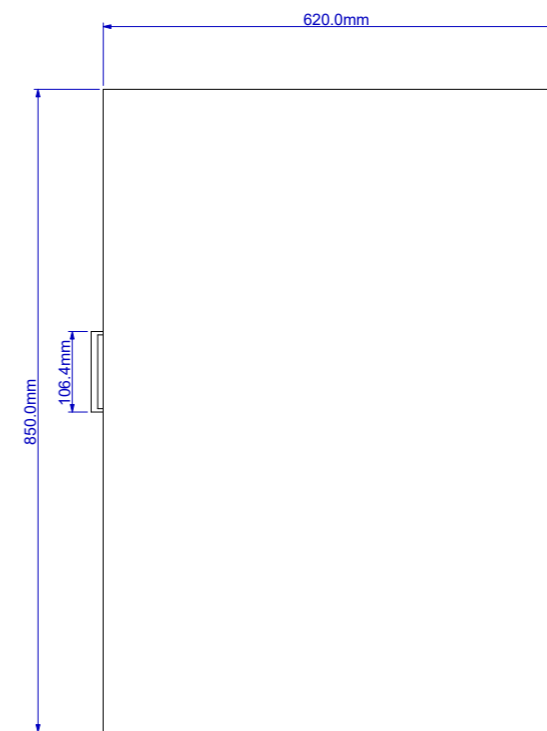
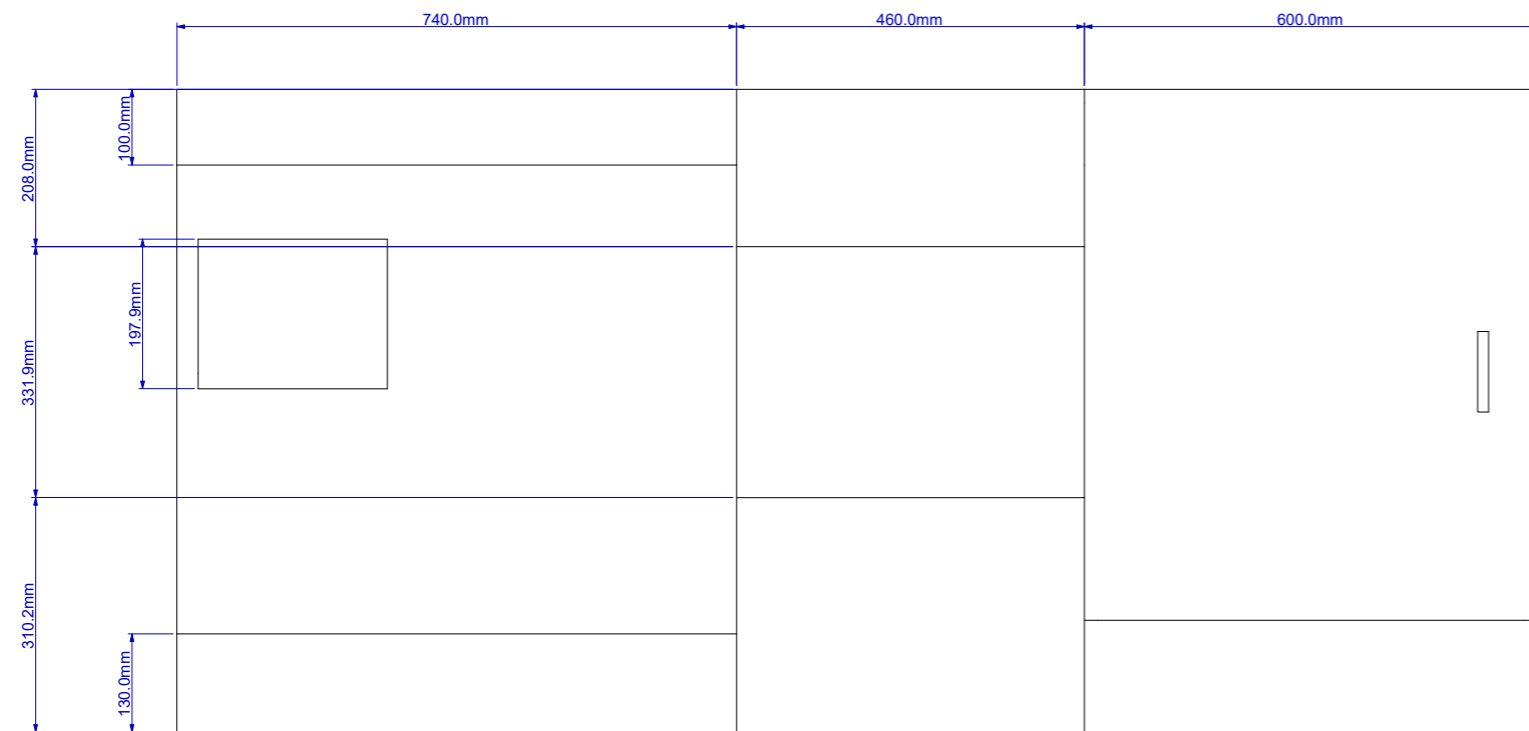
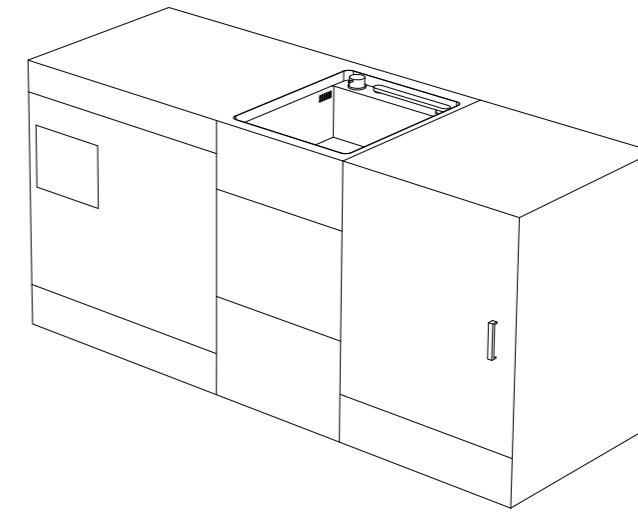
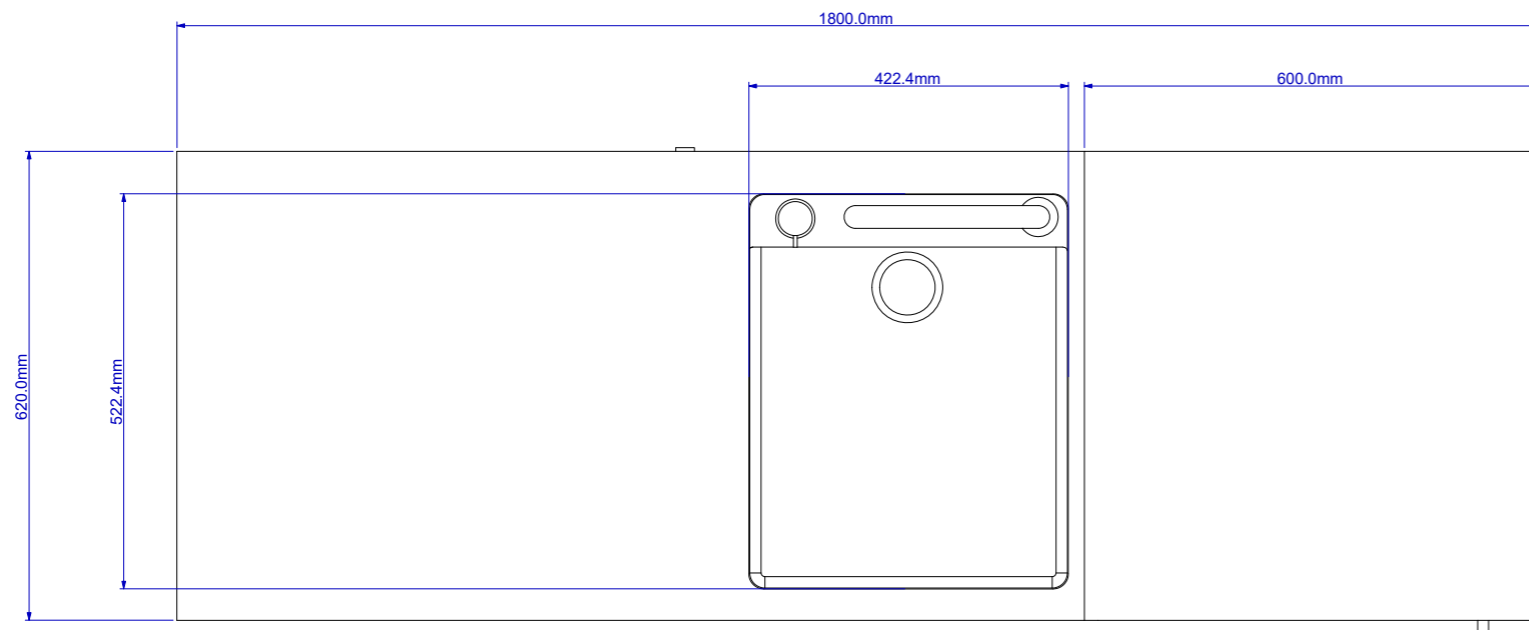
SCALA:1:20



Dimension of the left version



SCALA:1:20



SCALA:1:20

Material

Corian

Engraving. Coloration. Thermoforming. Corian places no limits on your imagination. Ripple, imperceptible joints, organic shapes, color effects and translucency of great impact: with Corian you can achieve everything you have always dreamed of.

Beech plywood

High strength, not easy to deform, not easy to break. Aside from the different strength, it is no different from solid wood in other respects, but it is cheaper than solid wood and has a stable structure.

PVC deco foil

Made of PVC resin and ecological polyimide resin, with an EMBO treatment layer to prevent stains from penetrating. Light, thin and seamless, it can replace paint.

304 chrome alloy steel

The biggest feature of the 304 stainless steel plate is corrosion resistance and non-magnetic conductivity, the 304 stainless steel plate has strong anti-corrosive ability.



PVC deco foil

LG Hausys



Quarzo artificiale

Corian



Vetro ceramica

induction cooker



Beech Plywood

18 mm thick



Acciaio cromo

aisi 304 lega 304



HAFELE

Swiveling Caster, Plate Mount, with Brake

The side and bottom of the table are equipped with pulleys, using HAFELE brake pulleys, which can fix the position of the table and place it in any space.



HAFELE

Base Pull-Out, Full Extension Frame Soft & Silent

When the induction cooker and the range hood are drawn out, the bottom needs a slideway. This one I chose is specially designed for the bottom and is suitable for the translation rail system. 120kg



HAFELE

Accuride 3832TR Touch Release

This is a very important part used in my design. The touch-release slideway, the handleless design makes the whole cleaner, simple and placed in a small space.



BLANCO

ELOSCOPE-F II

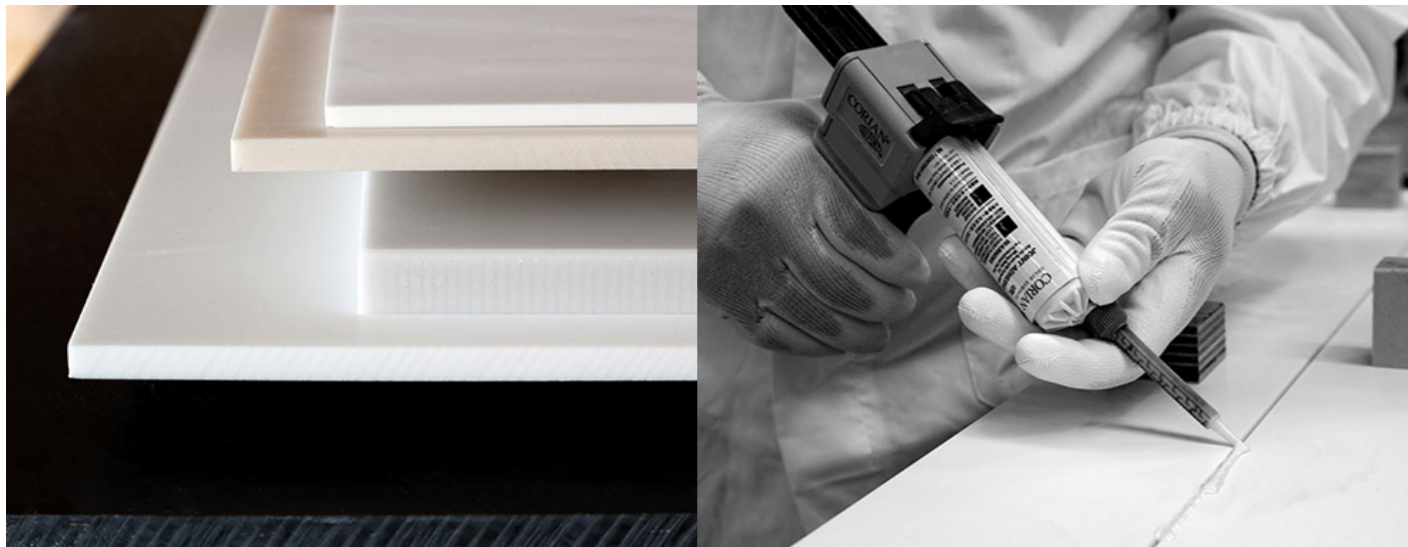
Spout can be retracted and swivelled by 360°

The adjustable 360° rotating faucet is controlled by the valve on the right. When the table is merged with the main part of the kitchen, the faucet can be hidden in the sink, because there are different apartment types, even if placed on the side of the window, it will not affect the opening and closing of the window.

Processing technology

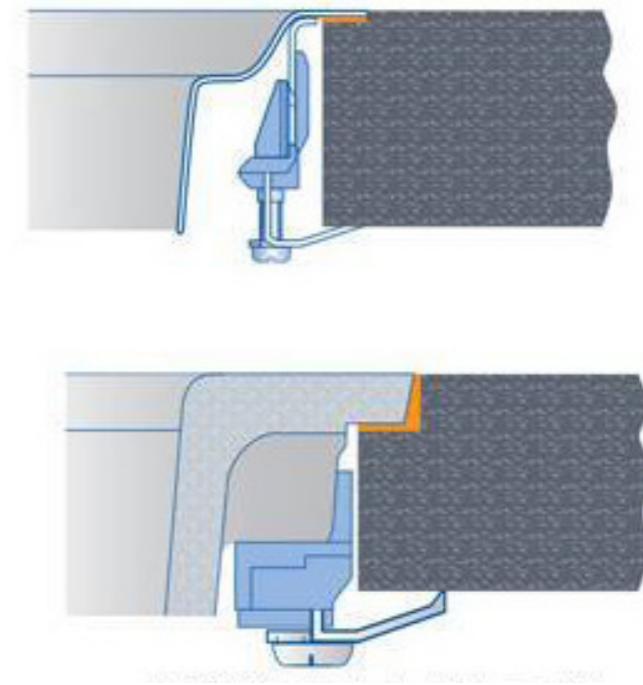
Corian installation method

Choose Corian for the kitchen countertop, because the countertop is small and the plywood can bear the weight, no need to install the backing plate. Directly use glue to bond with plywood. The main components of glue are epoxy resin and unsaturated resin. If the stone needs to be connected, marble glue can be used to fill the gap.



Installation method of stainless steel sink

Suitable for stainless steel sinks or granite sinks. The granite sink part type has beveled edges, the design is to facilitate the filling and sealing of silicone (see the orange part of the picture for filling). The integration of platform-level installation is second only to seamless installation, there is almost no dead angle and drop, and it is also highly visually uniform



Polywood installation method

Beech plywood as the main structure, using eccentric pieces and other fixed structures to connect the entire kitchen structure, kitchen countertops with corian, epoxy glue that connects corian and plywood.

Beech plywood is the main structure, which uses eccentric pieces and other fixed structures to connect the entire structure of the kitchen. The kitchen top uses corian, epoxy glue is used to connect corian and plywood, and the stainless steel sink uses a undercounter installation method to facilitate cleaning of the worktop.

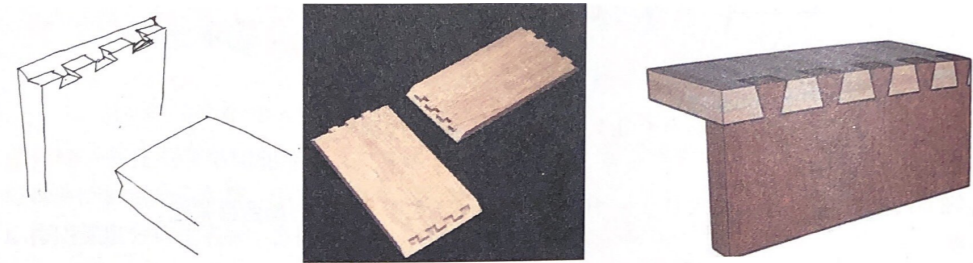


图 4-39 暗燕尾榫接合

图 4-40 明燕尾榫接合

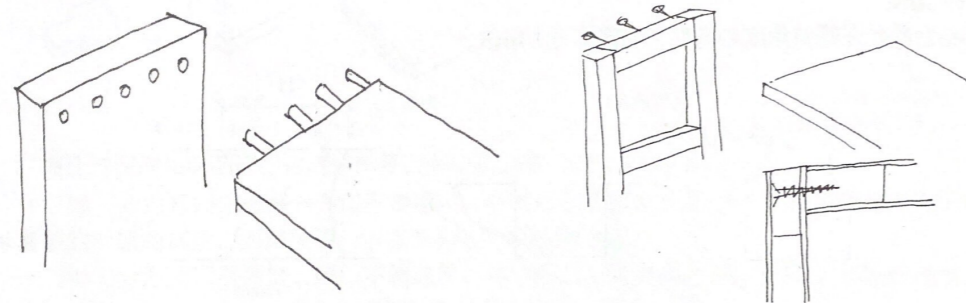
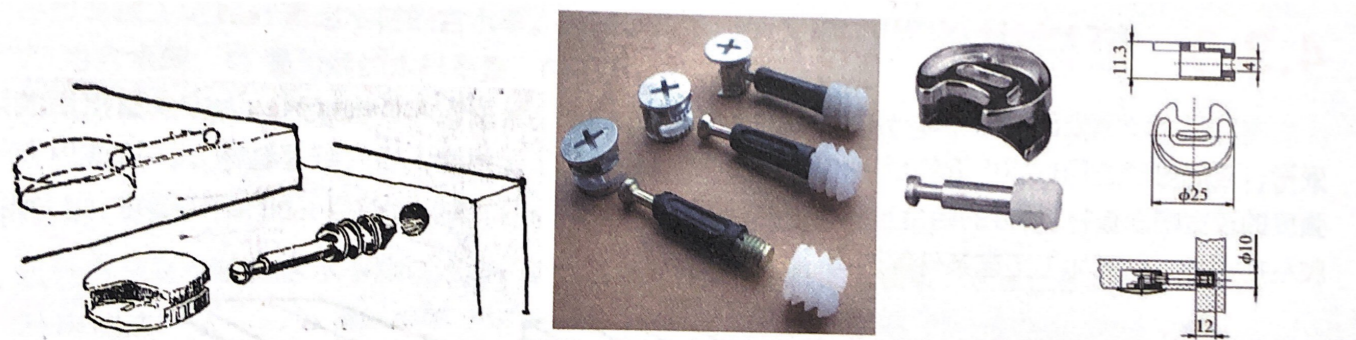
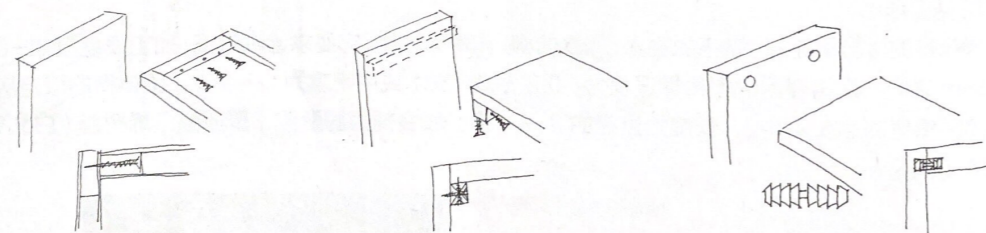


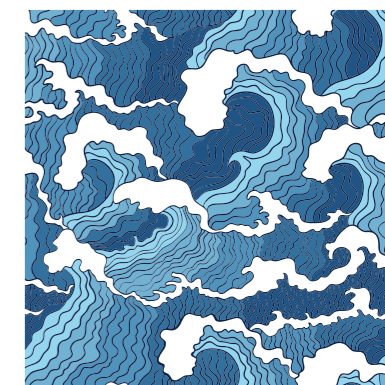
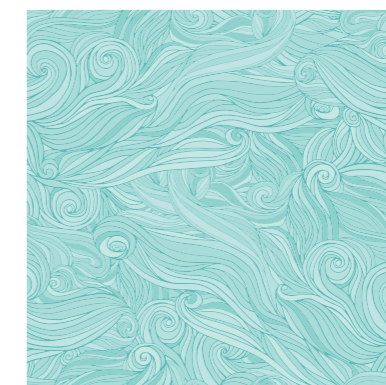
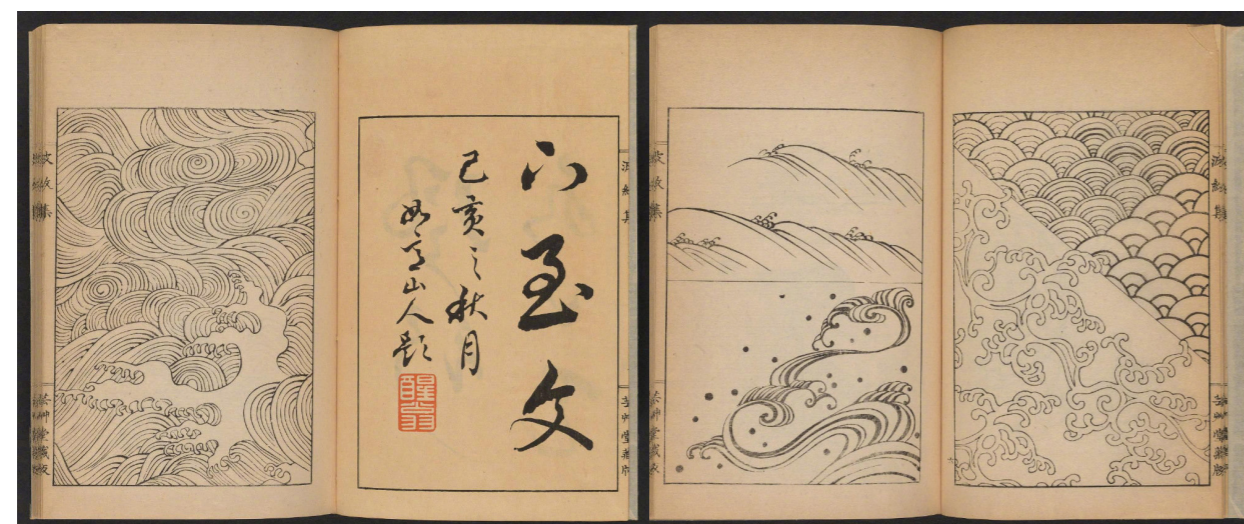
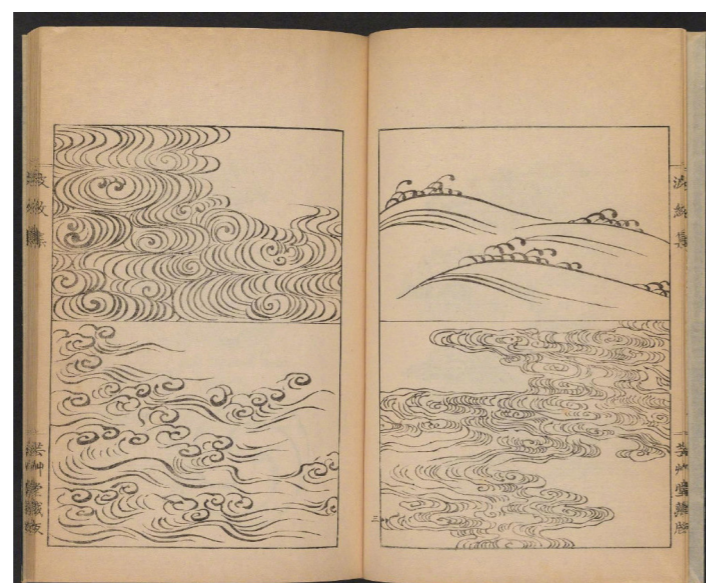
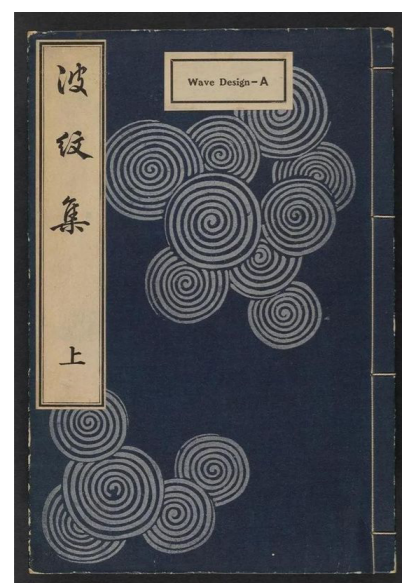
图 4-41 圆插销插入榫接合

图 4-42 外向螺钉接合



Textures

“Ripple Collection” was created by Japanese artist Mori Yuzan and published in 1903. It collects abstract corrugated patterns based on the Haihe River in a monochromatic line draft, with various styles. The scanned version of the original “Ripple Collection” is published by the Internet Archive for free, a total of 3 volumes, about 150 frames, with more than 350 ripple patterns included



The sea wave pattern, traditional Chinese carp pattern, flower and bird pattern are used as the texture of the product.

In Chinese culture, It implies the meaning of peace, auspiciousness, wealth and perfection.

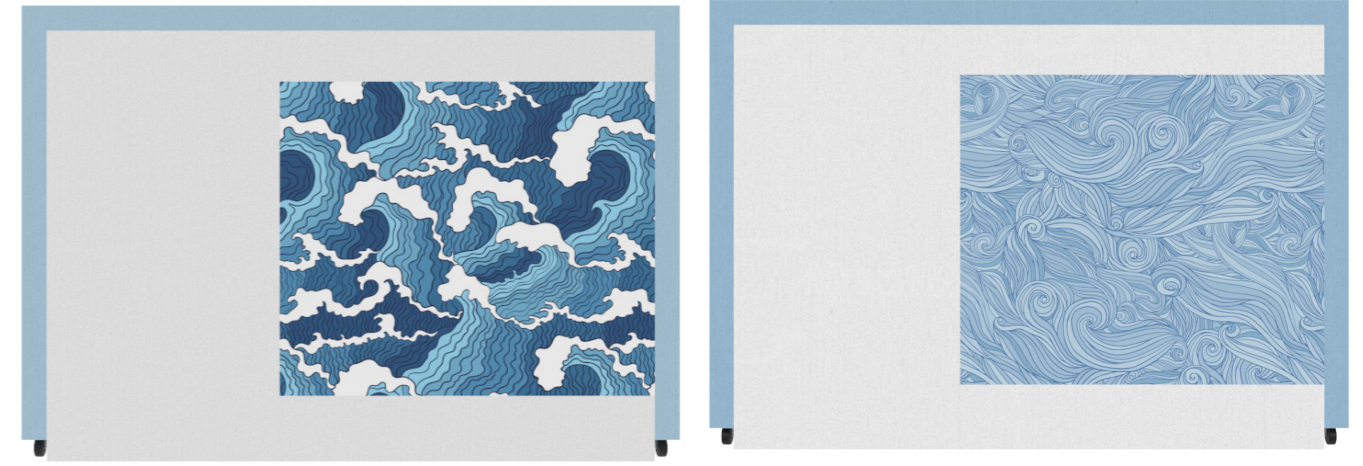


The picture is composed of quail, chrysanthemum and maple leaves. “Quail” and “Chrysanthemum” are homophones of Chinese characters; “Quail” and “chrysanthemum” are homophones of Chinese characters; maple leaf refers to the meaning of fallen leaves, which is the same as “Working smoothly” in Chinese. So the traditional Chinese flower and bird picture means Live and work in peace.

“Fish” is a homonym for “surplus” and is one of the most representative languages of traditional Chinese auspicious prayers. If it is represented by pictures, it can be regarded as a traditional auspicious symbol. Represents an abundance of life, every year there is excess wealth and food.



COLOR PALETTE

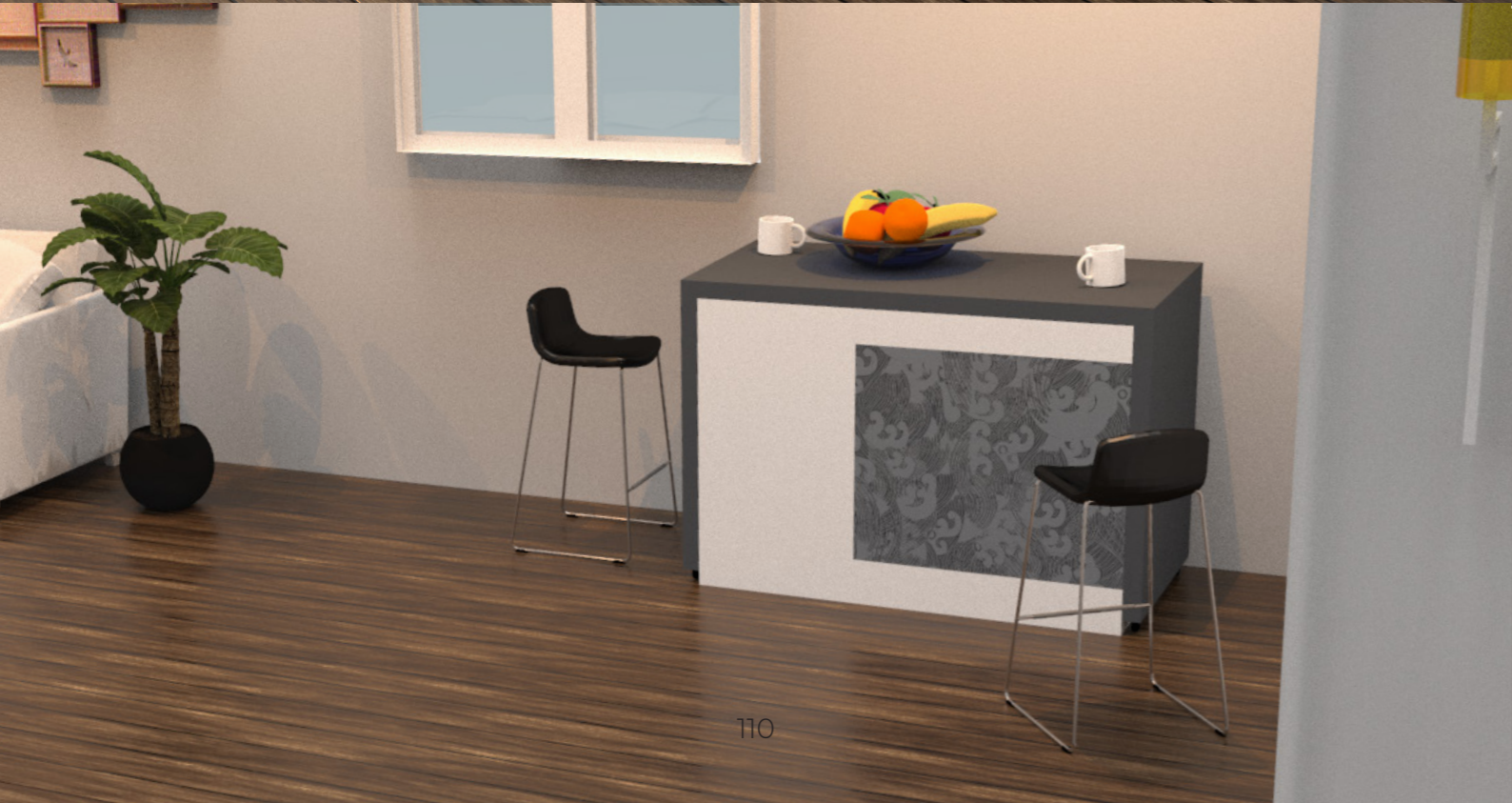


Rendering



Rendered image in **studio apartment (42m²)**

It can be seen that the characteristics of the kitchen in the studio apartment: the small footprint does not affect the integrity of the room, the table is placed freely, and the table can be placed according to different space arrangements. The hidden nature of the kitchen does not work in the space Will affect emotions.



Rendered image in 17 m² of tiny house The tiny house is a total of two floors, each floor is 8.5 m²





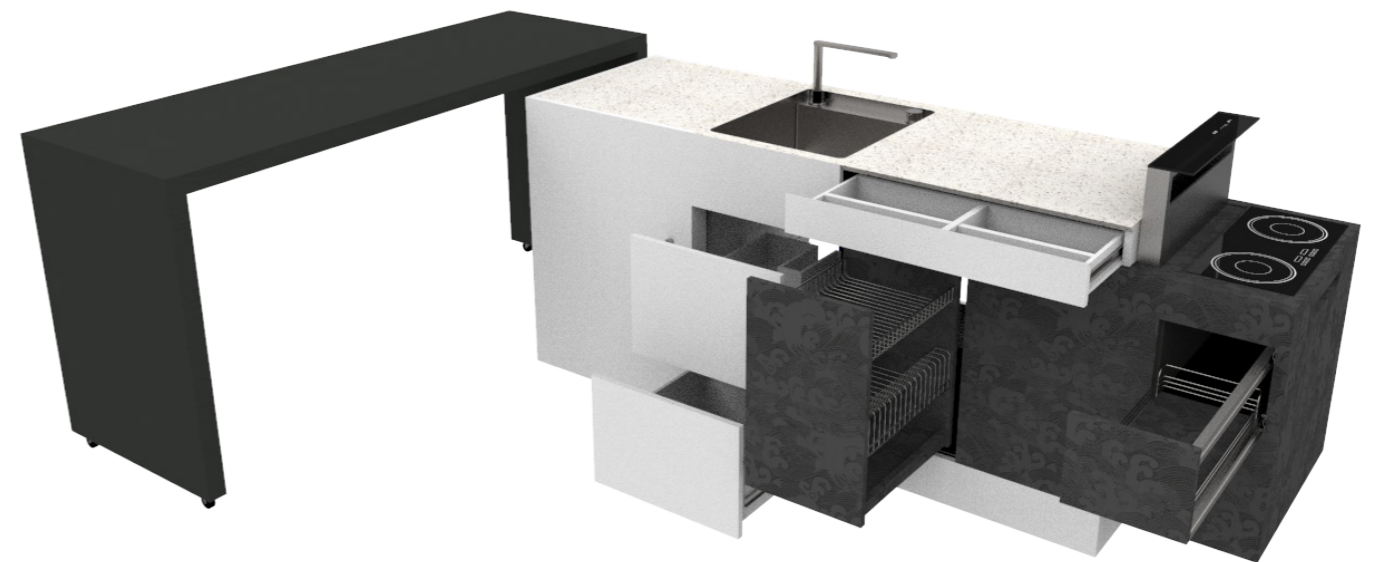
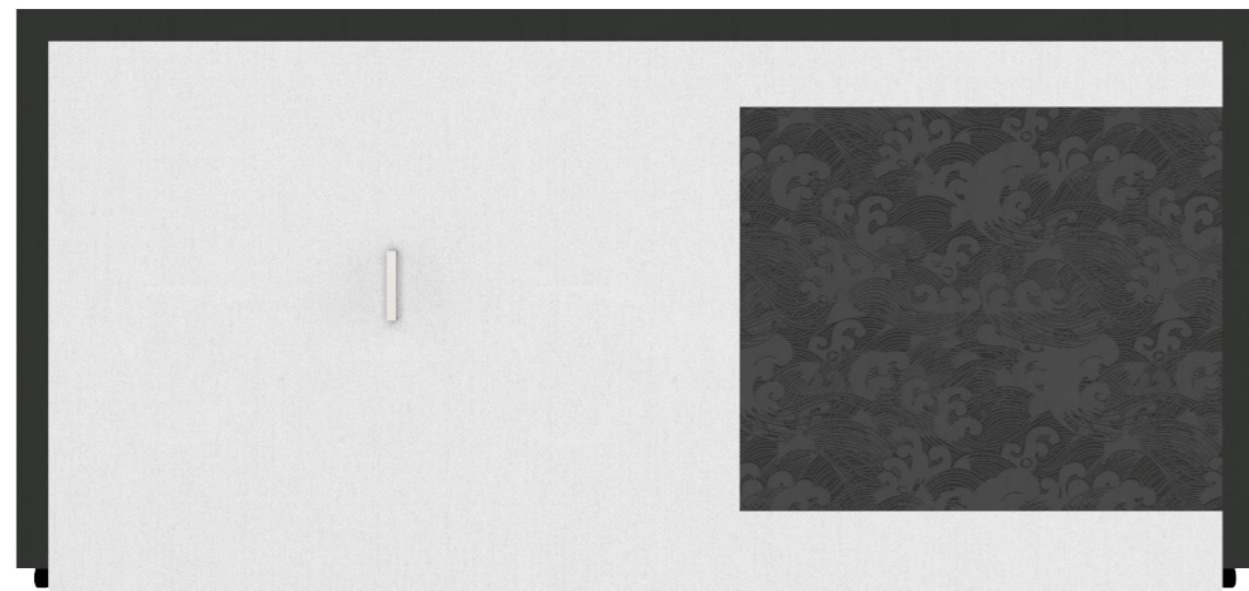




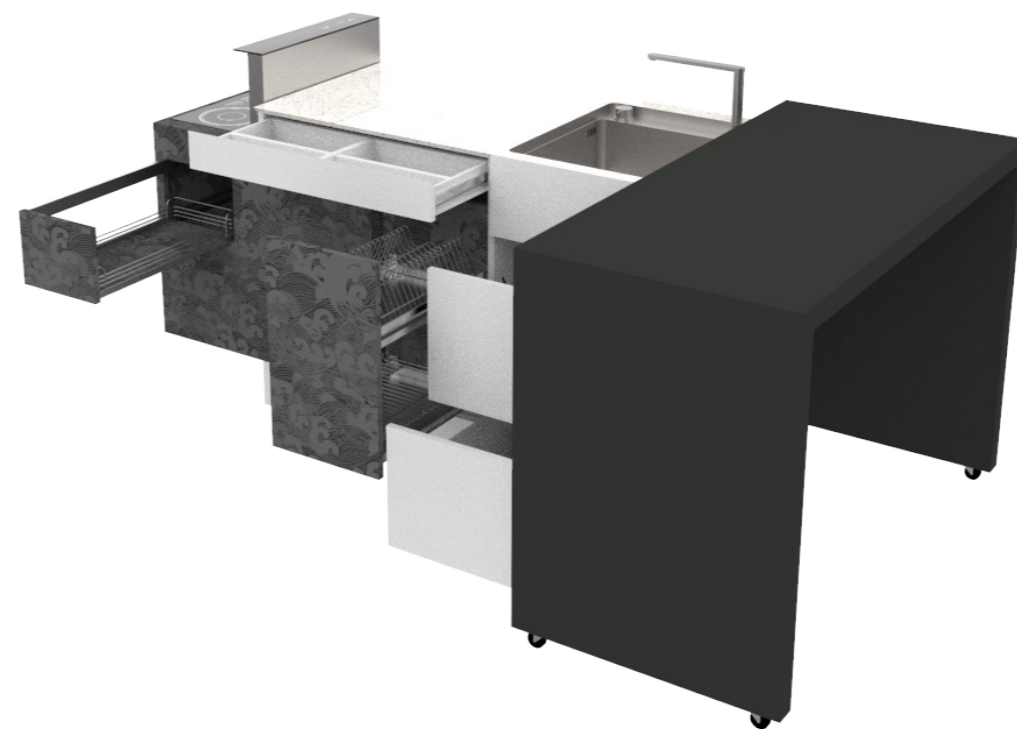
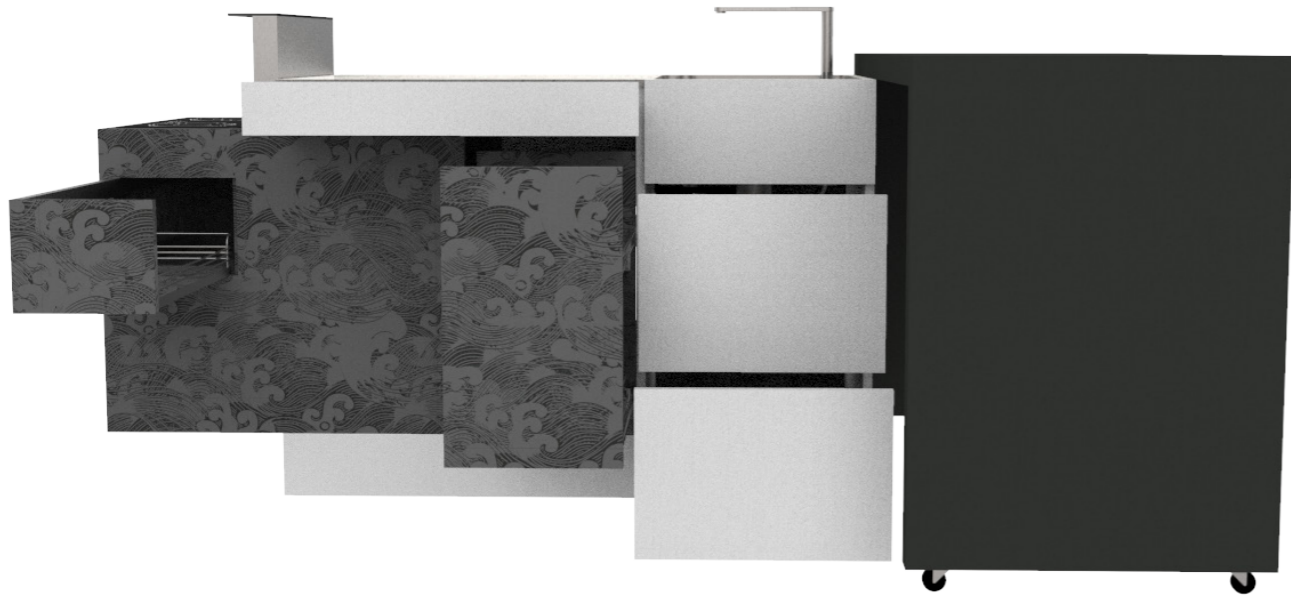
Variante



Variant 1: A refrigerator with a size of 60 * 60 * 60 cm is added to the side of the sink.



Variant 2: Design plan: turn on the appliance on the left.



*“Inspiration comes from everywhere, It is an
interior process for me.”*