



God is in the details...

Being driven by the vast experience in the hotel business and the knowledge acquired throughout years of traveling around Europe we have realized that the future for the construction industry dwells in a modern way of thinking of building homes, which results in a modular approach.

As the biggest manufacturer of Mobile Homes, Spa & Sauna units in Central and Eastern Europe, we are happy to present to you our new Modular Construction Systems brochure.

Lark products reach the highest quality standards and combine the excellent style with the attention to details. Our aim is to meet the expectations of every individual client.

In order to guarantee a pleasurable and carefree time, we have engaged the best designers, architects and structural engineers from all over the world, that went an extra mile to create products that meet the requirements of the most innovative technological solutions.





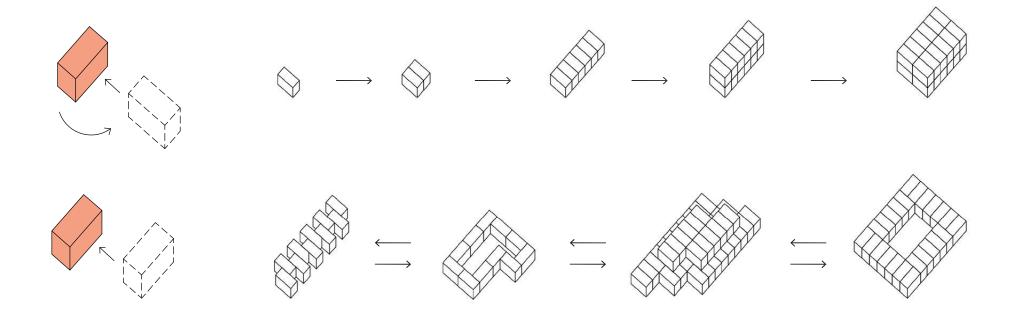


Prefabricated architecture

During the evolution of modern construction, in order to increase the efficiency of building capacity, a technology of prefabrication of individual building elements was introduced. Modern construction ceased to be based solely on details and finishes and began to offer opportunities for more efficient and faster creation of objects while increasing the quality of materials, structural strength and reducing the time needed to complete the process of raising a building. Prefabrication of individual structural elements such as walls or ceilings has become a standard in large-scale construction. Thanks to the extensive knowledge of architects, structural and construction engineers, the evolution of prefabrication led to the emergence of the most modern and advanced branch of the 21st century building architecture - modular architecture.

Module as the most effective construction unit

Modular prefabrication allows designing and constructing a building from twin structural units connected together in a freely designed configuration. Modules allow you to create hundreds of setting options while maintaining the same unit load structure. The modular architecture provides opportunities to increase building efficiency in structural, functional and economic spheres. Thanks to the precise design of the module details and the adjustment of functional zones so as to provide users with maximum comfort and safety, the modular architecture becomes an alternative solution for traditional construction. It has all the advantages of traditional architecture and adding new features that are superior to standard construction. The most important element of modular architecture is the speed of production, transport, and assembly of the building to a fully furnished state. Time for such activities is up to ten times shorter than in standard construction. The modular architecture is also lighter, thanks to which it provides a wide range of possibilities for the extension and superstructure of existing facilities. Thanks to the twin structure and precise LARK connections, the modules allow for any unit settings depending on the functional needs.

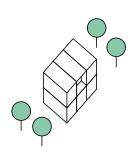


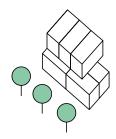
Functional diversity of modular construction

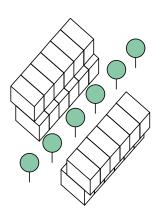
The modular architecture, thanks to its repeatability, can be easily adapted to most types of construction. Starting from residential construction - single-family and multi-family houses, separate housing units, apartments, through hotel architecture - hotels, retirement homes, dormitories, rooms for rent, and ending with office and public architecture - small company units, multi-floor office buildings, schools, kindergartens, restaurants and store spaces. Each element of modular architecture is designed with particular reverence so that the combined modules create a space that meets all functional requirements while maintaining a light and easy to combine structure. All LARK modules are designed according to the knowledge and standards of world architecture and meet normative design rules tailored to the given country.

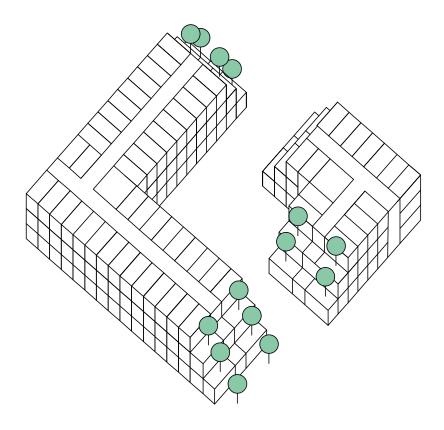
HOUSING ARCHITECTURE

single-family buildings • multi-family buildings • housing estates • recreational residence objects



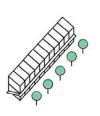


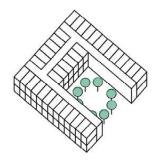


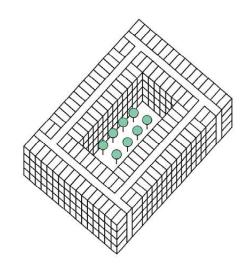


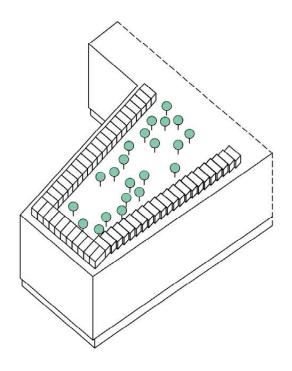
HOTEL ARCHITECTURE

hotels • guesthouses • dormitories • retirement homes • apartments



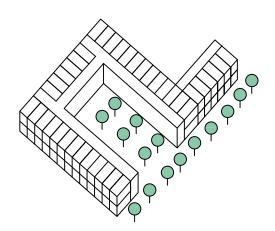






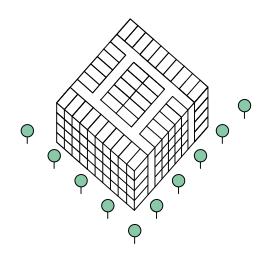
PUBLIC ARCHITECTURE

schools • kindergartens • public toilets • official offices



SERVICE AND OFFICE ARCHITECTURE

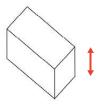
company buildings • office buildings • stores





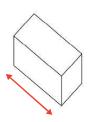
Design and dimensions

The construction process of a modular building is based on precise designs of modular systems as well as general construction projects of individual investments. Each stage of module production is preceded by an accurate selection of the dimensions of the structure. Dimensions are selected depending on the given building, functionality, technical parameters, investment requirements, as well as the façade finish - the factory or construction site. The following table shows the most commonly used dimensions and module weights.



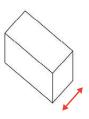
APPROXIMATE HEIGHT OF MODULES

300 cm



APPROXIMATE LENGTH OF MODULES

820 cm - 1000 cm



APPROXIMATE WIDTH OF MODULES

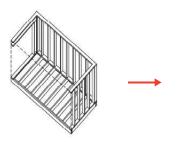
390 cm - 440 cm



APPROXIMATE WEIGHT OF MODULES

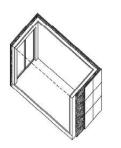
3,5 t. - 5 t.

Construction phases of a modular building



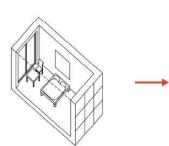
STRUCTURE

Production of module structure. The first phase of precise connection of supporting pillars, beams, strengthening ribs and lintels. The stage of creating walls, floors, ceilings and roofs.



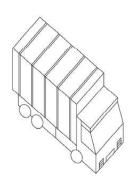
INSTALLATIONS AND MATERIALS

Material finishes. Stage of assembly of the installation and filling the structure with thermal, acoustic and damp insulation. Installation of façades and wall, floor, ceiling and roof linings.



FURNISHING AND DESIGN

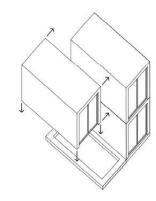
The final phase of equipping the module with furniture, bathroom and household elements. Decorative works over the interior. Installation of lighting fixtures, sockets, switches and control devices.



TRANSPORT

Adequate protection and transport of individual building modules to the construction site.

Preparation of modules for assembly.



ASSEMBLY AND FINISHING

Assembly of modules. Transportation with the help of mobile cranes to the final destination points. Connection of modules and finishing works - connection of the installation, roofing work, possible installation of the facade.



Time-saving implementation

The superior advantage of modular architecture is the possibility of erection and finishing of a building composed of modular elements in a shorter time than in traditional construction. We can divide the construction works into two main stages: - factory works, production related and - assembly and finishing works, carried out on the construction site. This division allows for the production of modules in the factory, while carrying out earthworks and foundation works on the construction site. In addition, thanks to the elements of repetitive construction, the time needed to design the building is also shorter than the time needed to perform a traditional construction project. Assembly of modules, due to the developed switching techniques, is much more time-efficient than the methods of making walls and ceilings by pouring concrete or bricklaying.



PREPARATION OF THE PROJECT DESIGN

PRODUCTION OF MODULES
AT THE FACTORY

ESTYCJI EARTH WORKS, FOUNDATION AND INVESTMENT PREPARATION

ASSEMBLY OF MODULES AND FINISHING WORKS

70% ↓

REDUCED TIME OF BUILDING EVEN UP TO **70%**



MODULAR CONSTRUCTION

PREPARATION OF THE PROJECT DESIGN

EARTH WORKS, FOUNDATION AND INVESTMENT PREPARATION

BUILDING AND FINISHING WORKS





TRADITIONAL CONSTRUCTION

Materials in modular constructions

The individual modular structures consist of a lightweight and durable wooden framework, which is a set of support pillars, beams, lintels and ribs. All walls, ceilings and floors have highly effective materials for thermal, acoustic and anti-moisture insulation. Each material element is precisely prepared in factory conditions by LARK specialists. The cross-sections of the structure and its density are selected depending on the type of building and the requirements that modules must fulfill at a given construction site - environmental requirements, functionalities, legal standards, requirements for meeting transport stress conditions and many others. The insulation and finishing layers are selected depending on the function of the modular building, recommendations for energy efficiency and investment requirements indicated by the Investor. Each structure and finishing element is made of materials with a high standard of operational parameters.

- ① Exterior part: durable facade cladding from natural materials or plastic. Adapted to the nature of the external environment, from the possibility of supplementing with additional insulation.
- 2 Interior part: claddings made of natural materials or plastic. The highest quality. Adapted to the level of humidity in the rooms
- 3 Construction and insulation part: frame construction elements made of the highest quality of wood, including moisture and thermo-acoustic insulation from mineral wool.







INTERIOR WALLS
- INTERMEDIATED



EXTERIOR WALLS

Ground and foundation works

Earthworks and foundations for modular buildings are made during the process of creating modules in factory conditions. All ground and foundation works must be made according to a separate foundation design and the recommendations of the manufacturer LARK. The modules should be placed on concrete, reinforced concrete or silicate or ceramic materials. Each modular building installed on the ground must be fully tangent to the foundation walls, with the exception of intentional derogations resulting from the building's functions - indicated in the manufacturer's recommendations LARK. The foundations are to be designed as foundation plates, monolithic or brick benches in the vertical part of the wall construction. All modular objects being the superstructure of an existing building are assembled after prior analysis of the building structure - the weight of the modules and the stresses they cause.



Assembly and connection of Modules

The transportation of modules on the construction site takes place via mobile cranes and specialized LARK assembly crews, performing assembly and transport works. Each module lifted by cranes is controlled by means of transport belts by a monitoring team. Setting up the modules and connecting them takes place using proprietary systems and assembly tools. The modules are fastened to foundations and connected to individual neighboring structures. The fastening system enables fast and safe assembly of modules, ensuring comfort of use and safety against weather conditions.



Finishing and interior works

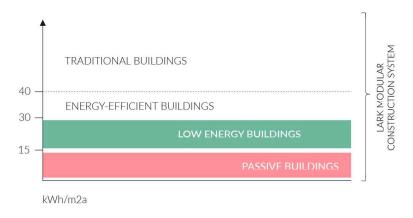
Finishing works are carried out after secure fixing of modules to the ground or neighboring objects. Depending on the functionality of the building, selection of materials and technologies, the finishing can be divided into:

- installation: related to the final connection of sanitary, electrical and ventilation installations
- roofing: related to tiling and tinsmithing
- elevation: with the potential assembly of external claddings and additional thermal insulation at the construction site
- interior design: in relation to details, module connection covers, as well as additional hardware and lighting equipment for interiors.

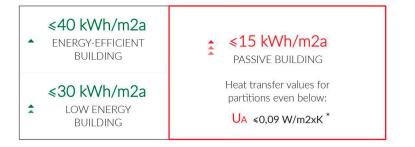




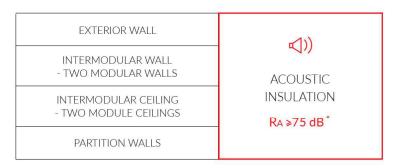
Energy requirements



Energy efficiency of LARK modules



Sound insulation of walls and ceilings



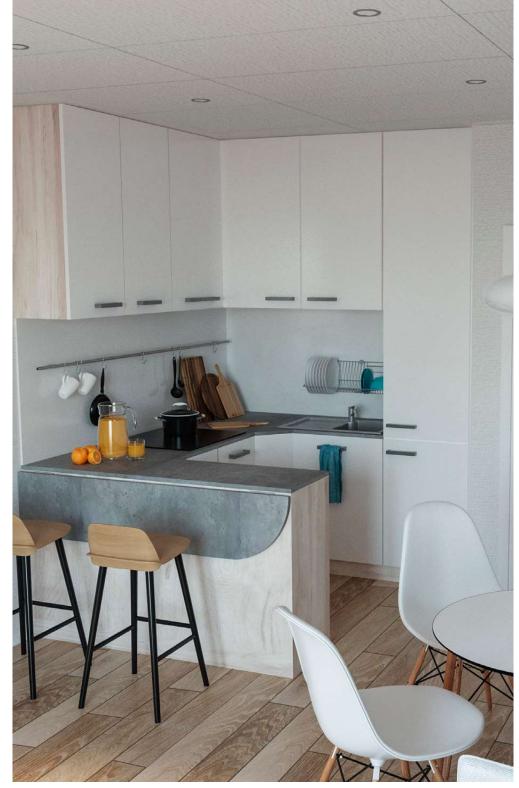
In-module installation systems and additional interior fittings

TYPE OF INSTALLATION	COMMENTS	WYPOSAŻENIE BAZOWE - OPCJONALNE	
Gas, water and sewage, electrical, ventilation and heating installations	installations selected by type of investment and environmental conditions	~	
Electrotechnical installations	alarm installations, monitoring, TV, home and industrial automation installations		~
Gas furnace or electric storage heater	one or dual-function depending on the investment	~	
Electric direct heaters	convector, surface, radiant and floor heating, single- or dual - function depending on investment	~	
Water heaters	convector and floor		
Natural ventilation	with optional fan	~	
Mechanical ventilation with recuperation and air conditioning	ventilation with supply, exhaust, central and heat exchanger		~
Heat pump	ground well connection system or air heat pump system		~
Photovoltaics	links with the operating system		~
Lightning protection	-	~	
Premium windows and doors - aluminum or wooden	-		~
Furnishings	=	~	
Kitchen equipment	hob, stove, sink, fridge	~	
Bathroom equipment	wc, shower, bathtub, washbasin, urinal, bidet, washing machine	~	
Premium materials and finishes for roof, terraces and interiors	wood materials, high class plastics, concrete, plaster, aluminum		~

^{*} Note: the sound insulation values and the heat transfer coefficient are given as examples, for the selected partition - they depend on the type of insulation - mineral wool. If the intention is to obtain a highly energy-efficient building, depending on the type of building, the UL parameter may be downgraded and the RA increased.







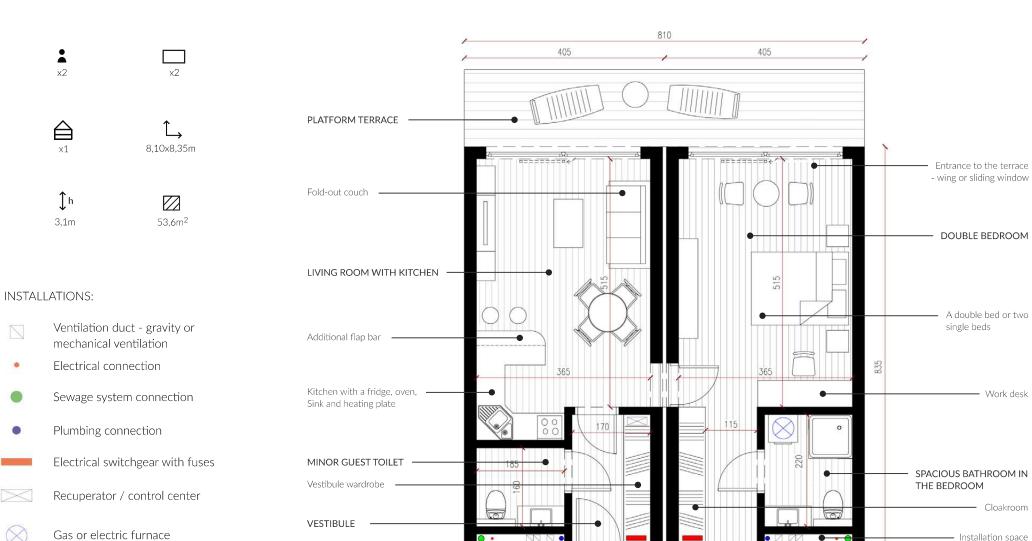






Minor residential unit

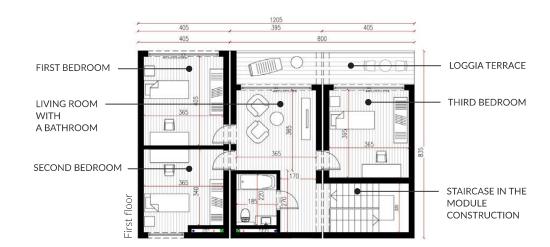
The unit is designed as a small living space. A detached object, consisting of two 4.05 m x 8.35 m modules, connected with each other by a long wall. Modular building is an alternative to smaller residential houses and summer houses. The housing unit has been designed for the needs of smaller families, people living alone or as a recreational facility. The unit has all functional zones needed for year-round use - it was designed as a year-round building. The property has one bedroom with a double bed, a desk and a private bathroom with a shower (or a bathtub of your choice). The second module was designed as a living room with kitchen and toilet. The living room is an additional bedroom space for guests. The windows have been designed so that the interior lighting is over-standard.





Detached one-family building

A type of single-family house suitable for a year-round residence. A building composed of six 4.05×8.35 modules. The building is an example of medium-size single-family housing. It has one bedroom with a double bed, and three additional single bedrooms (one of the bedrooms can be designed as a study). On the ground floor there is a living room with a kitchen, a dining room, a seating area and a bathroom with a shower and a boiler supplying a hot utility water installation. On the first floor, there are bedrooms and a bathroom with shower. The living room is an additional bedroom space for guests. The building has one electrical switchboard, supplying all modules. The building is equipped with an internal, open stairwell, which is part of the module's construction.







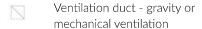








INSTALLATIONS:



Electrical connection

Sewage system connection

Plumbing connection

Electrical switchgear with fuses

Recuperator / control center

Gas or electric furnace



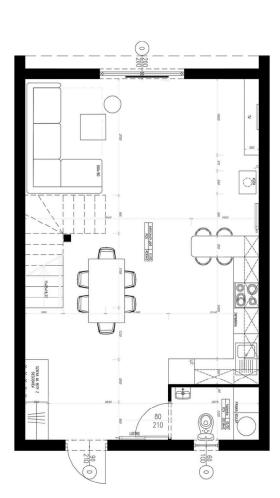


Detached house 1

The modular construction sector has been dynamically growing for several years. This current situation pushes the construction industry into a modern method of building and has a direct impact on the increased demand for modular construction. As prefabricated modules, not only exhibition, service or office pavilions are created, but also hotels, kindergartens, schools, public buildings and healthcare facilities are being built in this technology. Prefabricated modules are also used to build: single and multi-family residential houses as well as terraced houses. Modular houses are characterized by simple, economical forms and transparent composition.

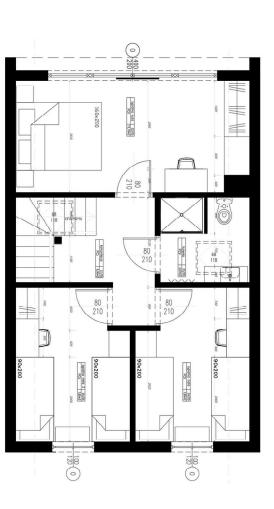








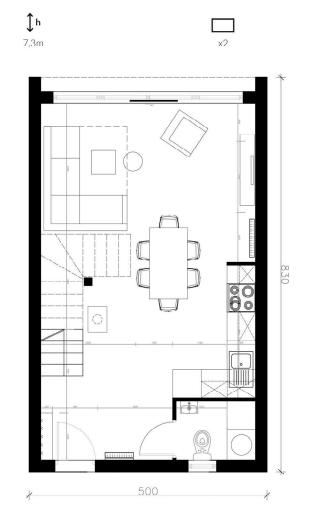
57,5 m²

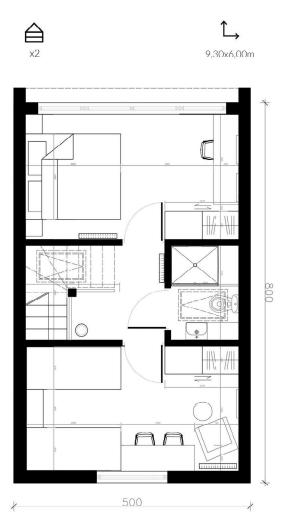




Detached house 2

There are many advantages of the modular construction method. However, in the majority of cases, one of the main reasons for using modular technology is to speed up the delivery time which, compared to traditional on-site construction, can create buildings in a much shorter time frame. Modular construction is not inferior to other construction technologies and often the quality is even better due to prefabrication. Individual modules are built in the plant, in fully controlled conditions, without the impact of climatic conditions on the construction process. The share of prefabrication in the overall construction process can achieve aprox 85-90%. The factory manufactures complete thermally insulated module constructions, partitions and floors are built, windows and doors are installed, and often roofs with covering. Almost all construction and finishing works ofmodular houses are controlled insaid the factory. Electrical installations, plumbing and heating installations are assembled in controlled factory conditions. Modules are often equipped with bathrom ceramics, room furniture and kitchen furniture with household appliances. Ready spatial modules leave the factory, which are then assembled and joined together at the construction site, on previously prepared plates armed with media or foundation footings. Modular construction gives the possibility of parallel work related to the production of modules and preparation of building infrastructure (the so called foundations for media and communication connections). Such construction technology significantly reduces the time of the investment process. The construction period time can be shorter by about 65% compared to traditional technologies.



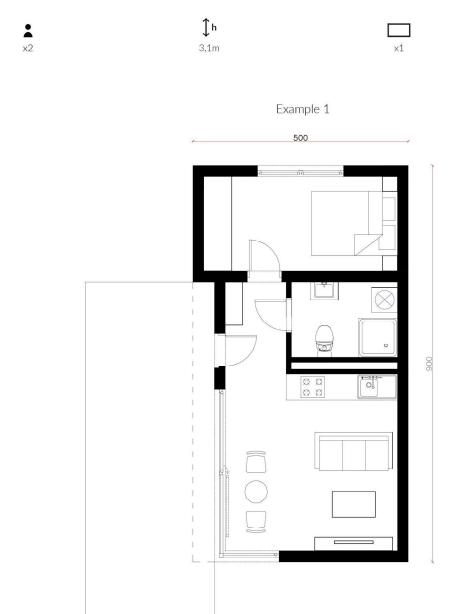


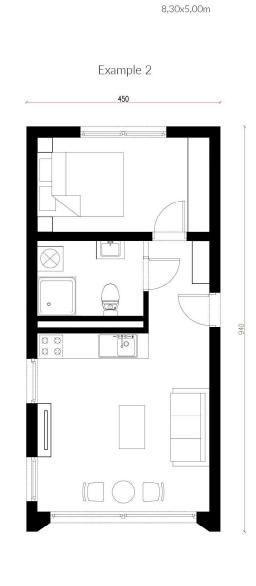
83 m²



Holiday house

Construction technology gives some huge possibilities for architectural creations. The key benefits – competing for traditional technology – are also a base of a much wider range of aesthetic options that allow designers to achieve architectural variety.



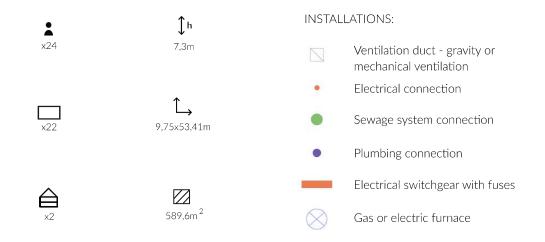


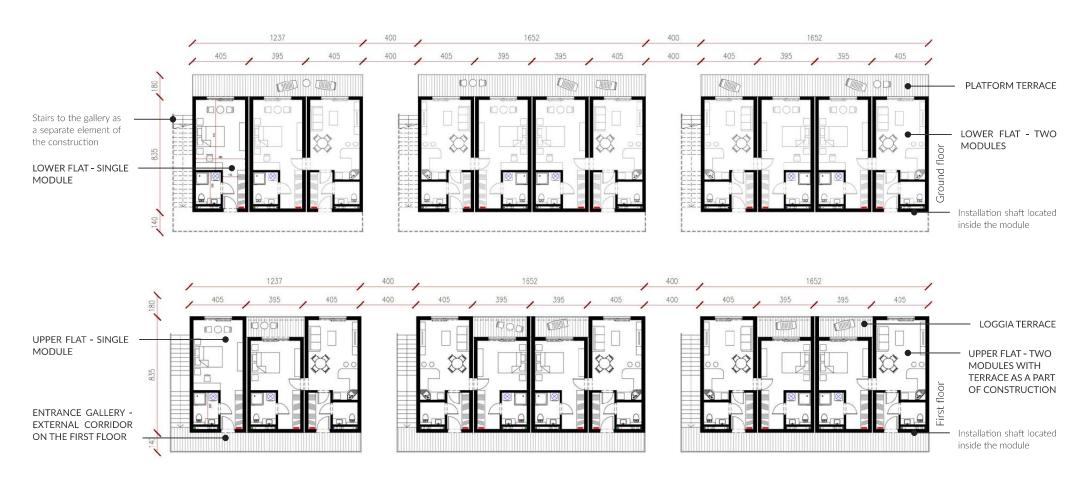
57,5 m ²



Single-family buildings - twin houses

Single-family homes in the form of twin houses in a linear building. The design assumes the creation of separate premises with separate entrances. The buildings are equipped with an external gallery, which is a communication corridor for premises designed on the first floor. Stairs lead to the gallery, being a separate structural part. Each flat has a separate bedroom with bathroom and a module of the living area with kitchen and guest toilet. In the building, two premises were created constituting a 1-unit housing unit. The premises on the first floor have indoor terraces - loggias, which can be an all-year space - closed glazing. Installation shafts with connections and recuperation are located inside each and every independent dwelling. Electrical switchgear with fuses supports each module separately.

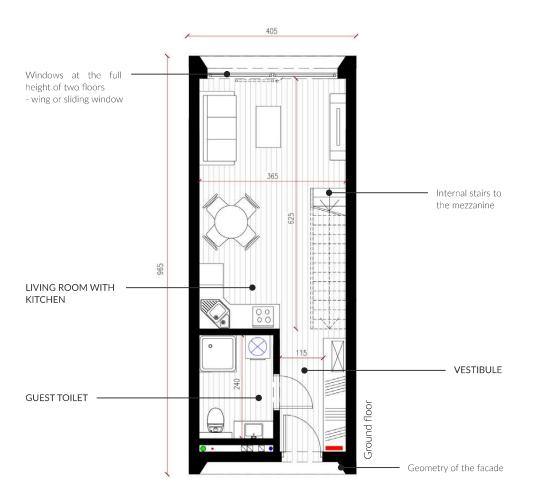


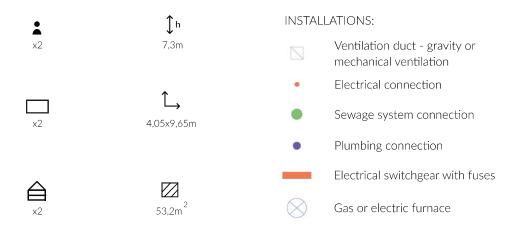


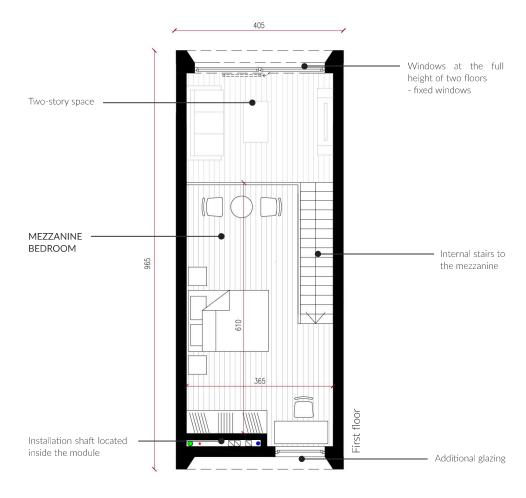


Single housing units

Detached, two-storey units with a gabled, regular roof. Buildings designed for year-round residence for two people. The facilities have a spacious living room combined with a kitchen, a bathroom and a second floor in the form of a mezzanine - which acts as a bedroom. Vertical communication was designed in the form of internal stairs leading to the first floor. The modular object has additional finishing of external details that give the façades a modern character. The windows of the building are designed in the form of a glass façade system with two storeys. In order to ensure the comfort of use, the length of the module has been increased. Sanitary, ventilation and electrical connections and installations have been designed in internal shafts and hidden in wardrobes.



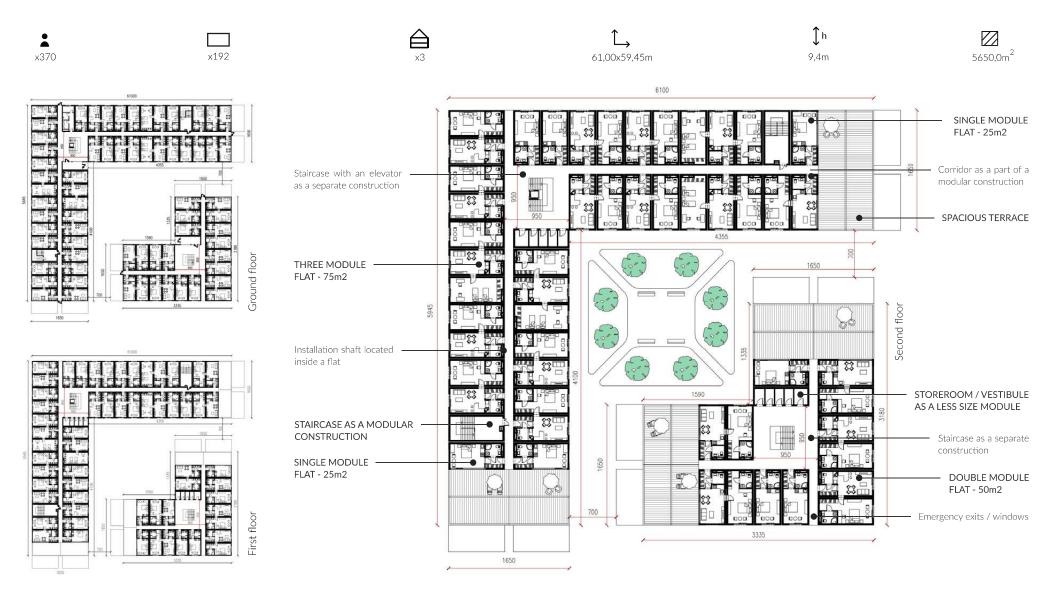






Multi-family housing estates

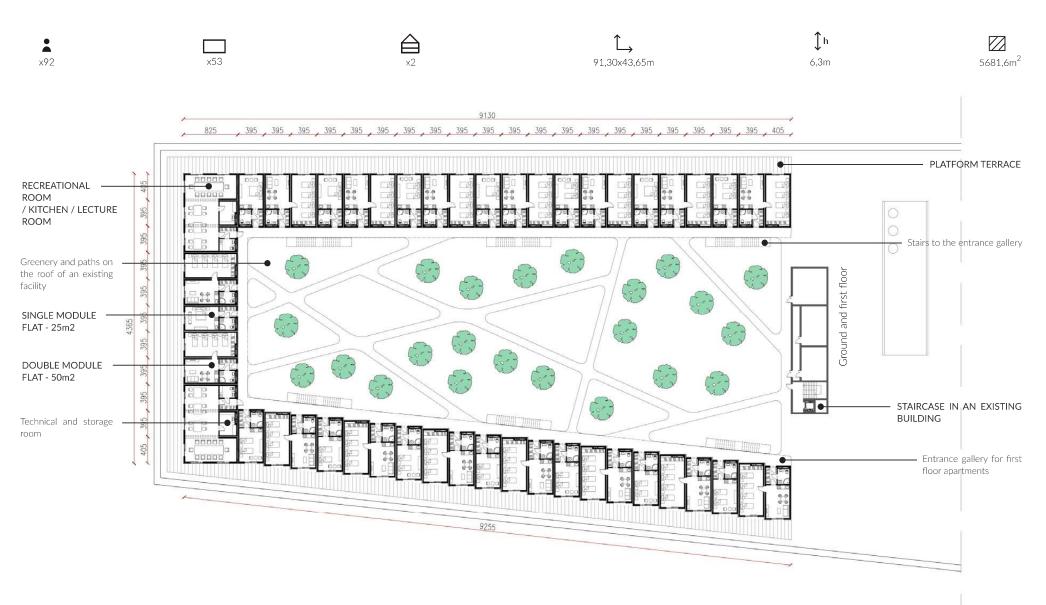
Multi-family housing in the form of a housing estate is the largest overall construction of housing and modular housing. Objects formed in housing tissue with a central square and park greenery. A single object forming the letter L was made of one, two and three-module flats. A three-floor building with stepped terraces, belonging to the crowning flats. The building has an independent internal staircase with spiral stairs and, alternatively, a central elevator. As additional evacuation stairs, modules for staircases, entirely a separate fire zone, were proposed. The common corridors are part of the module's construction. The apartments have separate installation shafts. The central installation node was placed on the ground floor in a separate technical module. The building also has modules with smaller areas, used as entrance areas (hall) and storage and technical vestibules.





Student dormitories - the superstructure of an existing building

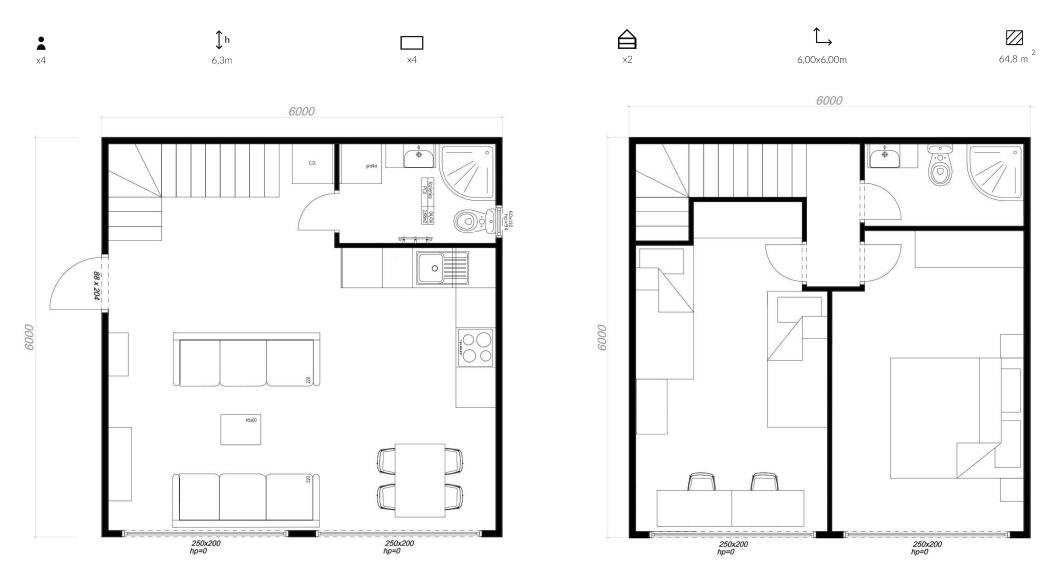
The modular building being an alternative to traditional superstructures and extensions, which can not be made due to the weight of materials or any technical or temporary difficulties in the construction process. The presented superstructure was created on the roof of the shopping center as a rational development of the roof space. Modular facilities have adopted the character of dorms. The structure was designed as a two-floor modular belt surrounding the central green space. Communication to dorms takes place through the existing staircase of the shopping gallery. Apartments have their own entrance without an indirect corridor. The modules on the first floor have been designed with an external communication gallery, which is led by a separate staircase. The flats have bathrooms and a kitchenette. Connections for sanitary, ventilation and electrical switchboards are designed in shafts located on the outside of the module, with the possibility of control from the gallery.





Cube building

The building in the shape of a regular cube with basic dimensions: width - 6 m, depth - 6 m, height - 6 m; having a simple wooden structure and an invisible roof with built-in concealed drainage system. Functional layout giving wide possibilities of easy arrangement for both residential and office purposes or similar. The form of the building is ideally suited for production in a modular system, i.e. a complete interior finish in the factory and quick assembly of modules on a prepared, media-filled foundation. The proposed arrangement can also easily be placed on floats and perform the so-called boathouse, which can moor at the waterfront quay creating cheap residential or office space. Thermal insulation of both the walls and the roof can be easily adapted to the user's requirements or building regulations is an economical solution and a very good indicator-relation of the price to the achieved effects.



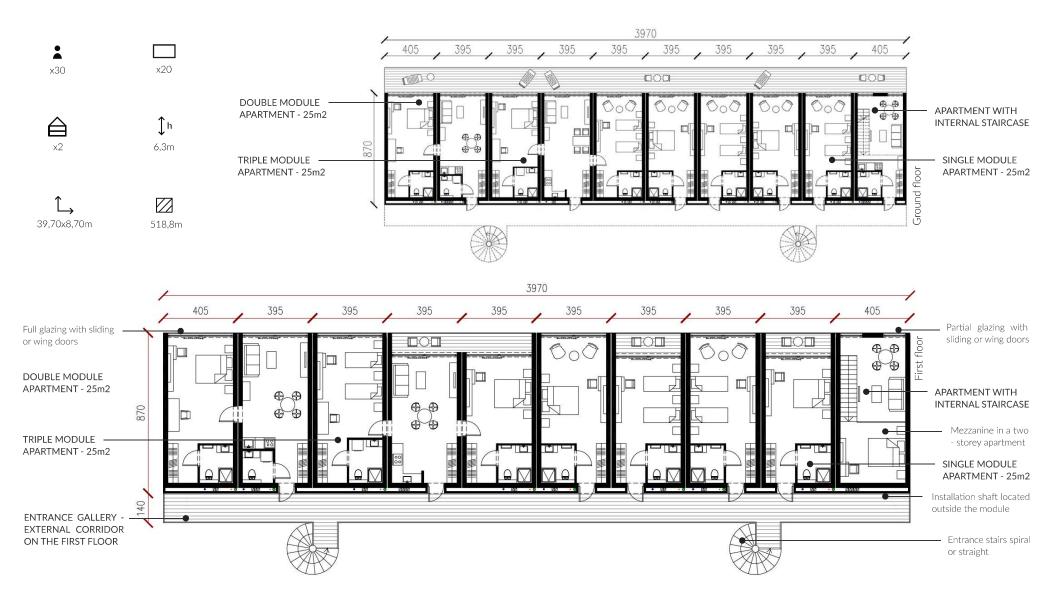






Serial apartments

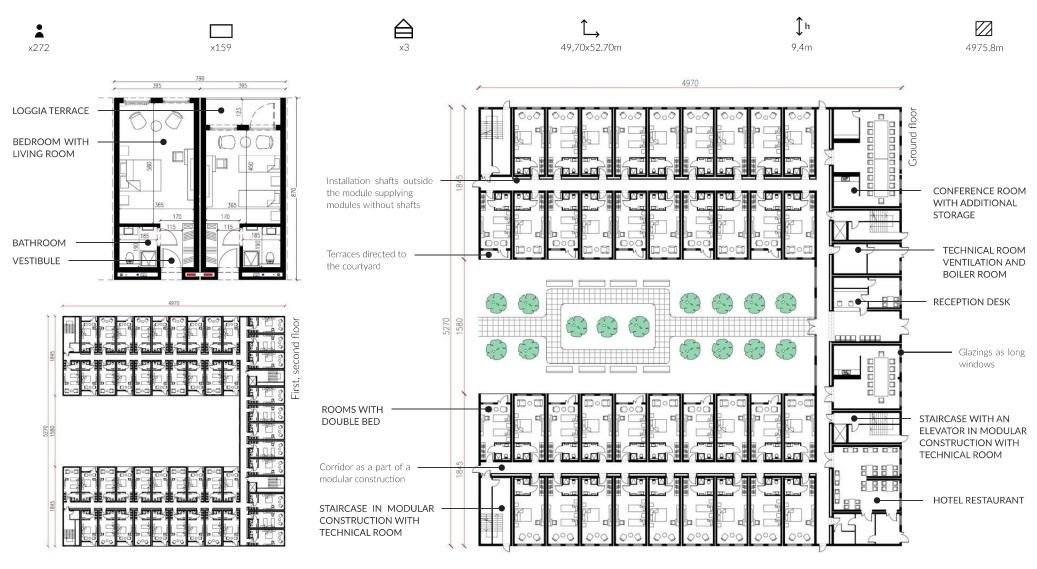
Hotel type in the form of independent apartments and single-module rooms. The building consists of 10 modules connected in a linear way. The object is an example of a modular hotel with separate entrances to the apartments - without a common internal entrance corridor. Apartments on the first floor are granted communication by an external gallery with a staircase in the form of spiral or linear stairs. Apartments consist of two or three modular units. In addition, the hotel has single-module rooms, as well as an apartment with an internal staircase and a mezzanine. Independent living units can only be a bedroom or be equipped with an additional kitchenette. Some of the rooms on the first floor have terraces in the form of a loggia. The hotel has full glazing of facade walls. Installation shafts are designed on the outside of the module to allow independent access to sanitary, ventilation and electrical installations.





The U -shaped HOTEL

A type of a large hotel facility consisting of three modular blocks connected together. Each block has three floors. Symmetrical blocks are modules connected in the corridor part. The central block is a connector, consisting of modules connected with each other only linearly. The hotel zones include 2 - bedrooms with a private bathroom, conference rooms, a hotel restaurant, a reception desk and technical and cleaning rooms. The object has staircases that are also evacuation routes - the wells are designed in the form of separate modules. Hotel corridors form part of the module's construction. Facade glazing was proposed in the form of longitudinal windows. Rooms facing the courtyard are designed with internal terraces - loggias. Installation shafts are designed on the outside of the module to allow independent access to sanitary, ventilation and electrical installations.





The Atrial – Shaped Hotel

The design of a large-size atrium hotel. A building designed with room modules surrounding the central courtyard with a swimming pool and bar. The modular hotel elements include 2 - bedrooms with private bathrooms, divided into rooms with or without terrace, conference rooms (3 modular), hotel restaurant, reception, and technical rooms. Rooms facing the courtyard are designed with internal terraces - loggias. The building has staircases that are also evacuation routes - the wells are designed in the form of modules and structurally separate space on a square plan. Hotel corridors form part of the module's structure. Installation shafts are designed on the outside of the module to allow independent access to sanitary, ventilation and electrical installations. The modules without shafts are powered by shafts of related modules.









Minor office building

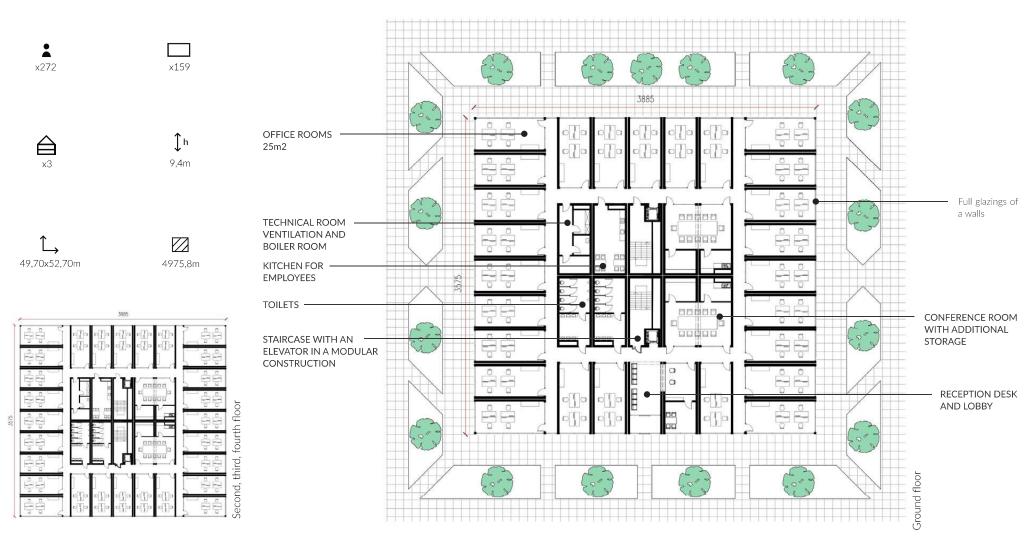
Design of a smaller office building consisting of two separate 2 and 4 modular buildings. The building is an example of a structural solution in the form of a modular structure shift on the floor in relation to the ground floor modules. The first building is a simple office design with a bathroom, kitchen, and an open space office space. The second building is a bunk office with a reception, toilet, and two workspaces. The office also has waiting rooms and an exit to the terrace. The second floor was designed in the form of an offset module supported on pillars. The construction of stairs is part of the construction of a single module. The main walls of the office rooms have been fully glazed. Each building has separate sanitary connections, ventilation and central electrical switchboards.





Large office building

The building was designed as a large office building, in the form of a quadrilateral. The office building has 4 floors, composed of a simple modular grid. The core of the building are modules for staircases, conference rooms, toilets, and kitchen - areas without the need for natural light. External wall modules have been designed as office rooms for a maximum of four employees, with the possibility of joining rooms into one larger space. Strings of sanitary, ventilation and electrical installations are provided in installation shafts of central modules - in the core of the building. In order to increase space, office modules do not have their own ventilation shafts - the main ventilation sequences are provided for in the technical module, which is the central installation center of the building. The office building, due to the need for increased security, has separate communication sections in the form of staircases and elevators, located in independent modules. The external walls of the office building were designed in the form of glazed facades.





Exhibition pavilion

Modular construction has many advantages and advantages over traditional construction systems: the modular system allows to reduce the investment time to 50%; especially suitable for the construction of: hotels, dormitories, schools, kindergartens, boarding houses, social housing; willingly and often used to make the superstructure, expand existing facilities; construction in a modular system is always shorter and less burdensome for the environment; at present, it is necessary to build: fast, energy-saving and durable (long-term use) and these requirements are met only by modular prefabrication technology; energy efficiency - buildings made of modules have very good parameters; high share of prefabrication reaching up to 85%, keeping high quality; thanks to technology it is possible to put together structures up to 4 floors, permanent and safe.





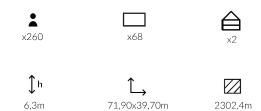


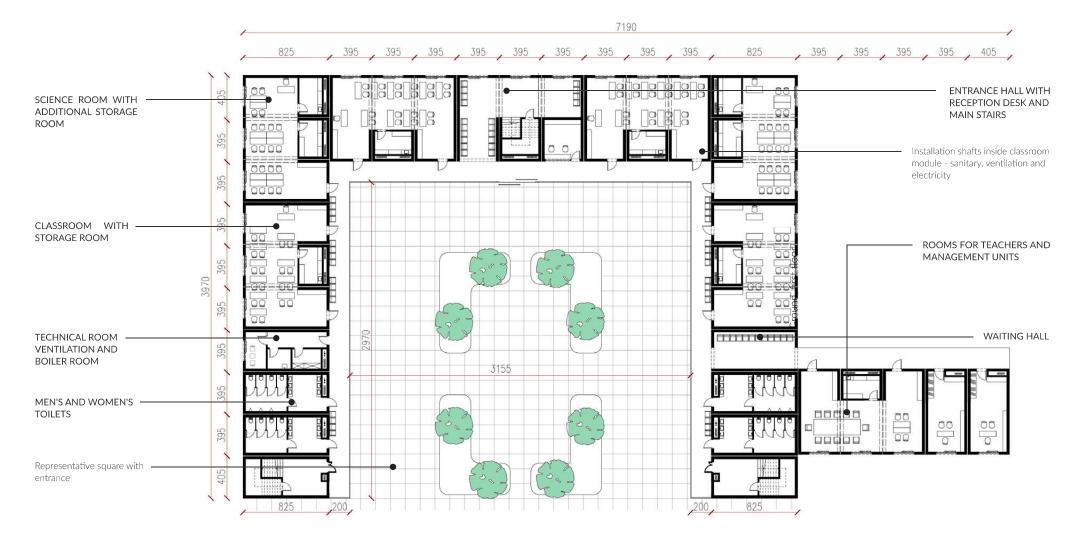




Primary school

Design of a modular public architecture object - a primary school with a central, open courtyard. The school building was designed as a linear sequence of modules with an internal corridor of inter-module communication. The facility has classrooms with technical rooms, study rooms, men's and women's toilets, with the possibility of creating a toilet for the disabled, main hall, duty room, rooms for teachers and management units, technical rooms as well as staircases adapted to evacuation requirements, placed in modules. The inter-module communication corridor was designed as a fully glazed façade, due to the need to provide significant illumination with natural light. Vertical lines of sanitary, ventilation and electrical installations have been designed in modules that are utility / technical rooms of classrooms. The strings feed the spaces of individual rooms. In addition, installation shafts are located in toilets and stairwells.



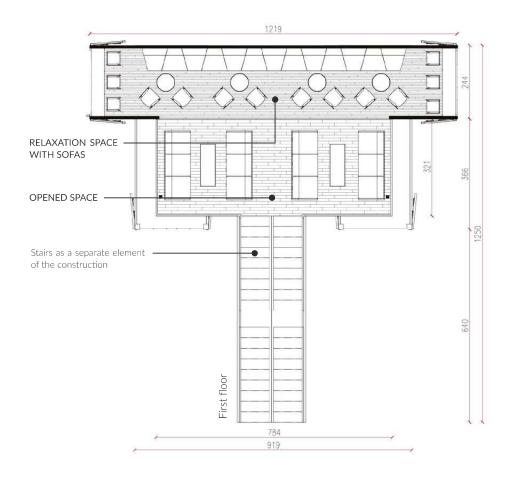


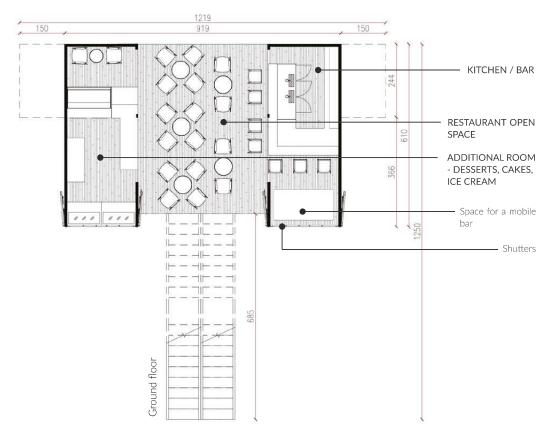


Minor restaurant building

A smaller type of restaurant facility with a symmetrical and open form of multifunctional space. On the ground floor, the building has a bar with seats, an additional area for the device to drinks, fridges for cakes and ice cream, and space for a mobile bar. On the first floor there is a relaxation area with sofas, tables and seats. The building has openable shutters and separate steel stairs. The object was designed in such a way as to enable the alternative installation of glazing of all open walls. Connections and sanitary, ventilation and electrical installations can be adapted.











The multifunctional **SaniModules** are ideal for camping parks. Use of a high quality waterproof materials will allow you to enjoy the properties of such a perfect solution for a long time. We offer a plenty of different units that will suit your needs! SaniModules include toilets, kitchen modules, canteen modules and habitat modules. You can also connect them whichever way you want and create the perfect solution for you!









