CHAMELEON

FLEXIBLE KINDERGARTEN

project presentation catalogue

premium environment for a happy childhood

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WHAT IS CHAMELEON?

Chameleon flexible kindergarten is a contemporary children-friendly kindergarten, which can be fitted into any existing environment (location / climate / culture) and perfectly adjusted to all investor's needs. It is made from materials of excellent quality and it uses the latest technology to ensure low maintenance costs and energy savings. By choosing the Chameleon, delivery time is significantly shortened; consequently money, energy and time can be saved.

CHILDREN ARE OUR FUTURE

Nowadays, children spend most of their time in kindergartens. Apart from their home and family, kindergartens are their entire world.

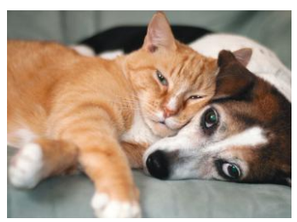
WHERE WOULD YOU LIKE YOUR CHILD TO GROW UP?

A kindergarten is not only a kindergarten...
It is a place to live through the earliest experiences of socializing and learning. It is like a second home - warm, friendly and welcoming.

because for our children, we want only the best

WHY CHAMELEON?

GREAT ENVIRONMENT
FOR LEARNING & PLAYING



EXCELLENT LIVING COMFORT

PREMIUM MATERIALS
FOR OPTIMUM COSINESS

INDIVIDUAL TREATMENT / FLEXIBLE UNITS

FITS REAL NEEDS
AND THE LOCAL ENVIRONMENT

COMPLETE SERVICE

PERFECTLY MEETS ALL CHILDRENS' NEEDS

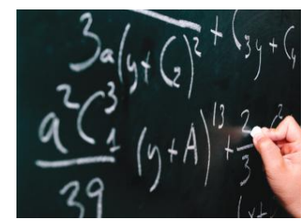
Chameleon kindergarten is carefully designed for demanding users – children. Special priority is given to the highest level of comfort in order to establish optimal conditions for playing, learning and experiencing everyday's environment.
Disposition of spaces, living comfort (fresh air, humidity), lighting system and equipment are adjusted to children's needs, designed for easy use.

THE HIGHEST QUALITY FOR AN AFFORDABLE PRICE

Architectural solution guarantees the highest quality of living. The flexible concept of Chameleon and its modular units fits perfectly into different locations, adjusted also to local individual needs. The highest European standards and carefully designed details are used in order to fulfil the highest demands of users. The client obtains a kindergarten tailor-made to his specific needs by selecting different levels of equipment and quality; these levels are enabled by the modular solution of the construction and installations. Flexible system, modular elements and high level of control keep the price affordable.

SECOND HOME

ENERGY EFFICIENCY



SMART SOLUTIONS

FAST DELIVERY

SHORTCUT THROUGH THE PAPER WORK

LOWER BULDING & MAINTANENCE COSTS

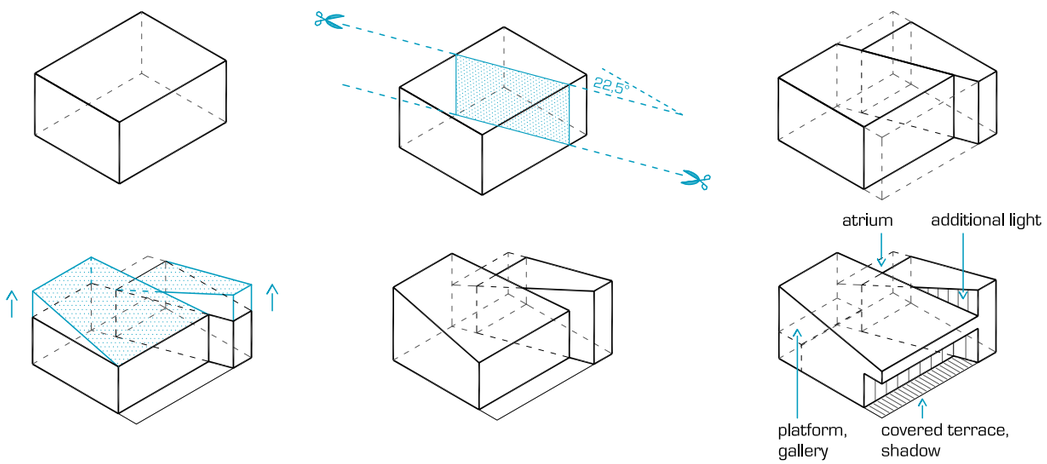
ABSOLUTE ENERGY EFFICIENCY & LOW MAINTENANCE COSTS

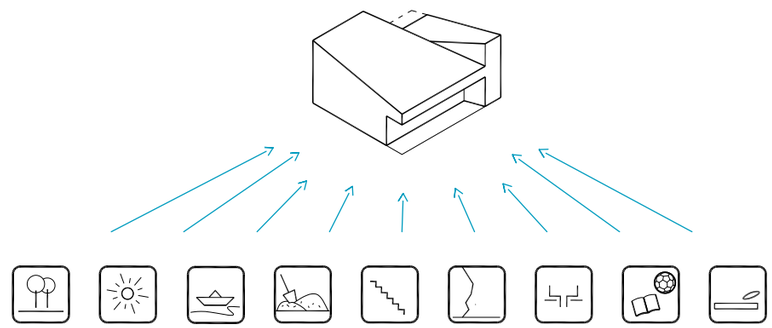
Floor heating of playrooms gives maximum comfort to children playing on the floor, while ensuring minimum energy consumption (6-12% lower energy use). Energy saving – as low as 3 eur/m2 per heating season. Ceiling cooling system ensures minimum air draft and maximum comfort (protecting children from cold, health hazards and discomfort). Ventilation units are designed to comply with the requirements of each room; with build-in recuperators they can return up to 90% of energy.
Air quality sensors regulate ventilation units to ventilate each room no more and no less than is needed (high air quality and low running costs).
Kindergarten can use rain water for flushing toilets, thus reducing the use of drinking water to a minimum.

FAST DELIVERY TIME & COMPLETE SERVICE

The structural modularity of Chameleon kindergarten, in comparison to classically designed buildings, offers significant advantages, especially in the execution phase. Modular elements, with respect to installations and construction, together with good process organisation, guarantee rapid manufacturing and consequently lower costs.
The construction solution enables implementation of different construction systems adjusted as much as possible to local market suppliers.
Chameleon kindergarten, based on smart ideas and plans, is made as complete fully equipped building, including the highest technology and carefully designed furniture. After we leave the construction site you only need a key to enter.

ARCHITECTURAL CONCEPT





The architectural concept of Chameleon emerges from the idea of exchanging and interconnecting identical functional units of kindergarten into various urbanistic patterns adjusted to local individual demands.

The playroom, which is the basic unit, is cut under a 22.5 degree angle, allowing it to join others in numerous combinations (angles combined to 45 degrees and/or 90 degrees). Such an intervention allows interior space hierarchy of bigger, smaller, higher and lower spaces providing ambiental and functional diversity. Playrooms are therefore self-efficient units, and include elements of experiences such as: water, trees, sand, light, height, sleep, action, ...

22,5 degree cut of playroom volume appears in the roof structure as well, with angles changing from unit to unit. Repeating of such elements creates a complex dynamic structure, reflecting the program of active users - children.

Functional and smart design of each unit (22,5 degree angle, roof structure, atrium ...) makes it self-efficient and flexible for different types of users. An advantage of modular unit is its complexity within simple layout.

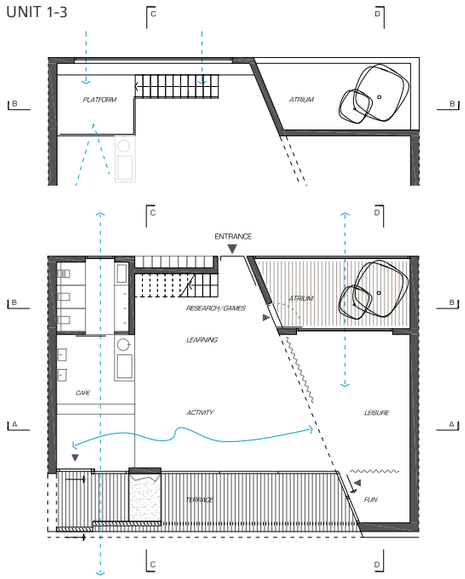
Modular units of playrooms enable flexible design and customised solutions. There are two types of units suitable for two age groups of children (1-3 years and 3-6 years).

Various functions of interior space organisation result in different zones for:

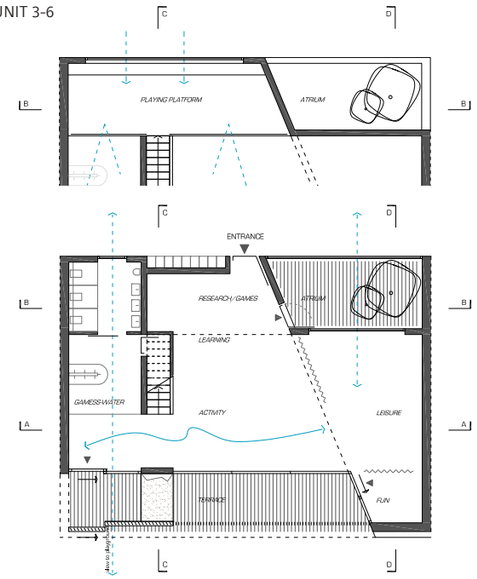
- activities
- sleeping
- leisure
- games with water
- learning/research
- fun
- height experience

PLAYROOM UNIT

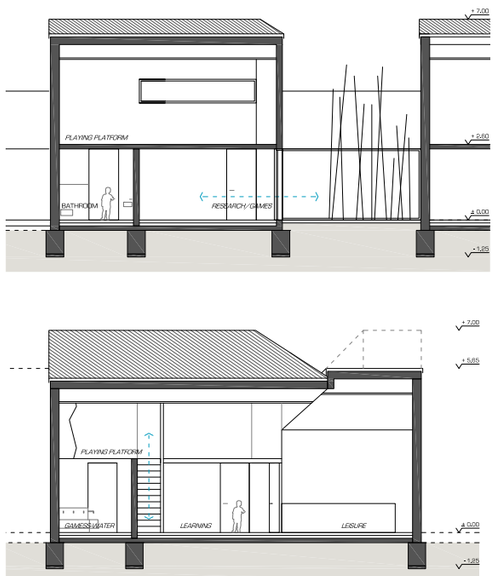
UNIT 1-3



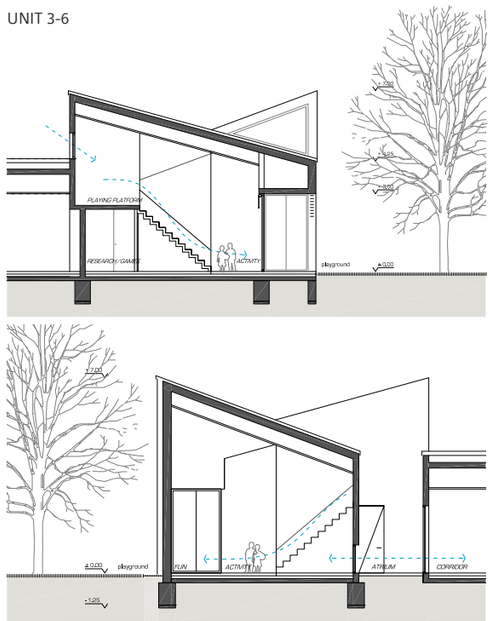
UNIT 3-6



UNIT 1-3

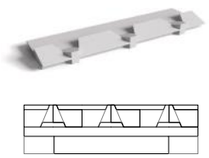


UNIT 3-6

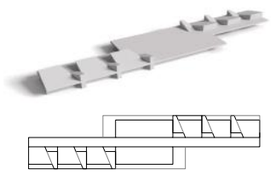


Various elements of use, incorporated in each unit are:

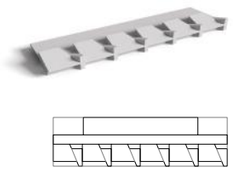
- toilets/pissoir and wash basins with direct access,
- direct access to individual shaded outside terrace,
- screens on the outer edge of the terrace: opticaly bigger room, useable shaded outside space,
- fully equipped changing station for babies with view and control over the room,
- indoor splash pool, outside climbing wall,
- shaded sand box and wooden terrace,
- direct entrance to Individual open air atrium with greenery, which provides natural light, experience of rain/snow,
- comfortable wardrobe as a part of unit,
- upper floor gallery with a view and light / height experience,
- peaceful leisure corner with pull-out beds,
- individual storage for outdoor toys,
- corner for teacher,
- special furniture adjusted to children's age,
- special playing corners for reading, cooking, hairdressing,...



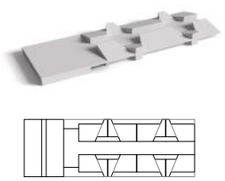
linear _01a chameleon



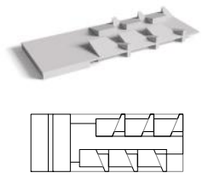
linear _02 chameleon



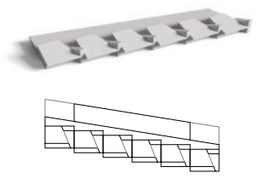
linear _01 chameleon



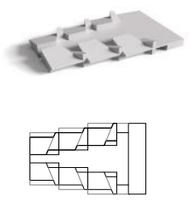
facing _02 chameleon



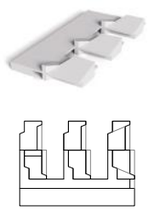
facing _03 chameleon



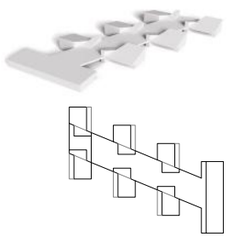
diagonal _01 chameleon



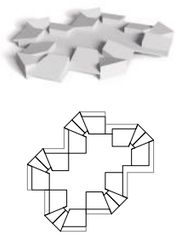
diagonal _03 chameleon



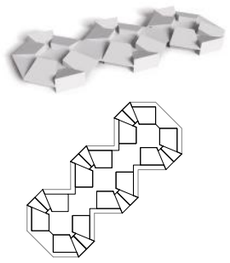
linear+diagonal _02 chameleon



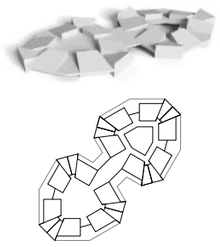
linear+diagonal _01 chameleon



organic _01 chameleon

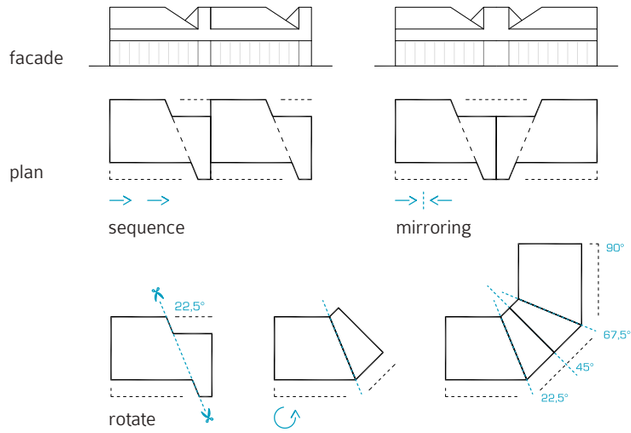


organic _02 chameleon



organic _03 chameleon

URBANISTIC DIVERSITY



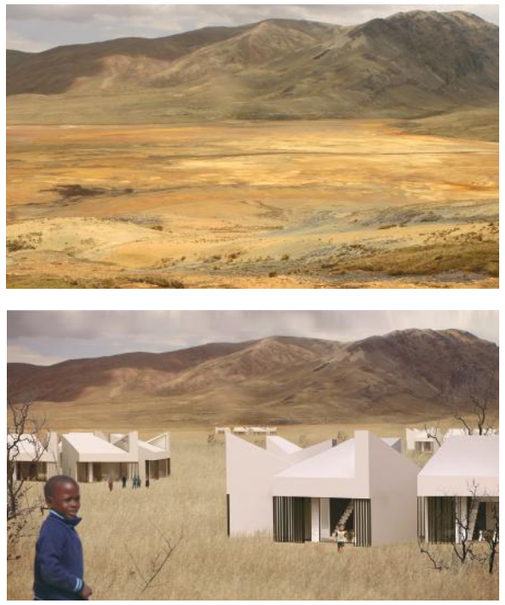
The design of Chameleon is based on contemporary planning approaches resulting from interdisciplinary understanding of location, function and user.

Modular units of playrooms enable flexible design and customised solutions from linear, diagonal, organic to other urbanistic patterns.

Such a system enables various urbanistic patterns depending on contextual parameters of location. Urbanistic disposition and shape of the building complex emerges from 4 basic groups: linear, compact, diagonal and organic.

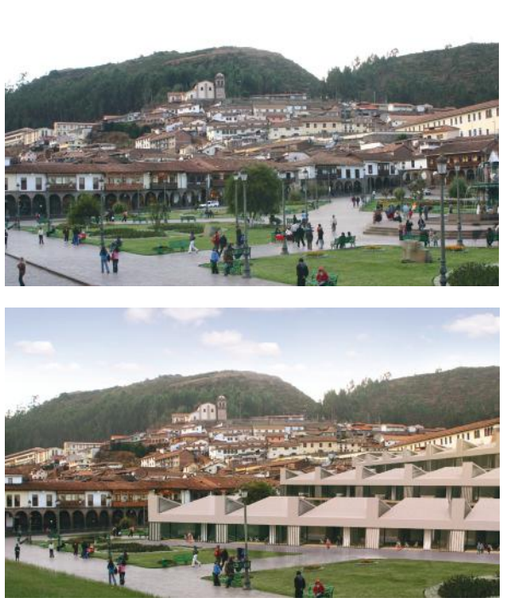
Flexibility

One of the greatest advantages of the Chameleon is its flexibility. It can be perfectly fitted to any kind of environment regarding location, climate and culture, and can be perfectly structured upon the investor's needs, budget and all other concerns.



Adaptiont to any location, environment or culture

Chameleon reads topographic characteristics of the location and at the same time takes into the consideration local context, environmental characteristics and cultural identity.



Types of Chameleons

Various types of chameleons are found in different countries or different locations. They all consist of the same skeleton and same basic elements, being positioned in different urbanistic patterns with a range of skin color changes (façade and material).

Comfort and safety of Chameleon

Chameleon's skin serves as higly developed system that protects it against different threats. Chameleon needs to accommodate demanding urban settings conditions. Outer skin reacts as a complicated mechanism that helps to regulate temperature, adjust to local context and offers safety.

DELIVERY TIME / MONTHS

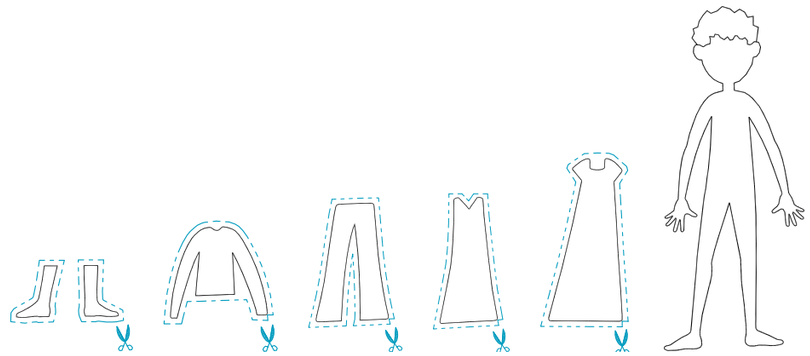
		average	*Slogradnje d.o.o.*
1	presentation	0.5	0.0
2	investor chooses the level ob buildings equipment	1.0	0.0
3	preparation of detailed projects description	1.0	0.0
4	preparation of idea project	2.0	0.5
5	guarantee of budget/finances for realisation	2.0	2.0
6	preparation of documentation for building permit	1.5	1.5
7	preparation of final design	1.0	0.0
8	preparation of tender design and choosing contractor	1.0	1.0
10	building execution	8.0	8.0
11	take over finished building	1.0	1.0
	total delivery time:	19.0 months	14.0 months

TAILOR-MADE TO CUSTOMER'S NEEDS

BASIC

PREMIUM

LUX



Chameleon offers complete service: from consulting, planning, building, financing to maintaining.
The client obtains a kindergarten tailor-made to his specific needs by selecting different levels of equipment and quality; these levels are enabled by the modular solution of the construction and installations. Flexible system, modular elements and high level of control keep the price affordable. Three major levels - basic, premium, lux - can be combined and adjusted to customer's specific needs. Characteristics of Chameleon levels are:

Individual treatment / flexible units
Fits real customer needs
Adapts to the local environment
Excellent living comfort
Premium materials
Energy efficiency
Smart solutions
Lower bulding & maintanence costs
Economy classes
Complete service

		BASIC	PREMIUM	LUX
Energy	Energy level by PHPP (kWh/m2A)	40	33	25
	Windows: Glass Ug (W/m2K) / Glass g / Frame (W/m2K)	0,7 / 0,52 / 1,3	0,7 / 0,52 / 1,3	0,6 / 0,52 /1,3
	Window frame type	Wood/Aluminium	Wood/Aluminium	Wood or Wood+Aluminium
	Thickness and type of wall insulation	16 cm; expanded polystirene (EPS), B1 inflamability class	18 cm; stone wool, A1 inflamability class	20 cm; stone wool, A1 inflamability class
	Thickness and type of floor insulation	15 cm; extruded polystyrene (XPS)	17 cm; extruded polystyrene (XPS)	20 cm; extruded polystyrene (XPS)
	Thickness and type of roof insulation	30 cm; stone wool, A1 inflamability class	30 cm; stone wool, A1 inflamability class	30 cm; stone wool, A1 inflamability class
Mechanical installations	Heating system	gas boiler / central system	heat pump / central system	heat pump / localised system
	Heating elements	panel hot water radiators	panel floor heating	panel floor heating
	Additional heating elements	x	x	hot water heat exchanger AHU unit
	Cooling	wall mounted air conditioners	panel ceiling cooling	panel ceiling cooling
	Additional cooling	x	x	cold water heat exchanger AHU unit
	Ventilation & air-conditioning	yes	yes	yes
	Heat recovery	aprox. 60%	aprox. 75%	aprox. 90%
	Dehumidification	x	yes	yes
	Humidification	x	x	yes
	Rainwater reservoir	x	x	yes
	Sanitary hot water	central system	central system	localised system
	Sanitary ware	lower range	middle range	higher range
	Faucets	single-lever mixer tap	push down mixer tap	electronic contactless mixer tap
	Solar collector for hot sanitary water	x	x	yes
	Heat recovery of cooker hood	x	yes	yes
Furniture, surface finishing	Flooring in hallway/playrooms	PVC/PVC	rubber / parquet	rubber / parquet
	Flooring in gym	PVC	rubber	sports parquet
	Flooring in other rooms/kitchen	PVC / ceramic	rubber / epoxy	rubber / epoxy
	Flooring on terrace	ecologic flooring	ecologic flooring (wood plastic composite)	exotic wood
	Furniture	laminated boards	MDF	solid wood
	Interior doors	hollow core, laminate	solid core, laminate	solid wood
	Sports equipment in gym	basic	standard	above standard
	Interior shades	x	yes	yes
	Façade	contact façade plaster	ventilated façade; fiber cement panels or laminate panels	ventilated façade; wooden façade or fiber cement panels or alu-composite panels
	Roofing - flat roof	PVC membrane	extensive green roof	extensive green roof
	Roofing - playrooms	small format fiber cement flat roof panels	large format fiber cement panels	large format fiber cement or aluminium panels
Automation, electrical installations	Automatic regulation of heating, based on activity (presence/absence)	yes	yes	yes
	Automatic regulation of ventilation & AC, based on schedules and presence	x	yes	yes
	Automatic regulation of ventilation & AC, based on necessity	x	x	yes
	Automation of shades	yes	yes	yes
	Regulated lighting - departments	x	x	yes
	Regulated lighting - hallways and offices	x	x	yes
	Alarm - technical security	x	yes	yes
	Key access control	x	x	yes
	Video surveillance of outdoor and play areas	x	x	yes
	Central touch screen for managing schedules in departments	yes	yes	yes
	Touch screens for managing schedules in departments	x	yes	yes
	LCD TV with players and TV signal in departments	x	x	yes
	Basic energy monitoring	x	yes	yes
	Automatic regulation of shades, based on sun / natural light	x	yes	yes
	Photovoltaic power plant	x	x	optional

TECHNICAL DATA

ARCHITECTURAL DESIGN

Contemporary planning approach;
Modular units enable flexible design and customised solutions;
Urbanistic diversity;
Functional and smart solutions;
Diverse interior space organisation;
Multifunctional use;
Built-in furniture/elements;
High quality materials/finishes;

STRUCTURAL DESIGN

Smart structural design and independency of modular units;
Modular elements guarantee building process optimisation, faster execution, lower costs;
Different construction systems (classic / prefabricated / steel) adjusted to local market suppliers;
Modularity enables parallel work on construction, installations and equipment.

ELECTRICAL INSTALATIONS

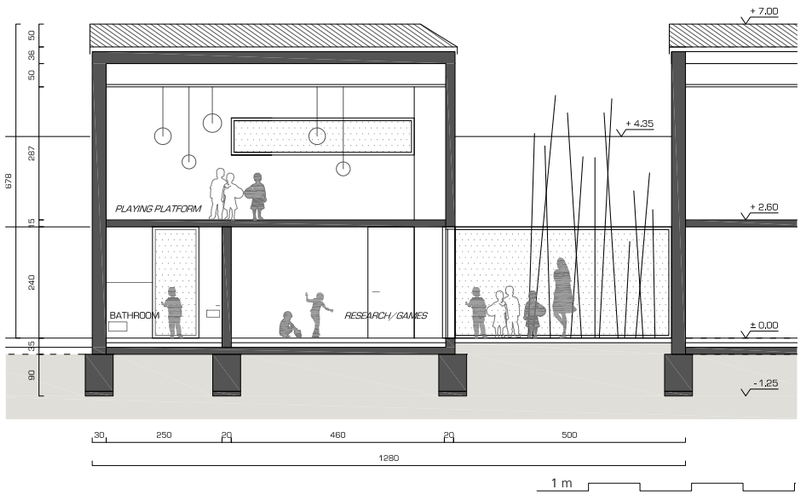
Built in Building and Automation Control for highest possible energy savings and living comfort;
Integration of HVAC, lightning, security, access control into one solution;
Low maintenance and operation costs;
Easy to use: one touch control of all systems;
Self-adaptable systems;
Customized by customer/project;
Comfort and healthy environment;
Optimized light conditions with automatic control;
Compliance with demanding EN 15 232 standard.

MECHANICAL INSTALLATIONS

High energy efficiency;
Low maintenance and operation costs;
Modular architectural units with independent mechanical installations;
Floor heating for children's comfort;
Heating pump uses renewable energy for cooling and heating;
Ceiling panel cooling system for highest level of comfort;
Efficient recuperation with 90% re-use of energy;
CSS system.

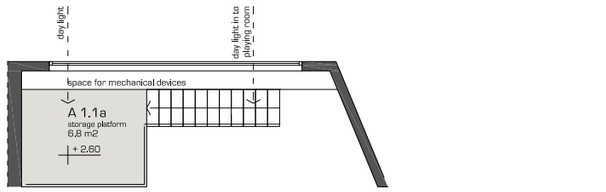
UNIT 1-3 / UNIT 3-6

section B

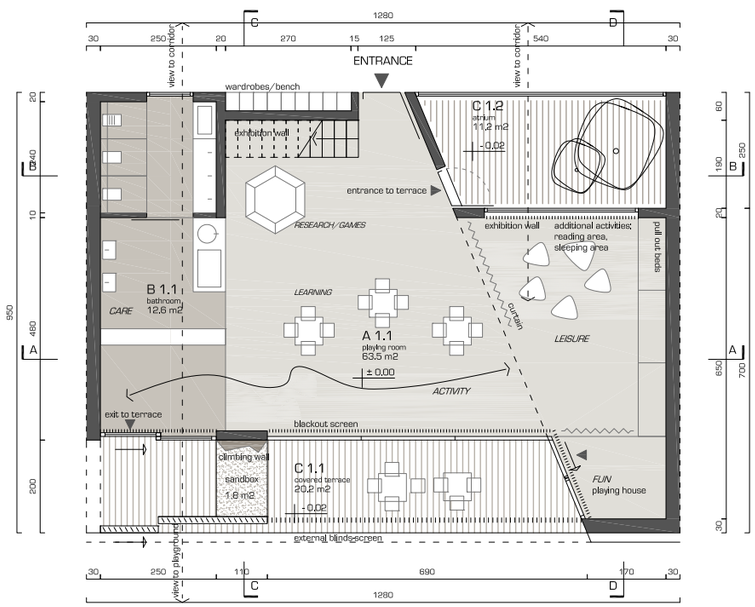


UNIT 1-3

middle floor

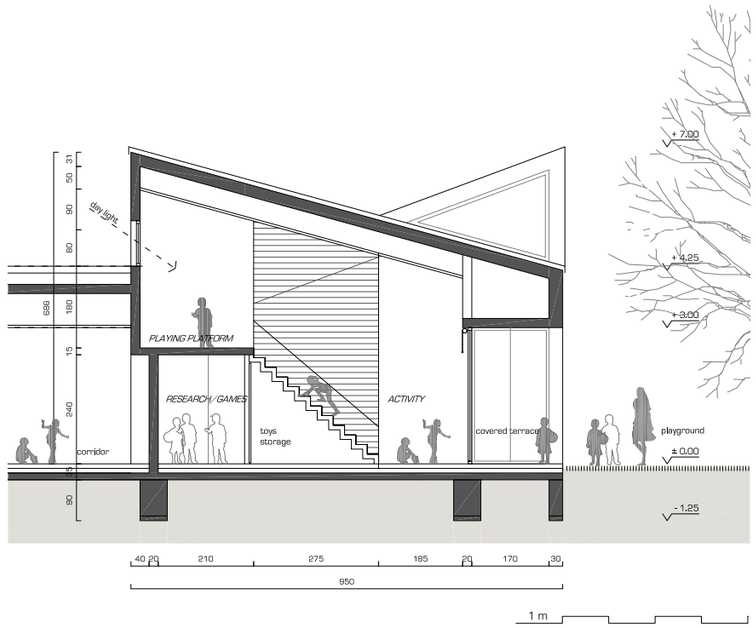


ground floor



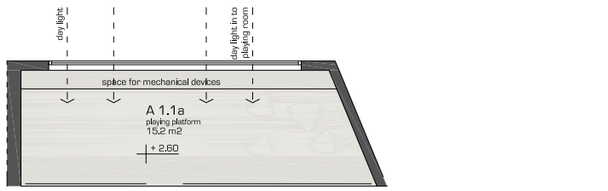
UNIT 1-3 / UNIT 3-6

section C

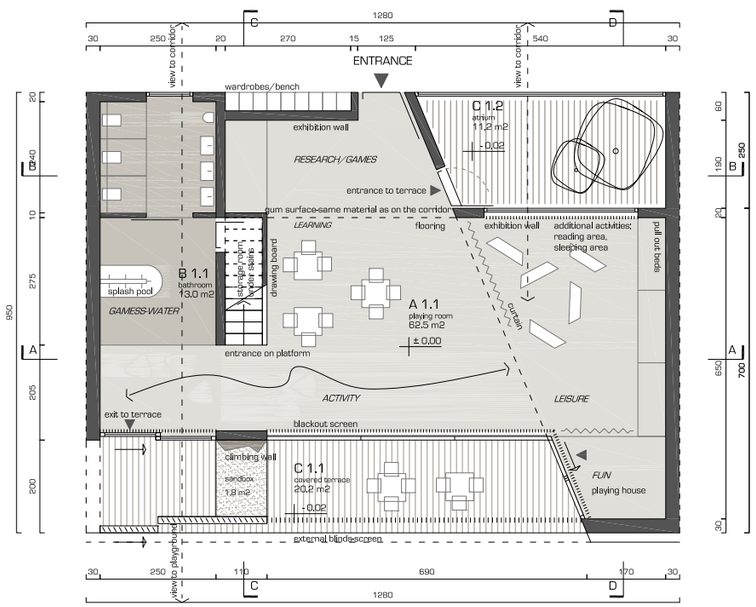


UNIT 3-6

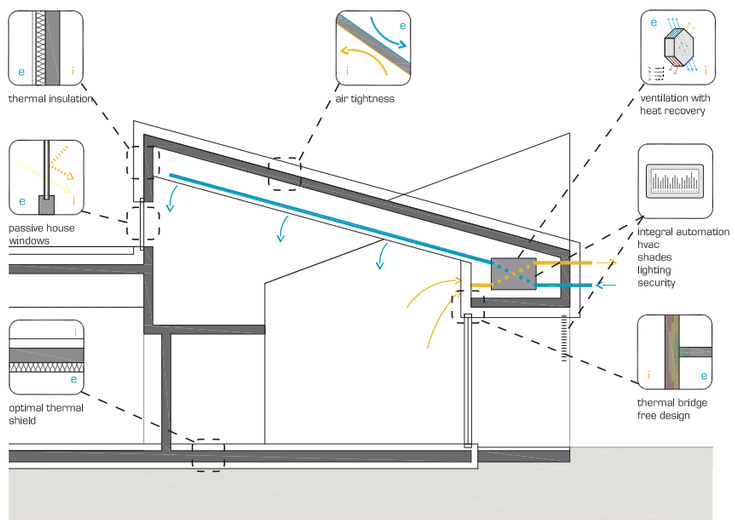
middle floor



ground floor



INTEGRATED EFFICIENCY AND COMFORT OF LIVING



Chameleon kindergarten is priced as low energy, but planned and executed with 7 principles of passive building:

1. Optimized thermal envelope - insulation, including windows/doors, smart shading with architectural design

- Cost effective design and execution of thermal envelope,
- Shading based on smart architectural design
- Choosing fire resistant materials
- Warm inside materials

2. Low energy windows

- Optimized solution of windows with safe proof glasses
- Insulation of glasses prevent radiation of coldness
- Window frame manufactured also from wood

3. No cold bridges at floor slab, windows montage, shades montage

- Careful design of weak points, simulated with thermal bridge free design software
- Optimized cost effective solutions

4. Airtightness of complete thermal envelope

- Carefully design and planned execution, provided airtightness in massive and wood based construction

5. Air exchange with recuperation of internal heat

- Air recuperation for fresh air and minimal energy loss

6. Energy efficient lightning

- Lightning designed as low energy, regulated and safe for children

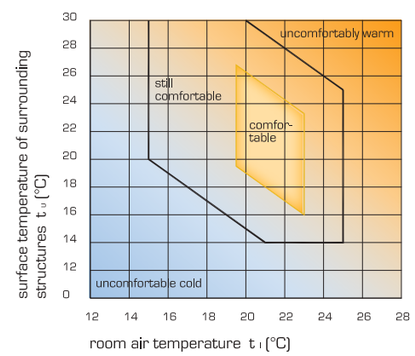
7. Integration with Automation system for even higher energy efficiency, easy of use and better safety

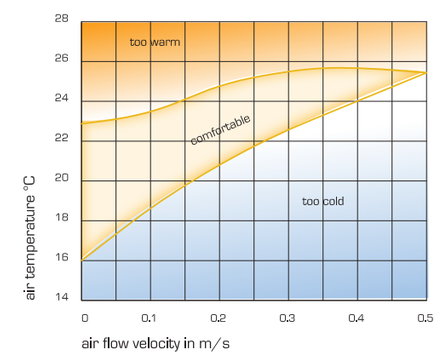
- Automation design for integrating all systems:

Heating/cooling, Air recuperation, Shading, Lightning, Access control

GREEN KINDERGARTEN

THERMAL COMFORT





Thermal comfort of surfaces

Besides energy efficency, comfort of living is the second most important principle of Chamelon Kindergarten. For children, that means, that they do not feel cold in the Winter or hot in the Summer anywhere in the room and they do not feel blowing of cold air in the Winter and blowing of hot air in the Summer. Different levels of Chameleon have different levels of Thermal Comfort. Principle for optimum thermally comfortable environment of surfaces:

Winter season:

- room temperatures: between 19,5 and 23 degrees
- all outside surface temperatures: between 16 and 27 degrees
- optimum difference between room temperature and outside surface should be max. 4 degrees (20 degrees room temperature; outer surface temperature min. 16)

Summer season:

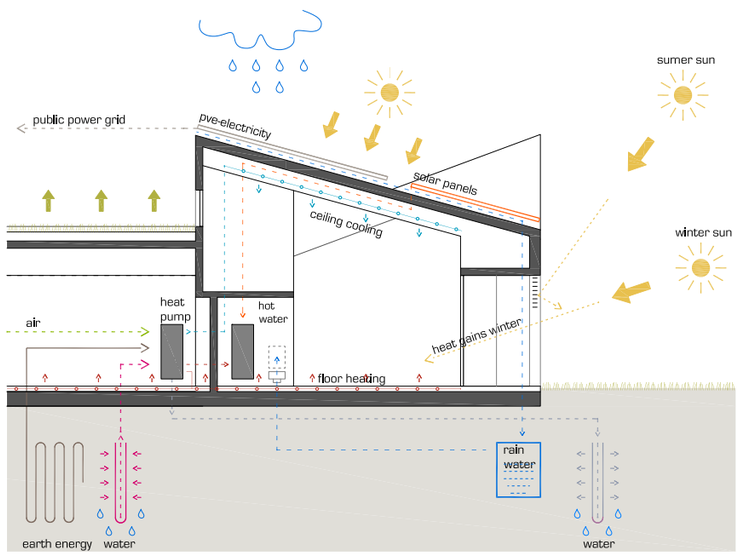
- room temperatures: between 19,5 and 23 degrees
- all outside surfaces temperatures: between 16 and 27 degrees
- optimum difference between room temperature and outside surface should be max. 4 degrees (20 degrees room temperature; outer surface temperature min. 16)

Air flow thermal comfort

Principles of optimum thermal comfort of air recuperation system is that the greater that the air flow velocity is, the bigger must be the temperature of the incoming fresh air

- at air flow velocity 0,1m/s; the temperature of incoming air has to be between 18,5 and 23,8 degrees
- at air flow velocity 0,4m/s; the temperature of incoming air has to be between 24 and 25,8 degrees

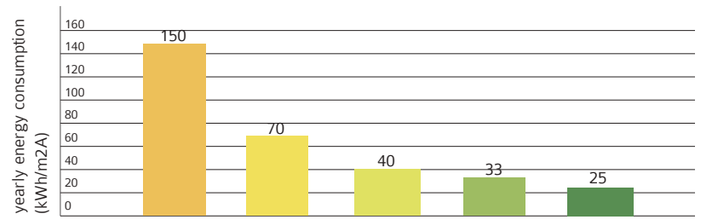
MECHANICAL INSTALLATIONS



Mechanical installations in the Chameleon are designed to be highly flexible, complementing the adaptable architectural design. Energy equipment and other mechanical installations display high energy efficiency ratios, responding to high energy demands and increasing prices in the world today. To make possible the use of cheaper, natural resources at hand, mechanical installations are designed to be adaptable to any local, renewable or other energy source.

With use of the central supervision system (state of the art Smart Grid CNS), all mechanical installations designs are made for maximum optimization of energy use. Based on that, mechanical installations are on point of lowest possible investment and energy consumption costs within 15-20 years.

ELECTRICAL INSTALLATIONS



ENERGY EFFICIENCY COMPARISON

- older buildings (by RS statistics)
- newer buildings (regulation, y. 2002)
- CHAMELEON BASIC
- CHAMELEON PREMIUM
- CHAMELEON LUX

building automation and control efficiency classes to EN 15232* *detailed description and categorization explained in project folder	energy saving factors compared to class C			
	CLASSICAL KINDERGARTEN	BASIC	PREMIUM	LUX
A High energy performance BACS and technical building management				
B Advanced BACS			0,8	0,7
C Standard BACS		1		
D Non energy efficient BACS	1,4			

BUILDING AUTOMATION & CONTROL EFFICIENCY

Additional automation systems integrated per standard EN 15 232 enables increased energy savings on

- Energy, needed for heating
- Energy, needed for cooling
- Energy, needed for lighting

Energy saving up to 45 % compared to old building

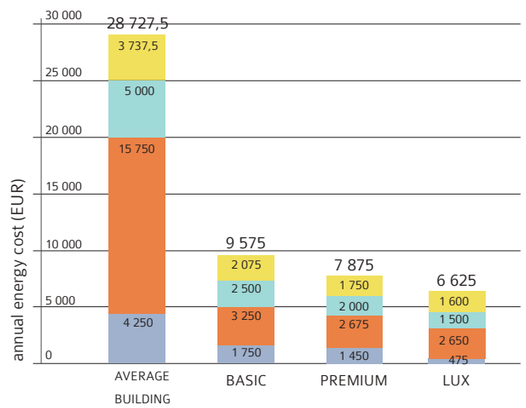
Electrical installation with control system is designed to achieve the best ratio between price & performance, return of investment costs and comfort of living.

The flexible kindergarten is eqipped with control integration of all main systems including control systems for heating, cooling, air recuperation, lighting, shading, security and access control.

Easy to use user interface allows ordinary user to set up desired living comfort level including light level, temperature and level of fresh air.
All systems are preconfigured with the main goal of achieving energy efficency and optimal living comfort.

Control system is executed by industrial standard systems for longterm and stable operation (Winter and Summer periods).
Easy to use for users and maintanance personelle.

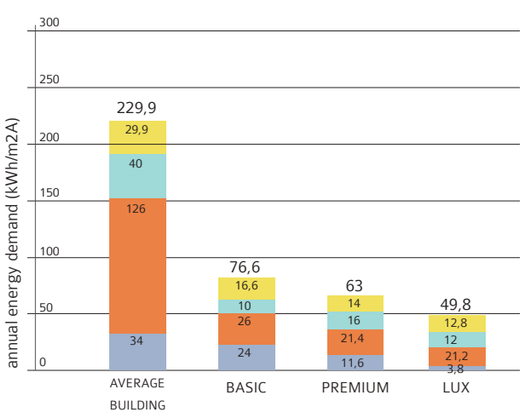
ENERGY COSTS



ANNUAL ENERGY COST (EUR)

- Cost - electicity for lights
- Cost - heating, transmission losses
- Cost - cooling demand
- Cost - heating, ventilation losses

Annual energy cost represents annual energy cost in EUR for all listed categories.



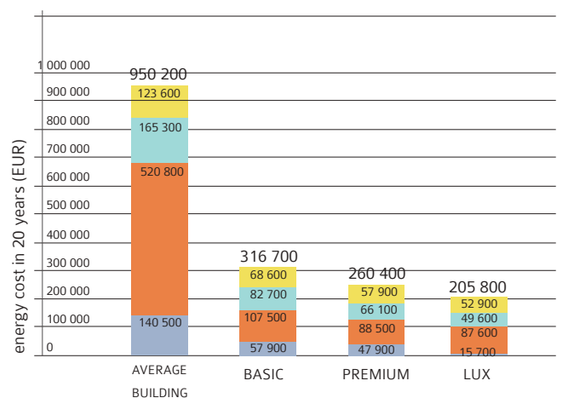
ANNUAL ENERGY DEMAND (kWh/m2a)

- Electicity for lights
- Heating, transmission losses
- Cooling demand
- Heating, ventilation losses

Annual energy demand represents annual energy per 1 m2 netto square area in the Chameleon kindergarten.

Categories of energy usage:

- Heating, Transmission losses, Ventilation losses
- Cooling - total
- Lighting



ENERGY COST IN 20 YEARS (EUR)

- Cost - electicity for lights
- Cost - heating, transmission losses
- Cost - cooling demand
- Cost - heating, ventilation losses

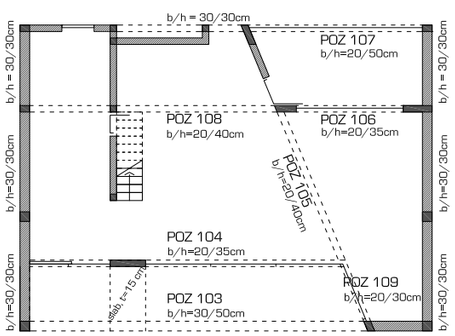
Presented is a projection of energy costs in EUR in 20 years of operation.
Calculation made on the following basis:

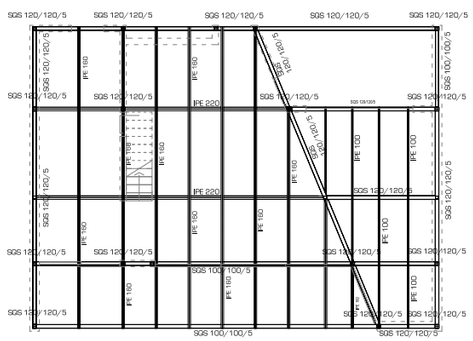
- Statistics data for current average public building was used
- Energy demand for Chameleon Linear 01 configuration made for Ljubljana climate, for a building, oriented to South
- Energy demand calculated for children and public areas was included in calculation, without kitchen and its technology (valid for all energy charts)
- Based on assumption that all details of thermal envelope, systems which influence energy efficiency, will be executed as planned
- Based on assumption that users will follow up instructions of use, needed in case of Low energy buildings

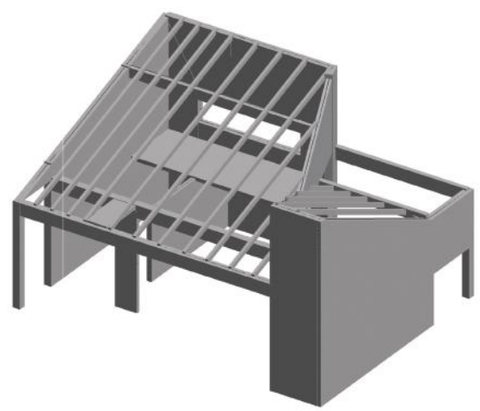
Energy cost used: 0,1 EUR /kWh – for listed energy consumption categories

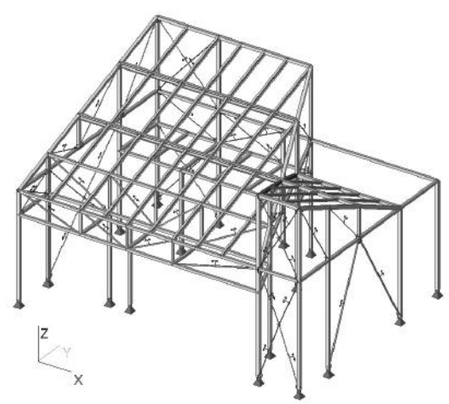
Calculation done based on assumption of

- 5% anual increase of energy cost - for listed energy consumption categories
- All systems and windows will be properly maintaned
- Calculation presented for demonstration purposes with up to +-15% precision









The construction solution offers the implementation of different construction systems, using a wide range of possible construction materials (classic / prefabricated, steel / brick / wood), which is a very important aspect in the tentative to adjust the execution phase to local market suppliers.

Presented modularity, which enables parallel work on construction, installations and equipment, has an important role in speeding up the building process as much as possible and subsequently reducing building costs.

The structure of the kindergarten is based on shallow foundation, suitable for different soils bases, due to low levels of contact pressures. In the case of significant settlements the foundation conditions can be improved by well compacted gravel bed with minimum thickness of 30 cm.

Bearing system of the structure can be formed by brick walls 30 cm thick with concrete columns 30/30 cm at wall's crossings with horizontal concrete connection beams and wooden roof beams. In case of different market preferences, the structure can be made in steel columns and beams, connected together in a solid bearing system.

Project dimensioning (computational calculations) is based on two represetative parts of the building: modular unit of playroom with dynamic roof structure and relatively open spaces and service part of the building with flat roof.

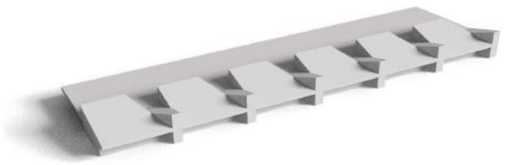
For determining the necessary dimensions of the bearing structure, the load of thr main floor needed to be calculated. Calculations were based on few parameters: load should not exceed 300 kN/m2, it does not require the presence of ground water, starting point for the analysis of seismic safety building is project acceleration 0.20 g.

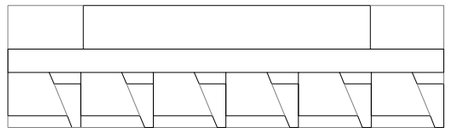
The buildings ground floor is based entirely on the basis of band width 60cm and depth 95cm. During the band is carried out based floor leveling plate thickness of 15cm.

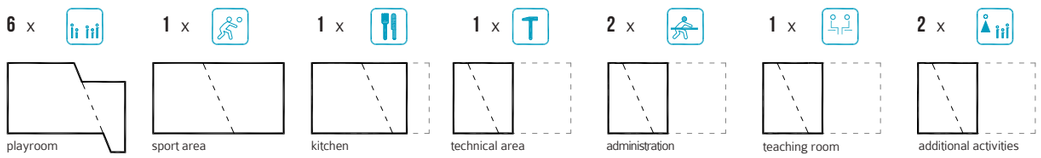
Choosing proper basic materials for bearing structure depends not only on contructional characteristic but also on local market conditions: variety of possible methods of execution, different prices for building materials and labor that vary from different countries. Therefore project offers three different possibilities of bearing structure: 1-classical massive construction (combination of concrete and brick walls with wooden roof construction), 2-steel construction or 3-cross laminated timber construction.

CASE STUDY

LINEAR 01_CHAMELEON





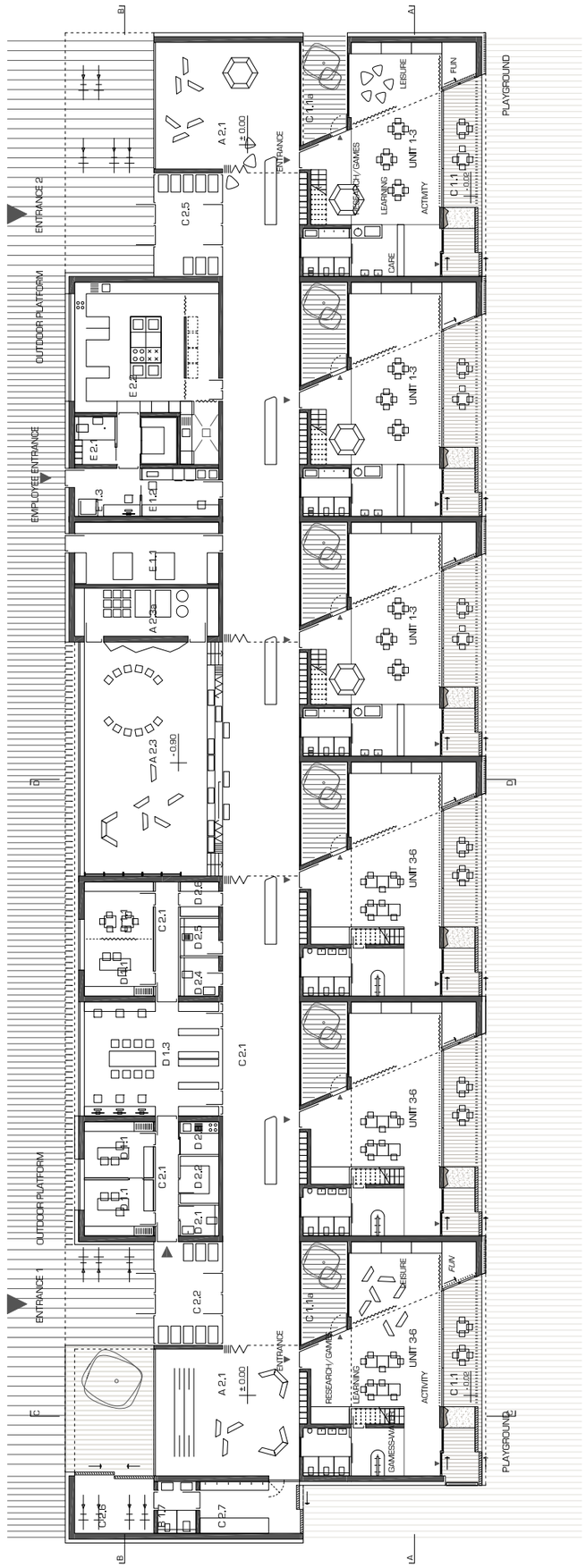


Chameleon consists of several functional elements, fulfilling the highest European standards: playrooms, additional activity spaces, sport hall, administration, rooms for individual specialised treatment, library, kitchen, technical rooms, additional services (toilets, wardrobes, storages...). All are designed as modular units with possibility of combining.
22,5 degree cut of playroom volume appears in the roof structure as well, with angles changing from unit to unit. Repeating of such elements creates a complex dynamic structure, reflecting the program of active users - children.

The following case study presents detailed description of the simplest variant (linear 01) out of possible Chameleon arrangements.

ground floor

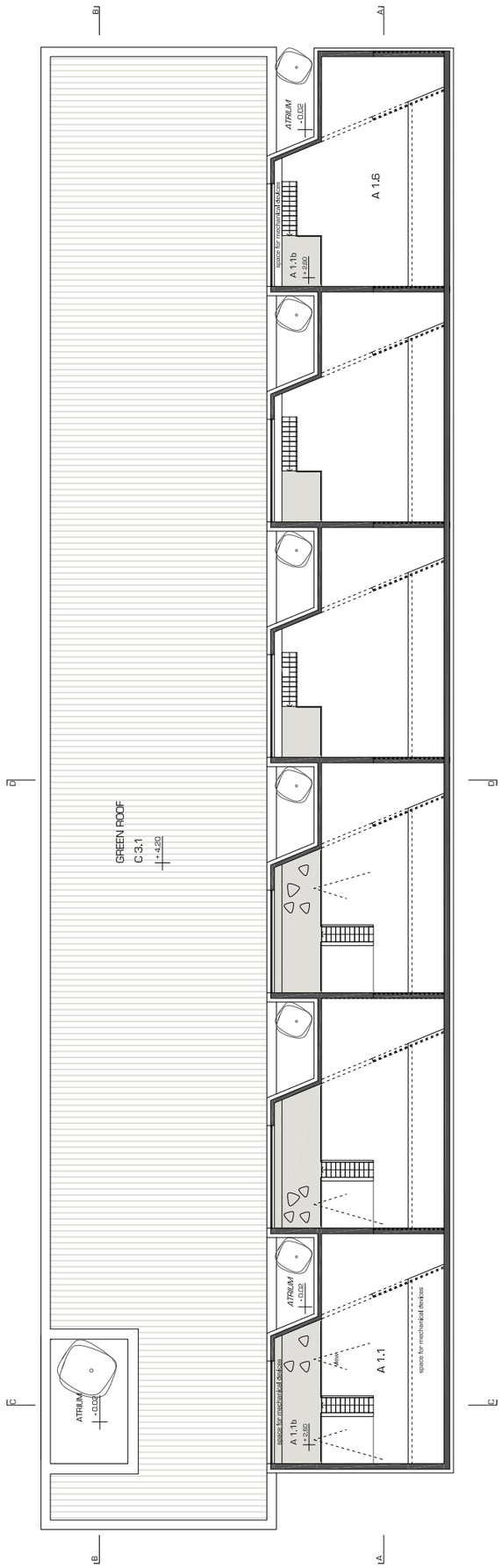
1m 5m



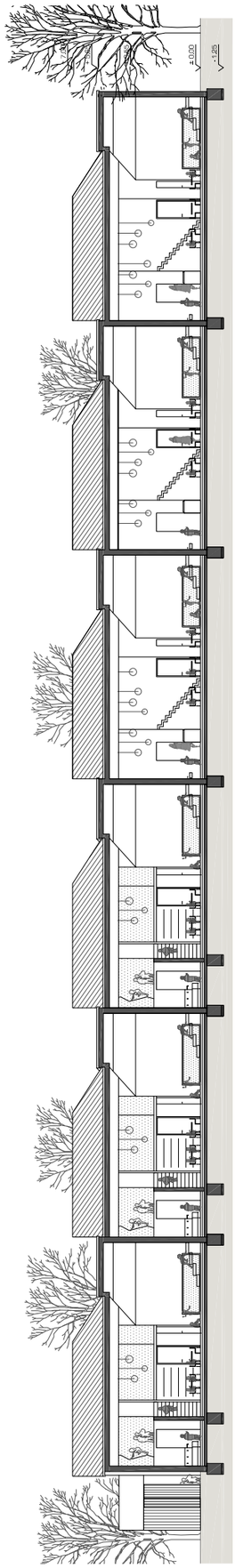
Unit 3-6	playroom / age 3-6
Unit 1-3	playroom / age 1-3
A 2.3a	storage
B 1.7	outdoor toilets
C 1.1	covered terrace
C 1.1a	atrium
C 2.1	corridor
C 2.2	entrance hall
C 2.5	entrance hall
C 2.6	employee bicycle
C 2.7	outdoor toy storage
D 1.1	office
D 1.3	chamber
D 1.4	headmaster office
D 1.5	teacher room
D 2.1	employee toilets
D 2.2	archive
D 2.3	kichenette
D 2.4	toilets for visitors
D 2.5	cleaners room
D 2.6	toy storage
E 1.1	technical area
E 1.2	concierge, laundry
E 1.3	service hall
E 2.1	wardrobes
E 2.2	kitchen

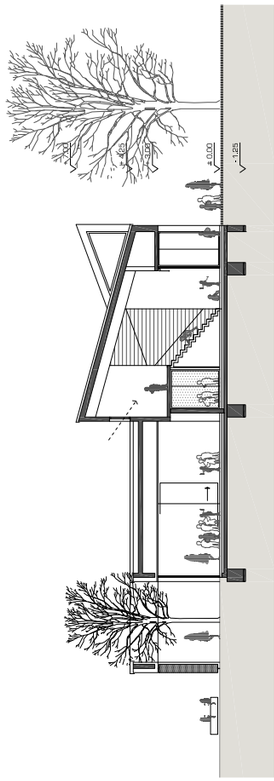
middle floor

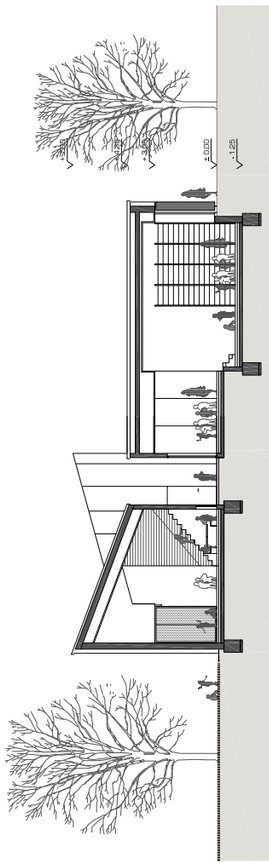
1m 5m



A 1.1	playroom
A 1.1b	middle floor
A 1.6	playroom
C 3.1	green roof
D 0.2	atrium







section A (upper)

1m 5m

section C (lower right)

1m 5m

section D (lower left)

1m 5m

south façade (upper)

1m 5m

north façade (center page)

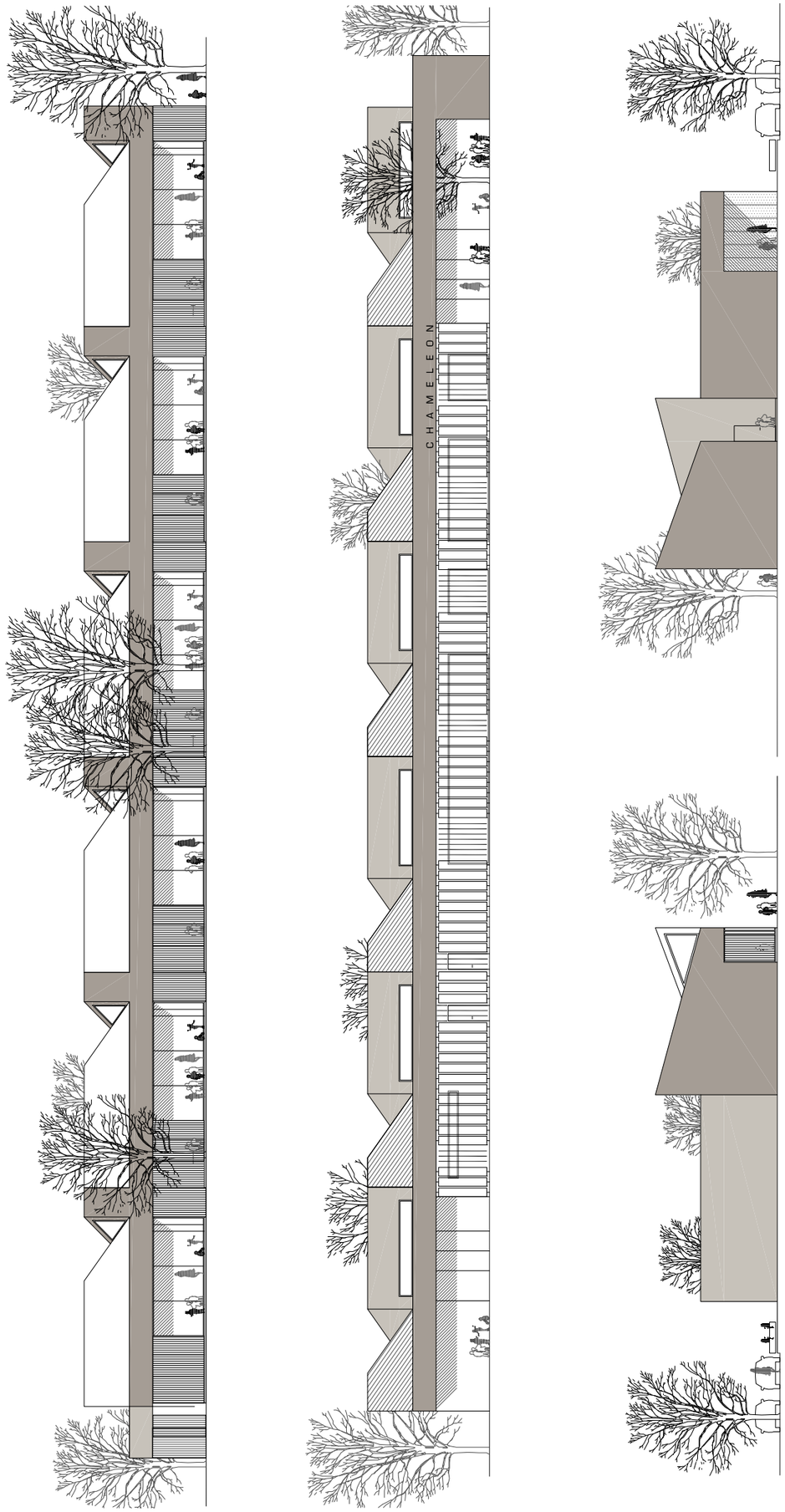
1m 5m

east façade (lower right)

1m 5m

west façade (lower left)

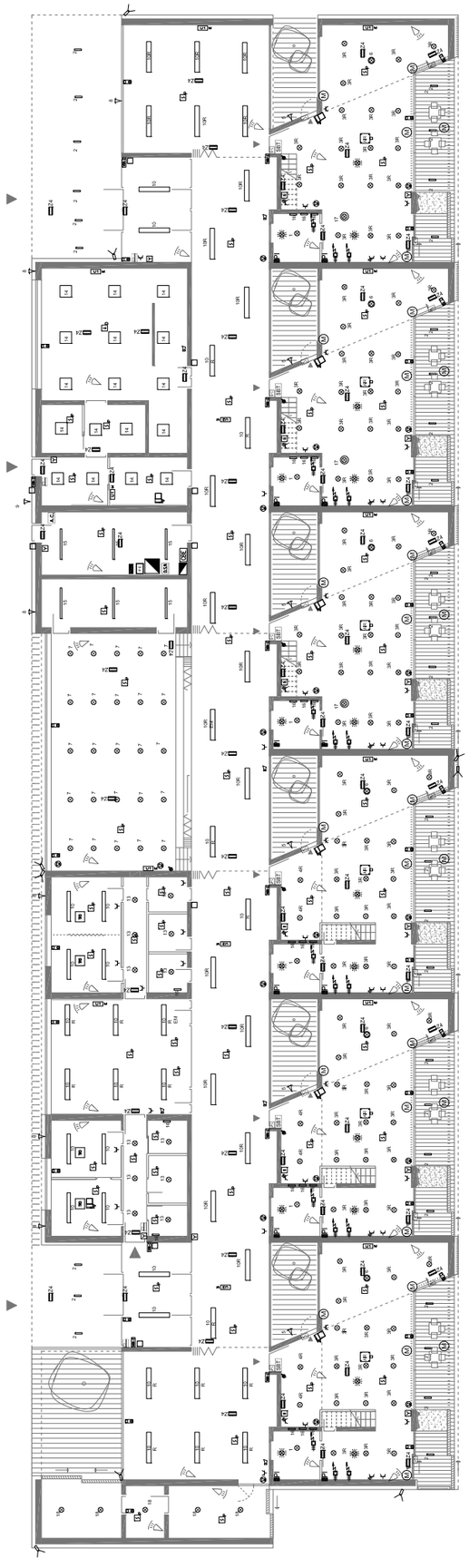
1m 5m



ELECTRICAL INSTALLATIONS

ground floor

1m 5m



switch box
1 phase electrical inlet
double 1 phase electrical inlet
1 ph cable connection
1F screen
magnetic contact
air quality sensor, condensation sensor
universal room control interface
multi and motion sensor
central battery unit
emergency lighting
1-18 light
telco inlet 2xRJ45
telecommunication switch board
floor inlet box
installation - wall
glass breaking sensor
combined (PIR+MV) sensor
LCD keyboard
security control box
fire alarm central box
thermical addressable sensor
optical addressable sensor
manual addressable sensor
fire sound alarm
video domophone unit - outside
video domophone unit - inside
access control
digital video recording box
video security camera
speaker
volume control box

Electrical installations

Electrical installations are Smart Grid ready with built active elements to allow future proof solution with focus on minimum cost of operation.

Heating/Cooling control, Ventilation/Air conditioning

Based on settings, control system controls heating/cooling system for optimal energy consumption and living comfort. Since kindergarten is only partly occupied, it is important that discontinued heating/cooling is apllied for the time ob absence.

Lighting & Blinds control

Lighting provides optimized level of brightness to achieve necessary level of light in living spaces. This is achieved by optimization of blinds control, outside brightness level and controlling lights to achieve needed lightning level for comfortable living conditions.

Security/Access controll

Security and access control is an integral part of the system. Users can easily determine security zones based on actual occupancy. Integration of systems automatically switches heating/cooling, ventilation/air conditioning to sleep mode during absence of presence. Access control is friendly for employees and childrens' parents who can gain easy access, and at the same time grants maximum security level of kindergarten.

Photovoltaic power plant

Photovoltaic power plant can be integrated into the roof of kindergarten, which may turn it into a PLUS energy building. Photovoltaic power plant can deliver electricity to power grid or to the equipment inside kindergarten.

MECHANICAL INSTALLATIONS

ground floor

1m 5m

Heating / Cooling

Floor heating of playrooms gives maximum comfort to children playing on the floor, while ensuring minimum energy consumption (6-12% lower energy use) Heat for heating can be prepared with any locally available heat source (high efficiency heat pumps, geothermal energy, forest wood biomass, natural gas,...) Ceiling cooling system ensures minimum air draft and maximum comfort (protecting children from cold, health hazards and discomfort). Excellent insulation of all installations and piping ensures low energy losses. Weather adaptable heating and cooling systems are optimized for maximum comfort and highest energy efficiency.

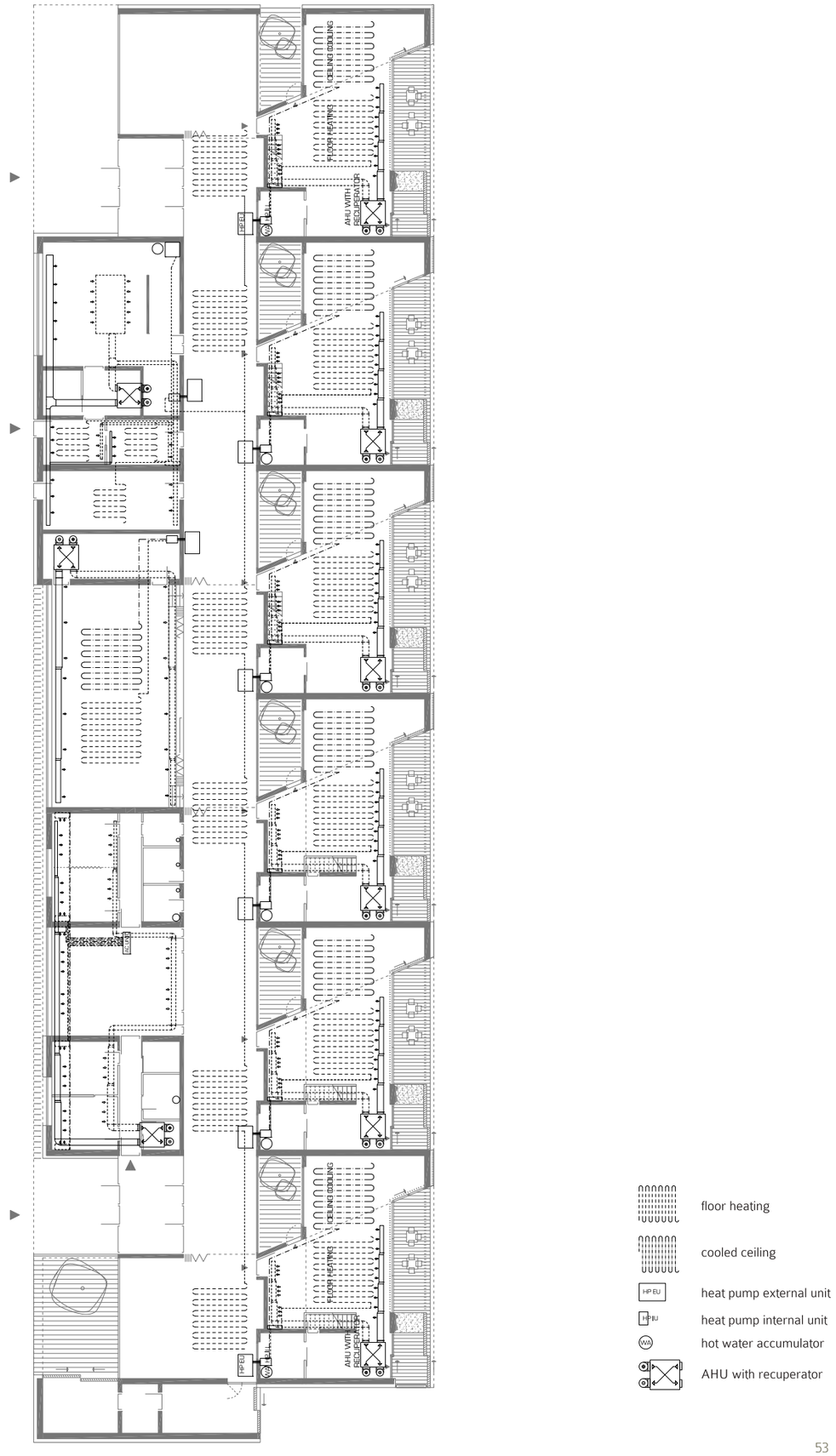
Plumbing / Drainage

Hot sanitary water is prepared with a heating system and can also be additionally prepared with vacuum solar panels in Summer and Winter time.

Sanitary hot water is regulated on taps to max. 38°C, so children cannot accidentally scald themselves with hot water. Taps with automatic shut off control ensure low water consumption. Kindergarten can use rain water for flushing toilets, thus reducing the use of drinking water to a minimum.

Ventilation / Air-Conditioning

Ventilation units are designed to comply with the requirements of each room; with built-in recuperators they can return up to 90% of energy. Air quality sensors regulate ventilation units to ventilate each room no more and no less than is needed (high air quality and low running costs). Filtration of air with the help of ventilation units and high quality air filters provide high air quality. Optimal ventilation distribution for no air draft inside work areas and playrooms. Use of passive cooling with outdoor air at night, stand-by operation.



BUILDING ENGINEERING

SPIT d.o.o. / www.spit.si /

Engineering process;
Organisation of design group;
Structural and technological design;
Project management on design and building level;
Execution of construction works;
Execution of trade-contracting works;
Coordination of all activities in the building process;
Internal survey of works in building process.

SMART ELECTRICAL INSTALLATIONS

Robotina d.o.o. / www.robotina.si /

Robotina is part of Robotina Group, who is the Manufacturer and System integration company for general and vertical based solutions with integration with control systems. Robotina makes complete solutions from energy study up to projects and to turn key solutions including apartment, public and business buildings, hospitals, luxury houses.

ARCHITECTURAL DESIGN

Modular architects Llc / www.modular.si /

:)

MECHANICAL INSTALLATIONS

Goznikar d.o.o. / www.goznikar.si /

Planning, engineering and execution of mechanical systems for water, compressed air, technical gases. Heating, ventilation, air-conditioning and cooling with various systems for business, residential, industrial, public buildings. Specialists in JET ventilation systems for underground parking garages, extraction of smoke and heat, fire protection and CO sensor systems; building services and all mechanical equipment.

PASSIVE COOLING, DOORS AND WINDOWS, FAÇADES AND SHADING

MIPO d.o.o. / www.soltec.si /

Providers of passive cooling with external sun shades and blinds, protecting the building against pre heating, providing light control and good transparency. Supplier of various combinations of windows and doors, as well as facades and shading systems.

ABOUT US

We are experienced, innovative, efficient and up-to-date.

We are professionals in our fields.

Architecture,
Energy concept, optimization, smart building management,
Heat, cooling & ventilations systems,
Passive cooling,
Doors & windows,
Façades,
Construction engineering.

We are a joint venture of four internationally recognised companies in the construction business, and leading architects for kindergartens. Numerous awards and high quality executed buildings classify us to the very top of content and service providers.

In months of intense work we developed the project Chameleon.

www.slogradnje.si

CONTACT US

SloGradnje
D.O.O.

T +386 (0)41 644 920
F +386 (0)7 45 22 128
skype: mirko pozar

info@slogradnje.si
www.slogradnje.si

SloGradnje d.o.o.
Šmartinska cesta 72
1000 Ljubljana
Slovenia_Europe