SHTËPI NË VARG / TERRACED HOUSE

<1960

TË DHËNAT E NDËRTESËS | GENERAL BUILDING DATA

Kategoria e ndërtesës Building category	SHTËPI NË VARG TERRACED HOUSE
Viti i ndërtimit Construction period	<1960
Numri i kateve Number of floors	1
Numri i njësive të banimit Number of dwellings	1
Neto sipërfaqja e ngrohur e ndërtesës (m²) Net surface of the heated space (m²)	118
Konsumi specifik për ngrohje (kWh/m²/vje) Specific energy need for heating (kWh/m²/a)	217.9

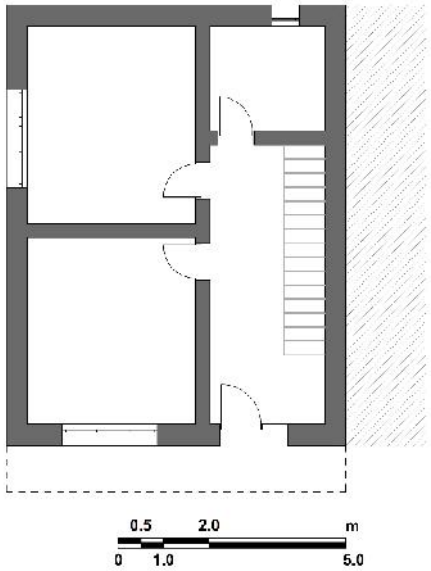
Shtëpitë në varg të ndërtuara para viteve të '60-ta karakterizohen me planimetri të thjeshtë dhe formë kompakte. Këto shtëpi përbëhen nga përdhesa dhe kanë kulm katërujore. Muret e ndërtesës janë nga tullat e plota nga argjila të suvatuara nga ana e jashtme dhe e brendshme. Konstruksioni i kulmit është nga druri, e mbuluar me tjegulla nga argjila dhe hapësira e nën-kulmit është e pashfrytëzueshme. Konstruksioni meskatësh përbëhet nga konstruksioni i drurit me tavan nga përzierja e llaçit gëlqeror me thuprat e drunjta. Dritaret janë të dyfishta nga materiali i drurit me xham njështresor. Shtëpitë në varg të kësaj periudhe përbëhen nga muret masive dhe nuk kanë shtresë të termoizolimit. Sipërfaqet e jashtme të murit dhe sipërfaqja e brendshme e tavanit janë të dëmtuara. Dritaret gjithashtu janë në gjendje jo të mirë. Kjo gjendje krijon humbje të mëdha termike përmes kalueshmërisë termike në sipërfaqet solide si dhe humbje termike përmes infiltrimit të ajrit përmes plasaritjeve në mure dhe gjendjes së dritareve. Për këtë lloj të ndërtesave, sipas vlerësimit të raporteve të ASK dhe vizitave në terren, sistemi tipik i ngrohjes është me stufa individuale me biomasë drusore kurse uji sanitar është me bojler elektrik lokal.

Terraced Houses built before 1960 are characterized by simple layout and compact form. These houses are constructed only with ground floor and have quadruple sloping roofs. The walls of the building are of full clay bricks plastered on outside and inside. The roof structure is made of wood, covered with clay tiles, and the under-roof space is unusable. The mortar construction consists of the wood construction with ceiling from mixture of plaster with wooden birch. Windows are with double paned wooden frame and single glazing. Terraced houses of this period consist of massive walls and do not have a thermal insulation layer. The outer wall surfaces and the inner surface of the ceiling are damaged. Windows are also in poor condition. This condition generates great thermal losses through thermal transmission in solid surfaces as well as thermal loss through air infiltration through wall cracks and poor-quality windows. For this type of buildings, according to KAS reports and field visits, the typical heating system is with individual stoves with wood biomass and sanitary water is with a local electric boiler.

PROPOZIMI STANDARD | STANDARD IMPROVEMENT

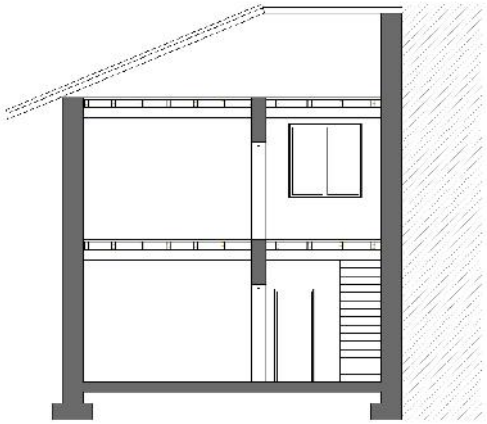
Izolimi i mureve me 10cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i konstruksionit meskatësh me 16 cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i konstruksionit mbi tokë me 5cm shtresë termoizoluese(λ=0.04W/mK). Ndërrimi i dritareve, me dritare të reja me dy shtresa xhami low-e me koeficient U=1.60 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente për zvogëlim të konsumit dhe përmirësim të komoditetit propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm.

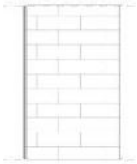
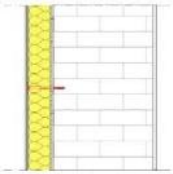
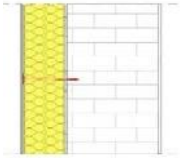
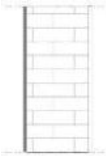
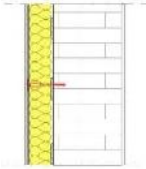
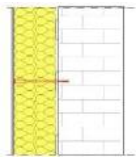
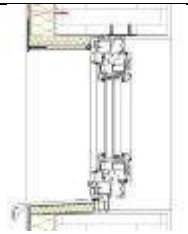
Insulation of walls with 10cm thermal insulation layer (λ = 0.04W / mK). Insulation of construction towards unheated attic with 16 cm of thermal insulation (λ=0.04W/mK). Insulation on the ground slab with 5cm thermal insulation layer (λ = 0.04W / mK). Replacement of windows, with new double-glazed windows with low-E to achieve the coefficient U = 1.60 W/m²K.
For this type of buildings as energy efficiency measures are proposed central heating system with biomass-pellets, hot water accumulator, radiators and thermostatic valves and central domestic hot water system connected to heating system.



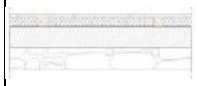
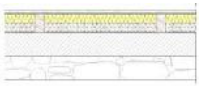
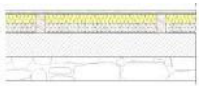
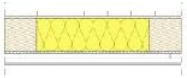
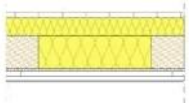
PROPOZIMI I AVANCUAR | ADVANCED IMPROVEMENT

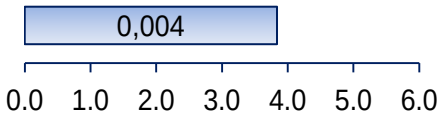
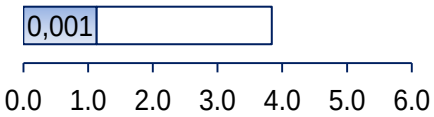
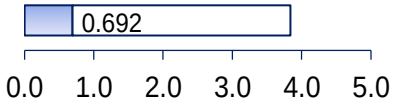
Izolimi i mureve me 20 cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i konstruksionit meskatësh me 20 cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i konstruksionit mbi tokë me 10 cm shtresë termoizoluese(λ=0.04W/mK). Ndërrimi i dritareve, me dritare të reja me tre shtresa xhami low-e me koeficient U=1.0 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente për zvogëlim të konsumit dhe përmirësim të komforit propozohet sistemi qendror i ngrohjes dhe ujit sanitar me pompë termike ajër-ajër dhe ngrohje dyshemore, akumulator të ujit të ngrohtë në kombinim me sistemin e kolektorëve solar.
Insulation of walls with 20cm thermal insulation layer (λ = 0.04W/mK). Insulation of construction towards unheated attic with 20 cm of thermal insulation (λ=0.04W/mK). Insulation on the ground slab with 10 cm thermal insulation layer (λ = 0.04W/mK). Replacement of windows, with new triple glazed windows with low-E to achieve the coefficient U = 1.0 W/m²K.
For this type of buildings as efficiency measure is proposed central heating system with electrical heat pump and floor heating system and central domestic hot water system connected to heating system and solar collector system.



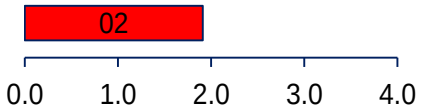
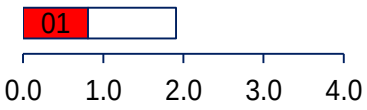
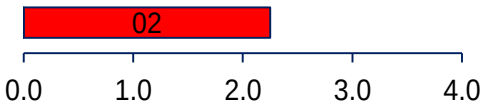
PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS						
	GJENDJA E TANISHME CURRENT CONDITION		GJENDJA E PROPOZIMIT STANDARD STANDARD IMPROVEMENT		GJENDJA E PROPOZIMIT TE AVANCUAR ADVANCE IMPROVEMENT	
MURET E JASHTME 1 EXTERNAL WALL		Llaç gëlqeror 2cm, tullë e plotë nga argjila 45cm, llaç fasade 2cm. Lime plaster 2cm, clay brick 45cm, plaster 2cm.		Llaç gëlqeror 2cm, tullë e plotë nga argjila 45cm, llaç fasade 2cm, termoizolim 10cm, llaç fasade 1cm. Lime plaster 2cm, clay brick 45cm, plaster 2cm, thermal insulation 10cm, façade plaster 1cm.		Llaç gëlqeror 2cm, tullë e plotë nga argjila 45cm, llaç fasade 2cm, termoizolim 20cm, llaç fasade 1cm. Lime plaster 2cm, clay brick 45cm, plaster 2cm, thermal insulation 20cm, façade plaster 1cm.
U (W/m²K)	U = 1.17 W/m2K		U = 0.275 W/m2K		U = 0.156 W/m2K	
MURET E JASHTME 2 EXTERNAL WALL		Llaç gëlqeror 2cm, tullë e plotë nga argjila 31cm, llaç fasade 2cm. Lime Plaster 2cm, clay brick 31cm, plaster 2cm.		Llaç gëlqeror 2cm, tullë e plotë nga argjila 31cm, llaç fasade 2cm, termoizolim 10cm, llaç fasade 1cm. Lime plaster 2cm, clay brick 31cm, plaster 2cm, thermal insulation 10cm, plaster 1cm.		Llaç gëlqeror 2cm, tullë e plotë nga argjila 31cm, llaç fasade 2cm, termoizolim 20cm, llaç fasade 1cm. Lime plaster 2cm, clay brick 31cm, plaster 2cm, thermal insulation 20cm, plaster 1cm.
U (W/m²/K)	U = 1.63 W/m2K		U = 0.319 W/m2K		U = 0.177 W/m2K	
DRITARET WINDOWS		Dritare druri, me një shtresë xhami dhe dy kanata. Double pane wooden windows with single glazing.		Dritare me dy shtresa xhami low-E. Double glazing windows with low-E.		Dritare me tri shtresa xhami low-E. Triple glazing windows with low-E.
U (W/m²/K)	U =3.5 W/m^{2}K		U=1.60 W/m^{2}K		U=1.0 W/m^{2}K	

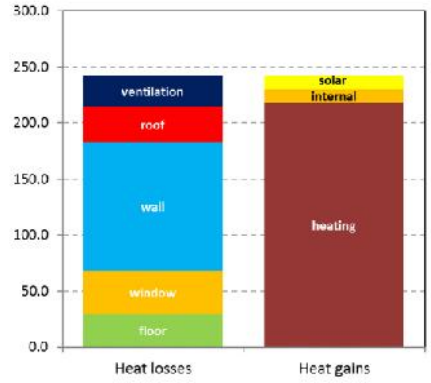
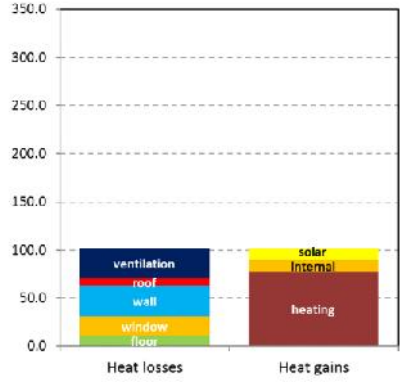
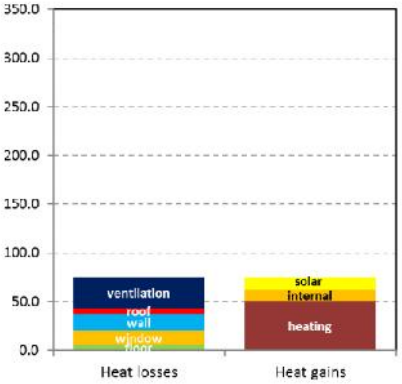
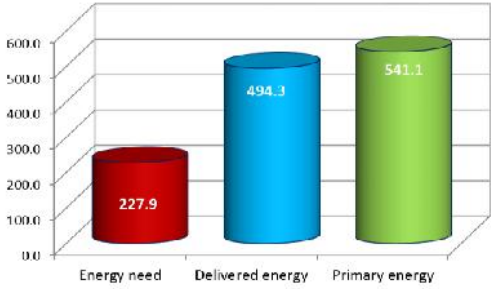
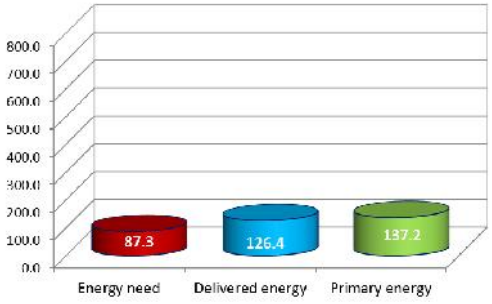
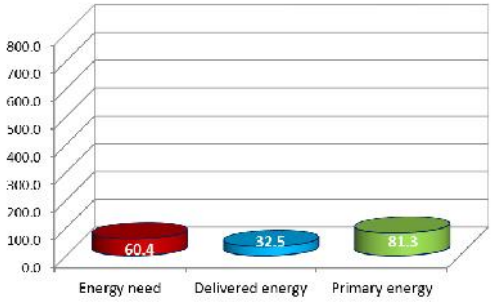
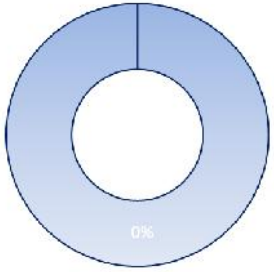
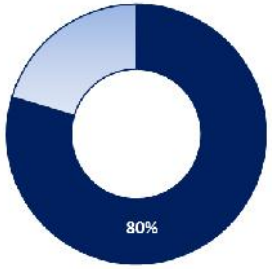
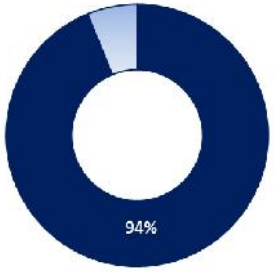
PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS

	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
DYSHEMEJA FLOOR		Dysheme druri 2.5cm, beton i lehtë 5cm, beton 10cm. Wooden floor 2.5cm, concrete 5cm, concrete 10cm.		Dysheme druri 2.5cm, beton i lehtë 5cm, termoizolim 5cm, beton 10cm. Wooden floor 2.5cm, concrete 5cm, thermal insulation 5cm, concrete 10cm.		Dysheme druri 2.5cm, beton i lehtë 5cm, termoizolim 10cm, beton 10cm. Wooden floor 2.5cm, concrete 5cm, thermal insulation 10cm, concrete 10cm.
U (W/m²/K)	U = 2.09 W/m^{2}k		U = 0.533 W/m^{2}K		U = 0.303 W/m2K	
KULMI ROOF		Dërrasa t=1.5cm, trarët e drurit 16/14cm, Dërrasa t=2.5cm, tërrska (karatavan) 2.5cm. Wooden planks 1.5cm, air space/timber construction beams 16cm, wooden planks 2.5cm.		Dërrasa t=1.5cm, trarët e drurit 16/14cm, izolim termik 16cm Dërrasa t=2.5cm, tërrska(karatavan) 2.5cm. Wooden planks 1.5cm, timber construction beams 16cm, thermal insulation 16cm, wooden planks 2.5cm.		Dërrasa t=1.5cm, Trarët e drurit 16/14cm, Lesh guri 20cm Dërrasa t=2.5cm. Wooden planks 1.5cm, timber construction beams 16cm, thermal insulation 20cm, wooden planks 2.5cm.
U (W/m²/K)	U = 1.60 W/m^{2}K		U = 0.196 W/m^{2}K		U = 0.160 W/m^{2}K	

Koeficienti i transmetimit (W/K) për A_{ref} (m^2) Transmission coefficient (W/K) per A_{ref} (m^2)			

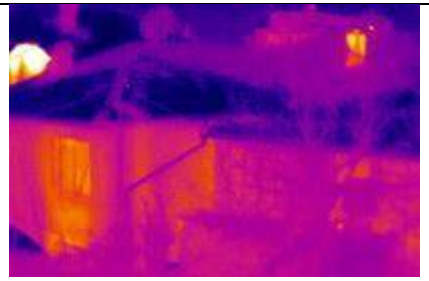
SISTEMI I NGROHJES DHE UJIT TË NGROHTË SANITAR | HEATING AND DOMESTIC HOT WATER SYSTEM						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
SISTEMI I NGROHJES HEATING SYSTEM		Stufë individuale me dru Individual wood stove		Sistemi i ngrohjes qendrore - kaldaja me biomasë, radiatorë dhe valvola termostatike Central heating system - with biomass, radiators and thermostatic valves		Sistemi i ngrohjes qendrore me pompë termike elektrike dhe sistem të ngrohjes dyshemore Central heating system with electrical heat pump and floor heating system
Efiçienca Efficiency	η = 50%		η = 80%		η = 250%	
SISTEMI I PËRGATITJES SË UJIT TË NGROHTË DOMESTIC HOT WATER SYSTEM (DHW)		Bojler elektrik për ngrohje të ujit sanitar Electric water heater		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes Central domestic hot water system connected to heating system		Sistemi qendrori i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes dhe sistemin e kolektorëve solar Central domestic hot water system connected to heating system and solar collector system

Kursimet e emetimit të CO_2 (tCO_2) CO_2 Emission savings (tCO_2)			

	GJENDJA E TANISHME CURRENT CONDITION	PROPOZIMI STANDARD STANDARD IMPROVEMENT	PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT
Humbjet dhe përfitimet specifike të ngrohjes (kWh/m^{2}a) Specific heat losses and gains (kWh/m^{2}a)			
Energjia për ngrohje dhe ujë të ngrohtë (kWh/m^{2}a) Energy for heating & DHW (kWh/m^{2}a)			
Kursimet e energjisë së furnizuar (kWh/m^{2}a) Delivered energy savings (kWh/m^{2}a)			

SHTËPI NË VARG / TERRACED HOUSES

1960-1969



TË DHËNAT E NDËRTESËS | GENERAL BUILDING DATA

Kategoria e ndërtesës Building category	SHTËPI NË VARG TERRACED HOUSES
Viti I ndërtimit Construction period	1960 - 1969
Numri i kateve Number of floors	1
Numri i njësive të banimit Number of dwellings	1
Neto sipërfaqja e ngrohur e ndërtesës (m²) Net surface of the heated space (m²)	58.8
Konsumi specifik për ngrohje (kWh/m²/vje) Specific energy need for heating (kWh/m²/a)	329.8

Baza e ndërtesës është e thjeshtë, me një formë të pastër gjeometrike. Ndërtesat e kësaj periudhe të ndërtimit zakonisht janë sistem të kombinuara me shtylla dhe mure mbajtëse të patermoizoluar. Muret janë nga tulla e plotë e argjilës me trashësi 31cm, të suvatuara nga të dy anët. Kulmi i ndërtesës është i patermoizoluar dhe kryesisht në këtë etapë të ndërtimit ndërtesat e këtij lloji kanë mbulesë nga tjegullat. Dyshemeja është nga konstruksioni i betonit si shtresë finale parket dhe tavani me suvatim në tërska. Hapjet e jashtme të ndërtesës janë me kornizë druri me dy krah me nga një shtresë xhami; dritaret e hyrjes janë me kornizë metalike dhe me një shtresë xhami. Dyert e hyrjes janë metalike dhe një shtresë xhami të përforcuar.

Fotografia e realizuar me termokamere tregon humbje të mëdha nga hapjet e ndërtesës dhe kulmi i ndërtesës. Për këtë lloj të ndërtesave, sipas vlerësimit të raporteve të ASK dhe vizitave në terren, sistemi tipik i ngrohjes është me stufa individuale me biomasë drusore kurse uji sanitar është me bojler elektrik lokal.

The base of the building is simple, with a clean geometric shape. Buildings of this construction period are usually a system combined with non-insulated columns and retaining walls.

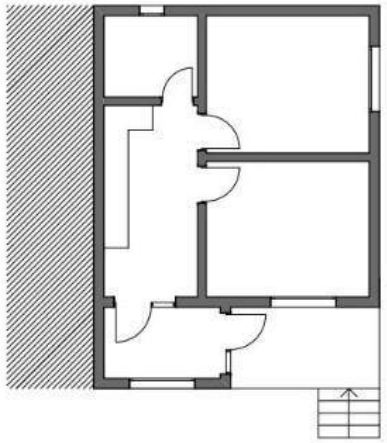
The walls are made of solid clay bricks with a thickness of 31cm, plastered on both sides.

The roof of the building is uninsulated and mainly buildings of this period of construction are covered with tiles. The floor is made of concrete construction with the final wooden flooring and plastered ceiling. The external openings of the building are of a two-sided wooden frame with a single glazing; The entrance windows are metallic and with a single glazing. The entrance doors are metal and a reinforced glass layer. The picture taken with thermal cameras shows great loss from the building's openings and the roof of the building. For this type of buildings, according to KAS reports and field visits, the typical heating system is with individual stoves with wood biomass and sanitary water is with a local electric boiler

PROPOZIMI STANDARD | STANDARD IMPROVEMENT

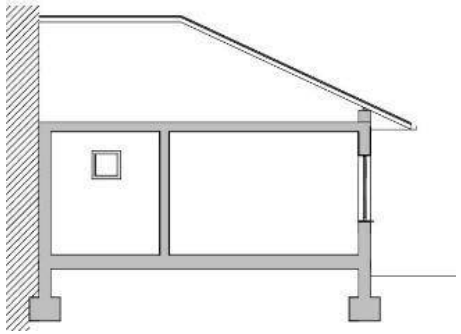
Izolimi i mureve me 10cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i konstruksionit të dyshemesë mbi hapësirë të pangrohur dhe konstruksionit të kulmit me 10cm shtresë termoizoluese (λ=0.04W/mK). Ndërrimi i dritareve, me dritare të reja me dy shtresa xhami low-E që të arrihet koeficienti U=1.60 W/m²K. Për këtë lloj të ndërtesave si masë efiçiente për zvogëlim të konsumit dhe përmirësim të komforit propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm.

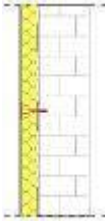
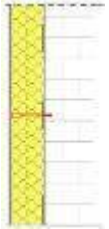
Insulation of walls with 10cm thermal insulation layer (λ = 0.04 W/mK). Insulation on the slab above unheated space Insulation on the roof slab with 10cm thermal insulation layer (λ = 0.04 W/mK). Replacement of windows, with new low-E windows with double glazing achieve the coefficient U = 1.60W/m²K.
For this type of buildings as efficiency measures are proposed central heating system with biomass-pellets, hot water accumulator, radiators and thermostatic valves and central domestic hot water system connected to heating system.



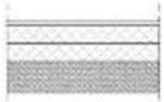
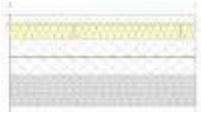
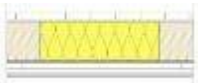
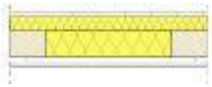
PROPOZIMI I AVANCUAR | ADVANCED IMPROVEMENT

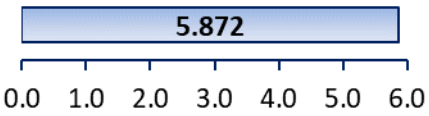
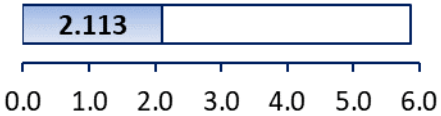
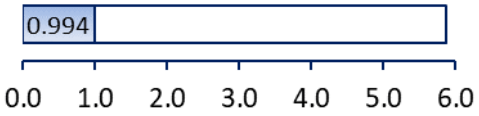
Izolimi i mureve me 20cm shtresë termoizoluese (λ=0.04W/mK). Izolimi I konstruksionit të dyshemesë mbi hapësirë të pangrohur dhe konstruksionit të kulmit me 20cm shtresë termoizoluese (λ=0.04W/mK). Ndërrimi i dritareve, me dritare të reja me dy shtresa xhami low-E që të arrihet koeficienti U=1.0 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente për zvogëlim të konsumit dhe përmirësim të komforit propozohet sistemi qendror i ngrohjes dhe ujit sanitar me pompë termike ajër-ajër dhe ngrohje dyshemore, akumulator të ujit të ngrohtë në kombinim me sistemin e kolektorëve solar.
Insulation of walls with 20cm thermal insulation layer (λ = 0.04 W/mK). Insulation on the slab above unheated space Insulation on the roof slab with 20cm thermal insulation layer (λ = 0.04 W/mK). Replacement of windows, with new low-E windows with double glazing to achieve the coefficient U = 1.0 W/m²K.
For this type of buildings as efficiency measure is proposed central heating system with electrical heat pump and floor heating system and central domestic hot water system connected to heating system and solar collector system.

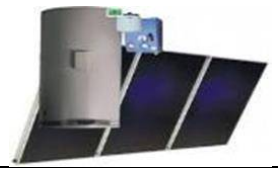


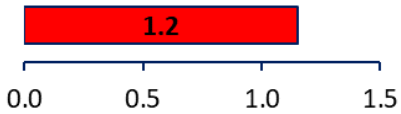
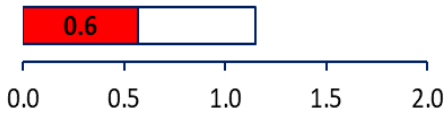
PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
MURET E JASHTME 1 EXTERNAL WALL		Llaç gëlqeror 2cm, tullë nga argjila 31cm, llaç çimentoje 2.5cm Lime plaster 2cm, clay brick 31cm, plaster 2.5cm.		Llaç gëlqeror 2cm, tullë nga argjila 31cm, llaç çimentoje 2.5cm , termoizolim 10cm, llaç fasade 2cm; Lime plaster 2cm, clay brick 31cm, plaster 2.5cm, thermal insulation 10cm, façade plaster 1cm.		Llaç gëlqeror 2cm, tullë nga argjila 31cm, llaç çimentoje 2.5cm , termoizolim 20cm, llaç fasade 2cm; Lime plaster 2cm, clay brick 31cm, plaster 2.5cm, thermal insulation 20cm, façade plaster 1cm.
U (W/m²K)	U = 1.53 W/m^{2}K		U = 0.327 W/m^{2}K		U = 0.180 W/m^{2}K	
MURET E JASHTME 2 EXTERNAL WALL		Llaç gëlqeror 2cm, Tullë nga argjila 25cm, diletimi (hapësirë ajrore) 5cm, tullë nga argjila 25cm, Llaç gëlqeror 2cm Lime plaster 2cm, clay brick 25cm, air space 5cm, clay brick 25cm, plaster 2cm		Pa Ndryshime No Changes		Pa Ndryshime No Changes
U (W/m²/K)	U = 1.194 W/m^{2}K		U = 1.194 W/m^{2}K		U = 1.194 W/m^{2}K	
DRITARET WINDOWS		Dritare druri, me një shtresë xhami dhe dy kanata Double pane wooden windows with single glazing.		Dritare me xham dy-shtresor low-E Double glazing windows with low-E.		Dritare me xham tre-shtresor low-E Triple glazing windows with low-E.
U (W/m²/K)	U =3.5 W/m^{2}K		U=1.60 W/m^{2}K		U=1.0 W/m^{2}K	

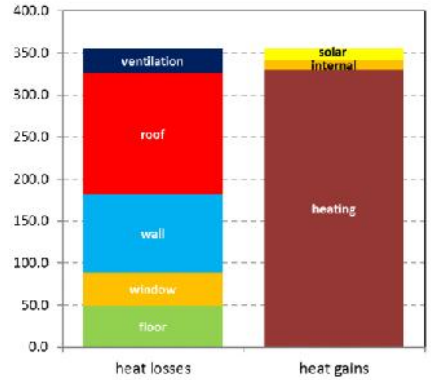
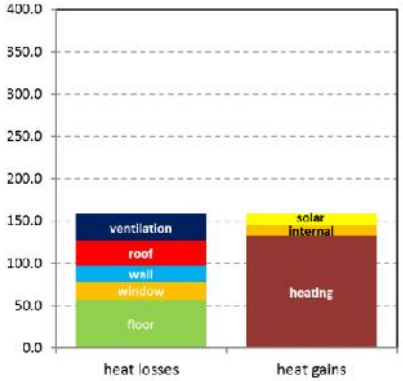
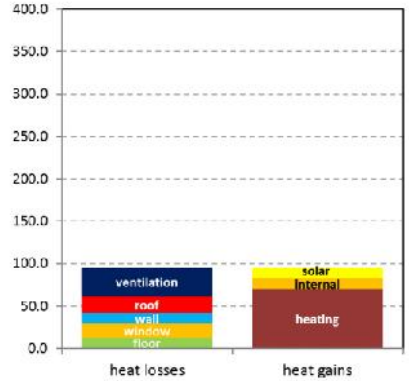
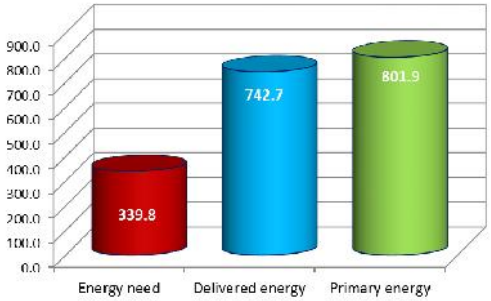
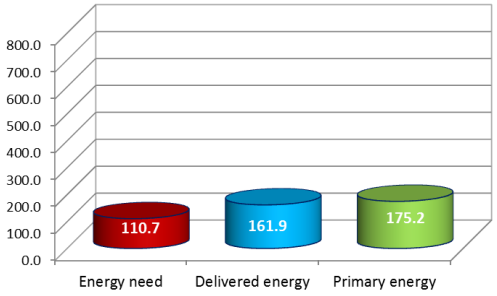
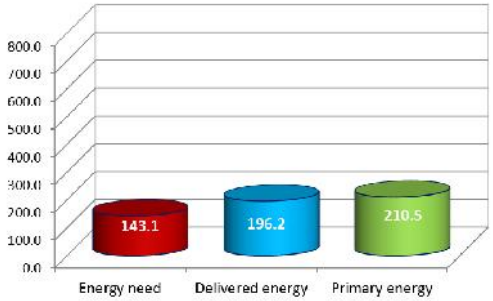
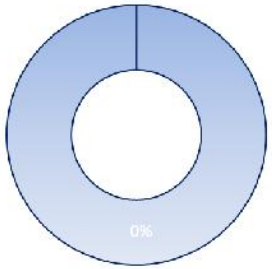
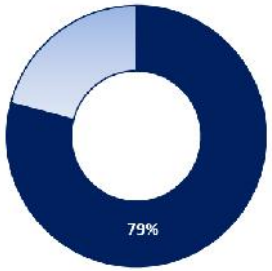
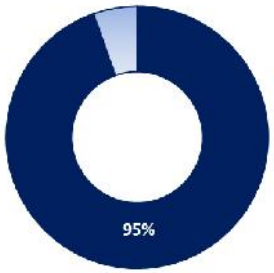
PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS

	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
DYSHEMEJA FLOOR		Dysheme druri 2.5cm, beton i lehtë 10cm hidroizolim, beton 10cm, zhavorr 10cm Wooden floor 2.5cm, screed 10cm, hydro isolation, concrete 10cm, gravel 10cm.		Pa Ndryshime No Changes		Dysheme druri 2.5cm, estrih 5cm, termoizolim 10cm, beton i lehtë 10cm hidroizolim, beton 10cm, zhavorr 10cm Wooden floor 2.5cm, concreate screed 5cm, hydro isolation, light concrete 10cm, gravel 10cm.
U (W/m²/K)	U = 1.742 W/m^{2}k		U = 1.742 W/m^{2}K		U = 0.319 W/m2K	
KULMI ROOF		Dërrasa t=1.5cm, Trarët e drurit 16/14cm, Dërrasa t=2.5cm, tërrska(karatavan) 2.5cm Wooden planks 1.5cm, air space/timber construction beams 16cm, wooden planks 2.5cm.		Dërrasa t=1.5cm, Trarët e drurit 16/14cm, Dërrasa t=2.5cm, tërrska (karatavan) 2.5cm Wooden planks 1.5cm, timber construction beams 16cm, thermal insulation 16cm, wooden planks 2.5cm.		Dërrasa t=1.5cm, Lesh guri=1x8cm,Trarët e drurit 16/14cm, Lesh guri=2x8cm, Wooden planks 1.5cm, timber construction beams 16cm, Rockwool thermal insulation 20cm, wooden planks 2.5cm.
U (W/m²/K)	U = 1.60 W/m^{2}K		U = 0.196 W/m^{2}K		U = 0.160 W/m^{2}K	

Koeficienti I transmetimit (W/K) për A_{ref} (m^2) Transmission coefficient (W/K) per A_{ref} (m^2)			

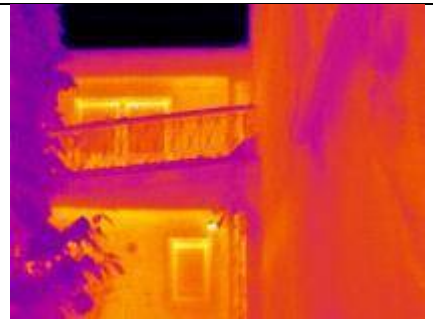
SISTEMI I NGROHJES DHE UJIT TË NGROHTË SANITAR | HEATING AND DOMESTIC HOT WATER SYSTEM						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
SISTEMI I NGROHJES HEATING SYSTEM		Stufë individuale me dru. Individual wood stove.		Sistemi i ngrohjes qendrore - kaldaja me biomasë, radiatorë dhe valvola termostatike. Central heating system - with biomass, radiators and thermostatic valves		Sistemi i ngrohjes qendrore me pompë termike elektrike dhe sistem të ngrohjes dyshemore. Central heating system with electrical heat pump and floor heating system
Efiçienca Efficiency	η = 50%		η = 80%		η = 250%	
SISTEMI I PËRGATITJES SË UJIT TË NGROHTË DOMESTIC HOT WATER SYSTEM (DHW)		Bojler elektrik për ngrohje të ujit sanitar. Electric water heater		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes. Central domestic hot water system connected to heating system		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes dhe sistemin e kolektoreve solar. Central domestic hot water system connected to heating system and solar collector system

Kursimet e emetimit të CO_2 (tCO_2) CO_2 Emission savings (tCO_2)			

	GJENDJA E TANISHME CURRENT CONDITION	PROPOZIMI STANDARD STANDARD IMPROVEMENT	PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT
Përfitimet dhe humbjet e nxehtësisë specifike (kWh/m^{2}a) Specific heat losses and gains (kWh/m^{2}a)			
Energjia për ngrohje dhe ujë të ngrohtë (kWh/m^{2}a) Energy for heating & DHW (kWh/m^{2}a)			
Kursimet e energjisë së furnizuar (kWh/m^{2}a) Delivered energy savings (kWh/m^{2}a)			

SHTËPI NË VARG / TERRACED HOUSES

1970-1979



TË DHËNAT E NDËRTESËS | GENERAL BUILDING DATA

Kategoria e ndërtesës Building category	SHTËPI NË VARG TERRACED HOUSES
Viti I ndërtimit Construction period	1971 - 1980
Numri i kateve Number of floors	3
Numri i njësive të banimit Number of dwellings	1
Neto sipërfaqja e ngrohur e ndërtesës (m²) Net surface of the heated space (m²)	357
Konsumi specifik për ngrohje (kWh/m²/vje) Specific energy need for heating (kWh/m²/a)	147.9

Baza e ndërtesës është e thjeshtë, me një formë të pastër gjeometrike. Ndërtesat e kësaj periudhe të ndërtimit zakonisht janë sistem skeletor me shtylla dhe trarë, mure të patermoizoluar dhe muret e përdheses të veshura me gur. Muret janë nga blloqet e argjilës me trashësi 25cm, të suvatuara nga te dy anët. Kulmi i ndërtesës është i patermoizoluar dhe kryesisht në këtë etape të ndërtimit ndërtesat e këtij lloji kanë mbulesë nga pllaka asbesti – sallonit dhe pllakë nga betoni i kombinuar me elemente të zgavruara nga argjila.
Dyshemeja është nga konstruksioni i betonit si shtresë finale parket dhe tavani me suvatim me llaç gëlqeror.
Hapjet e jashtme të ndërtesës janë me kornizë druri me dy krah me nga një shtresë xhami; dritaret e hyrjes janë me kornizë metalike dhe me një shtresë xhami. Dyert e hyrjes janë nga druri me një pjesë të vogël nga xhami një shtresor.
Fotografia e realizuar me termokamerë tregon urat termike dhe humbjet në ndërtesë.
Për këtë lloj të ndërtesave, sipas vlerësimit të raporteve të ASK dhe vizitave në terren, sistemi tipik i ngrohjes është me stufa individuale me biomasë drusore kurse uji sanitar është me bojler elektrik lokal.

The base of the building is simple, with a geometric shape. Buildings of this construction period are usually a skeleton system with beams and columns, non-insulated walls and ground floor walls covered with stone.
The walls are made of clay blocks with a thickness of 25cm, plastered on both sides.
The roof of the building is uninsulated and mainly buildings of this period of construction are covered with tiles and combined slab with hollowed clay elements are covered with tiles.
The floor is made of concrete construction with the final wooden flooring and ceiling is with lime plaster.
The external openings of the building are of a two-sided wooden frame with a single glazing; The entrance doors are wooden frame and single glazing.
The picture taken with thermocameras shows great loss from the building's openings and the roof of the building.
For this type of buildings, according to KAS reports and field visits, the typical heating system is with individual stoves with wood biomass and sanitary water is with a local electric boiler.

PROPOZIMI STANDARD | STANDARD IMPROVEMENT

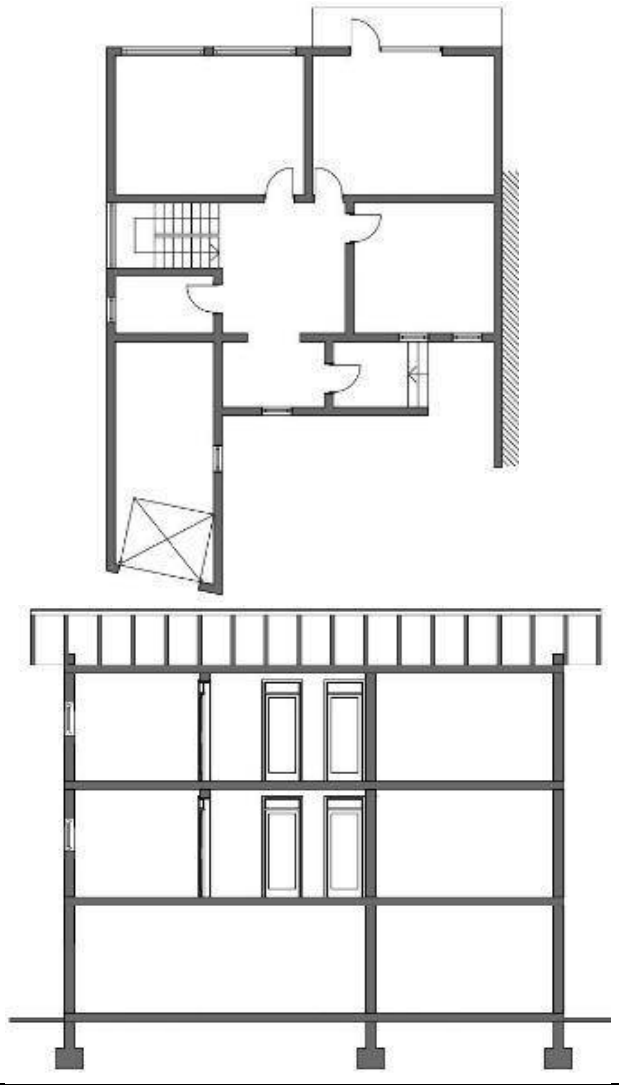
Izolimi i mureve me 10cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i konstruksionit të kulmit me 10cm shtresë termoizoluese (λ=0.04W/mK). Ndërrimi i dritareve, me dritare të reja me dy shtresa xhami low-E që të arrihet koeficienti U=1.60 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente për zvogëlim të konsumit dhe përmirësim të komforit propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm.

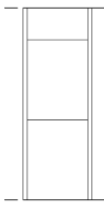
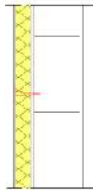
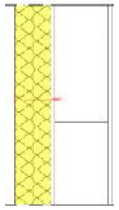
Insulation of walls with 10cm thermal insulation layer (λ = 0.04W/mK). Insulation on the roof slab with 10cm thermal insulation layer (λ = 0.04W/mK). Replacement of windows, with new low-E double glazing windows to achieve the coefficient U = 1.60 W/m²K.
For this type of buildings as efficiency measures are proposed central heating system with biomass-pellets, hot water accumulator, radiators and thermostatic valves and central domestic hot water system connected to heating system.

PROPOZIMI I AVANCUAR | ADVANCED IMPROVEMENT

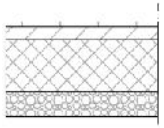
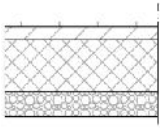
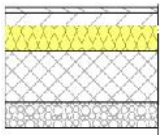
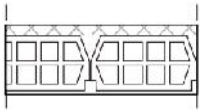
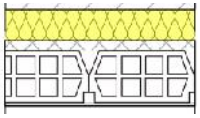
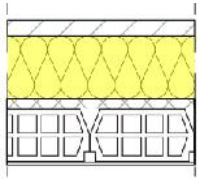
Izolimi i mureve me 20cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i konstruksionit të kulmit me 20cm shtresë termoizoluese (λ=0.04W/mK) dhe Izolimi i konstruksionit të dyshemesë me 10cm shtresë termoizoluese (λ=0.04W/mK). Ndërrimi i dritareve, me dritare të reja me tri shtresa xhami low-E që të arrihet koeficienti U=1.0 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente për zvogëlim të konsumit dhe përmirësim të komforit propozohet sistemi qendror i ngrohjes dhe ujit sanitar me pompë termike ajër-ajër dhe ngrohje dyshimore, akumulator të ujit të ngrohtë në kombinim me sistemin e kolektorëve solar.

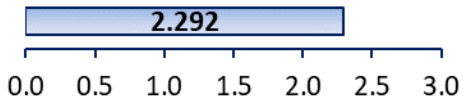
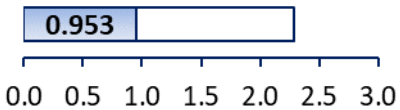
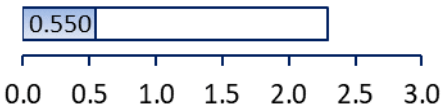
Insulation of walls with 20cm thermal insulation layer (λ = 0.04W/mK). Insulation on the roof slab with 20cm thermal insulation layer (λ = 0.04W/mK) and insulation on the floor slab with 10cm thermal insulation layer (λ = 0.04W/mK. Replacement of windows, with new low-E triple glazing windows to achieve the coefficient U = 1.0 W/m²K.
For this type of buildings as efficiency measure is proposed central heating system with electrical heat pump and floor heating system and central domestic hot water system connected to heating system and solar collector system.

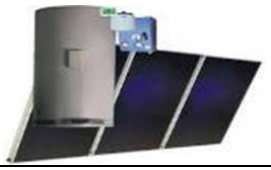


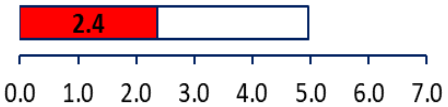
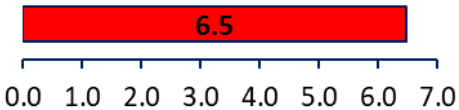
PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
MURET E JASHTME 1 EXTERNAL WALL		Llaç gëlqeror 2cm, Bllok argjile 25cm, llaç çimentoje 2.5cm Lime plaster 2cm, clay block 25cm, plaster 2.5cm,		Llaç gëlqeror 2cm, Bllok argjile 25cm, llaç çimentoje 2.5cm , termoizolim 10cm, llaç fasade 2cm; Lime plaster 2cm, clay block 25cm, plaster 2.5cm, thermal insulation 10cm, façade plaster 2cm.		Llaç gëlqeror 2cm, Bllok argjile 25cm, llaç çimentoje 2.5cm termoizolim 20cm, llaç fasade 2cm; Lime plaster 2cm, clay block 25cm, plaster 2.5cm, thermal insulation 20cm, façade plaster 2cm.
U (W/m²K)	U = 1.864 W/m^{2}K		U = 0.327 W/m^{2}K		U = 0.180 W/m^{2}K	
MURET E JASHTME 2 EXTERNAL WALL		Llaç gëlqeror 2cm, Tullë nga argjila 25cm, diletimi (hapësirë ajrore) 5cm, tullë nga argjila 25cm, Llaç gëlqeror 2cm Plaster 2cm, clay brick 25cm, air space 5cm, clay brick 25cm, plaster 2cm.		Pa Ndryshime No Changes		Pa Ndryshime No Changes
U (W/m²/K)	U = 1.194 W/m^{2}K		U = 1.194 W/m^{2}K		U = 1.194 W/m^{2}K	
DRITARET WINDOWS		Dritare druri, me një shtresë xhami dhe dy Kanata Double pane wooden windows with single glazing.		Dritare me xham dy-shtresor low-E Double glazing windows with low-E.		Dritare me xham tre-shtresor low-E Triple glazing windows with low-E.
U (W/m²/K)	U =3.5 W/m^{2}K		U=1.60 W/m^{2}K		U=1.0 W/m^{2}K	

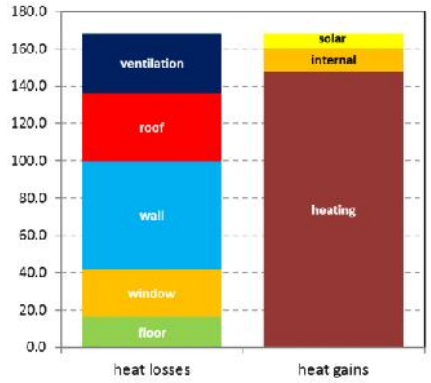
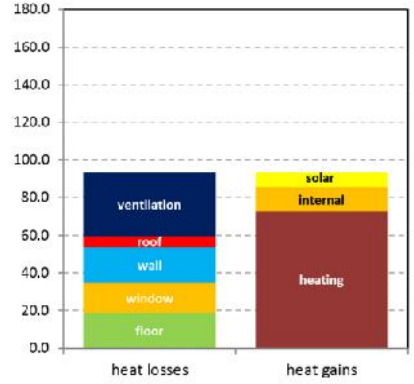
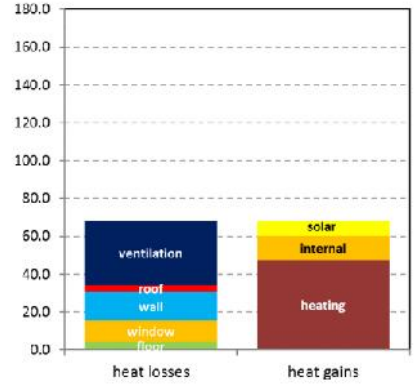
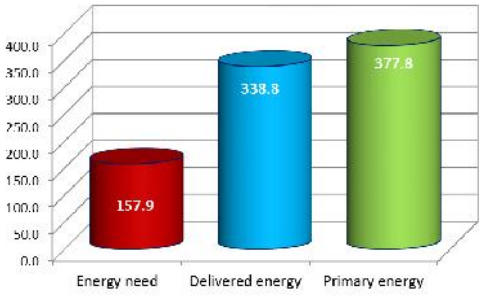
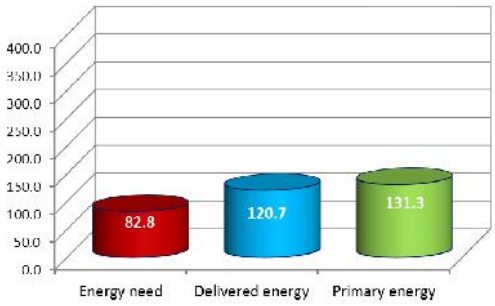
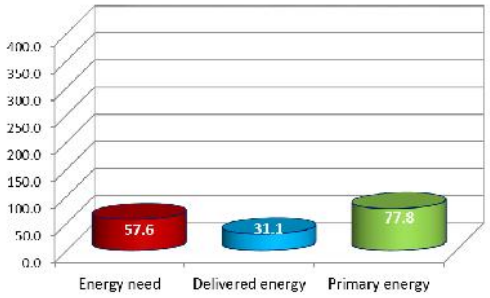
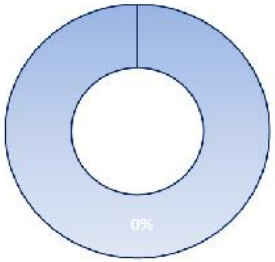
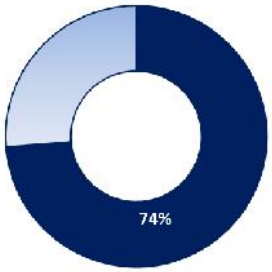
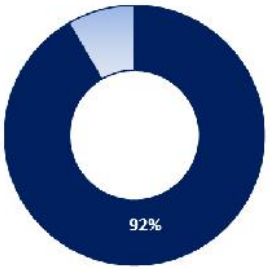
PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS

	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
DYSHEMEJA FLOOR		Parket 2.5cm, estrih 5cm, hidroizolim, beton 20cm, zhavorr 10cm Wooden floor 2.5cm, screed 5cm, hydro isolation, concrete 20cm, gravel 10cm.		Pa Ndryshime No Changes		Parket 2.5cm, estrih 5cm, termoizolim 10cm, hidroizolim, beton 20cm, zhavorr 10cm Wooden floor 2.5cm, screed 5cm, thermal isolation 10cm, hydro isolation, concrete 20cm, gravel 10cm.
U (W/m²/K)	U = 2.23 W/m^{2}k		U = 2.23 W/m^{2}K		U = 0.339 W/m2K	
KULMI ROOF		Llaç gëlqeror 2cm, monta nga argjila 20, pllakë betoni 10cm Lime plaster 2cm, slab with clay block infill 20cm and concrete slab 10cm		Llaç gëlqeror 2cm, monta nga argjila 20, pllakë betoni 10cm, termoizolim 10cm. Lime plaster 2cm, slab with clay block infill 20cm and concrete slab 10cm, thermal insulation 10cm		Llaç gëlqeror 2cm, monta nga argjila 20, pllakë betoni 10cm, termoizolim 20cm, dërrasa 2cm Lime plaster 2cm, slab with clay block infill 20cm and concrete slab 10cm, thermal insulation 20cm and wood board 2cm
U (W/m²/K)	U = 2.289 W/m^{2}K		U = 0.343 W/m^{2}K		U = 0.184 W/m^{2}K	

Koeficienti I transmetimit (W/K) për A_{ref} (m^2) Transmission coefficient (W/K) per A_{ref} (m^2)			

SISTEMI I NGROHJES DHE UJIT TË NGROHTË SANITAR | HEATING AND DOMESTIC HOT WATER SYSTEM						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
SISTEMI I NGROHJES HEATING SYSTEM		Stufë individuale me dru Individual wood stove		Sistemi i ngrohjes qendrore - kaldaja me biomasë, radiatorë dhe valvola termostatike Central heating system - with biomass, radiators and thermostatic valves		Sistemi i ngrohjes qendrore me pompë termike elektrike dhe sistem të ngrohjes dyshemore Central heating system with electrical heat pump and floor heating system
Efiçienca Efficiency	η = 50%		η = 80%		η = 250%	
SISTEMI I PERGATITJES SË UJIT TË NGROHTË DOMESTIC HOT WATER SYSTEM (DHW)		Bojler elektrik për ngrohje të ujit sanitar Electric water heater		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes Central domestic hot water system connected to heating system		Sistemi qendror i ujit teëngrohtë shtëpiak i lidhur me sistemin e ngrohjes dhe sistemin e kolektorëve solar Central domestic hot water system connected to heating system and solar collector system

Kursimi i emetimit të CO_2 (tCO_2) CO_2 Emission savings (tCO_2)			

	GJENDJA E TANISHME CURRENT CONDITION	PROPOZIMI STANDARD STANDARD IMPROVEMENT	PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT
Përfitimet dhe humbjet e nxehtësiseëspecifike kWh/m^{2}a) Specific heat losses and gains (kWh/m^{2}a)			
Energjia për ngrohje dhe ujë sanitar kWh/m^{2}a) Energy for heating & DHW (kWh/m^{2}a)			
Kursimi i energjisë së furnizuar kWh/m^{2}a) Delivered energy savings (kWh/m^{2}a)			

SHTËPI NË VARG / TERRACED HOUSES

1980-1999

TË DHËNAT E NDËRTESËS | GENERAL BUILDING DATA

Kategoria e ndërtesës Building category	SHTËPI NË VARG TERRACED HOUSES
Viti I ndërtimit Construction period	1981 - 1999
Numri i kateve Number of floors	3
Numri I njësive të banimit Number of dwellings	1
Neto sipërfaqja e ngrohur e ndërtesës (m²) Net surface of the heated space (m²)	340
Konsumi specifik për ngrohje (kWh/m²/vje) Specific energy need for heating (kWh/m²/a)	153.2

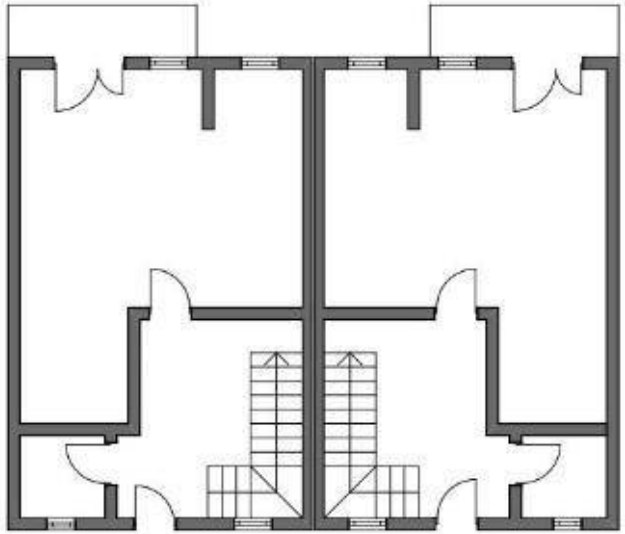
Baza e ndërtesës është e thjeshtë, me një formë të pastër gjeometrike. Ndërtesat e kësaj periudhe të ndërtimit zakonisht janë sistem skeletor me shtylla dhe trarë, muret janë të termoizoluara me 5cm në mes të tullës dhe bllokut.
Muret janë nga blloqet e argjilës me trashësi 25cm, të suvatuara nga e ana brendshme, kurse nga ana e jashtme me tullë fasade dhe në mes 5cm termoizolim .
Kulmi i ndërtesës është i patermoizoluar dhe kryesisht në këtë etape të ndërtimit ndërtesat e këtij lloji kanë mbulesë nga tjegullat dhe pllakë nga betoni i kombinuar me elemente të zgavruara nga argjila.
Dyshemeja është nga konstruksioni i betonit si shtresë finale parket dhe plafoni me suvatim me llaç gëlqeror.
Hapjet e jashtme të ndërtesës janë me kornizë druri me dy shtresa xhami. Dyert e hyrjes janë nga druri me një pjesë të vogël nga xhami një shtresor.
Fotografia e realizuar me termokamerë tregon urat termike dhe humbjet në ndërtesë.
Për këtë lloj të ndërtesave, sipas vlerësimit të raporteve të ASK dhe vizitave në terren, sistemi tipik i ngrohjes është me stufa individuale me biomasë drusore kurse uji sanitar është me bojler elektrik lokal.

The base of the building is simple, with a geometric shape. Buildings of this construction period are usually a skeleton system with beams and columns and with isolated walls.
The walls are made of clay blocks with a thickness of 25cm, plastered from inside, and brick 12cm from outside with 5cm thermal insulation.
The roof of the reinforced concrete slabs combined with hollowed clay elements are covered with tiles.
The floor is made of concrete construction with the final wooden flooring and ceiling with lime plaster.
The external openings of the building are of a wooden frame windows with double glazing picture taken with thermocamera shows great loss from the building's openings and the roof of the building.
For this type of buildings, according to KAS reports and field visits, the typical heating system is with individual stoves with wood biomass and sanitary water is with a local electric boiler.

PROPOZIMI STANDARD | STANDARD IMPROVEMENT

Izolimi i mureve me 10cm shtresë termoizoluese(λ=0.04W/mK). Izolimi i konstruksionit të kulmit me 10cm shtresë termoizoluese(λ=0.04W/mK). Ndërrimi i dritareve, me dritare te reja me dy shtresa xhami low-E që të arrihet koeficienti U=1.4 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente për zvogëlim të konsumit dhe përmirësim të komforit propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm.

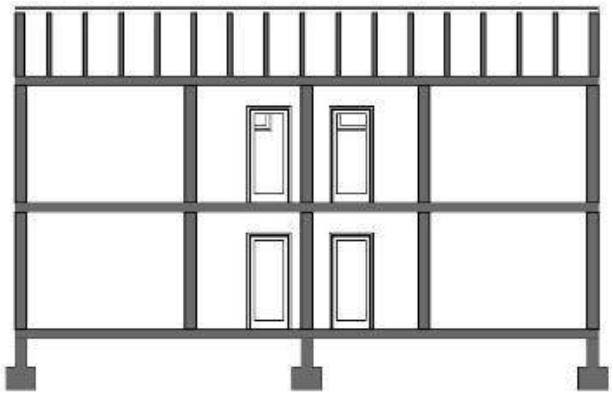
Insulation of walls with 10cm thermal insulation layer (λ = 0.04W/mK). Insulation on the roof slab with 10cm thermal insulation layer (λ = 0.04W/mK). Replacement of windows, with new low-E double glazing windows to achieve the coefficient U = 1.4 W/m²K.
For this type of buildings as efficiency measures are proposed central heating system with biomass-pellets, hot water accumulator, radiators and thermostatic valves and central domestic hot water system connected to heating system.

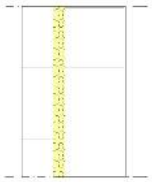
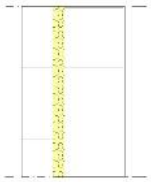
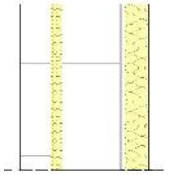
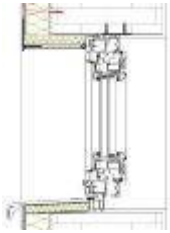


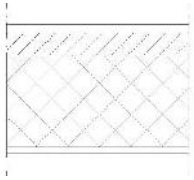
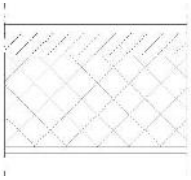
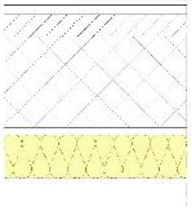
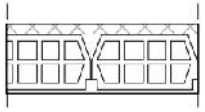
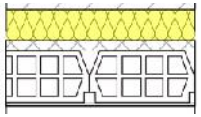
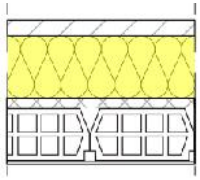
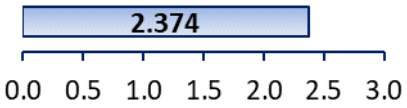
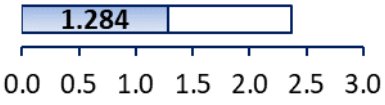
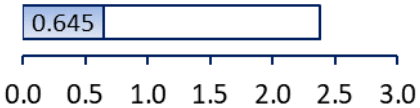
PROPOZIMI I AVANCUAR | ADVANCED IMPROVEMENT

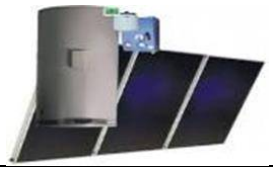
Izolimi mureve me 20cm shtresë termoizoluese(λ=0.04W/mK). Izolimi i konstruksionit të kulmit me 20cm shtresë termoizoluese(λ=0.04W/mK) dhe Izolimi i konstruksionit të dyshemesë me 10cm shtresë termoizoluese(λ=0.04W/mK). Ndërrimi i dritareve, me dritare te reja me tre shtresa xhami low-E që të arrihet koeficienti U=1.0 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente për zvogëlim të konsumit dhe përmirësim të komforit propozohet sistemi qendror i ngrohjes dhe ujit sanitar me pompë termike ajër-ajër dhe ngrohje dyshemore, akumulator të ujit të ngrohtë në kombinim me sistemin e kolektorëve solar.

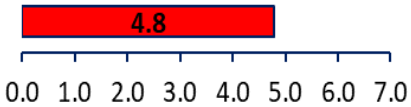
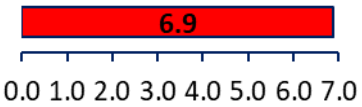
Insulation of walls with 20cm thermal insulation layer (λ = 0.04W/mK). Insulation on the roof slab with 20cm thermal insulation layer (λ = 0.04W / mK) and insulation on the floor slab with 10cm thermal insulation layer (λ = 0.04W/mK. Replacement of windows, with new low-E triple glazing windows to achieve the coefficient U = 1.0 W/m²K.
For this type of buildings as efficiency measure is proposed central heating system with electrical heat pump and floor heating system and central domestic hot water system connected to heating system and solar collector system.

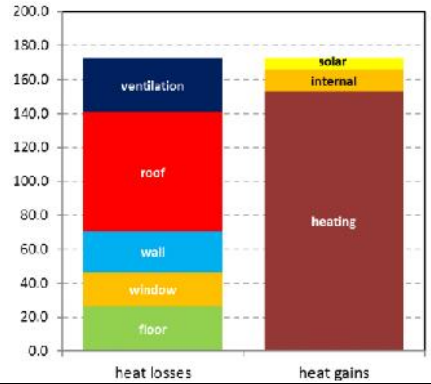
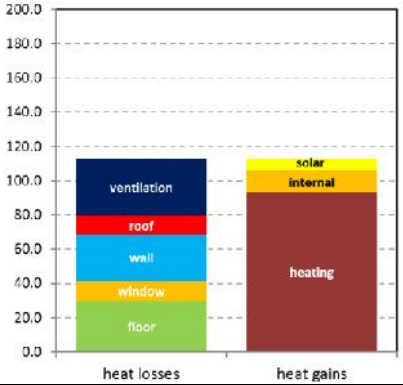
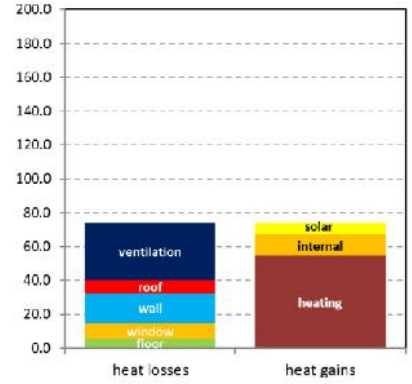
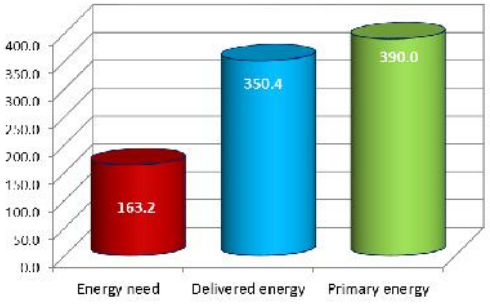
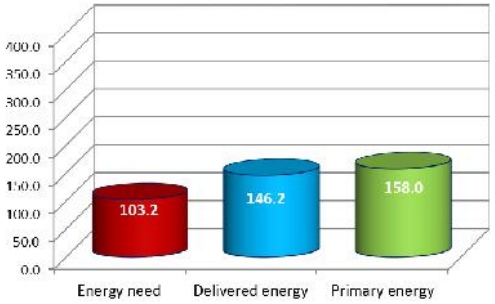
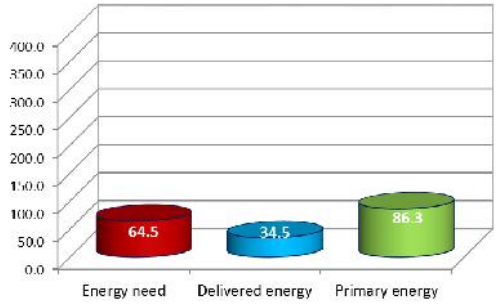
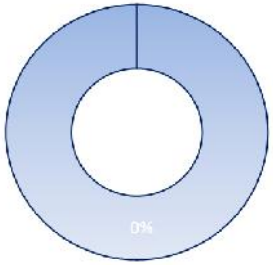
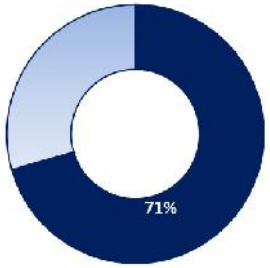
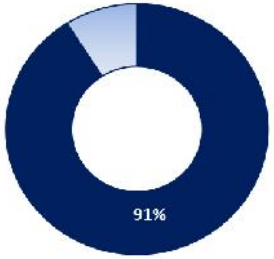


PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
MURET E JASHTME 1 EXTERNAL WALL		Suvatim i brendshëm, Bllok argjile 19cm, mbrojtje nga avulli, Lesh guri 3cm, tullë fasade 12cm Lime plaster 2cm, clay block 19cm, vapour barrier, cement plaster 2.5cm, rockwool insulation 3cm, façade block 12cm.		Pa Ndryshime No Changes		Suvatim i brendshëm, termoizolim 10cm, Suvatim i brendshëm, Bllok argjile 19cm, mbrojtje nga avulli, Lesh guri 3cm, tulle fasade nga argjila 12cm, fasadë 1cm. Lime plaster 2cm,Thermal insulation 10cm, Lime plaster 2cm, clay block 19cm,vapour barrier, rockwool 3 cm, facade block 12cm, , plaster 1cm.
U (W/m²K)	U = 0.664 W/m^{2}K		U = 0 .664 W/m^{2}K		U = 0.248W/m^{2}K	
MURET E JASHTME 2 EXTERNAL WALL		Llaç gëlqeror 2cm, tulle nga argjila 25cm, diletimi (hapësirë ajrore) 5cm,tulle nga argjila 25cm, llaç gëlqeror 2cm Plaster 2cm, clay brick 25cm, air space 5cm, clay brick 25cm plaster 2cm.		Pa Ndryshime No Changes		Pa Ndryshime No Changes
U (W/m²/K)	U = 1.194 W/m^{2}K		U = 1.194 W/m^{2}K		U = 1.194 W/m^{2}K	
DRITARET WINDOWS		Dritare druri, me dy shtresa xhami Wood Double glazing windows.		Dritare me xhame dy-shtresor low-E Double glazing windows with low-E.		Dritare me xhame tre-shtresor low-E Triple glazing windows with low-E.

U (W/m²/K)	U =3.5 W/m^{2}K		U=1.60 W/m^{2}K		U=1.0 W/m^{2}K	
PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
DYSHEMEJA FLOOR		Parket 2.5cm, estrih 5cm, hidroizolim beton 20cm Wooden floor 2.5cm, concrete screed 5cm, hydro isolation, concrete 20cm, plaster 2cm.		Pa Ndryshime No Changes		Parket 2.5cm, estrih 5cm, hidroizolim, beton 20cm, termoizolim 10cm Wooden floor 2.5cm, concrete screed 5cm, hydro isolation, concrete slab 20cm, and thermal insulation 10 cm
U (W/m²/K)	U = 1.95 W/m^{2}k		U = 1.95 W/m^{2}K		U = 0.33 W/m2K	
KULMI ROOF		Llaç gëlqeror 2cm, monta nga argjila 20, pllakë betoni 10cm Lime plaster 2cm, slab with clay block infill 20cm and concrete slab 10cm		Llaç gëlqeror 2cm, monta nga argjila 20, pllakë betoni 10cm, termoizolim 10cm. Lime plaster 2cm, slab with clay block infill 20cm and concrete slab 10cm, thermal insulation 10cm.		Llaç gëlqeror 2cm, monta nga argjila 20, pllakë betoni 10cm , termoizolim 20cm, dërrasa 2cm Lime plaster 2cm, slab with clay block infill 20cm and concrete slab 20cm, thermal insulation 20cm, wooden board 2 cm
U (W/m²/K)	U = 2.289 W/m^{2}K		U = 0.343 W/m^{2}K		U = 0.184 W/m^{2}K	
Koeficienti I transmetimit (W/K) për A_{ref} (m^2) Transmission coefficient (W/K) per A_{ref} (m^2)						

SISTEMI I NGROHJES DHE UJIT TË NGROHTË SANITAR | HEATING AND DOMESTIC HOT WATER SYSTEM						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
SISTEMI I NGROHJES HEATING SYSTEM		Stufë individuale me dru Individual wood stove		Sistemi i ngrohjes qendrore - kaldaja me biomasë, radiatorë dhe valvola termostatike Central heating system - with biomass, radiators and thermostatic valves		Sistemi i ngrohjes qendrore me pompë termike elektrike dhe sistem të ngrohjes dyshemore Central heating system with electrical heat pump and floor heating system
Efiçienca Efficiency	η = 50%		η = 80%		η = 250%	
SISTEMI I PERGATITJES SË UJIT TË NGROHTË DOMESTIC HOT WATER SYSTEM (DHW)		Bojler elektrik për ngrohje të ujit sanitar Electric water heater		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes Central domestic hot water system connected to heating system		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes dhe sistemin e kolektorëve solar Central domestic hot water system connected to heating system and solar collector system

Kursimi i emetimit të CO_2 (tCO_2) CO_2 Emission savings (tCO_2)			

	GJENDJA E TANISHME CURRENT CONDITION	PROPOZIMI STANDARD STANDARD IMPROVEMENT	PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT
Përfitimet dhe humbjet e nxehtësiseëspecifike (kWh/m^{2}a) Specific heat losses and gains (kWh/m^{2}a)			
Energjia për ngrohje dhe ujë sanitar (kWh/m^{2}a) Energy for heating & DHW (kWh/m^{2}a)			
Kursimet e energjisë së furnizuar (kWh/m^{2}a) Delivered energy savings (kWh/m^{2}a)			

SHTËPI NË VARG / TERRACED HOUSES

2000-2017

TË DHËNAT E NDËRTESËS | GENERAL BUILDING DATA

Kategoria e ndërtesës Building category	SHTËPI NË VARG TERRACED HOUSES
Viti I ndërtimit Construction period	2000 - 2017
Numri I kateve Number of floors	2
Numri I njësive të banimit Number of dwellings	1
Neto sipërfaqja e ngrohur e ndërtesës (m²) Net surface of the heated space (m²)	110.8
Konsumi specifik për ngrohje (kWh/m²/vje) Specific energy need for heating (kWh/m²/a)	93.4

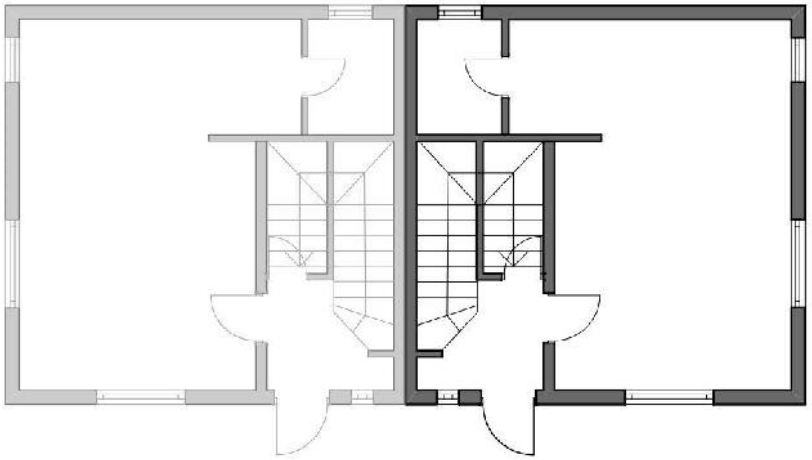
Baza e ndërtesës është e thjeshtë, me një formë të pastër gjeometrike. Ndërtesat e kësaj periudhe të ndërtimit zakonisht janë sistem skeletor me shtylla dhe trarë, mure të termoizoluar. Muret janë nga blloqet e argjilës me trashësi 25cm, 10cm termoizolim dhe te suvatuara nga te dy anët.
Kulmi i ndërtesës është nga pllakat nga betoni i kombinuar me elemente të zgavruara nga argjila dhe kulmin nga tjegullat.
Dyshemeja është nga konstruksioni i betonit me shtresë finale parket dhe plafoni me suvatim me llaç gëlqeror.
Hapjet e jashtme të ndërtesës janë me kornizë PVC me nga dy shtresa xhami. Dyert e hyrjes janë nga PVC me një pjesë nga xhami dy shtresor.
Fotografia e realizuar me termokamerë tregon urat termike dhe humbjet në ndërtesë.
Për këtë lloj të ndërtesave, sipas vlerësimit të raporteve të ASK dhe vizitave në terren, sistemi tipik i ngrohjes është me stufa individuale me biomasë drusore kurse uji sanitar është me bojler elektrik lokal.

The base of the building is simple, with a clear geometric shape. Buildings of this construction period are usually a skeleton system with beams and columns. And insulated walls.
The walls are made of clay blocks with a thickness of 25cm, thermal layer 10cm and plastered on both sides.
The roof of the reinforced concrete slabs combined with hollowed clay elements are covered with tiles.
The floor is made of concrete construction, with the final wooden floor and ceiling with lime plaster.
The external openings of the building are of a PVC frame with double glazing; The entrance doors are PVC and partially with double glazing.
The picture taken with thermocamera shows great loss from the building's openings and the roof of the building.
For this type of buildings, according to KAS reports and field visits, the typical heating system is with individual stoves with wood biomass and sanitary water is with a local electric boiler.

PROPOZIMI STANDARD | STANDARD IMPROVEMENT

Muret, dyshemeja dhe kulmi pa ndryshime, ndërsa për dritaret ndërrimi i xhamit me xham low-E që të arrihet koeficienti i dritares U=1.60 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente për zvogëlim të konsumit dhe përmirësim të komforit propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm.

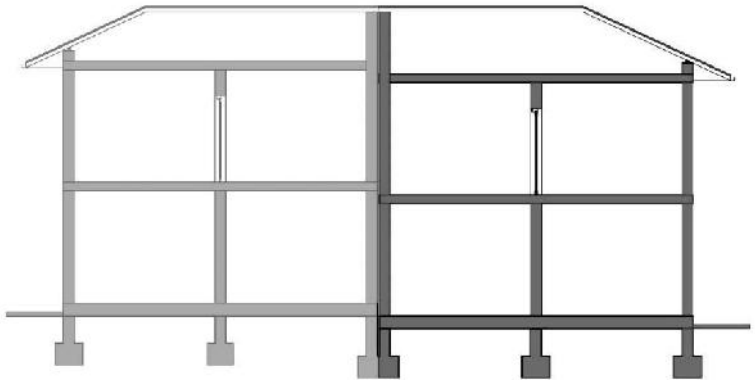
No changes for walls, roof and slab, while for windows is recommended replacement of the glazing with low-E glazing to achieve coefficient U = 1.60 W/m²K.
For this type of buildings as efficiency measures are proposed central heating system with biomass-pellets, hot water accumulator, radiators and thermostatic valves and central domestic hot water system connected to heating system.

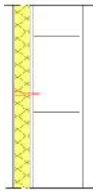
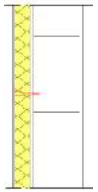
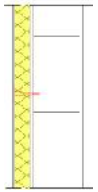
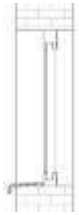


PROPOZIMI I AVANCUAR | ADVANCED IMPROVEMENT

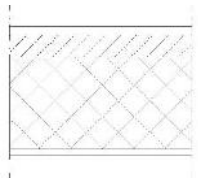
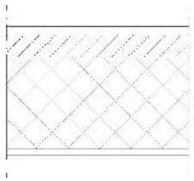
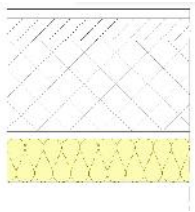
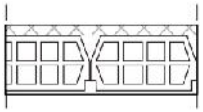
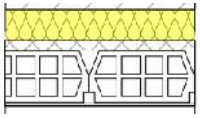
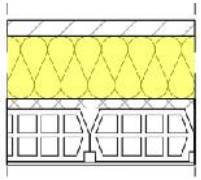
Izolimi i mureve me 10cm shtresë termoizoluese(λ=0.04W/mK). Izolimi i konstruksionit të kulmit me 10cm shtresë termoizoluese(λ=0.04W/mK) dhe Izolimi i konstruksionit të dyshemesë me 10cm shtresë termoizoluese (λ=0.04W/mK). Ndërrimi i dritareve, me dritare te reja me tre shtresa xhami low-E që të arrihet koeficienti U=1.0 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente për zvogëlim të konsumit dhe përmirësim të komforit propozohet sistemi qendror i ngrohjes dhe ujit sanitar me pompë termike ajër-ajër dhe ngrohje dyshimore, akumulator të ujit të ngrohtë në kombinim me sistemin e kolektorëve solar.

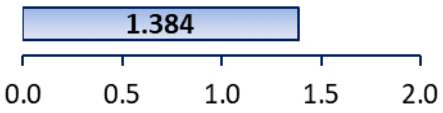
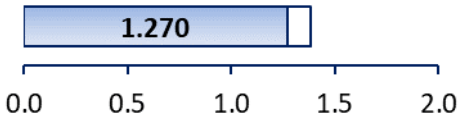
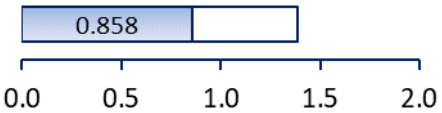
Insulation of walls with 10cm thermal insulation layer (λ = 0.04W / mK). Insulation on the roof slab with10cm thermal insulation layer (λ = 0.04W / mK) and insulation on the floor slab with 10cm thermal insulation layer (λ = 0.04W/mK . Replacement of windows, with new low-E triple glazing windows to achieve the coefficient U = 1.0 W/m²K.
For this type of buildings as efficiency measure is proposed central heating system with electrical heat pump and floor heating system and central domestic hot water system connected to heating system and solar collector system.

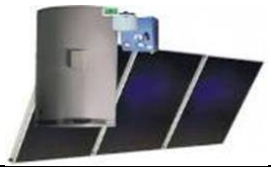


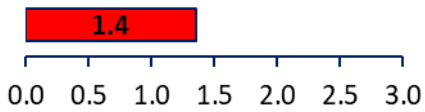
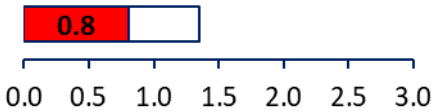
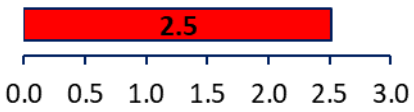
PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
MURET E JASHTME 1 EXTERNAL WALL		Llaç gëlqeror 2cm, Bllok argjile 25cm, llaç çimentoje 2.5cm , termoizolim 10cm, llaç fasade 2cm; Plaster 2cm, clay block 25cm, plaster 2.5cm, thermal insulation 10cm, façade plaster 2cm.		Pa Ndryshime No Changes		Llaç gëlqeror 2cm, Bllok argjile 25cm, llaç çimentoje 2.5cm , termoizolim 20cm, llaç fasade 2cm; Plaster 2cm, clay block 25cm, plaster 2.5cm, thermal insulation 20cm, façade plaster 2cm.
U (W/m²K)	U = 0.327 W/m^{2}K		U = 0.327 W/m^{2}K		U = 0.180 W/m^{2}K	
MURET E JASHTME 2 EXTERNAL WALL		Llaç gëlqeror 2cm, Tullë nga argjila 25cm, diletimi (hapësirë ajrore) 5cm,tullë nga argjila 25cm, llaç gëlqeror 2cm Plaster 2cm, clay brick 25cm, air space 5cm, clay brick 25cm plaster 2cm.		Pa Ndryshime No Changes		Pa Ndryshime No Changes
U (W/m²/K)	U = 1.194 W/m^{2}K		U = 1.194 W/m^{2}K		U = 1.194 W/m^{2}K	
DRITARET WINDOWS		Dritare me ram PVC xham dy-shtresor PVC Double glazing windows		Dritare me xham dy-shtresor low-E Double glazing windows with low-E.		Dritare me xham tre-shtresor low-E Triple glazing windows with low-E.
U (W/m²/K)	U =1.60 W/m^{2}K		U=1.40 W/m^{2}K		U=1.0 W/m^{2}K	

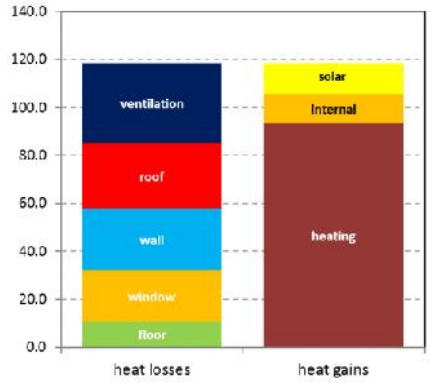
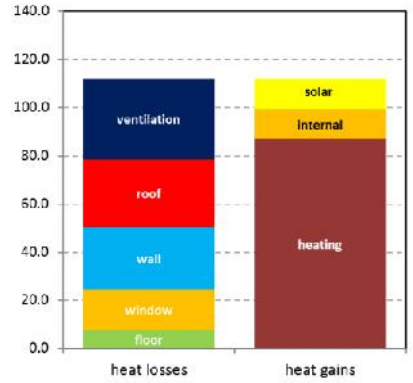
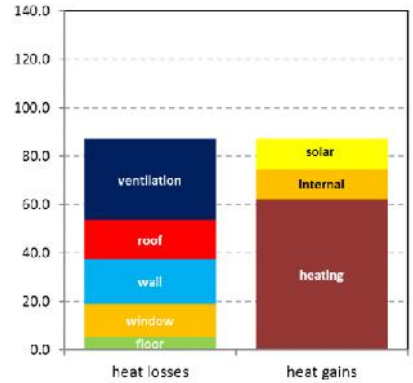
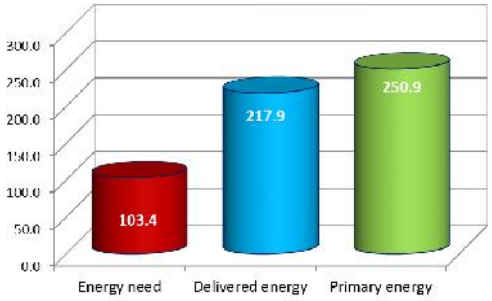
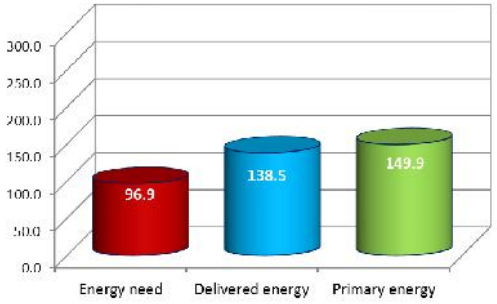
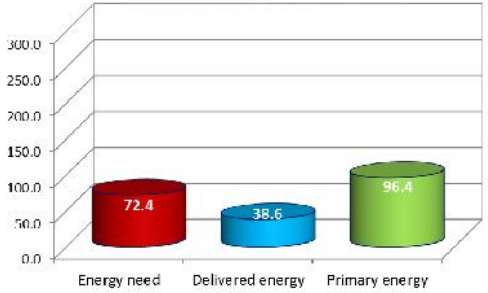
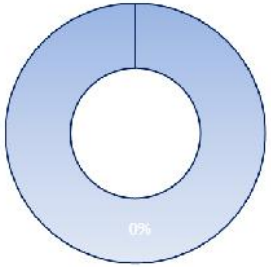
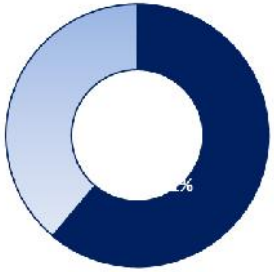
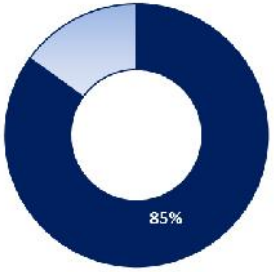
PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS

	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
DYSHEMEJA FLOOR		Parket 2.5cm, estrih 5cm, hidroizolim beton 20cm Wooden floor 2.5cm, screed 5cm, hydro isolation, concrete slab 20cm,		Pa Ndryshime No Changes		Parket 2.5cm, estrih 5cm, hidroizolim beton 20cm, termoizolim 10cm Wooden floor 2.5cm, screed 5cm, hydro isolation, concrete 20cm, plaster 2cm and thermal insulation 10 cm
U (W/m²/K)	U = 1.742 W/m^{2}k		U = 1.742 W/m^{2}K		U = 0.319 W/m2K	
KULMI ROOF		Llaç gëlqeror 2cm, monta nga argjila 20, pllakë betoni 10cm Lime plaster 2cm, slab with clay block infill 20cm and concrete slab 10cm,		Llaç gëlqeror 2cm, monta nga argjila 20, pllakë betoni 10cm, termoizolim 10cm. Lime plaster 2cm, slab with clay block infill 20cm and concrete slab 10cm, thermal insulation 10cm,		Llaç gëlqeror 2cm, monta nga argjila 20, pllakë betoni 10cm , termoizolim 20cm, dërrasa 2cm Lime plaster 2cm, slab with clay block infill 20cm and concrete slab 10cm, thermal insulation 20cm, wooden board 2 cm
U (W/m²/K)	U = 2.289 W/m^{2}K		U = 0.343 W/m^{2}K		U = 0.184 W/m^{2}K	

Koeficienti i transmetimit (W/K) për A_{ref} (m^2) Transmission coefficient (W/K) per A_{ref} (m^2)			

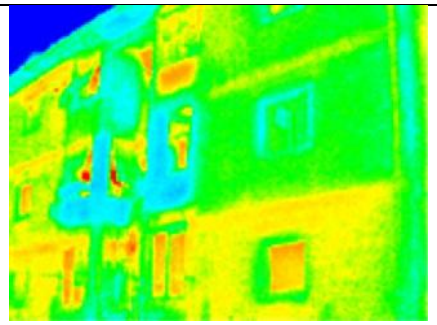
SISTEMI I NGROHJES DHE UJIT TË NGROHTË SANITAR | HEATING AND DOMESTIC HOT WATER SYSTEM						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
SISTEMI I NGROHJES HEATING SYSTEM		Stufë individuale me dru Individual wood stove		Sistemi i ngrohjes qendrore - kaldaja me biomasë, radiatorë dhe valvola termostatike Central heating system - with biomass, radiators and thermostatic valves		Sistemi i ngrohjes qendrore me pompë termike elektrike dhe sistem të ngrohjes dyshemore Central heating system with electrical heat pump and floor heating system
Efiçienca Efficiency	η = 50%		η = 80%		η = 250%	
SISTEMI I PERGATITJES SË UJIT TË NGROHTË DOMESTIC HOT WATER SYSTEM (DHW)		Bojler elektrik për ngrohje të ujit sanitar Electric water		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes Central domestic hot water system connected to heating system		Sistemi qendror i ujit të ngrohtë shtëpiak I lidhur me sistemin e ngrohjes dhe sistemin e kolektorëve solar Central domestic hot water system connected to heating system and solar collector system

Kursimet e emetimit të CO_2 (tCO_2) CO_2 Emission savings (tCO_2)			

	GJENDJA E TANISHME CURRENT CONDITION	PROPOZIMI STANDARD STANDARD IMPROVEMENT	PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT
Përfitimet dhe humbjet e nxehtësisë (kWh/m^{2}a) Specific heat losses and gains (kWh/m^{2}a)			
Energjia për ngrohje dhe ujë sanitar (kWh/m^{2}a) Energy for heating & DHW (kWh/m^{2}a)			
Kursimet e energjisë së furnizuar (kWh/m^{2}a) Delivered energy savings (kWh/m^{2}a)			

NDËRTESA SHUMËBANESORE E ULËT/ MULTI FAMILY HOUSES

< 1960



TË DHËNAT E NDËRTESËS | GENERAL BUILDING DATA

Kategoria e ndërtesës Building category	NDËRTESA SHUMËBANESORE E ULËT MULTI FAMILY HOUSES
Viti i ndërtimit Construction period	< 1960
Numri i kateve Number of floors	4
Numri i njësive të banimit Number of dwellings	12
Neto sipërfaqja e ngrohur e ndërtesës (m²) Net surface of the heated space (m²)	521.5
Konsumi specifik për ngrohje (kWh/m²/vje) Specific energy need for heating (kWh/m²/a)	169.5

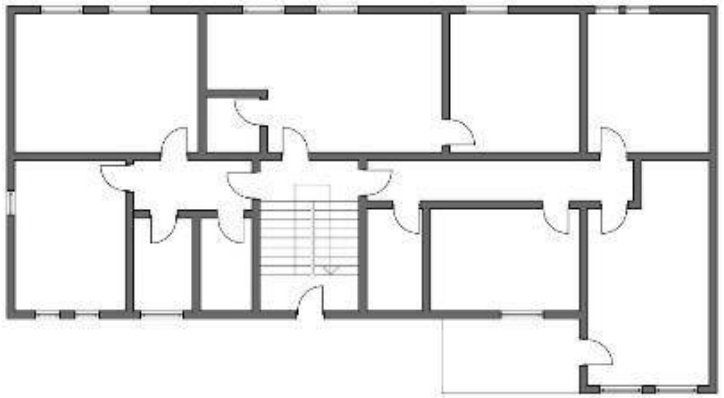
Baza e ndërtesës është e thjeshtë, me një formë të pastër gjeometrike. Ndërtesat e kësaj periudhe të ndërtimit zakonisht janë sistem të kombinuara me shtylla dhe mure mbajtëse të patermoizoluar. Muret janë nga tulla e plotë e argjilës me trashësi 45cm, të suvatuara nga të dy anët dhe muret e bodrumit nga betoni dhe gurët me trashësi 50cm. Kulmi i ndërtesës është i patermoizoluar dhe kryesisht në këtë etapë të ndërtimit ndërtesat e këtij lloji kanë mbulesë nga tjegullat.
Dyshemeja është nga konstruksioni i betonit si shtresë finale parket dhe tavani me suvatim në tërska.
Hapjet e jashtme të ndërtesës janë me kornizë druri me dy krah me nga një shtresë xhami; dritaret e hyrjes janë me kornizë metalike dhe me një shtresë xhami. Dyert e hyrjes janë metalike dhe një shtresë xhami të përforcuar.
Fotografia e realizuar me termokamerë tregon humbje të mëdha nga hapjet e ndërtesës dhe kulmi i ndërtesës. Për këtë lloj të ndërtesave, sipas vlerësimit të raporteve të ASK dhe vizitave në terren, sistemi tipik i ngrohjes është me ngrohëse elektrike individuale kurse uji sanitar është me bojler elektrik lokal.

The base of the building is simple, with a clean geometric shape. Buildings of this construction period are usually a system combined with columns and retaining walls. The walls are made of solid clay bricks with a thickness of 45cm, plastered on both sides and basement walls of concrete and stones with a thickness of 50cm. The roof of the building is uninsulated and mainly buildings of this period of construction are covered with tiles.
The floor is made of concrete construction with the final wooden flooring and ceiling with lime plaster.
The external openings of the building are of a two-sided wooden frame with a single glazing; The entrance windows are metallic and also with single glazing. The entrance doors are metal and a reinforced glass layer.
The picture taken with thermocamera shows great loss from the building's openings and the roof of the building.
For this type of buildings, according to KAS reports and field visits, the typical heating system is with individual electric heaters and sanitary water is with a local electric boiler.

PROPOZIMI STANDARD | STANDARD IMPROVEMENT

Izolimi i mureve me 10cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i konstruksionit mbi tokë me 5cm shtresë termoizoluese (λ=0.04W/mK). Ndërrimi i dritareve, me dritare të reja me dy shtresa xhami low-E që të arrihet koeficienti U=1.60 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm.

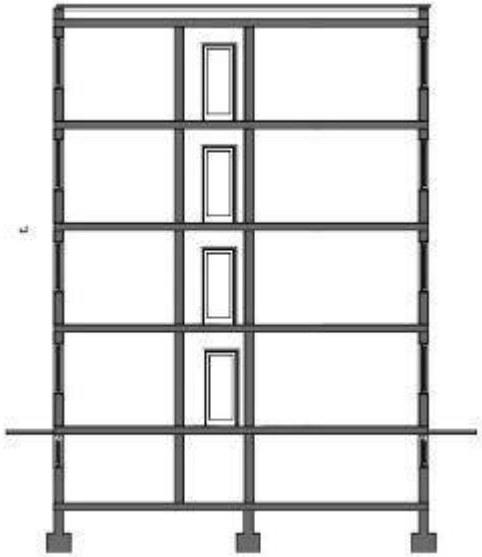
Insulation of walls with 10cm thermal insulation layer (λ = 0.04W/mK). Insulation on the ground slab with 5cm thermal insulation layer (λ = 0.04W/mK). Replacement of windows, with new low-E double glazing windows to achieve the coefficient U = 1.60 W/m²K.
For this type of buildings, the central heating and sanitary water system with biomass boilers - pellets, hot water accumulators, thermostatic radiators, which can be operated according to external temperature and programmable timers can be proposed as an energy efficiency measure.

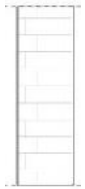
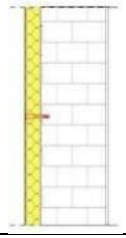
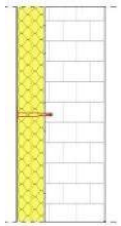
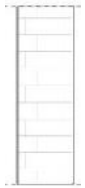
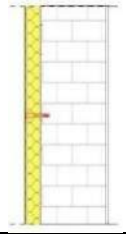
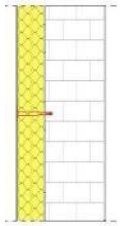
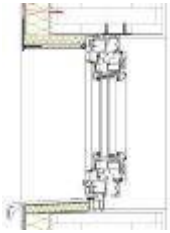


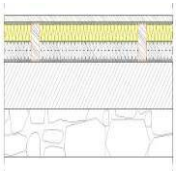
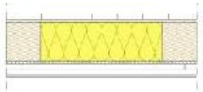
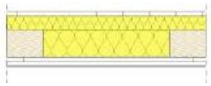
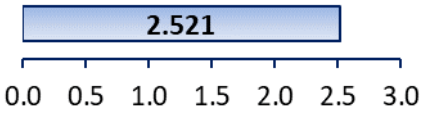
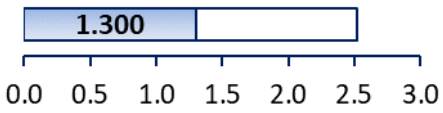
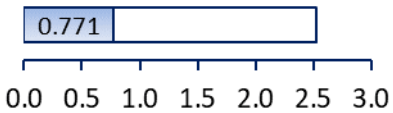
PROPOZIMI I AVANCUAR | ADVANCED IMPROVEMENT

Izolimi I mureve me 20cm shtresë termoizoluese (λ=0.04W/mK). Izolimi I konstruksionit mbi tokë me 10cm shtresë termoizoluese (λ=0.04W/mK). Ndërrimi I dritareve, me dritare te reja me dy shtresa xhami low-E që të arrihet koeficienti U=1.0 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm në kombinim me sistemin e kolektorëve solar.

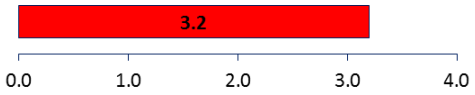
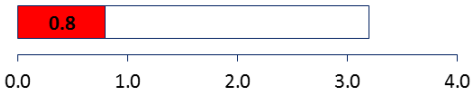
Insulation of walls with 20cm thermal insulation layer (λ = 0.04W/mK). Insulation on the ground slab with 10cm thermal insulation layer (λ = 0.04W/mK). Replacement of windows, with new low-E triple glazing windows to achieve the coefficient U = 1.0 W/m²K.
For this type of buildings, the central heating and sanitary water system with biomass boilers - pellets, hot water accumulators, radiators with thermostatic valves, which can be operated according to external temperature and programmable timers in combination with solar collector system, can be proposed as advanced energy efficiency measure.

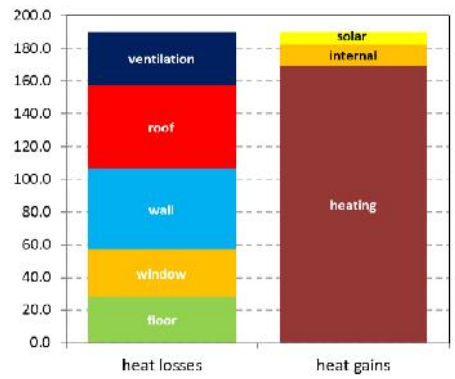
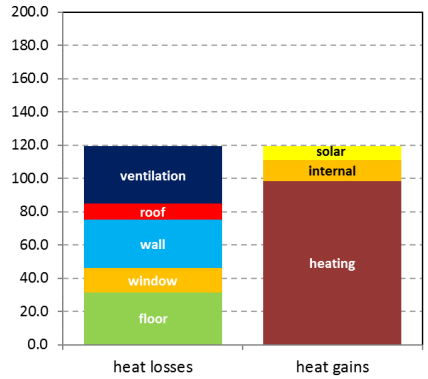
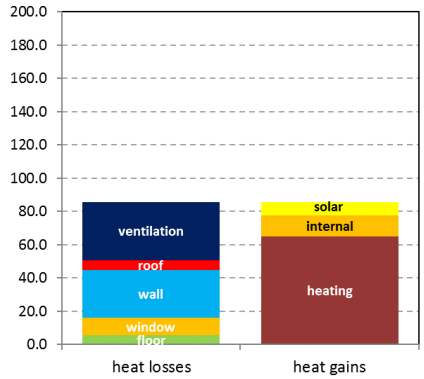
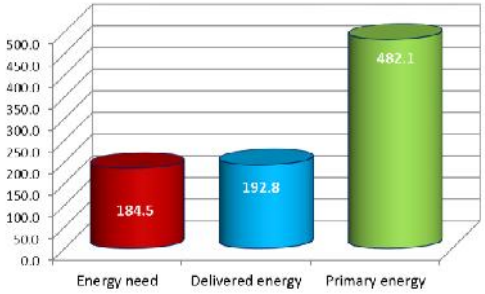
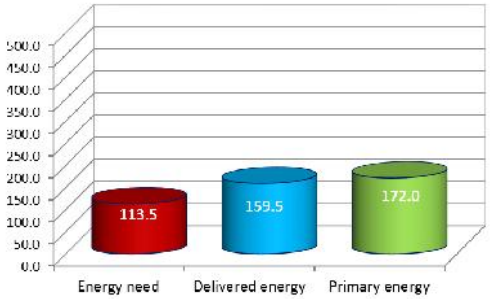
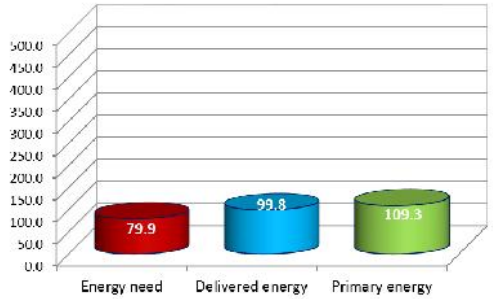
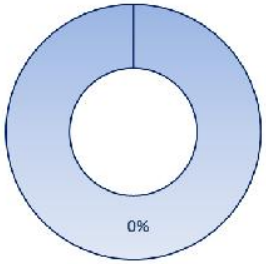
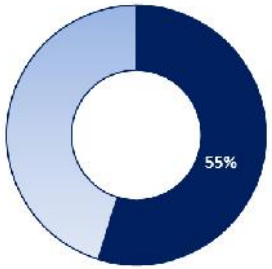
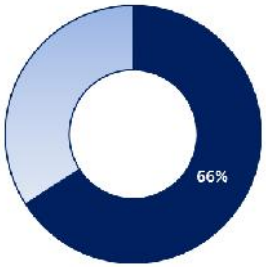


PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
MURET E JASHTME 1 EXTERNAL WALL		Llaç gëlqeror 2cm, tullë e plotë nga argjila 45cm, llaç fasade 2cm. Lime Plaster 2cm, clay brick 45cm, plaster 2cm.		Llaç gëlqeror 2cm, tullë e plotë nga argjila 45cm, llaç fasade 2cm, termoizolim 10cm, llaç fasade 1cm. Lime Plaster 2cm, clay brick 45cm, plaster 2cm, thermal insulation 10cm, façade plaster 1cm		Llaç gëlqeror 2cm, tullë e plotë nga argjila 45cm, llaç fasade 2cm, termoizolim 20cm, llaç fasade 2cm. Lime Plaster 2cm, clay brick 45cm, plaster 2cm, thermal insulation 20cm, façade plaster 2cm.
U (W/m²K)	U = 1.2 W/m^{2}K		U = 0.302 W/m^{2}K		U = 0.156 W/m^{2}K	
MURET E JASHTME 2 EXTERNAL WALL		Llaç gëlqeror 2cm, tullë e plotë e nga argjila 31cm, llaç fasade 2cm. Lime Plaster 2cm, clay brick 31cm, plaster 2cm.		Llaç gëlqeror 2cm, tullë e plotë nga argjila 3cm, llaç fasade 2cm, termoizolim 10cm, llaç fasade 1cm. Lime Plaster 2cm, clay brick 31cm, plaster 2cm, thermal insulation 10cm, plaster 1cm.		Llaç gëlqeror 2cm, tullë e plotë nga argjila 31cm, llaç fasade 2cm, termoizolim 20cm, llaç fasade 2cm. Lime Plaster 2cm, clay brick 45cm, plaster 2cm, thermal insulation 20cm, façade plaster 2cm.
U (W/m²/K)	U = 1.633 W/m^{2}K		U = 0.319 W/m^{2}K		U = 0.177 W/m^{2}K	
DRITARET WINDOWS		Dritare druri, me një shtresë xhami dhe dy kanata. Double pane wooden windows with single glazing.		Dritare me dy shtresa xhami low-E. Double glazing windows with low-E.		Dritare me xhame tre-shtresor low-E. Triple glazing windows with low-E.
U (W/m²/K)	U =3.50 W/m^{2}K		U=1.60 W/m^{2}K		U=1.0 W/m^{2}K	

PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
DYSHEMEJA FLOOR		Dysheme druri 2.5cm, beton i lehtë 5cm, beton 10cm. Wooden floor 2.5cm, light concrete 5cm, concrete 10cm.		Pa Ndryshime No Changes		Dysheme druri 2.5cm, beton i lehtë 5cm, termoizolim 10cm, beton 10cm. Wooden floor 2.5cm, light concrete 5cm, thermal insulation 10cm, concrete 10cm.
U (W/m²/K)	U = 2.064 W/m^{2}k		U = 0.533 W/m^{2}K		U = 0.303 W/m2K	
KULMI ROOF		Dërrasa t=1.5cm, trarët e drurit 16/14cm, Dërrasa t=2.5cm, tërrska (karatavan) 2.5cm. Wooden planks 1.5cm, air space/timber construction beams 16/14cm, wooden planks 2.5cm.		Dërrasa t=1.5cm, trarët e drurit 16/14cm, izolim termik 16cm Dërrasa t=2.5cm, terrska (karatavan) 2.5cm. Wooden planks 1.5cm, timber construction beams 16/14cm, thermal insulation 16cm, wooden planks 2.5cm.		Dërrasa t=1.5cm, trarët e drurit 16/14cm, Lesh guri 20cm. Wooden planks 1.5cm, timber construction beams 16cm, thermal insulation 20cm, wooden planks 2.5cm.
U (W/m²/K)	U = 1.60 W/m^{2}K		U = 0.196 W/m^{2}K		U = 0.160 W/m^{2}K	
Koeficienti i transmetimit (W/K) për A_{ref} (m^2) Transmission coefficient (W/K) per A_{ref} (m^2)						

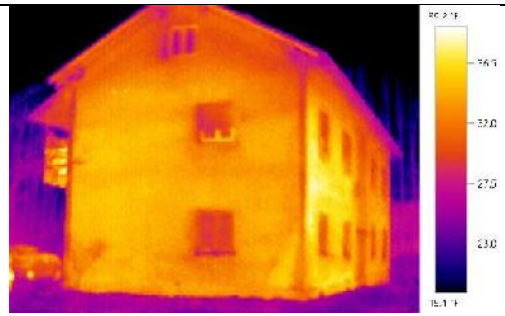
SISTEMI I NGROHJES DHE UJIT TË NGROHTË SANITAR | HEATING AND DOMESTIC HOT WATER SYSTEM						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
SISTEMI I NGROHJES HEATING SYSTEM		Stufë individuale elektrike Individual electric stove		Sistemi i ngrohjes qendrore - kaldaja me biomasë, radiatorë dhe valvola termostatike Central heating system - with biomass, radiators and thermostatic valves		Sistemi i ngrohjes qendrore - kaldaja me biomasë me akumulues, me pompë variabile, sistem balancues të ujit dhe valvole termostatike Central heating system - with biomass, with heat accumulator, VSD pump, hydraulic system balance and thermostatic valves
Efiçienca Efficiency	η = 95%		η = 80%		η = 85%-90%	
SISTEMI I PËRGATITJES SË UJIT TË NGROHTË DOMESTIC HOT WATER SYSTEM (DHW)		Bojler elektrik për ngrohje të ujit sanitar Electric water heater		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes Central domestic hot water system connected to heating system		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes dhe sistemin e kolektorëve solar Central domestic hot water system connected to heating system and solar collector system

Kursimi i emetimit të CO_2 (tCO_2) CO_2 Emission savings (tCO_2)			

	GJENDJA E TANISHME CURRENT CONDITION	PROPOZIMI STANDARD STANDARD IMPROVEMENT	PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT
Përfitimet dhe humbjet e nxehtësisë specifike (kWh/m^{2}a) Specific heat losses and gains (kWh/m^{2}a)			
Energjia për ngrohje dhe ujë sanitar (kWh/m^{2}a) Energy for heating & DHW (kWh/m^{2}a)			
Kursimet e energjisë së furnizuar (kWh/m^{2}a) Delivered energy savings (kWh/m^{2}a)			

NDËRTESA SHUMËBANESORE E ULËT/MULTI FAMILY HOUSES

1960 - 1969



TË DHËNAT E NDËRTESËS | GENERAL BUILDING DATA

Kategoria e ndërtesës Building category	NDËRTESË SHUMËBANESORE E ULTË MULTI FAMILY HOUSES
Viti i ndërtimit Construction period	1960-1969
Numri i kateve Number of floors	2
Numri i njësive të banimit Number of dwellings	4
Neto sipërfaqja e ngrohur e ndërtesës (m²) Net surface of the heated space (m²)	340
Konsumi specifik për ngrohje (kWh/m²/vje) Specific energy need for heating (kWh/m²/a)	284.9

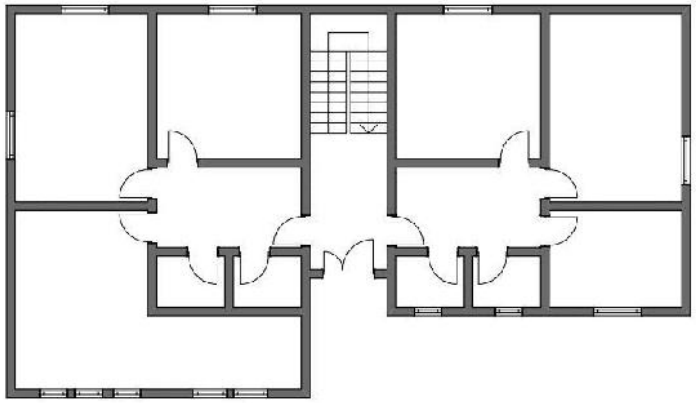
Baza e ndërtesës është e thjeshtë, me një formë të pastër gjeometrike. Ndërtesat e kësaj periudhe të ndërtimit zakonisht janë sistem të kombinuara me shtylla dhe mure mbajtëse të patermoizoluara. Muret janë nga tulla e plotë e argjilës me trashësi 31cm, të suvatuara nga të dy anët. Kulmi i ndërtesës është i patermoizoluar dhe kryesisht në këtë etapë të ndërtimit ndërtesat e këtij lloji kanë mbulesë nga tjegullat.
Dyshemeja është nga konstruksioni i betonit si shtresë finale parket dhe tavani me suvatim në tërska.
Hapjet e jashtme të ndërtesës janë me kornizë druri me dy krah me nga një shtresë xhami; dritaret e hyrjes janë me kornizë metalike dhe me një shtresë xhami. Dyert e hyrjes janë metalike dhe një shtresë xham të përforcuar.
Fotografia e realizuar me termokamerë tregon humbje të mëdha nga hapjet e ndërtesës dhe kulmi i ndërtesës. Për këtë lloj të ndërtesave, sipas vlerësimit të raporteve të ASK dhe vizitave në terren, sistemi tipik i ngrohjes është me ngrohëse elektrike individuale kurse uji sanitar është me bojler elektrik lokal.

The base of the building is simple, with a clean geometric shape. Buildings of this construction period are usually a system combined with columns and retaining walls. The walls are made of solid clay bricks with a thickness of 31cm, plastered on both sides.
The roof of the building is uninsulated and mainly building of this period of construction are covered with tiles.
The floor is made of concrete construction with the final wooden flooring and ceiling with lime plaster.
The external openings of the building are of a two-sided wooden frame with a single glazing; The entrance windows are metallic and with a single glazing. The entrance doors are metal and a reinforced glass layer.
The picture taken with thermal camera shows great loss from the building's openings and the roof of the building. For this type of buildings, according to KAS reports and field visits, the typical heating system is with individual electric heaters and sanitary water is with a local electric boiler.

PROPOZIMI STANDARD | STANDARD IMPROVEMENT

Izolimi i mureve me 10cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i konstruksionit të kulmit me 10cm shtresë termoizoluese (λ=0.04W/mK). Ndërrimi i dritareve, me dritare të reja me dy shtresa xhami low-E që të arrihet koeficienti U=1.60 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm.

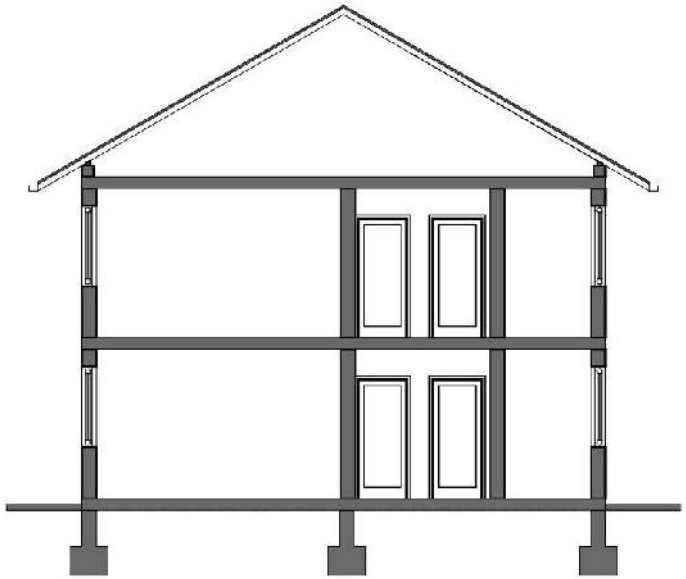
Insulation of walls with 10cm thermal insulation layer (λ = 0.04W/mK). Insulation on the roof slab with 10cm thermal insulation layer (λ = 0.04W/mK). Replacement of windows, with new low-E double glazing windows to achieve the coefficient U = 1.60 W/m²K.
For this type of buildings, the central heating and sanitary water system with biomass boilers - pellets, hot water accumulators, thermostatic radiators, which can be operated according to external temperature and programmable timers can be proposed as an energy efficiency measure.

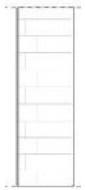
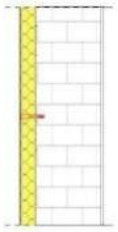
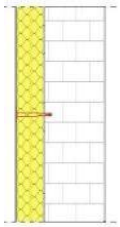


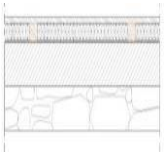
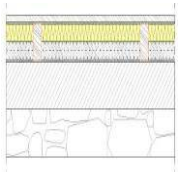
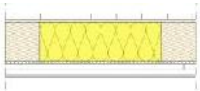
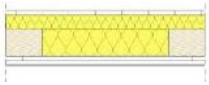
PROPOZIMI I AVANCUAR | ADVANCED IMPROVEMENT

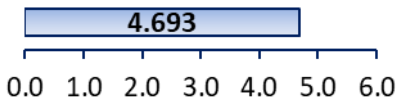
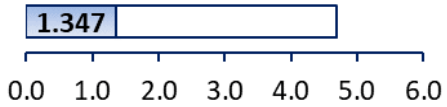
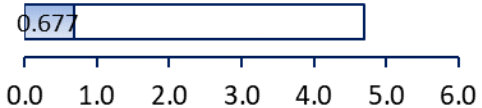
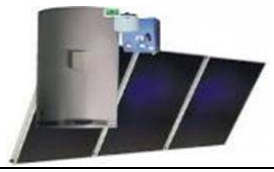
Izolimi i mureve me 20cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i konstruksionit të kulmit me 20cm shtresë termoizoluese (λ=0.04W/mK) dhe Izolimi i konstruksionit të dyshemesë me 10cm shtresë termoizoluese (λ=0.04W/mK). Ndërrimi I dritareve, me dritare te reja me tre shtresa xhami low-E që të arrihet koeficienti U=1.0 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm në kombinim me sistemin e kolektorëve solar.

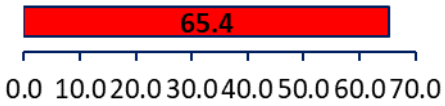
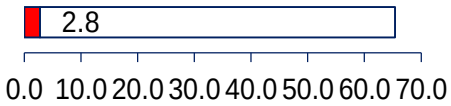
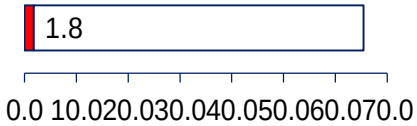
Insulation of walls with 20cm thermal insulation layer (λ = 0.04W/mK). Insulation on the roof slab with 20cm thermal insulation layer (λ = 0.04W/mK) and insulation on the floor slab with 10cm thermal insulation layer (λ = 0.04W/mK. Replacement of windows, with new low-E triple glazing windows to achieve the coefficient U = 1.0 W/m²K.
For this type of buildings, the central heating and sanitary water system with biomass boilers - pellets, hot water accumulators, radiators with thermostatic valves, which can be operated according to external temperature and programmable timers in combination with solar collector system, can be proposed as advanced energy efficiency measure.

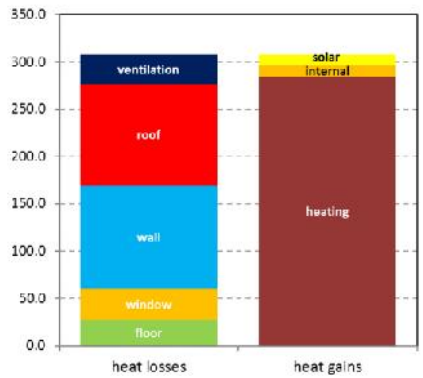
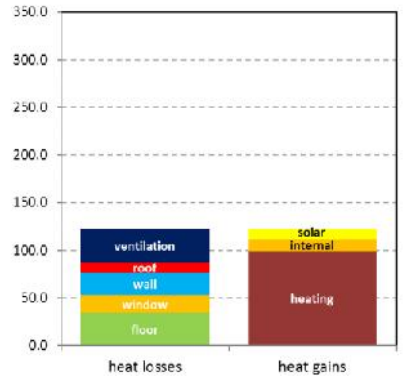
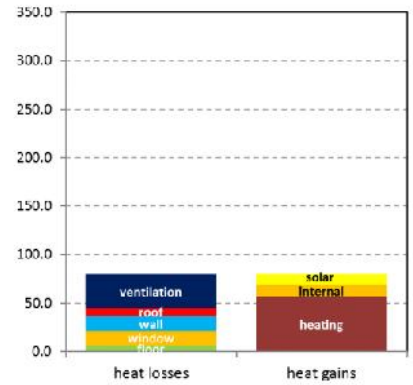
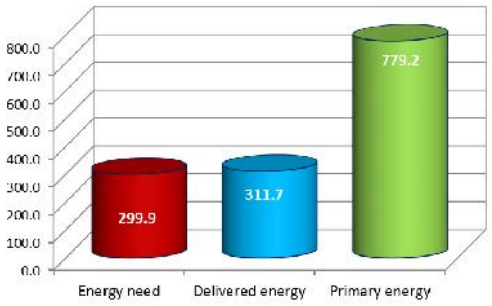
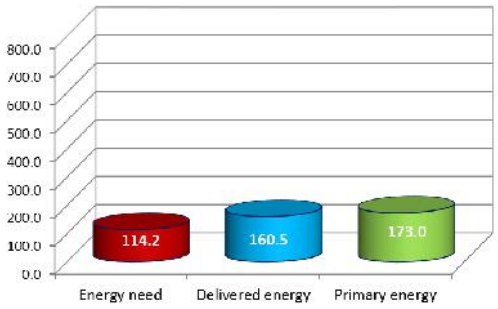
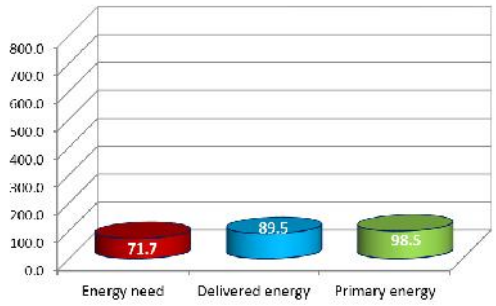


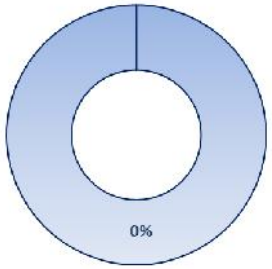
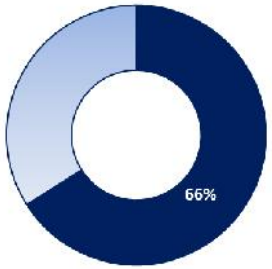
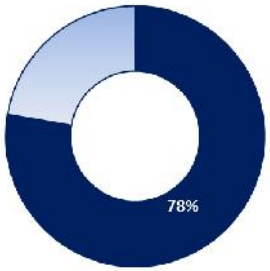
PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
MURET E JASHTME 1 EXTERNAL WALL		Llaç gëlqeror 2cm, tullë e plotë nga argjila 31cm, llaç fasade 2cm. Lime Plaster 2cm, clay brick 31cm, plaster 2cm.		Llaç gëlqeror 2cm, tullë e plotë nga argjila 31cm, llaç fasade 2cm, termoizolim 10cm, llaç fasade 1cm. Lime Plaster 2cm, clay brick 31cm, plaster 2cm, thermal insulation 10cm, plaster 1cm.		Llaç gëlqeror 2cm, tullë e plotë nga argjila 31cm, llaç fasade 2cm, termoizolim 20cm, llaç fasade 1cm. Lime Plaster 2cm, clay brick 31cm, plaster 2cm, thermal insulation 20cm, plaster 1cm.
U (W/m²K)	U = 1.864 W/m^{2}K		U = 0.327 W/m^{2}K		U = 0.180 W/m^{2}K	
MURET E JASHTME 2 EXTERNAL WALL		Llaç gëlqeror 2cm, Tullë nga argjila 25cm, diletimi (hapësire ajrore) 5cm,tullë nga argjila 25cm, llaç gëlqeror 2cm Lime Plaster 2cm, clay brick 25cm, air space 5cm, and clay brick 25cm plaster 2cm.		Pa Ndryshime No Changes		Pa Ndryshime No Changes
U (W/m²/K)	U = 1.194 W/m^{2}K		U = 1.194 W/m^{2}K		U = 1.194 W/m^{2}K	
DRITARET WINDOWS		Dritare druri, me një shtrese xhami dhe dy kanata. Double pane wooden windows with single glazing.		Dritare me dy-shtresor low-E Double glazing windows with low-E.		Dritare me xham tre-shtresor low-E Triple glazing windows with low-E.
U (W/m²/K)	U =3.50 W/m^{2}K		U=1.60 W/m^{2}K		U=1.0 W/m^{2}K	

PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
DYSHEMEJA FLOOR		Dysheme druri 2.5cm, beton i lehtë 5cm, beton 10cm. Wooden floor 2.5cm, light concrete 5cm, concrete slab 10cm.		Pa Ndryshime No Changes		Dysheme druri 2.5cm, beton i lehte 5cm, termoizolim 10cm, beton 10cm. Wooden floor 2.5cm, light concrete 5cm, thermal insulation 10cm, concrete slab 10cm.
U (W/m²/K)	U = 2.064 W/m^{2}k		U = 0.533 W/m^{2}K		U = 0.303 W/m2K	
KULMI ROOF		Dërrasa t=1.5cm, trarët e drurit 16/14cm, Dërrasa t=2.5cm, tërrska(karatavan) 2.5cm. Wooden planks 1.5cm, air space/timber construction beams 16/14cm, wooden planks 2.5cm.		Dërrasa t=1.5cm, trarët e drurit 16/14cm, izolim termik 16cm Dërrasa t=2.5cm, tërrska (karatavan) 2.5cm. Wooden planks 1.5cm, timber construction beams 16/14cm, thermal insulation 16cm, wooden planks 2.5cm.		Dërrasa t=1.5cm, trarët e drurit 16/14cm, Lesh guri 20cm, tërrska (karatavan) 2.5cm. Wooden planks 1.5cm, timber construction beams 16cm, thermal insulation 20cm, wooden planks 2.5cm.
U (W/m²/K)	U = 1.60 W/m^{2}K		U = 0.196 W/m^{2}K		U = 0.160 W/m^{2}K	

Koeficienti i transmetimit (W/K) për A_{ref} (m^2) Transmission coefficient (W/K) per A_{ref} (m^2)						
SISTEMI I NGROHJES DHE UJIT TË NGROHTË SANITAR | HEATING AND DOMESTIC HOT WATER SYSTEM						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
SISTEMI I NGROHJES HEATING SYSTEM		Stufë individuale elektrike Individual electric stove		Sistemi i ngrohjes qendrore - kaldaja me biomasë, radiatorë dhe valvola termostatike Central heating system - with biomass, radiators and thermostatic valves		Sistemi i ngrohjes qendrore - kaldaja me biomasë me akumulues, me pompë variabile, sistem balancues të ujit dhe valvole termostatike Central heating system - with biomass, with heat
Efiçienca Efficiency	η = 95%		η = 80%		η = 85%-90%	
SISTEMI I PËRGATITJES SË UJIT TË NGROHTË DOMESTIC HOT WATER SYSTEM (DHW)		Bojler elektrik për ngrohje të ujit sanitar Electric water heater		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes Central domestic hot water system connected to heating system		Sistemi qendror I ujit të ngrohtë shtëpiak I lidhur me sistemin e ngrohjes dhe sistemin e kolektorëve solar Central domestic hot water system connected to

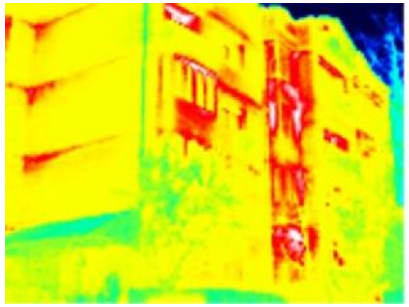
Kursimet në emetim të CO_2 (tCO_2) CO_2 Emission savings (tCO_2)			

	GJENDJA E TANISHME CURRENT CONDITION	PROPOZIMI STANDARD STANDARD IMPROVEMENT	PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT
Përfitimet dhe humbjet specifike të nxehtësisë (kWh/m^2a) Specific heat losses and gains (kWh/m^2a)			
Energjia për ngrohje dhe ujë sanitar (kWh/m^2a) Energy for heating & DHW (kWh/m^2a)			

Kursimet e energjisë së furnizuar(kWh/ m^2a) Delivered energy savings (kWh/m^2a)			

NDËRTESA SHUMËBANESORE E ULËT/MULTI FAMILY HOUSES

1970-1979



TË DHËNAT E NDËRTESËS | GENERAL BUILDING DATA

Kategoria e ndërtesës Building category	NDËRTESË SHUMËBANESORE E ULTË MULTI FAMILY HOUSES
Viti i ndërtimit Built in	1970-1979
Numri i kateve Number of floors	4

Shtëpitë shumë familjare janë ndërtesa të cilat përmbajnë një numër më të madh të njësive banimi dhe zakonisht kanë etazhitet P+2 deri P+4. Ky lloj ndërtesash të ndërtuara në periudhën 1970-1979 zakonisht kanë formë më të përbërë me thyerje, kjo për arsye të mundësimit të ndriçimit të të gjitha hapësirave. Sistemi konstruktiv është skeletor, me mure të jashtme të kombinuara nga ato të dyfishta me trashësi totale të murit prej 34cm, si dhe muret e njëfishta nga tullat e plota nga argjila me trashësi 25cm, të suvatuara nga të dyja anët. Konstruksioni meskatësh është nga pllakat masive nga betoni i armuar. Kulmi e ndërtesës është e rrafshët. Në këtë periudhë aplikimi i termoizolimit është prezent në pjesën më të madhe të mureve të jashtme dhe kulmit. Dritaret e hapësirave të ngrohura janë nga druri me xham dyshtresor, kurse dritaret e hapësirave të pa ngrohura dhe dyert e hyrjes janë nga hekuri me xham njështresor. Ndërtesa përmban hapësira të pangrohura si korridoret e përbashkëta, shkallët dhe hapësira teknike. Si rezultat i kombinimit të sistemeve të mureve të jashtme dhe krijimit të urave termike nga sistemi konstruktiv, humbjet termike përmes kalueshmërisë termike janë evidente. Humbje termike përmes infiltrimit krijohen kryesisht nga gjendja jo e mirë e dritareve. Për këtë lloj të ndërtesave, sipas vlerësimit të raporteve të ASK dhe vizitave në terren, sistemi i ngrohjes tipik është me ngrohëse elektrike individuale kurse uji sanitar është me bojler elektrik lokal.

Multi Family Houses are buildings that contain a larger number of housing units and typically have GF + 2 to GF + 4. This kind of buildings constructed during 1970-1979 period have a more complex geometry due to enabling the natural light for all spaces. The constructive system is skeleton, external walls are combined with double decker walls with total thickness of 34 cm including thermal insulation, as well as regular walls of 25 cm thick clay block plastered on both sides. The constructive slabs are made of reinforces concrete. The roof of the building is flat. During this period, the application of thermal insulation is present in most of the exterior walls

Numri i njësive të banimit Number of dwellings	16
Neto sipërfaqja e ngrohur e ndërtesës (m²) Net surface of the heated space (m²)	1435.34
Konsumi specifik për ngrohje (kWh/m²/vje) Specific energy need for heating (kWh/m²/a)	158.6

and roof. The windows of the heated spaces are wooden with double glazing, while the windows of the unheated spaces and the entrance doors are metal single glazed. The building also consists of unheated spaces such as common corridors, stairs and technical chambers. As a result of the combination of external wall systems and the presence of thermal bridges by the constructive system, thermal losses through thermal transmission are evident. Thermal loss through infiltration is mainly caused by poor quality windows. For this type of buildings, according to KAS reports and field visits, the typical heating system is with individual electric heaters and sanitary water is with a local electric boiler.

PROPOZIMI STANDARD | STANDARD IMPROVEMENT

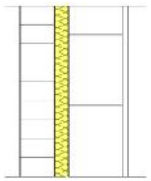
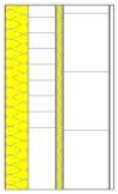
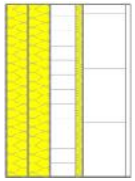
Izolimi mureve të jashtme me 10cm shtresë termoizoluese (λ=0.04W/mK). Kulmi dhe dyshemeje mbi toke nuk parashihen të izolohen. Ndërrimi i dritareve, me dritare të reja me dy shtresa xhami low-E me koeficient U=1.60 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm.

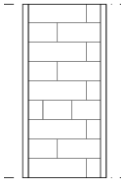
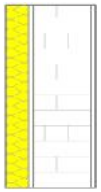
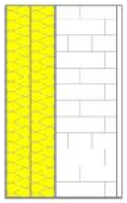
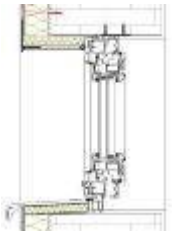
Insulation of walls with 10cm thermal insulation layer (λ = 0.04W / mK). No interventions on the roof and floor. Replacement of windows, with new double-glazed windows with low-E to achieve the coefficient U = 1.60 W/m²K.
For this type of buildings, the central heating and sanitary water system with biomass boilers - pellets, hot water accumulators, thermostatic radiators, which can be operated according to external temperature and programmable timers can be proposed as an energy efficient measure.

PROPOZIMI I AVANCUAR | ADVANCED IMPROVEMENT

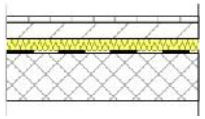
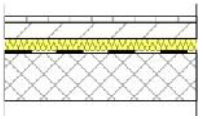
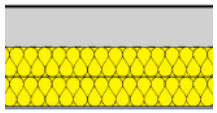
Izolimi i mureve me 20 cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i kulmit të rrafshtë me 15cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i konstruksionit mbi tokë me 15cm shtresë termoizoluese(λ=0.04W/mK). Ndërrimi i dritareve, me dritare të reja me tre shtresa xhami low-E me koeficient U=1.0 W/m²K. Për këtë lloj të ndërtesave si masë efiçiente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm në kombinim me sistemin e kolektorëve solar. Insulation of walls with 20 cm thermal insulation layer (λ = 0.04W/mK). Insulation of construction towards unheated attic with 15 cm of thermal insulation (λ=0.04W/mK). Insulation on the ground slab with 15 cm thermal insulation layer (λ = 0.04W/mK). Replacement of windows, with new triple glazed windows with low-E to achieve the coefficient U = 1.0 W/m²K. For this type of buildings, the central heating and sanitary water system with biomass boilers - pellets, hot water accumulators, radiators with thermostatic valves, which can be operated according to external temperature and programmable timers in combination with solar collector system, can be proposed as advanced energy efficiency measure.	

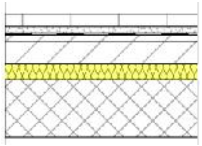
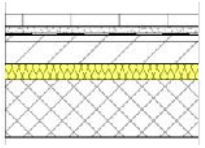
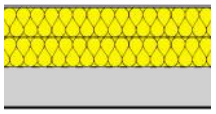
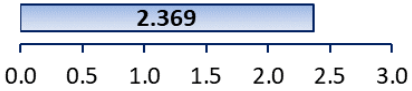
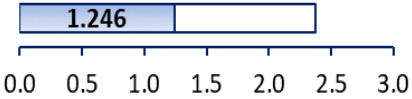
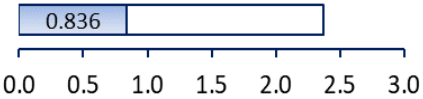
PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS

	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
MURET E JASHTME 1 EXTERNAL WALL		Suvatim i brendshëm, Bllok argjile 19cm, mbrojtje nga avulli, Lesh guri 3cm, tullë fasade 12cm Lime plaster 2cm, clay block 195cm, cement plaster 2.5cm, thermal insulation 3cm, vapour barrier, façade block 12cm.		Suvatim i brendshëm, Bllok argjile 19cm, mbrojtje nga avulli, Lesh guri 3cm, tullë fasade nga argjila 12cm, termoizolim 10cm, fasadë 1cm.L Lime plaster 2cm, clay block 19cm, cement plaster 2.5cm, rock wool insulation 3cm, vapour barrier, façade block 12cm, thermal insulation 10 cm, plaster 1 cm		Suvatim i brendshëm, Bllok argjile 19cm, mbrojtje nga avulli, Lesh guri 3cm, tullë fasade nga argjila 12cm, termoizolim 20cm. Lime plaster 2cm, clay block 19cm, rock wool 3cm, vapour barrier, thermal insulation 20cm, façade plaster 1cm.
U (W/m²K)	U = 0.737 W/m2K		U = 0.259 W/m2K		U = 0.162 W/m2K	

MURET E JASHTME 2 EXTERNAL WALL		Suvatimi i brendshëm 2cm, tullë e plotë 25cm, suvatim i jashtem2cm. Plaster 2cm, clay brick 25cm, plaster 2cm.		Suvatimi i brendshëm, tullë e plotë 25cm, suvatim i jashtëm, termoizolim 10cm, fasadë 1cm. Plaster 2cm, clay brick 25cm, plaster 2cm, thermal insulation 10cm, façade plaster 1cm.		Suvatimi i brendshëm, tullë e plotë 25cm, suvatim i jashtëm, termoizolim 20cm, fasadë 1cm. Plaster 2cm, clay brick 25cm, plaster 2cm, thermal insulation 20cm, facade plaster 1cm
U (W/m²/K)	U = 1.754 W/m2K		U = 0.326 W/m2K		U = 0.162 W/m2K	
DRITARET WINDOWS		Dritare druri me dy shtresa xhami. Wooden windows with double glazing.		Dritare me dy shtresa xhami low-E. Double glazing windows with low-E.		Dritare me tri shtresa xhami low-E. Triple glazing windows with low-E.
U (W/m²/K)	U =2.8 W/m^{2}K		U=1.60 W/m^{2}K		U=1.0 W/m^{2}K	

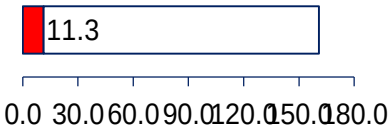
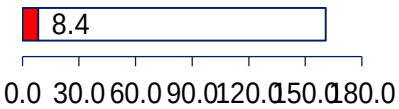
PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS

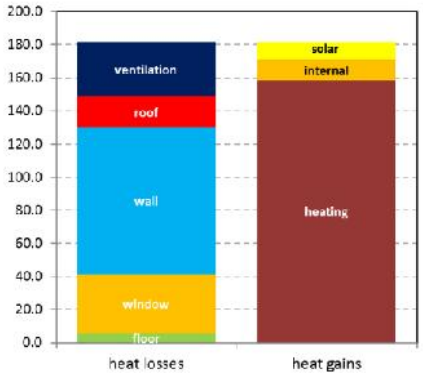
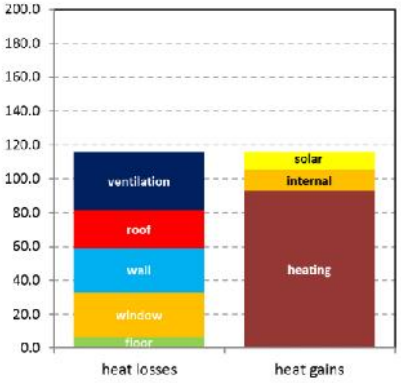
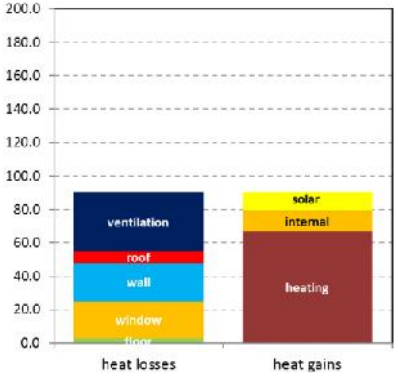
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
DYSHEMEJA FLOOR		Parket 2cm, beton 5cm, Stiropor 4cm, hidroizolim, BA 15cm. Parquet 2cm, concrete 5cm, EPS 4cm, waterproof layer, Reinforced concrete 15cm.		Pa ndryshime. No improvements.		Parket 2cm, beton 5cm, Stiropor 4cm, hidroizolim, BA 15cm izolim termik 15cm. Parquet 2cm, concrete 5cm, EPS 4cm, waterproof layer, Reinforced concrete 15cm, thermal insulation 15cm.
U (W/m²/K)	U = 0.677 W/m^{2}k		U = 0.677 W/m^{2}K		U = 0.19 W/m2K	

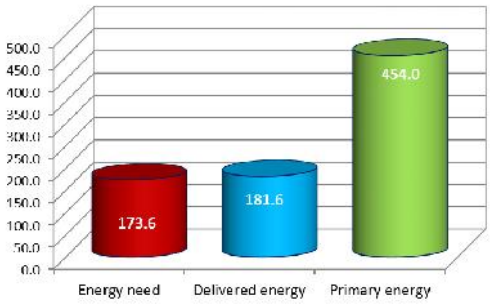
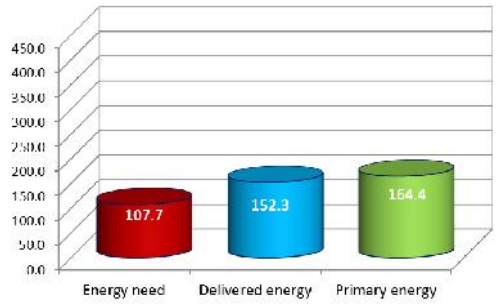
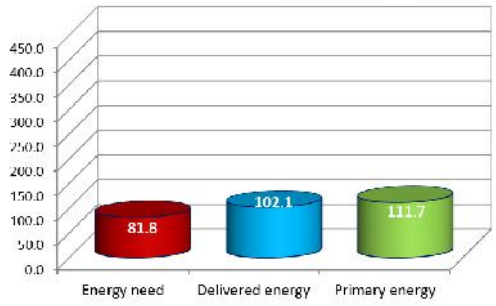
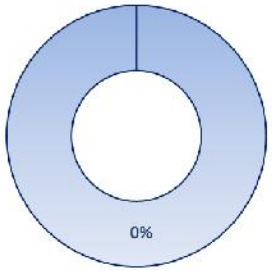
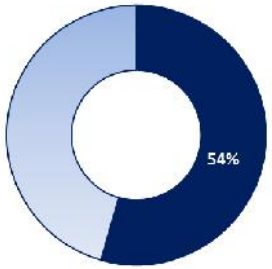
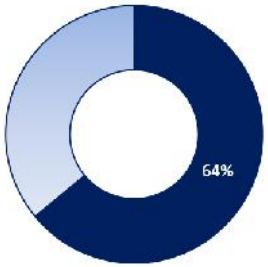
KULMI ROOF		Pllaka terraco 4cm, rërë 2cm, hidroizolim, beton lustrues 2cm, perlit 5-15cm, stiropor 5cm, foli avulli, BA 18cm. Concrete tiles 4cm, sand 2cm, waterproof layer, concrete 2cm, perlite 5-15cm, EPS 5cm, vapour barrier, reinforced concrete 18cm.		Pa ndryshime. No improvements.		Pllaka terraco 4cm, rërë 2cm, hidroizolim, beton lustrues 2cm, perlit 5-15cm, PVC, stiropor 15cm, foli avulli, BA 18cm. Concrete tiles 4cm, sand 2cm, waterproof layer, concrete 2cm, perlite 5-15cm, EPS 15cm, vapour barrier, reinforced concrete 18cm.
U (W/m²/K)	U = 0.461 W/m^{2}K		U = 0. 461 W/m^{2}K		U = 0.168 W/m^{2}K	
Koeficienti i transmetimit (W/K) për A_{ref} (m^2) Transmission coefficient (W/K) per A_{ref} (m^2)						

SISTEMI I NGROHJES DHE UJIT TË NGROHTË SANITAR | HEATING AND DOMESTIC HOT WATER SYSTEM

	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
SISTEMI I NGROHJES HEATING SYSTEM		Stufë individuale elektrike individual electric heater		Sistemi i ngrohjes qendrore - kaldaja me biomasë, radiatorë dhe valvola termostatike Central heating system - with biomass, radiators and thermostatic valves		Sistemi i ngrohjes qendrore - kaldaja me biomasë me akumulues, me pompë variabile, sistem balancues të ujit dhe valvole termostatike Central heating system - with biomass, with heat accumulator, VSD pump, hydraulic system balance
Efiçienca Efficiency	η = 95%		η = 80%		η = 85%-90%	

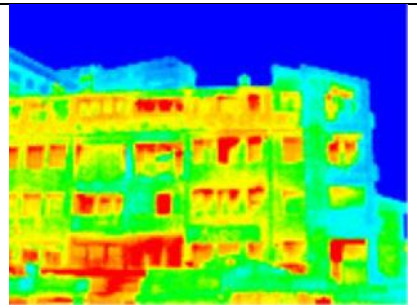
SISTEMI I PERGATITJES SË UJIT TË NGROHTË DOMESTIC HOT WATER SYSTEM (DHW)		Bojler elektrik për ngrohje të ujit sanitar Electric water heater		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes Central domestic hot water system connected to heating system		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes dhe sistemin e kolektorëve solar Central domestic hot water system connected to heating system and solar
Kursimet e emetimit të CO_2 (tCO_2) CO_2 Emission savings (tCO_2)						

	GJENDJA E TANISHME CURRENT CONDITION	PROPOZIMI STANDARD STANDARD IMPROVEMENT	PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT
Përfitimet dhe humbjet specifike të nxehtësisë (kWh/m^2a) Specific heat losses and gains (kWh/m^2a)			

Energjia për ngrohje dhe ujë sanitar (kWh/m^{2}a) Energy for heating & DHW (kWh/m^{2}a)			
Kursimet e energjisë së furnizuar (kWh/m^{2}a) Delivered energy savings (kWh/m^{2}a)			

NDËRTESA SHUMËBANESORE E ULËT/MULTI FAMILY HOUSES

1980-1999



TË DHËNAT E NDËRTESËS | GENERAL BUILDING DATA

Shtëpitë shumë familjare të ndërtuara gjatë periudhës 1980-1999 kanë kryesisht planimetri të rregullt dhe vëllim relativisht kompakt me thellime të lloxhave dhe me kulm me pjerrësi të vogël. Sistemi konstruktiv skeletor nga shtyllat e betonit të armuar. Muret e jashtme janë nga blloqet e argjilës me vrima, me trashësi 25cm dhe të suvatuara nga të dyja anët. Konstruksioni meskatësh nga pllakat nga betoni i kombinuar . Nën kulmi në të shumtën e rasteve është e shfrytëzuar për banim. Etazhiteti i këtyre ndërtesave është P+3 deri P+4. Dritaret janë me kornizë druri dhe dy shtresa xhami. Shtresat termoizoluese në këto ndërtesa paraqiten në kulm.

Për arsye të mungesës së izolimit termik në këto ndërtesa humbjet termike janë prezente në të gjitha elementet por më të theksuara në elementet nga betoni i armuar si shtyllat, trarët dhe pllakat, të cilat funksionojnë si ura termike. Gjithashtu dritaret janë elemente të cilat krijojnë humbje të konsiderueshme përmes transmetimit dhe rrjedhjes së ajrit. Për këtë lloj të ndërtesave, sipas vlerësimit të raporteve të ASK dhe vizitave në terren, sistemi tipik i

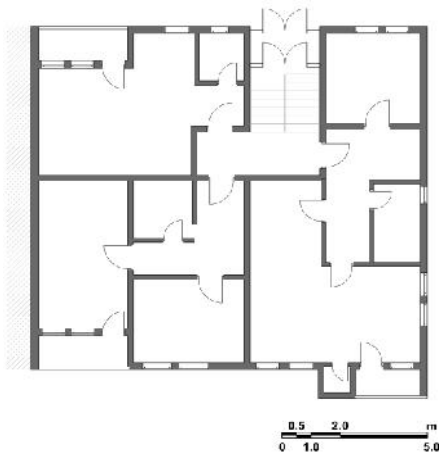
Kategoria e ndërtesës Building category	NDËRTESË SHUMËBANESORE E ULTË MULTI FAMILY HOUSES
Viti i ndërtimit Construction period	1980-1999
Numri i kateve Number of floors	4
Numri i njësive të banimit Number of dwellings	12
Neto sipërfaqja e ngrohur e ndërtesës (m²) Net surface of the heated space (m²)	510.87
Konsumi specifik për ngrohje (kWh/m²/vje) Specific energy need for heating (kWh/m²/a)	151.6

ngrohjes është me ngrohëse elektrike individuale kurse uji sanitar është me bojler elektrik lokal.

Multi Family Houses built during 1980-1999 period have mostly regular layout and relatively compact volume with several loggias and slope roofs. Constructive skeleton system made of reinforced concrete. The exterior walls are made of hollowed clay blocks with a thickness of 25cm and plastered on both sides. Concrete structure made from reinforced concrete slabs combined with hollowed clay elements. The attic in mostly used for housing. Buildings usually consist of GF + 3 to GF + 4. Windows are mostly wooden double glazed. Thermal insulating layers in these buildings are applied on the roof. Due to the lack of thermal insulation in these buildings thermal losses are present in all elements mostly in reinforced concrete elements such as columns, beams and slabs, which function as thermal bridges. Windows are also elements that create significant losses through air infiltration. For this type of buildings, according to KAS reports and field visits, the typical heating system is with individual electric heaters and sanitary water is with a local electric boiler.

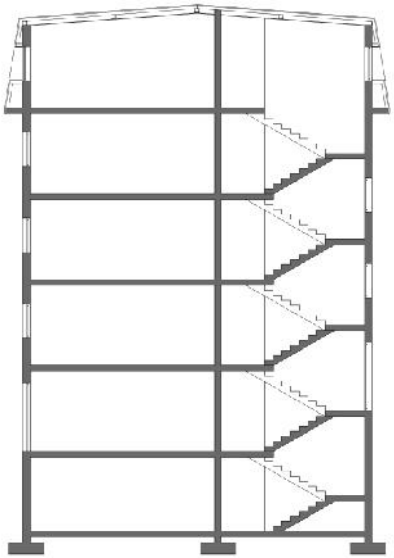
PROPOZIMI STANDARD | STANDARD IMPROVEMENT	

Izolimi i mureve me 10cm shtresë termoizoluese (λ=0.04W/mK) dhe mureve të nënkulmit 5cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i kulmit me 10cm shtresë termoizoluese (λ=0.04W/mK). Konstruksioni mbi hapësirën e pangrohur pa ndryshime. Ndërrimi i dritareve, me dritare të reja me dy shtresa xhami low-E me koeficient U=1.60 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm.
Insulation of walls with 10cm thermal insulation layer (λ = 0.04W/mK) and the attic walls with 5 cm thermal insulation layer (λ = 0.04W/mK). Insulation of the roof with 10 cm of thermal insulation (λ=0.04W/mK). Floor slab above the unheated space without any changes. Replacement of windows, with new double glazed windows with low-E to achieve the coefficient U = 1.60W/m²K.
For this type of buildings, the central heating and sanitary water system with biomass boilers - pellets, hot water accumulators, thermostatic radiators, which can be operated according to external temperature and programmable timers can be proposed as an energy efficency measure.

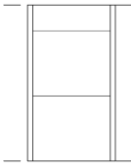
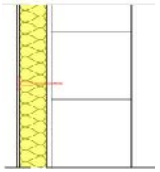
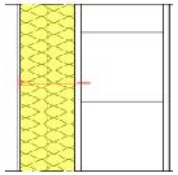
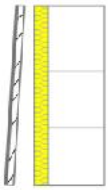
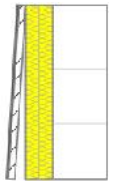
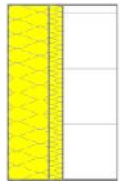


PROPOZIMI I AVANCUAR | ADVANCED IMPROVEMENT

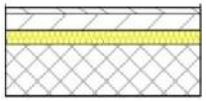
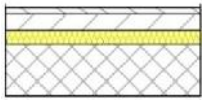
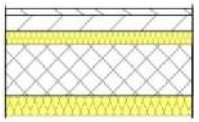
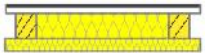
Izolimi i mureve me 20cm shtresë termoizoluese (λ=0.04W/mK) dhe mureve të nënkulmit 15cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i pllakës së kulmit me 20cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i konstruksionit mbi hapësirën e pangrohur me 10cm shtresë termoizoluese (λ=0.04W/mK). Ndërrimi i dritareve, me dritare të reja me tre shtresa xhami low-E me koeficient U=1.0 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm në kombinim me sistemin e kolektorëve solar.
Insulation of walls with 20 cm thermal insulation layer (λ = 0.04W/mK) and the attic walls with 15cm thermal insulation layer (λ = 0.04W/mK). Insulation of roof with 20cm of thermal insulation (λ=0.04W/mK). Insulation on the floor slab above the unheated space with 10cm thermal insulation layer (λ = 0.04W/mK). Replacement of windows, with new triple glazed windows with low-E to achieve the coefficient U = 1.0 W/m²K.
For this type of buildings, the central heating and sanitary water system with biomass boilers - pellets, hot water accumulators, radiators with thermostatic valves, which can be operated according to external temperature and programmable timers in combination with solar collector system, can be proposed as advanced energy efficiency measure.

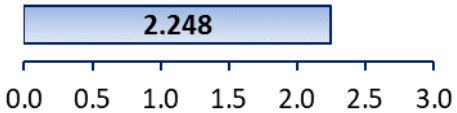
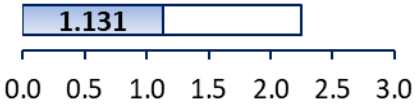
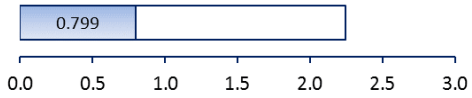


PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS

	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI AVANCUAR ADVANCE IMPROVEMENT	
MURET E JASHTME 1 EXTERNAL WALL		Llaç gëlqeror 2cm, bllok silikat 20cm ,llaç çimentoje 2.5cm. Lime plaster 2cm, silicate block 20cm, cement plaster 2cm.		Llaç gëlqeror 2cm, Bllok argjile 25cm , llaç çimentoje 2.5cm termoizolim 10cm, fasade 1cm. Lime plaster 2cm, silicate block 20cm, cement plaster 2cm, thermal insulation 10cm, façade plaster 1cm		Llaç gëlqeror 2cm, Bllok argjile 25cm , llaç çimentoje 2.5cm termoizolim 20cm, llaç fasade 2cm. Lime plaster 2cm, silicate block 20cm, cement plaster 2cm, thermal insulation 20cm, façade plaster 1cm
U (W/m²K)	U = 2.156 W/m2K		U = 0.334 W/m2K		U = 0.182 W/m2K	
MURET E JASHTME 2 EXTERNAL WALL		Suvatim 2cm, bllok argjile 20cm, izolim termik 5cm, hapësirë ajrore, dërrasa 2cm. Plaster 2cm, clay blocks 20cm, thermal insulation 5cm, air space, wooden planks 2cm.		Suvatim 2cm, bllok argjile 20cm, izolim termik 10cm, hapësirë ajrore, dërrasa 2cm. Plaster 2cm, clay blocks 20cm, thermal insulation 10 cm, air space, wooden planks 2cm.		Suvatim 2cm, bllok argjile 20cm, izolim termik 15cm, hapësirë ajrore, dërrasa 2cm. Plaster 2cm, clay blocks 20cm, thermal insulation 15 cm, wooden planks 2 cm.
U (W/m²/K)	U = 0.479 W/m2K		U = 0.294 W/m2K		U = 0.176 W/m2K	
DRITARET WINDOWS		Dritare druri me dy shtresa xhami. Wooden windows with double glazing.		Dritare me dy shtresa xhami low-E. Double glazing windows with low-E.		Dritare me tre shtresa xhami low-E. Triple glazing windows with low-E.
U (W/m²/K)	U =2.8 W/m^{2}K		U=1.60 W/m^{2}K		U=1.0 W/m^{2}K	

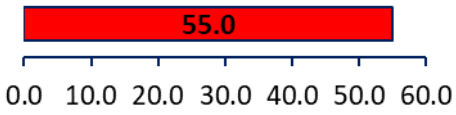
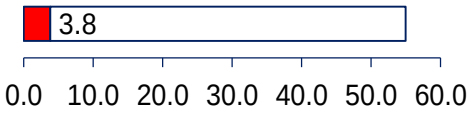
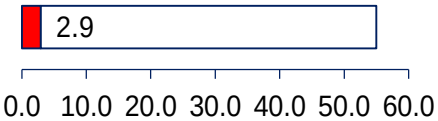
PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS

	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI AVANCUAR ADVANCE IMPROVEMENT	
DYSHEMEJA FLOOR		Parket 2.5cm, estrih 5cm, termoizolim EPS 4cm pllake B.A. 20cm, suvatim 2cm. Parquet 2.5cm, concrete 5cm, EPS 4cm, reinforced concrete 20cm, plaster 2cm.		Pa ndryshime No improvements.		Parket 2.5cm, estrih 5cm, termoizolim EPS 4cm pllake B.A. 20cm, suvatim, termoizolim 10cm, suvatim 1cm. Parquet 2.5cm, concrete 5cm, EPS 4cm, reinforced concrete 20cm, plaster 2cm, thermal insulation 10cm, plaster 1cm.
U (W/m²/K)	U = 0.588 W/m^{2}k		U = 0.588 W/m^{2}K		U = 0.220 W/m2K	
KULMI ROOF		Panel gjipsi 1.5cm, trarë druri 10cm, izolim termik 5cm, dërrasim 2cm. Gypsum board 1.5cm, timber beams10cm/thermal insulation 5 cm, wooden planks 2cm.		Panel gjipsi 1.5cm, trarë druri 10cm, izolim termik 10cm, dërrasim 2cm. Gypsum board 1.5cm, timber beams10cm/thermal insulation 10 cm, wooden planks 2cm.		Panel gjipsi 1.5cm, trarë druri 10cm, izolim termik 20cm, dërrasim 2cm. Gypsum board 1.5cm, timber beams 10cm/thermal insulation 20 cm, wooden planks 2cm.
U (W/m²/K)	U = 0.624 W/m^{2}K		U = 0.327 W/m^{2}K		U = 0.187 W/m^{2}K	

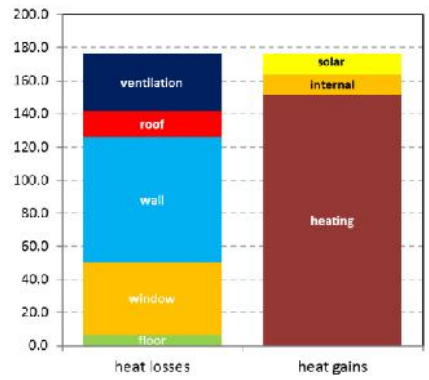
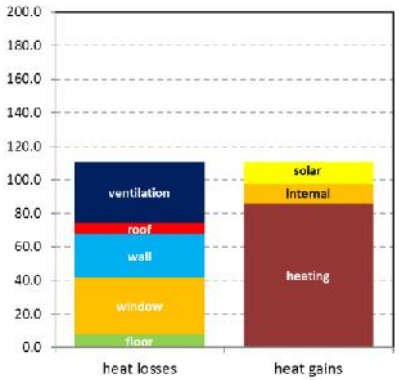
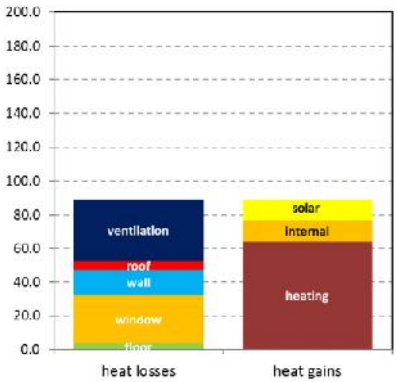
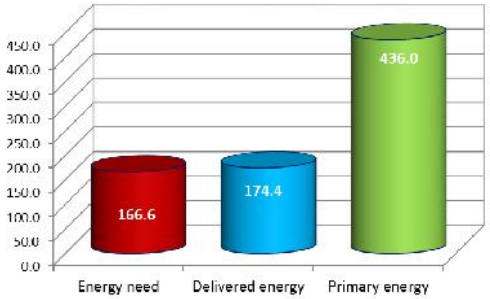
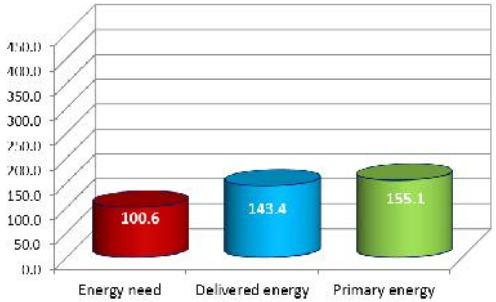
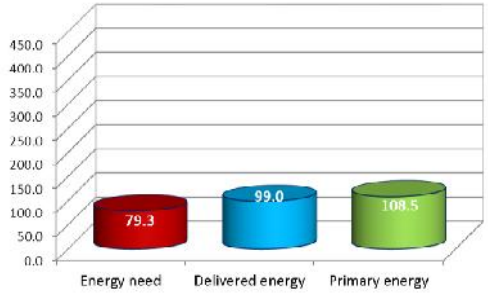
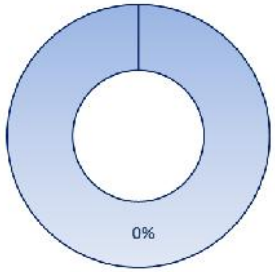
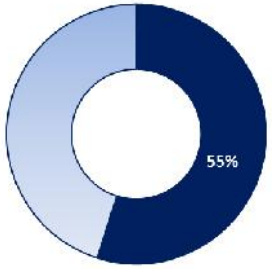
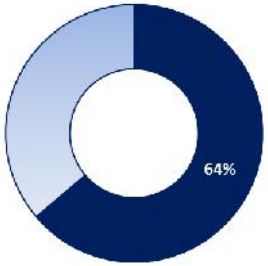
Koeficienti i transmetimit (W/K) për A_{ref} (m^2) Transmission coefficient (W/K) per A_{ref} (m^2)			

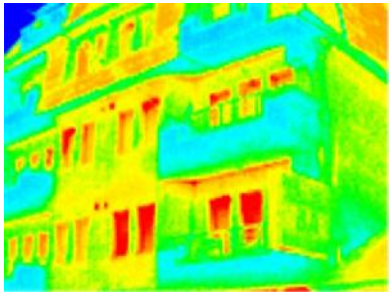
SISTEMI I NGROHJES DHE UJIT TË NGROHTË SANITAR | HEATING AND DOMESTIC HOT WATER SYSTEM

	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
SISTEMI I NGROHJES HEATING SYSTEM		Ngrohëse elektrike individuale Individual electric heater		Sistemi i ngrohjes qendrore - kaldaja me biomasë, radiatorë dhe valvola termostatike Central heating system - with biomass, radiators and thermostatic valves		Sistemi i ngrohjes qendrore - kaldaja me biomasë me akumulues, me pompë variabile, sistem balancues të ujit dhe valvole termostatike Central heating system - with biomass, with heat accumulator, VSD pump, hydraulic system balance
Efiçienca Efficiency	η = 95%		η = 80%		η = 85%-90%	
SISTEMI I PËRGATITJES SË UJIT TË NGROHTË DOMESTIC HOT WATER SYSTEM (DHW)		Bojler elektrik për ngrohje të ujit sanitar Electric water heater		Sistemi qendror I ujit të ngrohtë shtëpiak I lidhur me sistemin e ngrohjes Central domestic hot water system connected to heating system		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes dhe sistemin e kolektorëve solar Central domestic hot water system connected to heating system and solar

Kursimet nëemetim të CO_2 (tCO_2) CO_2 Emission savings (tCO_2)			

	GJENDJA E TANISHME CURRENT CONDITION	PROPOZIMI STANDARD STANDARD IMPROVEMENT	PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT

Përfitimet dhe humbjet e nxehtësisë specifike (kWh/m^{2}a) Specific heat losses and gains (kWh/m^{2}a)			
Energjia për ngrohje dhe ujë sanitar (kWh/m^{2}a) Energy for heating & DHW (kWh/m^{2}a)			
Kursimet e energjisë së furnizuar (kWh/m^{2}a) Delivered energy savings (kWh/m^{2}a)			
NDËRTESA SHUMËBANESORE E ULËT/MULTI FAMILY HOUSES	2000-2017		



TË DHËNAT E NDËRTESËS | GENERAL BUILDING DATA

Kategoria e ndërtesës Building category	NDËRTESË SHUMËBANESORE E ULTË MULTI FAMILY HOUSES
Viti i ndërtimit Built in	2000-2017
Numri i kateve Number of floors	4
Numri i njësive të banimit Number of dwellings	24
Neto sipërfaqja e ngrohur e ndërtesës (m²) Net surface of the heated space (m²)	1510.93
Konsumi specifik për ngrohje (kWh/m²/vje) Specific energy need for heating (kWh/m²/a)	96.6

Shtëpitë shumë familjare të ndërtuara gjatë periudhës pas vitit 2000 kanë kryesisht planimetri të rregullt dhe vëllim kompakt dhe kulm me pjerrësi. Sistemi konstruktiv është skeletor me shtylla nga betoni i armuar. Muret e jashtme janë me trashësi 30 cm nga blloqet e argjilës dhe izolim termik 5 cm të suvatuara nga të dyja anët. Konstrukcioni meskatësh nga pllaka e betonit të armuar të kombinuar me elemente të zgavruara nga argjila . Nën-kulmi në të shumtën e rasteve është e e shfrytëzuar për banim. Nën-kulmi ka konstrukcion druri me mbulese nga tegolat dhe termoizolim nga stiropori. Etazhiteti i këtyre ndërtesave është P+3 deri P+4. Dritaret janë me kornizë druri apo PVCme dy shtresa xhami. Te ky lloj i ndërtesave humbjet termike janë të theksuara në konsolat e ballkoneve të cilat funksionojnë si ura termike. Për këtë lloj të ndërtesave, sipas vlerësimit të raporteve të ASK dhe vizitave në terren, sistemi i ngrohjes qendrore elektrike individuale në apartmane kurse uji sanitar është me bojler elektrik lokal.

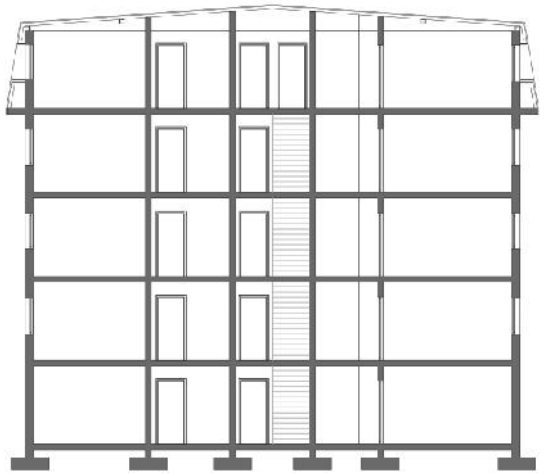
Multi Family Houses built during 2000-2018 have mainly regular planimetry and compact volume and slope roofs. The constructive system is skeleton made of reinforced concrete columns. The exterior walls are 30 cm thick made of clay blocks and 5 cm thermal insulation on both sides. Concrete structure made of reinforced concrete slab combined with hollowed clay elements. The attic is mostly used for housing. The roof is made of wooden construction with asphalt tile finishes and thermal insulation from EPS. Buildings mostly consist of GF + 3 to GF + 4. Windows are made of wood or PVC double glazing. In this type of building the thermal losses are highlighted in the consoles of balconies that function as thermal bridges. For this type of buildings, according to KAS reports and field visits, the typical heating system is Individual electric central heating system in each apartment and sanitary water is with a local electric boiler.

PROPOZIMI STANDARD | STANDARD IMPROVEMENT

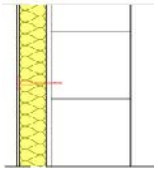
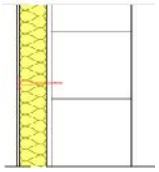
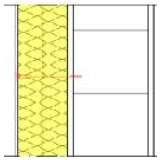
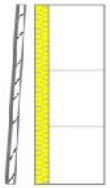
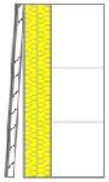
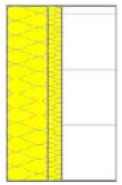
Izolimi i mureve me 10cm shtresë termoizoluese (λ=0.04W/mK) dhe mureve të nënkulmit 5cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i kulmit me 10cm shtresë termoizoluese (λ=0.04W/mK). Konstruksioni mbi hapësirën e pangrohur pa ndryshime. Ndërrimi i dritareve, me dritare të reja me dy shtresa xhami low-E me koeficient U=1.60 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm.
Insulation of walls with 10cm thermal insulation layer (λ = 0.04W/mK) and the attic walls with 5cm thermal insulation layer (λ = 0.04W/mK). Insulation of the roof with 10cm of thermal insulation (λ=0.04W/mK). Floor slab above the unheated space without any changes. Replacement of windows, with new double-glazed windows with low-E to achieve the coefficient U = 1.60 W/m²K.
For this type of buildings, the central heating and sanitary water system with biomass boilers - pellets, hot water accumulators, thermostatic radiators, which can be operated according to external temperature and programmable timers can be proposed as an energy efficiency measure.

PROPOZIMI I AVANCUAR | ADVANCED IMPROVEMENT

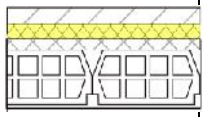
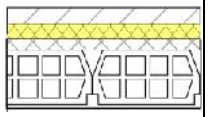
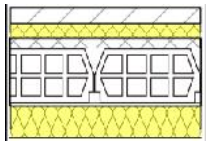
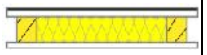
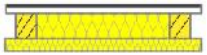
Izolimi i mureve me 20cm shtresë termoizoluese (λ=0.04W/mK) dhe mureve të nënkulmit 15cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i pllakës së kulmit me 20cm shtresë termoizoluese (λ=0.04W/mK). Izolimi i konstruksionit mbi hapësirën e pangrohur me 10cm shtresë termoizoluese(λ=0.04W/mK). Ndërrimi i dritareve, me dritare të reja me tre shtresa xhami low-E me koeficient U=1.0 W/m²K.
Për këtë lloj të ndërtesave si masë efiçiente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pelet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm në kombinim me sistemin e kolektorëve solar.
Insulation of walls with 20 cm thermal insulation layer (λ = 0.04W/mK) and the attic walls with 15 cm thermal insulation layer (λ = 0.04W/mK). Insulation of roof with 20cm of thermal insulation (λ=0.04W/mK). Insulation on the floor slab above the unheated space with 10cm thermal insulation layer (λ = 0.04W/mK). Replacement of windows, with new triple glazed windows with low-E to achieve the coefficient U = 1.0 W/m²K.
For this type of buildings, the central heating and sanitary water system with biomass boilers - pellets, hot water accumulators, radiators with thermostatic valves, which can be operated according to external temperature and programmable timers in combination with solar collector system, can be proposed as advanced energy efficiency measure.

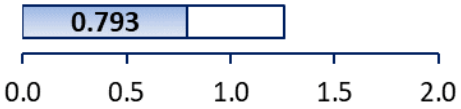
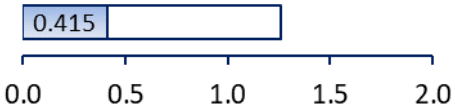


PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS

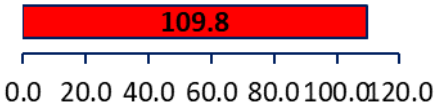
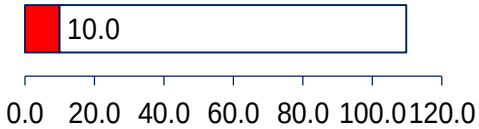
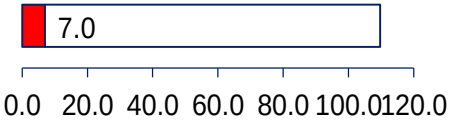
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
MURET E JASHTME 1 EXTERNAL WALL		Llaç gëlqeror 2cm, bllok argjile 25cm, izolim termik 5cm, llaç fasade 1cm. Lime plaster 2cm, clay block 25cm, thermal insulation 5cm, façade plaster 1cm.		Llaç gëlqeror 2cm, bllok argjile 25cm, izolim termik 10cm, fasade 1cm. Lime plaster 2cm, clay block 25cm, thermal insulation 10cm, façade plaster 1cm.		Llaç gëlqeror 2cm, bllok argjile 25cm, izolim termik 20cm, fasade 1cm. Lime plaster 2cm, clay block 25cm, thermal insulation 20cm, façade plaster 1cm.
U (W/m²K)	U = 0.57 W/m2K		U = 0.275 W/m2K		U = 0.156 W/m2K	
MURET E JASHTME 2 EXTERNAL WALL		Suvatim 2cm, bllok argjile 20cm, izolim termik 5cm, hapësirë ajrore, dërrasa 2cm. Plaster 2cm, clay blocks 20cm, thermal insulation 5cm, air space, wooden planks 2cm.		Suvatim 2cm, bllok argjile 20cm, izolim termik 10cm, hapësirë ajrore, dërrasa 2cm. Plaster 2cm, clay blocks 20cm, thermal insulation 10 cm, air space, wooden planks 2cm.		Suvatim 2cm, bllok argjile 20cm, izolim termik 15cm, hapësirë ajrore, dërrasa 2cm. Plaster 2cm, clay blocks 20cm, thermal insulation 15 cm, wooden planks 2 cm..
U (W/m²/K)	U = 0.479 W/m2K		U = 0.294 W/m2K		U = 0.176 W/m2K	
DRITARET WINDOWS		Dritare plastike me dy shtresa xhami. Plastic framed windows with double glazing		Dritare me dy shtresa xhami low-E. Double glazing windows with low-E.		Dritare me tre shtresa xhami low-E. Triple glazing windows with low-E.
U (W/m²/K)	U =2.8 W/m^{2}K		U=1.60 W/m^{2}K		U=1.0 W/m^{2}K	

PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESËS | BUILDING ENVELOPE IMPROVEMENTS

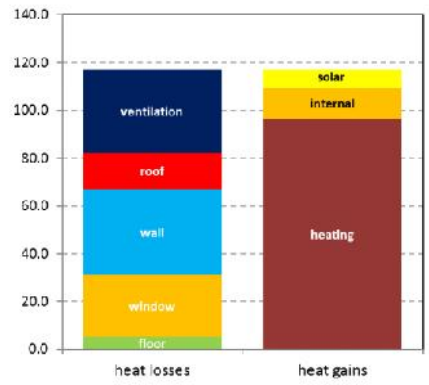
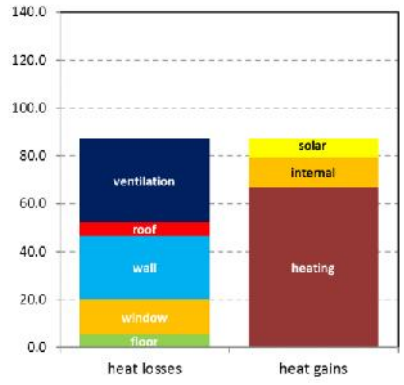
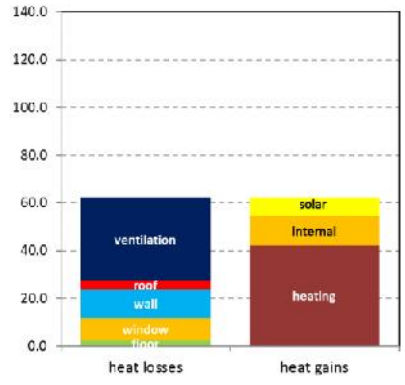
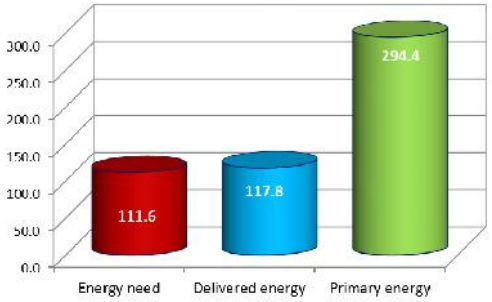
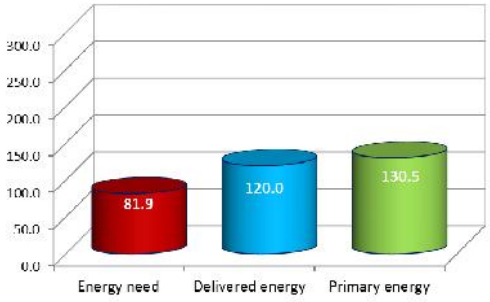
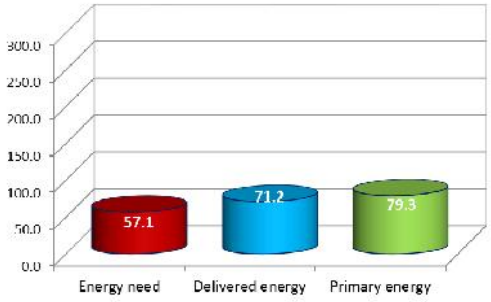
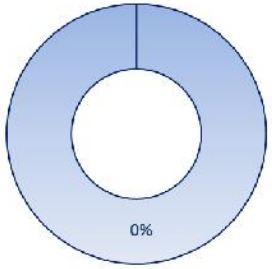
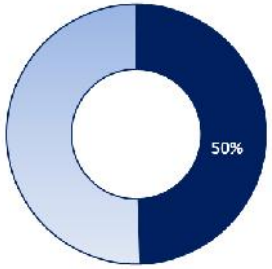
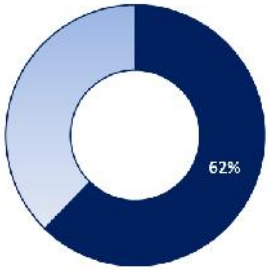
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
DYSHEMEJA FLOOR		Parket 2.5cm, estrih 5cm, termoizolim EPS 4cm pllake Monta 20cm, suvatim 2cm. Parquet 2,5cm, concrete 5cm, thermal insulation 5cm, slab with clay block infill 20cm, plaster 2cm.		Pa ndryshime No improvements		Parket 2.5cm, estrih 5cm, , beton 20cm, termoizolim 5cm, pllakë monta 20cm, termoizolim 10cm Parquet 2,5cm, concrete 5cm, thermal insulation 5cm, slab with clay block infill 20cm, thermal insulation 10cm.
U (W/m²/K)	U = 0.95 W/m^{2}k		U = 0.95 W/m^{2}K		U = 0.338 W/m2K	
KULMI ROOF		Panel gjipsi 1.5cm, trarë druri 10cm, izolim termik 5cm, dërrasim 2cm. Gypsum board 1.5cm, timber beams10cm/thermal insulation 5 cm, wooden planks 2cm.		Panel gjipsi 1.5cm, trarë druri 10cm, izolim termik 10cm, dërrasim 2cm. Gypsum board 1.5cm, timber beams10cm/thermal insulation 10 cm, wooden planks 2cm.		Panel gjipsi 1.5cm, trarë druri 10cm, izolim termik 20cm, dërrasim 2cm. Gypsum board 1.5cm, timber beams 10cm/thermal insulation 20 cm, wooden planks 2cm.
U (W/m²/K)	U = 0.63 W/m^{2}K		U = 0.355 W/m^{2}K		U = 0.188 W/m^{2}K	

Koeficienti i transmetimit (W/K) për A_{ref} (m^2) Transmission coefficient (W/K) per A_{ref} (m^2)			

SISTEMI I NGROHJES DHE UJIT TË NGROHTË SANITAR | HEATING AND DOMESTIC HOT WATER SYSTEM						
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
SISTEMI I NGROHJES HEATING SYSTEM		Sistem i ngrohjes qendrore elektrike individuale në apartmane Individual electric central heating in each apartment		Sistemi i ngrohjes qendrore - kaldaja me biomasë, radiatorë dhe valvola termostatike Central heating system - with biomass, radiators and thermostatic valves		Sistemi i ngrohjes qendrore - kaldaja me biomasë me akumulues, me pompë variabile, sistem balancues të ujit dhe valvole termostatike Central heating system - with biomass, with heat accumulator, VSD pump, hydraulic system balance
Efficiency (ALB) Efficiency	η = 95%		η = 80%		η = 85%-90%	
SISTEMI I PËRGATITJES SË UJIT TË NGROHTË DOMESTIC HOT WATER SYSTEM (DHW)		Bojler elektrik për ngrohje të ujit sanitar Electric water heater		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes Central domestic hot water system connected to heating system		Sistemi qendror i ujit të ngrohtë shtëpiak i lidhur me sistemin e ngrohjes dhe sistemin e kolektorëve solar Central domestic hot water system connected to heating system and solar collector system

Kursimet në emetim të CO_2 (tCO_2) CO_2 Emission savings (tCO_2)			

	GJENDJA E TANISHME CURRENT CONDITION	PROPOZIMI STANDARD STANDARD IMPROVEMENT	PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT

Përfitimet dhe humbjet e nxehtësisë specifike (kWh/m^{2}a) Specific heat losses and gains (kWh/m^{2}a)			
Energjia për ngrohje dhe ujë (kWh/m^{2}a) Energy for heating & DHW (kWh/m^{2}a)			
Kursimet e energjisë së furnizuar (kWh/m^{2}a) Delivered energy savings (kWh/m^{2}a)s