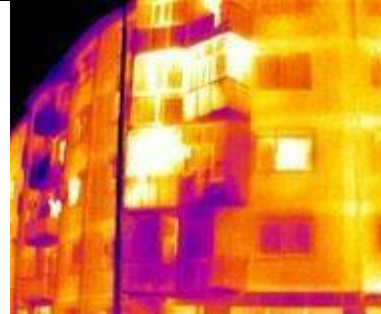


NDËRTESA SHUMËBANESORE TË LARTA APARTMENT BLOCKS

1960-1969



TË DHËNAT E NDËRTESESË | GENERAL BUILDING DATA

Kategoria e ndërtesës
Building category

NDËRTESA SHUMËBANESORE TË
LARTA / APARTMENT BLOCKS

Viti i ndërtimit
Construction period

1960 - 1969

Numri i kateve
Number of floors

5

Numri i njësive të banimit
Number of dwellings

15

Neto sipërfaqja e ngrohur e ndërtesës (m²)
Net surface of the heated space (m²)

967.2

Konsumi specifik për ngrohje (kWh/m²/vje)
Specific energy need for heating (kWh/m²/a)

144.2

Baza e ndërtesës është e thjeshtë, me një formë të pastër gjeometrike. Ndërtesat e kësaj periudhe të ndërtimit zakonisht janë sisteme të kombinuara me trarë horizontale dhe shtylla të armuara dhe me mbështjellës të patermoizoluar. Muret janë nga blloqet e argjilës me trashësi 20cm, të suvatuara nga të dy anët dhe muret e bodrumit nga betoni i armuar me trashësi 20cm. Kulmi i ndërtesës është i patermoizoluar dhe kryesisht në këtë etapë të ndërtimit ndërtesat e këtij lloji kanë mbulesë nga asbesti, i cili duhet të ketë një trajtim të veçantë. DysHEMEJA është nga pllakat montazhe të betonit të armuar me një termoizolim nga fibrat e drurit me trashësi 2cm. Hapjet e jashtme të ndërtesës janë me kornizë druri me dy krah me nga një shtresë xhami; dritaret e hyrjes janë me ram metalik dhe me një shtresë xhami. Dyert e hyrjes janë metalike dhe një shtrese xhami të përforcuar. Fotografia e realizuar me termokamerë tregon humbje të mëdha nga muret dhe hapjet e 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 with simple geometric shape. Buildings of this construction period are usually a system combined with horizontal beams and columns with non-insulated roofing. The walls are from 20cm thick clay blocks, plastered on both sides and basement walls are of 20cm thick reinforced concrete. The roof of the building is non-insulated and, mainly at this stage of construction buildings of this type are, covered by asbestos tiles, which should have a special treatment. The floor is made of reinforced concrete slab tiles with a thermal insulation of 2cm thick wood fibers. The windows with double paned wooden frame and single glazing; The entrance windows are of metallic frame and with single glazing. The entrance doors are of metal frame and a reinforced glass layer. The picture taken with the thermocamera shows a great loss from the walls and the openings 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.

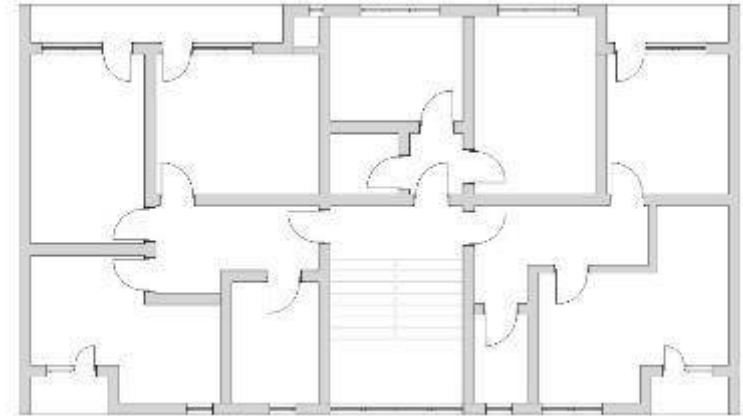
PROPOZIMI STANDARD | STANDARD IMPROVEMENT

Izolimi i mureve me 10cm shtresë termoizoluese ($\lambda = 0.04 \text{ W/mK}$). Izolimi i konstruksionit të dyshemesë mbi hapësirë të pangrohur dhe konstruksionit të kulmit me 10cm shtresë termoizoluese ($\lambda = 0.04 \text{ W/mK}$). Ndërrimi i dritareve, me dritare te reja me dy shtresa xhami low-E që të arrihet koeficienti $U = 1.4 \text{ W/m}^2\text{K}$.

Për këtë lloj të ndërtesave si masë efiçiente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pellet, 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 ($\lambda = 0.04 \text{ W/mK}$). Insulation on the slab above unheated space and Insulation on the roof slab with 10cm thermal insulation layer ($\lambda = 0.04 \text{ W/mK}$). Replacement of windows, with new windows with two layers of low-E glass to achieve the coefficient $U = 1.4 \text{ W/m}^2\text{K}$.

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.



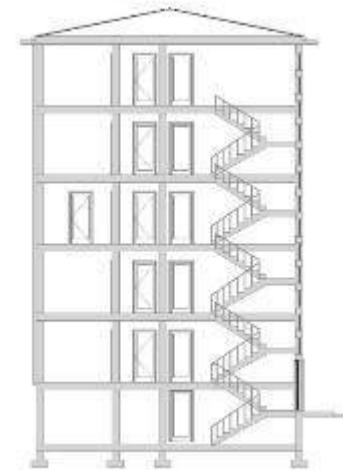
PROPOZIMI I AVANCUAR | ADVANCED IMPROVEMENT

Izolimi i mureve me 20cm shtresë termoizoluese ($\lambda = 0.04 \text{ W/mK}$). Izolimi i konstruksionit të dyshemesë mbi hapësirë të pangrohur dhe konstruksionit të kulmit me 20cm shtresë termoizoluese ($\lambda = 0.04 \text{ W/mK}$). Ndërrimi i dritareve, me dritare te reja me dy shtresa xhami low-e që të arrihet koeficienti $U = 1.0 \text{ W/m}^2\text{K}$.

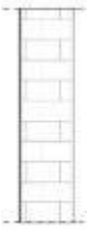
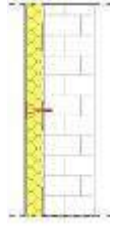
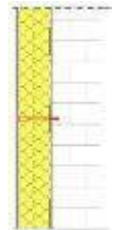
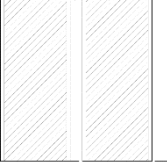
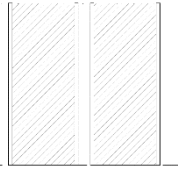
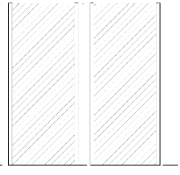
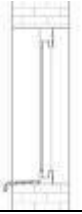

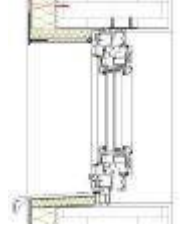
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Insulation of walls with 20cm thermal insulation layer ($\lambda = 0.04 \text{ W/mK}$). Insulation on the slab above unheated space and insulation on the roof slab with 20cm thermal insulation layer ($\lambda = 0.04 \text{ W/mK}$). Replacement of windows, with new windows two layers of low-e glass to achieve the coefficient $U = 1.0 \text{ W/m}^2\text{K}$.

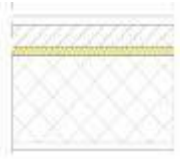
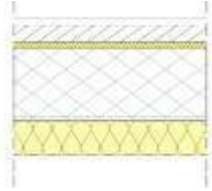
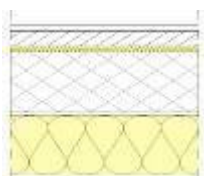

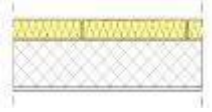
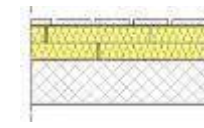
For this type of buildings, the central heating and sanitary hot water system with biomass boilers - pellets, hot water accumulators, radiators with thermostatic valves, which can be operated according to external temperature and programmable timers in combination with solar collector system can be proposed as advanced energy efficiency measure.

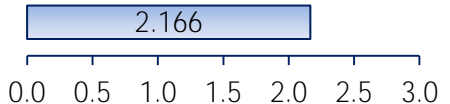
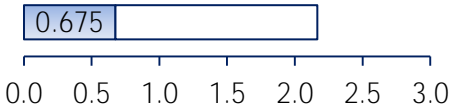
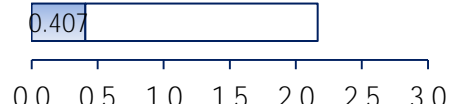


PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESESË | BUILDING ENVELOPE IMPROVEMENTS






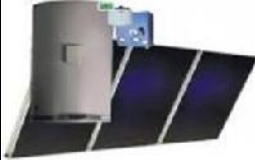
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
MURET E JASHTME 1 EXTERNAL WALL		Llaç gëlqeror 2cm, tullë nga argjila 25cm, llaç çimentoje 2.5cm Lime plaster 2.5cm, clay brick 25cm, plaster 2.5cm.		Llaç gëlqeror 2cm, tullë nga argjila 25cm, llaç çimentoje 2.5cm, termoizolim 10cm, llaç fasade 2cm; Lime plaster 2.5cm, clay brick 25cm, plaster 2.5cm, thermal insulation 10cm, façade plaster 2cm.		Llaç gëlqeror 2cm, tullë nga argjila 25cm, llaç çimentoje 2.5cm, termoizolim 20cm, llaç fasade 2cm; Lime plaster 2.5cm, clay brick 25cm, plaster 2.5cm, thermal insulation 20cm, façade plaster 2cm.
U (W/m²K)	U = 1.864 W/m²K		U = 0.327 W/m²K		U = 0.180 W/m²K	
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 2.5cm, clay brick 25cm, air space 5cm, clay brick 25cm, lime plaster 2cm.		Pa ndryshime No changes		Pa ndryshime No changes
U (W/m²K)	U = 1.194 W/m²K		U = 1.194 W/m²K		U = 1.194 W/m²K	
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/m²K)	U = 3.5 W/m²K		U = 1.60 W/m²K		U = 1.0 W/m²K	

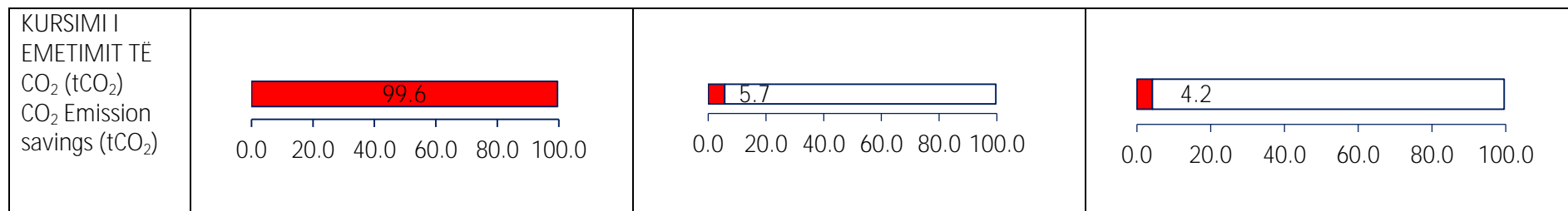
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	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
DYSHEMEJA FLOOR		Parket 2.5cm, estrih 5cm, pllaka me fibra druri 2cm, beton 20cm, llaç gëlqeror 2cm Wooden floor 2.5cm, concrete screed 5cm, wood fibre 2cm, concrete slab 20cm, plaster 2cm.		Parket 2.5cm, estrih 5cm, pllaka me fibra druri 2cm, beton 20cm, llaç gëlqeror 2cm, termoizolim 10cm, llaç gëlqeror 2cm Wooden floor 2.5cm, concrete screed 5cm, wood fibre 2cm, concrete slab 20cm, plaster 2cm, Thermal insulation 10cm, plaster 2cm		Parket 2.5cm, estrih 5cm, pllaka me fibra druri 2cm, beton 20cm, llaç gëlqeror 2cm, termoizolim 20cm, llaç gëlqeror 2cm Wooden floor 2.5cm, concrete screed 5cm, wood fibre 2cm, concrete slab 20cm, plaster 2cm, Thermal insulation 20cm, plaster 2cm
U (W/m ² /K)	U = 1.339 W/m ² k		U = 0.316 W/m ² K		U = 0.176 W/m ² K	
KULMI ROOF		Pllakë betoni 20cm, llaç gëlqeror 2cm Concrete slab 20cm, lime plaster 2cm		Termoizolim 10cm, pllakë betoni 20cm, llaç gëlqeror 2cm Thermal insulation 10cm, Concrete slab 20cm, lime plaster 2cm		Dërrasa st=1.5cm, Termoizolim 20cm, pllakë betoni 20cm, llaç gëlqeror 2cm Wooden planks t=1.5cm, thermal insulation 20cm, Concrete slab 20cm, lime plaster 2cm
U (W/m ² /K)	U = 4.134 W/m ² K		U = 0.365 W/m ² K		U = 0.160 W/m ² K	

Koeficienti ë transmetimit (W/K) për A _{ref} (m ²) Transmission coefficient (W/K) per A _{ref} (m ²)			
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SISTEMI I NGROHJES DHE UJIT TE NGROHT 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 rrymë Individual electric stove		Sistemi i ngrohjes qendrore - kaldaja me biomasë, radiatorë dhe valvola termostatike Central heating system - with biomass, radiators and thermostatic valves		Sistemi ë 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	= 95%		= 80%		= 85%-90%	
SISTEMI I PERGATITJES SË UJIT TËE 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 ë 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



	GJENDJA E TANISHME CURRENT CONDITION	PROPOZIMI STANDARD STANDARD IMPROVEMENT	PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT																																																															
<p>Përfitimet dhe humbjet e nxehtësisë specifike (kWh/m²a)</p> <p>Specific heat losses and gains (kWh/m²a)</p>	<table border="1"> <caption>Current Condition Heat Losses and Gains (kWh/m²a)</caption> <thead> <tr> <th>Category</th> <th>Sub-category</th> <th>Value (kWh/m²a)</th> </tr> </thead> <tbody> <tr> <td rowspan="5">heat losses</td> <td>ventilation</td> <td>~25</td> </tr> <tr> <td>roof</td> <td>~25</td> </tr> <tr> <td>wall</td> <td>~50</td> </tr> <tr> <td>window</td> <td>~40</td> </tr> <tr> <td>floor</td> <td>~10</td> </tr> <tr> <td rowspan="3">heat gains</td> <td>heating</td> <td>~145</td> </tr> <tr> <td>internal</td> <td>~10</td> </tr> <tr> <td>solar</td> <td>~10</td> </tr> </tbody> </table>	Category	Sub-category	Value (kWh/m ² a)	heat losses	ventilation	~25	roof	~25	wall	~50	window	~40	floor	~10	heat gains	heating	~145	internal	~10	solar	~10	<table border="1"> <caption>Standard Improvement Heat Losses and Gains (kWh/m²a)</caption> <thead> <tr> <th>Category</th> <th>Sub-category</th> <th>Value (kWh/m²a)</th> </tr> </thead> <tbody> <tr> <td rowspan="5">heat losses</td> <td>ventilation</td> <td>~25</td> </tr> <tr> <td>roof</td> <td>~5</td> </tr> <tr> <td>wall</td> <td>~10</td> </tr> <tr> <td>window</td> <td>~20</td> </tr> <tr> <td>floor</td> <td>~5</td> </tr> <tr> <td rowspan="3">heat gains</td> <td>heating</td> <td>~55</td> </tr> <tr> <td>internal</td> <td>~15</td> </tr> <tr> <td>solar</td> <td>~10</td> </tr> </tbody> </table>	Category	Sub-category	Value (kWh/m ² a)	heat losses	ventilation	~25	roof	~5	wall	~10	window	~20	floor	~5	heat gains	heating	~55	internal	~15	solar	~10	<table border="1"> <caption>Advanced Improvement Heat Losses and Gains (kWh/m²a)</caption> <thead> <tr> <th>Category</th> <th>Sub-category</th> <th>Value (kWh/m²a)</th> </tr> </thead> <tbody> <tr> <td rowspan="5">heat losses</td> <td>ventilation</td> <td>~25</td> </tr> <tr> <td>roof</td> <td>~2</td> </tr> <tr> <td>wall</td> <td>~5</td> </tr> <tr> <td>window</td> <td>~10</td> </tr> <tr> <td>floor</td> <td>~2</td> </tr> <tr> <td rowspan="3">heat gains</td> <td>heating</td> <td>~35</td> </tr> <tr> <td>internal</td> <td>~15</td> </tr> <tr> <td>solar</td> <td>~10</td> </tr> </tbody> </table>	Category	Sub-category	Value (kWh/m ² a)	heat losses	ventilation	~25	roof	~2	wall	~5	window	~10	floor	~2	heat gains	heating	~35	internal	~15	solar	~10
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NDËRTESA SHUMËBANESORE TË LARTA APARTMENT BLOCKS

1970-1979



Ndërtesat shumëbanesore të ndërtuara gjatë periudhës 1970-1979 karakterizohen me planimetri relativisht të rregullt dhe me vëllime kompakte. Këto ndërtesa përmbajnë një numër më të madh të njërive banimi dhe zakonisht kanë etazhitet P+7 deri P+10. Sistemi konstruktiv është masiv me mure mbajtëse nga betoni i armuar, me mure të jashtme të kombinuara nga ato të dyfishta me trashësi totale të murit prej 31cm nga betoni i armuar, termoizolimi dhe tullat nga argjila, muret e dyfishta nga muret me trashësi totale prej 22cm nga panele rigipsi, izolim termik dhe tulle nga argjila si dhe muret e dyfishta me trashësi totale 24cm nga betoni i armuar në të dyja anët termoizolim dhe hapësirë ajrore. Konstruksioni meskatësh është nga betoni i armuar. Çatia e ndërtesës është e rrafshët. Në këtë periudhë aplikimi i termoizolimit është prezent në të gjitha muret e jashtme, kullm dhe dysheme. Dritaret janë nga druri me xham dyshtresor. Ndërtesa përmban hapësira jo-banimi si lokale apo zyra administrative në nivelin e përdhese. Urat 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.

Apartment blocks built during the 1970-1979 are characterized by relatively regular and compact volumes. These buildings carry a larger number of housing units and usually consist of GF + 7 to GF + 10. The construction system is with massive load bearing walls made of reinforced concrete, with exterior walls combined with double walls with total wall thickness of 31 cm from reinforced concrete, thermal insulation and clay bricks, double walls with total wall thickness of 22 cm from gypsum panels, thermal insulation and clay bricks as well as double walls with a total thickness of 24 cm from reinforced concrete on both sides of the thermal insulation and air gap. The floor slab construction is made of reinforced concrete. The roof of the building is flat. During this period, the application of thermal insulation is present in all the exterior wall, roof and basement. The windows are made of double-glazed wooden frames. The building contains non-residential spaces such as shops or administrative offices at the ground level. Thermal bridges on the construction system and thermal losses through thermal transmittance are evident. Thermal loss through infiltration is mainly caused by low 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.

TË DHËNAT E NDËRTESESË | GENERAL BUILDING DATA

Kategoria e ndërtesës Building category	NDËRTESA SHUMËBANESORE TË LARTA / APARTMENT BLOCK		
Viti i ndërtimit Construction period	1970-1979		
Numri i kateve Number of floors	9		
Numri i njërive të banimit Number of dwellings	36		
Neto sipërfaqja e ngrohur e ndërtesës (m ²) Net surface of the heated space (m ²)	2144.01		
Konsumi specifik për ngrohje (kWh/m ² /vje) Specific energy need for heating (kWh/m ² /a)	94.4		

PROPOZIMI STANDARD | STANDARD IMPROVEMENT

Izolimi i të gjitha llojeve të mureve me 10cm shtresë termoizoluese ($=0.04W/mK$). Izolimi i kulmit me 10cm shtresë termoizoluese ($=0.04W/mK$). Konstruksioni mbi hapësirën e pa ngrohura me 10cm shtresë termoizoluese ($=0.04W/mK$). Ndërrimi i dritareve, me dritare të reja me dy shtresa xhami low-E me koeficient $U=1.60 W/m^2K$.

Për këtë lloj të ndërtesave si masë efiçente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pellet, 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 all walls with 10cm thermal insulation layer ($=0.04W/mK$). Insulation of the roof with thermal insulation of 10cm thermal insulation ($=0.04W/mK$). Floor slab above the unheated space with 10cm thermal insulation ($=0.04W/mK$). Replacement of windows, with new double-glazed windows with low-E to achieve the coefficient $U = 1.60 W/m^2K$.

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.

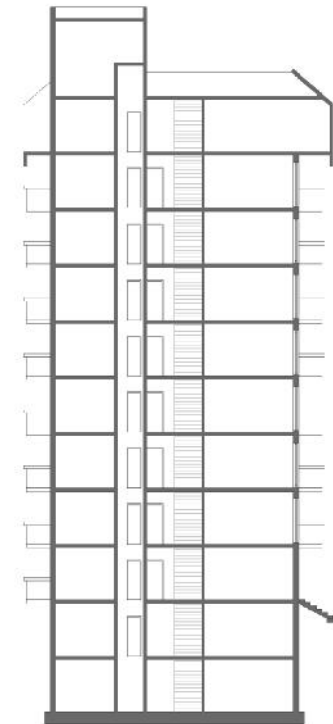
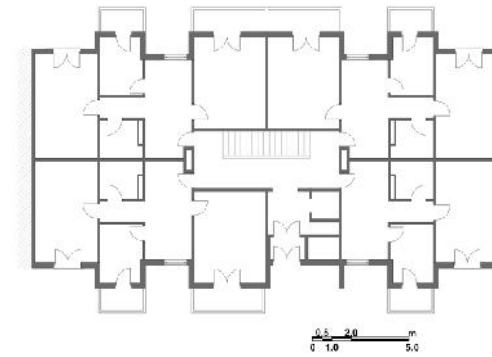
PROPOZIMI I AVANCUAR | ADVANCED IMPROVEMENT

Izolimi i të gjitha llojeve të mureve me 20cm shtresë termoizoluese ($=0.04W/mK$). Izolimi i kulmit me 20cm shtresë termoizoluese ($=0.04W/mK$). Konstruksioni mbi hapësirën e pangrohura me 20cm shtresë termoizoluese ($=0.04W/mK$). Ndërrimi i dritareve, me dritare të reja me dy shtresa xhami low-E me koeficient $U=1.0 W/m^2K$.

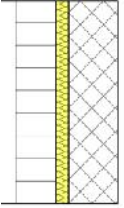
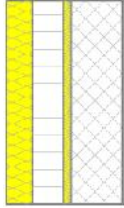
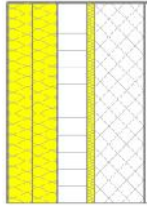
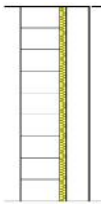
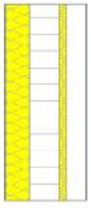
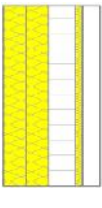
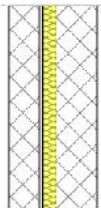
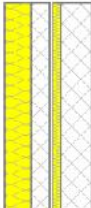
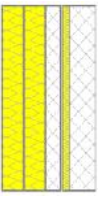
Për këtë lloj të ndërtesave si masë efiçente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pellet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm në kombinim me sistemin e kolektorëve solar.




Insulation of all walls with 20cm thermal insulation layer ($=0.04W / mK$). Insulation of the roof with thermal insulation of 20cm thermal insulation ($=0.04W/mK$). Floor slab above the unheated space with 20cm thermal insulation ($=0.04W/mK$). Replacement of windows, with new double-glazed windows with low-E to achieve the coefficient $U = 1.0 W/m^2K$.

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.

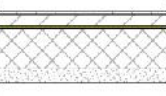




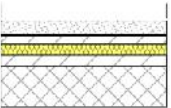


PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESESË | BUILDING ENVELOPE IMPROVEMENTS

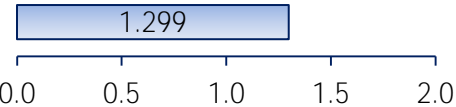


	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI AVANCUAR ADVANCE IMPROVEMENT	
MURET E JASHTME 1 EXTERNAL WALL		Suvatim 2cm, beton i armuar 15cm, izolim termik 4cm, tullë argjile 12cm. Lime plaster 2cm, reinforced concrete 15cm, thermal insulation 4cm, clay bricks 12cm.		Suvatim, beton i armuar 15cm, izolim termik 4cm, tullë argjile 12cm, termoizolim 10cm Lime plaster, reinforced concrete 15cm, thermal insulation 4cm, clay bricks 12cm, thermal insulation 10cm, façade plaster 1cm.		Suvatim, beton i armuar 15cm, izolim termik 4cm, tullë argjile 12cm, termoizolim 20cm. Lime plaster, reinforced concrete 15cm, thermal insulation 4cm, clay bricks 12cm, thermal insulation 20cm, façade plaster 1cm.
U (W/m²K)	U = 0.677 W/m²K		U = 0.235 W/m²K		U = 0.142 W/m²K	
MURET E JASHTME 2 EXTERNAL WALL		Tullë fasade nga argjila, Stiropor 2cm me foli alumini, Pllakë gipsi 8cm. Clay bricks 12cm, EPS 2cm with aluminium foil, gypsum board 8cm.		Tullë fasade nga argjila, Stiropor 2cm me foli alumini, Pllakë gipsi 8cm, termoizolim 10cm. Clay bricks 12cm, EPS 2cm with aluminium foil, gypsum board 8cm, thermal insulation 10cm, façade plaster 1cm.		Tullë fasade nga argjila, Stiropor 2cm me foli alumini, Pllakë gipsi 8cm, termoizolim 20cm. Clay bricks 12cm, EPS 2cm with aluminium foil, gypsum board 8cm, thermal insulation 20cm, façade plaster 1cm.
U (W/m²K)	U = 0.906 W/m²K		U = 0.258 W/m²K		U = 0.150 W/m²K	
MURET E JASHTME 3 EXTERNAL WALL		Beton i armuar 12cm, termoizolim 4cm, ajër 1cm, beton i armuar 7cm. Reinforced concrete 12cm, thermal insulation 4cm, air 1cm, reinforced concrete 7cm.		Beton i armuar 12cm, termoizolim 4cm, ajër 1cm, beton i armuar 7cm, termoizolim 10cm. Reinforced concrete 12cm, thermal insulation 4cm, air 1cm, reinforced concrete 7cm, thermal insulation 10cm, façade plaster 1cm.		Beton i armuar 12cm, termoizolim 4cm, ajër 1cm, beton i armuar 7cm, termoizolim 20cm. Reinforced concrete 12cm, thermal insulation 4cm, air 1cm, reinforced concrete 7cm, thermal insulation 20cm, facade plaster 1cm.

	$U = 1.01 \text{ W/m}^2\text{K}$		$U = 0.266 \text{ W/m}^2\text{K}$		$U = 0.153 \text{ W/m}^2\text{K}$	
DRITARET WINDOWS		Dritare druri me dy shtresa xhami. Wooden windows with double glazing.		Dritare me xham dy-shtresor low-E. Double glazing windows with low-E.		Dritare me tri shtresa xhami low-E. Triple glazing windows with low-E.
U (W/m ² /K)	$U = 2.8 \text{ W/m}^2\text{K}$		$U = 1.60 \text{ W/m}^2\text{K}$		$U = 1.0 \text{ W/m}^2\text{K}$	

PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESESË | BUILDING ENVELOPE IMPROVEMENTS

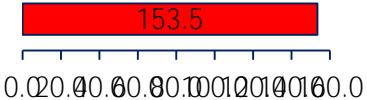
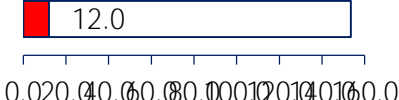
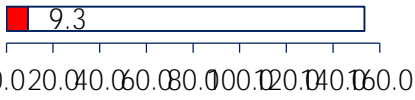
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
DYSHEMEJA FLOOR		Pllaka qeramike 1cm, beton me rrjetë 4cm, foli, stiropor 1cm, BA 14cm, durisol 5cm. Ceramic tiles 1cm, concrete 4cm, EPS 1cm, Reinforced concrete 14cm, durisol 5cm.		Pllaka qeramike 1cm, beton me rrjetë 4cm, foli, stiropor 1cm, BA 14cm, durisol 5cm, termoizolim 10cm. Ceramic tiles 1cm, concrete 4cm, EPS 1cm, Reinforced concrete 14cm, durisol 5cm, thermal insulation 10cm.		Pllaka qeramike 1cm, beton me rrjetë 4cm, foli, stiropor 1cm, BA 14cm, durisol 5cm, termoizolim 20cm. Ceramic tiles 1cm, concrete 4cm, EPS 1cm, Reinforced concrete 14cm, durisol 5cm, thermal insulation 20cm.
U (W/m ² /K)	$U = 0.90 \text{ W/m}^2\text{K}$		$U = 0.344 \text{ W/m}^2\text{K}$		$U = 0.185 \text{ W/m}^2\text{K}$	

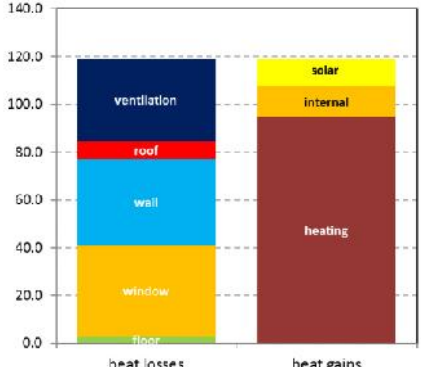
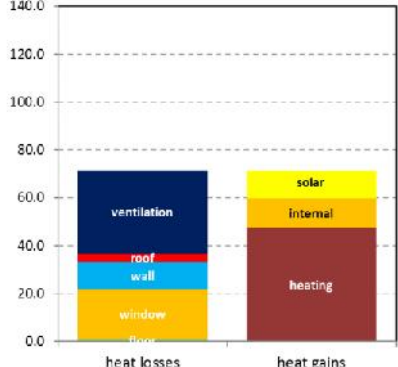
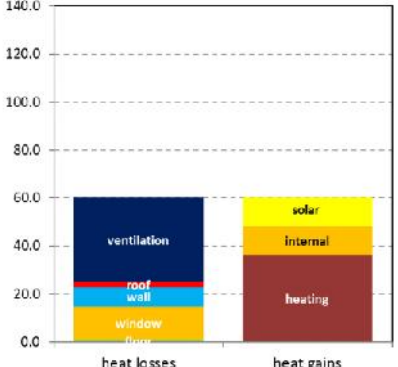
KULMI ROOF		Zhavorr 5cm, hidroizolim, këmishëz betoni 3cm, poliuretani i fortë 4cm, mbrojtja nga avulli, perlit beton 4cm, BA 15cm. Gravel 5cm, waterproof layer, concrete 3cm, XPS 4cm, perlite concrete 4cm, Reinforced concrete 15cm.		Termoizolim 10cm, hidroizolim, këmishëz betoni 3cm, poliuretani i fortë 4cm, mbrojtja nga avulli, perlit beton 4cm, BA 15cm. Thermal insulation 10 cm, waterproof layer, concrete 3cm, XPS 4cm, perlite concrete 4cm, Reinforced concrete 15cm.		Termoizolim 20cm, hidroizolim, këmishëz betoni 3cm, poliuretani i fortë 4cm, mbrojtja nga avulli, perlit beton 4cm, BA 15cm. Thermal insulation 20 cm, waterproof layer, concrete 3cm, XPS 4cm, perlite concrete 4cm, Reinforced concrete 15cm.
	U (W/m ² /K)	U = 0.565 W/m ² K		U = 0.221/m ² K		U = 0.148 W/m ² K

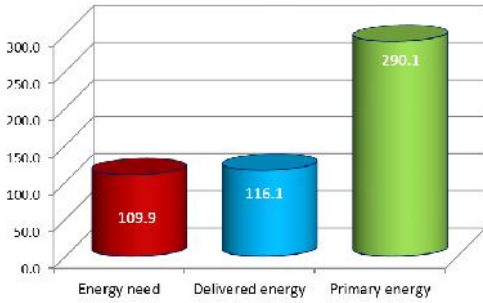
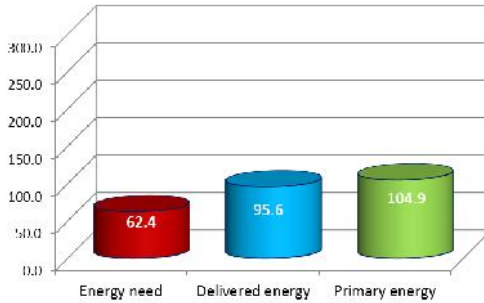
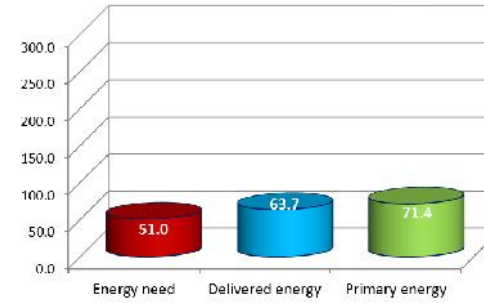
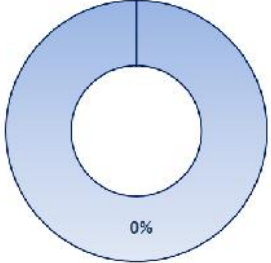
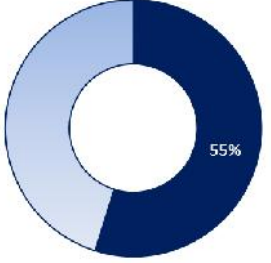
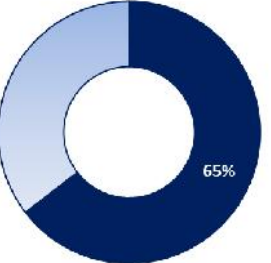
Koeficienti i transmetimit (W/K) per A _{ref} (m ²) Transmission coefficient (W/K) per A _{ref} (m ²)			
	1.299	0.556	0.381

ISTEMI 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 rrymë 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 and thermostatic valves
Eficienca Efficiency	= 95%		= 80%		= 85%-90%	
SISTEMI I PËERGATITJES SË UJIT TËE 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 e emetimit të CO ₂ (tCO ₂) CO ₂ Emission savings (tCO ₂)			
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	GJENDJA E TANISHME CURRENT CONDITION	PROPOZIMI STANDARD STANDARD IMPROVEMENT	PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT
Përfitimet dhe humbjet specifike të nxehtësisë (kWh/m ² a) Specific heat losses and gains (kWh/m ² a)	 <p>Stacked bar chart for Current Condition. The y-axis represents kWh/m²a from 0.0 to 140.0. The 'heat losses' bar is composed of floor (green, ~2), window (yellow, ~18), wall (blue, ~20), roof (red, ~5), and ventilation (dark blue, ~35). The 'heat gains' bar is composed of heating (dark red, ~95), internal (yellow, ~10), and solar (yellow, ~10).</p>	 <p>Stacked bar chart for Standard Improvement. The y-axis represents kWh/m²a from 0.0 to 140.0. The 'heat losses' bar is composed of floor (green, ~2), window (yellow, ~18), wall (blue, ~10), roof (red, ~5), and ventilation (dark blue, ~30). The 'heat gains' bar is composed of heating (dark red, ~48), internal (yellow, ~12), and solar (yellow, ~10).</p>	 <p>Stacked bar chart for Advance Improvement. The y-axis represents kWh/m²a from 0.0 to 140.0. The 'heat losses' bar is composed of floor (green, ~2), window (yellow, ~10), wall (blue, ~10), roof (red, ~5), and ventilation (dark blue, ~25). The 'heat gains' bar is composed of heating (dark red, ~35), internal (yellow, ~10), and solar (yellow, ~10).</p>

<p>Energjia për ngrohje dhe ujë sanitar (kWh/m²a)</p> <p>Energy for heating & DHW (kWh/m²a)</p>	 <table border="1"> <thead> <tr> <th>Category</th> <th>Value (kWh/m²a)</th> </tr> </thead> <tbody> <tr> <td>Energy need</td> <td>109.9</td> </tr> <tr> <td>Delivered energy</td> <td>116.1</td> </tr> <tr> <td>Primary energy</td> <td>290.1</td> </tr> </tbody> </table>	Category	Value (kWh/m ² a)	Energy need	109.9	Delivered energy	116.1	Primary energy	290.1	 <table border="1"> <thead> <tr> <th>Category</th> <th>Value (kWh/m²a)</th> </tr> </thead> <tbody> <tr> <td>Energy need</td> <td>62.4</td> </tr> <tr> <td>Delivered energy</td> <td>95.6</td> </tr> <tr> <td>Primary energy</td> <td>104.9</td> </tr> </tbody> </table>	Category	Value (kWh/m ² a)	Energy need	62.4	Delivered energy	95.6	Primary energy	104.9	 <table border="1"> <thead> <tr> <th>Category</th> <th>Value (kWh/m²a)</th> </tr> </thead> <tbody> <tr> <td>Energy need</td> <td>51.0</td> </tr> <tr> <td>Delivered energy</td> <td>63.7</td> </tr> <tr> <td>Primary energy</td> <td>71.4</td> </tr> </tbody> </table>	Category	Value (kWh/m ² a)	Energy need	51.0	Delivered energy	63.7	Primary energy	71.4
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<p>Kursimet e energjisë në furnizim (kWh/m²a)</p> <p>Delivered energy savings (kWh/m²a)</p>	 <p>0%</p>	 <p>55%</p>	 <p>65%</p>																								

NDËRTESA SHUMËBANESORE TË LARTA / APARTMENT BLOCKS

1980-1999



Ndërtesat shumëbanesore të ndërtuara gjatë periudhës 1980-1999 karakterizohen me planimetri relativisht të rregullt dhe me vëllime kompakte. Këto ndërtesa përbajnë një numër më të madh të njësive banimi dhe zakonisht kanë etazhitet P+4 deri P+5. Sistemi konstruktiv është masiv me mure mbajtëse nga betoni i armuar, me mure të jashtme të dyfishta me trashësi totale prej 25cm nga betoni i armuar në të dyja anët dhe në mes izolimi termik. Konstruksioni meskatësh është nga pllakat masive nga betoni i armuar. Çatia e ndërtesës është e pjerrët nga konstruksioni i drurit ku është aplikuar izolimi termik. Në këtë periudhë aplikimi i termoizolimit është prezent në të gjitha muret e jashtme dhe çatisë. Dritaret janë nga druri me xham dyshtresor. Ndërtesa përmban hapësira jo-banimi si lokale apo zyra administrative në nivelin e përdhësës. Si rezultat i aplikimit të betonit të armuar në tërë mbështjellësin termik evident është krijimi i urave termike nga sistemi

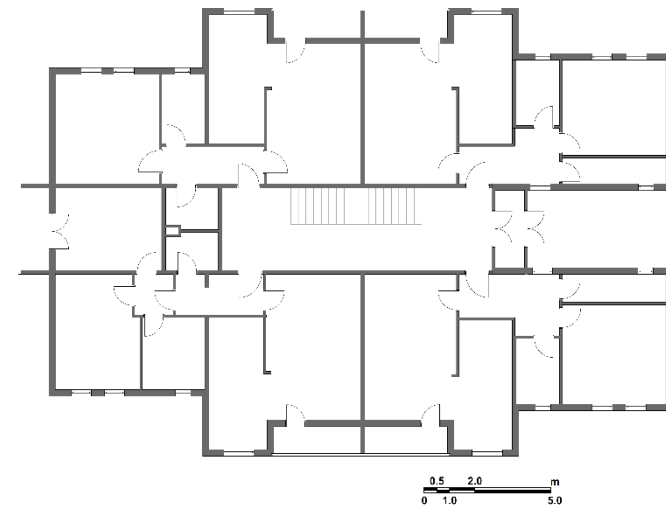
TË DHËNAT E NDËRTESESË GENERAL BUILDING DATA		<p>konstruktiv, humbjet termike përmes kalueshmërisë termike janë evidente gjithashtu në elementet nga betoni mbi dritare. Humbje termike përmes infiltrimit krijohen kryesisht nga gjendja jo e mirë e dritareve.</p> <p>Për këtë lloj të ndërtesave, sipas vlerësimit 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.</p> <p>Apartment Blocks built during the 1980-1999 are characterized by relatively regular planning and compact volumes. These buildings carry a larger number of housing units and usually consist of GF + 4 to GF + 5. The constructive system is massive with reinforced concrete walls, with double exterior walls with a total thickness of 25 cm from reinforced concrete on both sides and between thermal insulation. The slab structure is made of reinforced concrete. The roof is slope from the timber construction where thermal insulation is applied. During this period, the application of thermal insulation is present on all exterior walls and roofs. The windows are made of double-glazed wooden frame. The building contains non-residential spaces such as the local or administrative office at the ground level. As a result of the application of reinforced concrete in the entire thermal envelope the creation of thermal bridges is evident by the constructive system, thermal losses through thermal transmittance are also evident in the elements from the concrete over the window. Thermal loss through infiltration is mainly caused by low 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.</p>
Kategoria e ndërtesës Building category	NDËRTESA SHUMËBANESORE TË LARTA / APARTMENT BLOCK	
Viti i ndërtimit Construction period	1980-1999	
Numri i kateve Number of floors	6	
Numri i njësive të banimit Number of dwellings	24	
Neto sipërfaqja e ngrohur e ndërtesës (m ²) Net surface of the heated space (m ²)	1644.64	
Konsumi specifik për ngrohje (kWh/m ² /vje) Specific energy need for heating (kWh/m ² /a)	1102	
PROPOZIMI STANDARD STANDARD IMPROVEMENT		

Izolimi i mureve me 10cm shtresë termoizoluese ($=0.04W/mK$). Izolimi i kulmit me zëvendësimin e termoizolimit ekzistues me 10 cm shtresë të re termoizoluese ($=0.04W/mK$). Konstruksioni mbi hapësirën e pangrohur pa ndryshime. Ndërrimi i dritareve, me dritare të reja me dy shtresa xhami low-E me koeficient $U=1.60 W/m^2K$.

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 ndryshimit të temperaturës së jashtme dhe tajmerit të programueshëm.

Insulation of walls with 10cm thermal insulation layer ($=0.04W/mK$). Insulation of roof with replacement of the existing thermal insulation with 10 cm of new thermal insulation ($=0.04W/mK$). Floor slab above the unheated space no addition changes. Replacement of windows, with new double glazed windows with low-E to achieve the coefficient $U = 1.60 W/m^2K$.

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.



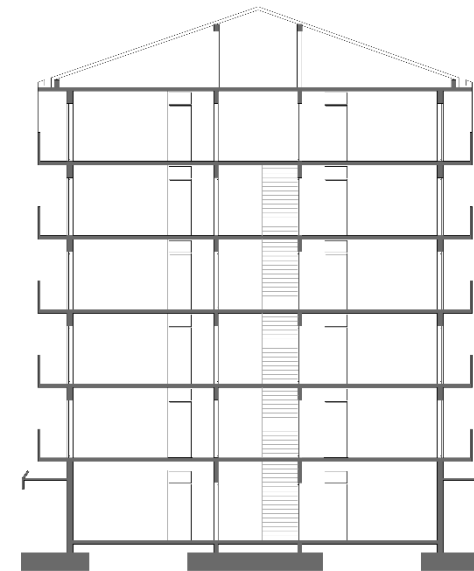
PROPOZIMI I AVANCUAR | **ADVANCED IMPROVEMENT**

Izolimi i mureve me 20cm shtresë termoizoluese ($=0.04W/mK$) dhe mureve ndarëse me hapësirat e pangrohura 5 cm shtresë termoizoluese ($=0.04W/mK$). Izolimi i pllakës së kulmit me zëvendësimin e termoizolimit ekzistues me 20 cm shtresë të re termoizoluese ($=0.04W/mK$). Izolimi i konstruksionit mbi hapësirën e pangrohur me 10cm shtresë termoizoluese($=0.04W/mK$). Ndërrimi i dritareve, me dritare të reja me tre shtresa xhami low-E me koeficient $U=1.0 W/m^2K$.


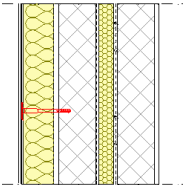
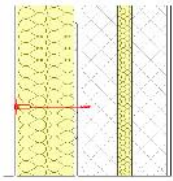
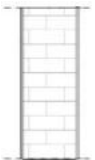
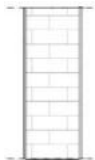
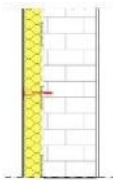


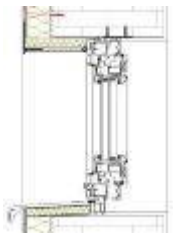
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Insulation of walls with 20 cm thermal insulation layer ($=0.04W/mK$) and the partition walls towards unheated areas with 5 cm thermal insulation layer ($=0.04W/mK$). Insulation of roof with replacement of the old thermal insulation with 20 cm of new thermal insulation ($=0.04W/mK$). Insulation on the floor slab above the unheated space with 10cm thermal insulation layer ($=0.04W/mK$). Replacement of windows, with new triple glazed windows with low-E to achieve the coefficient $U = 1.0 W/m^2K$.


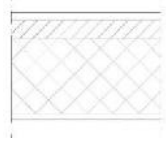
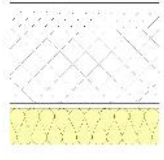

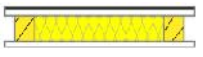
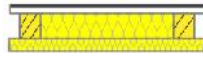
For this type of buildings, the central heating and sanitary water system with biomass boilers - pellets, hot water accumulators, radiators with thermostatic valves, which can be operated according to external temperature and programmable timers in combination with solar collector system, can be proposed as advanced energy efficiency measure.

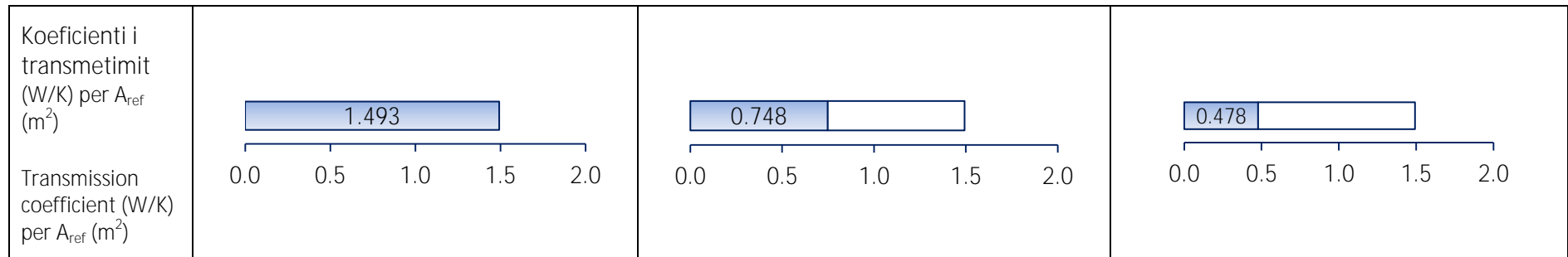


PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESES | **BUILDING ENVELOPE IMPROVEMENTS**







	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
MURET E JASHTME 1 EXTERNAL WALL		Llaç gëlqeror 2cm, pllaka montazh betoni 10cm , termoizolim 5cm, pllaka montazh betoni 10cm , llaç çimentoje 2.5cm. Lime plaster 2cm, reinforced concrete 10 cm, thermal insulation 5cm, reinforced concrete 10 cm, cement plaster 2.5cm.		Llaç gëlqeror 2cm, Pllaka montazh betoni 10cm , termoizolim 5cm, Pllaka montazh betoni 10cm , llaç çimentoje 2.5cm termoizolim 10cm, fasadë 1cm. Lime plaster 2cm, reinforced concrete 10 cm, thermal insulation 5cm, reinforced concrete 10 cm, cement plaster 2.5cm, thermal insulation 10 cm, façade plaster 1cm.		Llaç gëlqeror 2cm, Pllaka montazh betoni 10cm , termoizolim 5cm, Pllaka montazh betoni 10cm , llaç çimentoje 2.5cm termoizolim 20cm, llaç fasadë 2cm. Lime plaster 2cm, reinforced concrete 10 cm, thermal insulation 5cm, reinforced concrete 10 cm, cement plaster 2.5cm, thermal insulation 20 cm, façade plaster 1cm.
U (W/m²K)	U = 0.644 W/m²K		U = 0.245 W/m²K		U = 0.10 W/m²K	
MURET E JASHTME 2 EXTERNAL WALL		Llaç i brendshëm 2cm, tullë e plotë 25cm, llaç i brendshëm 2cm. Lime plaster 2cm, clay brick 25cm, plaster 2cm.		Pa ndryshime. No improvements.		Llaç i brendshëm 2cm, tulle e plote 25cm, llaç i brendshëm 2cm, termoizolim 5 cm. Lime plaster 2cm, clay brick 25cm, plaster 2cm, thermal insulation 5cm.
U (W/m²K)	U = 2.0 W/m²K		U = 2.0 W/m²K		U = 0.55 W/m²K	
DRITARET WINDOWS		Dritare druri me dy shtresa xhami. Wooden windows with double glazing.		Dritare me xham dy-shtresor low-E Double glazing windows with low-E.		Dritare me tri shtresa xhami low-E. Triple glazing windows with low-E.
U (W/m²K)	U = 2.8 W/m²K		U = 1.60 W/m²K		U = 1.0 W/m²K	




PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESESË | BUILDING ENVELOPE IMPROVEMENTS

	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI I STANDARD STANDARD IMPROVEMENT		PROPOZIMIT I AVANCUAR ADVANCE IMPROVEMENT	
DYSHEMEJA FLOOR		Parket 2.5cm, estrih 5cm, hidroizolim beton i armuar 20cm. Parquet 2.5, concrete screed 5cm, waterproof layer, reinforced concrete 20cm.		Pa ndryshime No improvements.		Parket 2.5cm, estrih 5cm, hidroizolim beton 20cm, termoizolim 20cm. Parquet 2.5, concrete screed 5cm, waterproof layer, reinforced concrete 20cm, thermal insulation 20cm.
U (W/m ² /K)	U = 0.95 W/m ² k		U = 0.95 W/m ² K		U = 0.338 W/m ² K	
KULMI ROOF		Dërrasa 2.4 cm, Termoizolim 4cm, panele rigips 1.5cm. Wooden planks 2.4cm, Thermal insulation 4cm, gypsum board 1.5cm		Dërrasa 2.4cm, termoizolim 10cm, panele rigips 1.5cm. Wooden planks 2.4cm, Thermal insulation 10cm, gypsum board 1.5cm.		Dërrasa 2.4cm, termoizolim 20cm, panele rigips 1.5cm. Wooden planks 2.4cm, Thermal insulation 20cm, gypsum board 1.5cm.
U (W/m ² /K)	U = 0.63 W/m ² K		U = 0.355 W/m ² K		U = 0.188 W/m ² K	



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

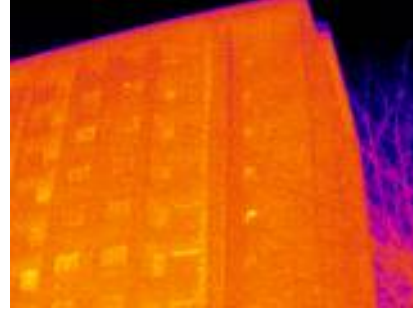
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
SISTEMI I NGROHJES HEATING SYSTEM		Ngrohëse elektrike individuale Individual electric heater		Sistemi i ngrohjes qendrore - kaldaja me biomasë, radiatorë dhe valvola termostatike Central 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 and thermostatic valves
Efiçienca Efficiency	= 95%		= 80%		= 85%-90%	
SISTEMI I PERGATITJES SË UJIT TË NGROHTËE 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)	0.0 20.0 40.0 60.0 80.0 100.0 120.0 140.0	0.0 20.0 40.0 60.0 80.0 100.0 120.0 140.0	0.0 20.0 40.0 60.0 80.0 100.0 120.0

	GJENDJA E TANISHME CURRENT CONDITION	PROPOZIMI STANDARD STANDARD IMPROVEMENT	PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT																																																															
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NDËRTESA SHUMËBANESORE TË LARTA / APARTMENT BLOCKS

2000-2017



Baza e ndërtesës është e thjeshtë, me një formë të pastër gjeometrike dhe e zhvilluar në sistem kulle. Ndërtesat e kësaj periudhe të ndërtimit zakonisht janë sistem skeletor me shtylla dhe trarë dhe mure të termoizoluara.

Muret janë nga blloqet e argjilës me trashësi 25cm, 10cm termoizolim dhe të suvatuara nga të dy anët. Kulmi i ndërtesës është i termoizoluar dhe kryesisht në këtë etapë të ndërtimit ndërtesat e këtij lloji kanë pllakë betoni dhe kulmin nga tjegullat.

Dyshejma është nga konstruksioni i betonit e termoizoluar me 10cm, si 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 AL 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 i ngrohjes është me stufa individuale, por në shumë raste edhe me sistem qendror elektrike individual në apartmane kurse uji sanitar është me bojler elektrik lokal.

The base of the building is simple, with a geometric shape and developed in the tower type system. Buildings of this construction period are usually a skeleton system with beams and columns and with insulated walls.

The walls are made of clay block with a thickness of 25cm, thermal layer 10cm and plastered on both sides.

The roof of the building is insulated and mainly this period of construction are covered with tiles.

The floor is made of concrete construction, 10cm thermal layer and as the final wooden floor and ceiling plaster with lime mortar.

The external openings of the building are of a PVC frame with double glazing; The entrance doors are of PVC and 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 electric heaters and also with electric central heating system in each apartment and sanitary water is with a local electric boiler.

TË DHËNAT E NDËRTESESË | GENERAL BUILDING DATA

Kategoria e ndërtesës
Building category

NDËRTESA SHUMËBANESORE TË
LARTA / APARTMENT BLOCKS

Viti i ndërtimit
Construction period

2000-2017

Numri i kateve
Number of floors

11

Numri i njësive të banimit
Number of dwellings

56

Neto sipërfaqja e ngrohur e ndërtesës (m²)
Net surface of the heated space (m²)

5400

Konsumi specifik për ngrohje (kWh/m²/vje)
Specific energy need for heating (kWh/m²/a)

44.9

PROPOZIMI STANDARD | STANDARD IMPROVEMENT

Pa ndryshime, përveç pllakës së kulmit që termoizolimi mbulohet me estrih. Për këtë lloj të ndërtesave si masë efiçiente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pellet, 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, just roof slab where the existing thermal layer is covered with concrete screed.

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.



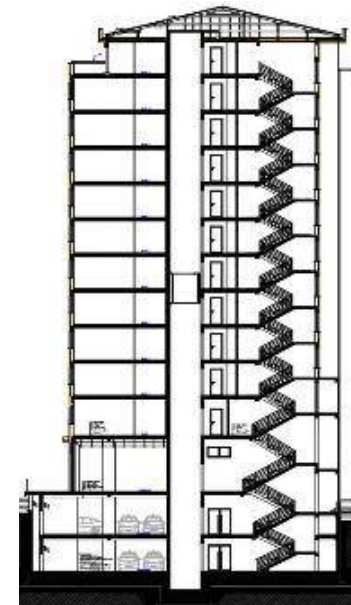
PROPOZIMI I AVANCUAR | ADVANCED IMPROVEMENT

Izolimi i mureve me 10cm shtresë termoizoluese ($\lambda = 0.04 \text{ W/mK}$). Izolimi i konstruksionit të kulmit me 10cm shtresë termoizoluese ($\lambda = 0.04 \text{ W/mK}$) dhe izolimi i konstruksionit të dyshemesë me 10cm shtresë termoizoluese ($\lambda = 0.04 \text{ W/mK}$). Ndërrimi i dritareve me dritare të reja me tri shtresa xhami low-E që të arrihet koeficienti $U = 1.0 \text{ W/m}^2\text{K}$.

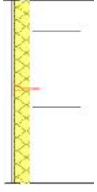
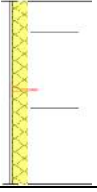
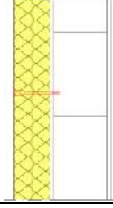



Për këtë lloj të ndërtesave si masë efiçiente propozohet sistemi qendror i ngrohjes dhe ujit sanitar me kaldaja me biomasë – pellet, akumulator të ujit të ngrohtë, radiatorë me valvola termostatike, që mund të operohen sipas ndryshimet të temperaturës së jashtme dhe tajmerit të programueshëm në kombinim me sistemin e kolektorëve solar.

Insulation of walls with 10cm thermal insulation layer ($\lambda = 0.04 \text{ W/mK}$). Insulation on the roof slab with 10cm thermal insulation layer ($\lambda = 0.04 \text{ W/mK}$) and insulation on the floor slab with 10cm thermal insulation layer ($\lambda = 0.04 \text{ W/mK}$). Replacement of windows with new windows with low-E tripple glazing to achieve the coefficient $U = 1.0 \text{ W/m}^2\text{K}$.

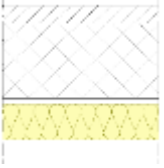
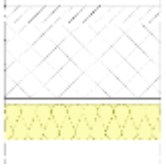

For this type of buildings, the central heating and sanitary water system with biomass boilers - pellets, hot water accumulators, radiators with thermostatic valves, which can be operated according to external temperature and programmable timers in combination with solar collector system can be proposed as advanced energy efficiency measure.

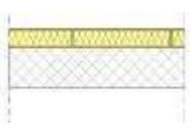
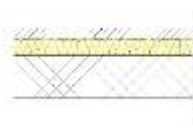
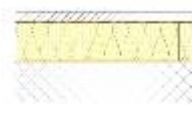


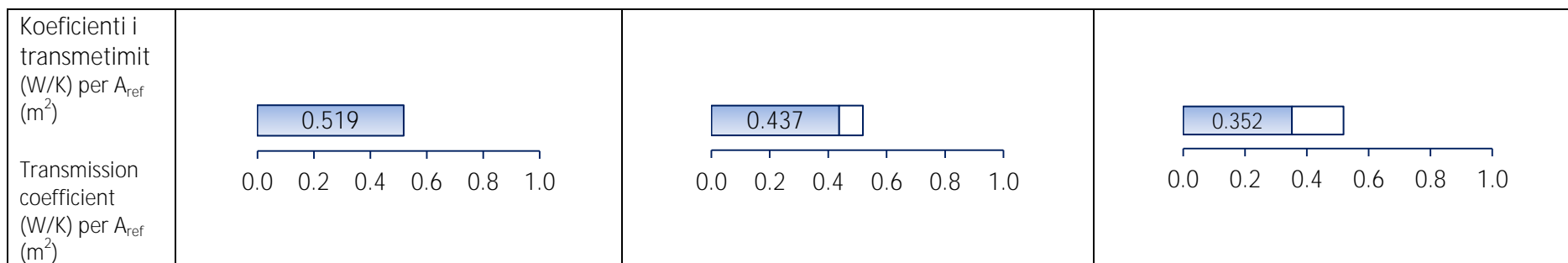
PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESESË | BUILDING ENVELOPE IMPROVEMENTS

	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, , termoizolim 10cm, llaç fasade 2cm; Lime plaster 2cm, clay block 25cm, thermal insulation 10cm, façade plaster 2cm.		Pa ndryshime No Changes		Llaç gëlqeror 2cm, bllok argjile 25cm, , termoizolim 20cm, llaç fasade 2cm; Lime plaster 2cm, clay block 25cm, thermal insulation 20cm, façade plaster 2cm.
U (W/m ² K)	U = 0.289 W/m ² K		U = 0.289 W/m ² K		U = 0.180 W/m ² K	
DRITARET WINDOWS		Dritare me xham dy- dhtresor low-E Plastic framed windows with double glazing low-E		Pa ndryshime No changes		Dritare me xham tre- shtresor low-E Triple glazing windows with low-E.
U (W/m ² /K)	U=1.40 W/m ² K		U=1.40 W/m ² K		U=1.0 W/m ² K	







PROPOZIMET PËR MBËSHTJELLËSIN E NDËRTESESË | BUILDING ENVELOPE IMPROVEMENTS

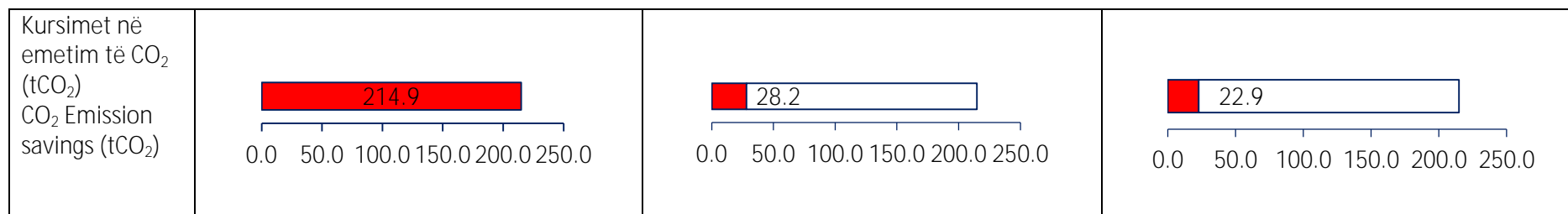
	GJENDJA E TANISHME CURRENT CONDITION		PROPOZIMI STANDARD STANDARD IMPROVEMENT		PROPOZIMI I AVANCUAR ADVANCE IMPROVEMENT	
DYSHEMEJA FLOOR		Parket 2.5cm, estrih 5cm, hidroizolim beton 20cm, termoizolim 10cm Parquet 2,5cm, screed 5cm, concrete 20cm thermal insulation 10cm		Pa ndryshime No changes		Parket 2.5cm, estrih 5cm, hidroizolim beton 20cm, termoizolim 20cm Parquet 2,5cm, concrete screed 5cm, concrete slab 20cm thermal insulation 20cm
U (W/m ² /K)	U = 0.338 W/m ² k		U = 0.338 W/m ² K		U = 0.193 W/m ² K	

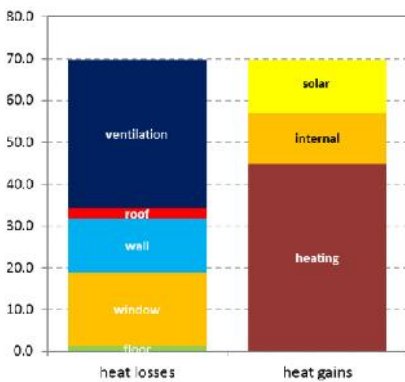
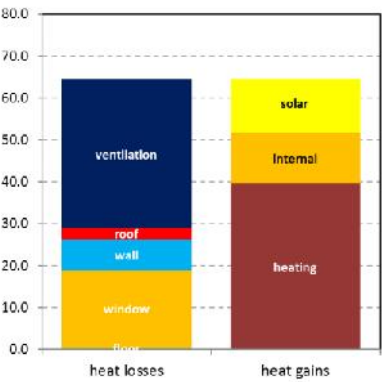
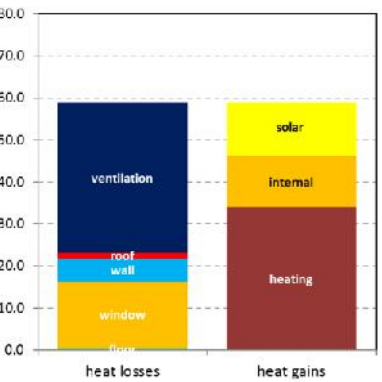
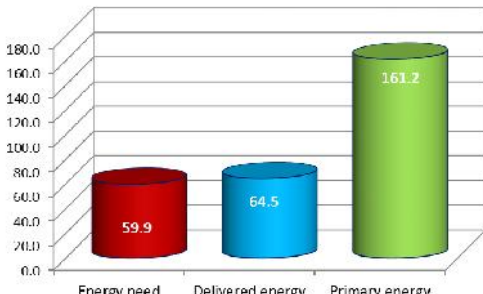
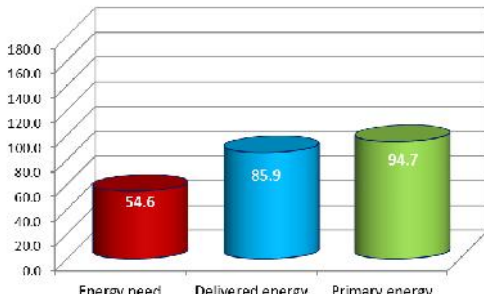
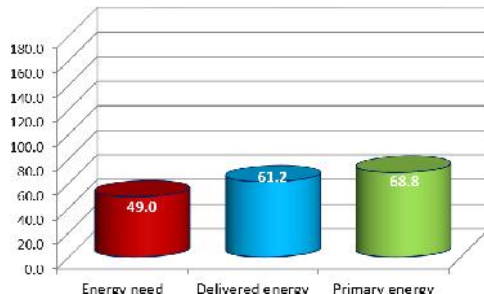
KULMI ROOF		Termoizolim 10cm, pllakë betoni 20cm, llaç gëlqeror 2cm Thermal insulation 10cm Concrete slab 20cm, lime plaster 2cm		Estrih 5cm, termoizolim 10cm, pllakë betoni 20cm, llaç gëlqeror 2cm Screed 5cm, Thermal insulation 10cm Concrete slab 20cm, lime plaster 2cm		Estrih 5cm, termoizolim 20cm, pllakë betoni 20cm, llaç gëlqeror 2cm Screed 5cm, Thermal insulation 20cm Concrete slab 20cm, lime plaster 2cm
U (W/m ² /K)	U = 0.361 W/m ² K		U = 0.357 W/m ² K		U = 0.189 W/m ² K	



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 valvola termostatike Central heating system - with biomass, with heat accumulator, VSD pump, hydraulic system balance
Efiçienca Efficiency	= 95%		= 80%		= 85%-90%	
SISTEMI I PERGATITJES SE UJIT TE NGROHTE 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



	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 në furnizim (kWh/m ² a) Delivered energy savings (kWh/m ² a)	