CB 9 - Pieriki Anaptixiaki S.A.- PIERIKI

Country: GR

SUMMARY

1. Church Care Home of Katerini Metropolis

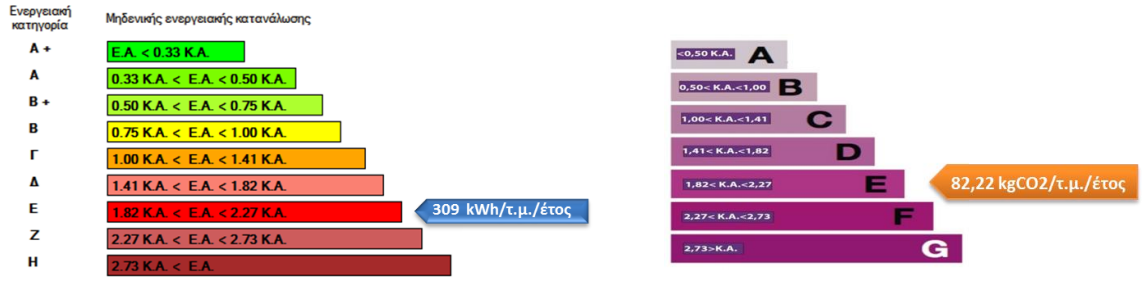
1/ Identification of the partner

Name of contact : Mr. Tzegkas-expert of Pieriki could be contacted as intermediate.

2/ RCHEP main issues

There is lack of comparative data and national level in order to classify RCHEPs according to their consumption, and because of the special character of the RCHEPs an informal classification system was elaborated within SAVE AGE project, mainly for comparison reasons and in order to graphically support each detailed action plan. Based on the calculated consumptions of each RCHEPs and by considering that the Greek RCHEP with the lowest primary energy consumption per square metre is an "informal reference building", the rest RCHEPs were classified according to their consumptions and their emissions (this RCHEP is a new built unit with envelope and systems that cover the EPBD requirements). The informal classification within SAVE AGE project is based on assumptions and is not a classification on EPBD.

For the CHURCH CARE HOME OF KATERINI METROPOLIS, classification is as follows:



The CHURCH CARE HOME OF KATERINI METROPOLIS consumes primary (all types of sources) 309 kWh/m2/year (final consumption: 195 kWh/m2/year), and it is classified in category E of the Informal Energy Certification System which was elaborated exclusively for the SAVE AGE project (details were offered in the detailed action plan). It is the 5th better performance of final energy consumption between the 10 Greek RCHEPs under examination and 5th on primary energy consumption.

If we take into consideration the final energy consumption per resident, this care home with consumption of 5021 kWh/resident/year, presents the same performance (5th). As the unit uses electricity and oil the primary energy consumption per resident is higher, but it is still in the same level (5th) within the 10 Greek examined RCHEPs, 7.946 kWh/resident/year.

In comparison with the EUI1 and EUI2 performance indicators, the building presents better performance at the percentage of12, 40% for the consumption per square meter whilst for the consumption per resident it presents importantly lowest consumption (34,50%), obviously because of high occupation rate and efforts of the management. It could also be related to the financial resources, limited available resources lead to lower energy consumption.

The main energy resource is oil (73%), and as such the emissions are typical for Greece, 82,22

kgCO2/m2/year, (6th performance between the participating RCHEPs), and it is classified in E category of the informal classification system.

3/Action plan of RCEHP

The Action Plan includes the following parts:

1. Building characteristics
2. Special information
3. Energy consumption
4. Equipment and observed behavior
5. Conclusions for the 10 RCHEPs

Annex: Energy consumption and emissions of the 10 participating RCHEPs

The specific measures proposed for this RCHEP in the action plan were (per sector):

Insulation

Full insulation of the envelope, despite the high cost, it will lead to important energy savings, especially in the sector of heating. Fenestration present acceptable level of loses. The total cost of this investment should be taken into consideration, in order to be acceptable at financial level.

Ventilation

It was observed that during natural ventilation (during heating period) the heating system is on, leading to important energy waste. Natural ventilation and heating periods within a day should not overlap.

Cooling

Yearly maintenance of the air conditioning units and rational use should be adapted. Use of cooling devices during ventilation or when there is no real need, should be avoided.

Heating

The energy consumption for the specific RCHEP is 110 kWh/m2 and 2846 kWh/resident. Compared to indicators EUI3 and EUI4 the building presents at 7% better attitude in the consumption for heating per m2, whilst the consumption per resident is highly lower than the optimum-34,1%, obviously due to the high occupation rate and efforts of the RCHEP management. Moreover, it could be related to financial resources, limited financial resources lead to lack in heating.

It was proposed to change the existing system with a new certified low temperatures system along with creation of independent thermal zones. The heating boiler should be certified, with multi-grade burner, automatically adjusted. In the exit of the heating boiler a compensation system should be installed with an electrical four-way valve, with a controller which will receive information from the external environment (i.e. temperature) and the temperature of selected areas. Moreover, the circulator should be altered with a new of variable speed (inverter). In the network electrical gate valves should be installed, splitting the building in areas of independent services (i.e. old wing, new wing, dining room, etc.). These valves will be adjusted from a central panel board whilst the option of time-programming at week level will be offered.

The proposed interventions in the network, in combination with the use of variable speed pump, will result in significant energy savings since they will not be waste on unnecessary heating of unused spaces or overheating of others.

It could be interesting to educate responsible people for the proper use of heating, not only to achieve energy savings but to enhance the comfort of each guest. Another important element in the heating efficiency is the reaction of the responsible for the maintenance to intervene in case of malfunction and the different approach of empty spaces.

Hot water

For the production of hot water (DHW) the use of solar evacuated tube collectors of total area of approximately 40m2 is proposed. The panels will be installed on the roof of the dining room on aluminum bases and will be electrical-grounded. Through two-pipe system made of copper tubes the system will feed with forced circulation, a steel triple energy boiler with capacity of 2000lt which will be placed in the laundry room. The boiler will be fed through a second serpentine from the heating boiler while it will also have a resistance of 6kW for heating the usage water. The output of the DHW Boiler will connect to the existing three lugs while washing machines will be fed (if they have a double connection to water and internal mixer for regulating the temperature of wash).

Lighting-Appliances

On the roof of the care home it could be installed a P/V power system of at least 11kWp. The system will be electrically-grounded in accordance with the regulations and rules of art. The photovoltaic inverter will feed through batteries that are placed in an appropriately configured space. The batteries again through the Inverter will feed the electrical grid of the care home. The autonomous system is calculated to cover loads of lighting, office equipment, television, and is calculated to connect also network sockets in it. Additionally some of the refrigerators or air conditioners could be connected, but appliances of kitchen and washhouse will continue to be powered directly from the grid. The daily load consumption is estimated at 30 kWh, which is about 30% of the power consumption resulting from their electric bills. To meet these loads the installation of photovoltaic panels of total capacity of at least 11 kW was calculated.

4/ Energy efficiency activities implemented in the RCHEP

In the CHURCH CARE HOME OF KATERINI METROPOLIS a medium budget energy efficient investment, of 300.000 Euros total budget was implemented, adapting most of the proposals of the detailed action plan, as described above. The full study for the interventions was implemented by Pieriki Anaptixiaki, within the SAVE AGE project.

In detail the following interventions were adapted:

- Autonomous P/V system (10Kw): 39.360,00 Euros
- Heating-Hot Water system (e.e.-RES): 46.118,16 Euros
- Energy Efficient kitchen equipment: 46.936,80 Euros
- Energy Efficient washing-drying equipment: 59.394,40 Euros
- Supportive Equipment: 108.190,64 Euros

What was more important is that Pieriki has managed to consult the RCHEP and funding of these actions were achieved for the Greek Rural Development Programme, since the RCHEP is established in a rural area and such a measure was active in the area.

5/ Behavioural measure for residents and visitors

The CHURCH CARE HOME OF KATERINI METROPOLIS is one of the RCHEPs selected for placement of visibility signs. Such visibility signs were place in kitchen, laundry, communal areas and,of course rooms.Residents were informed on the potentiality of saving energy with their everyday routine. Although cost of energy was not important to them directly, all of them were correlated with rough cost savings and simplified environmental impact.

In this RCHEP meeting with residents during their free time in the TV-room were organised, whilst with some that saw more interest, face-to-face meetings were orgasnised in their rooms.

6/ Monitoring when available

As in most facilities visited, there is no monitoring of consumption, if we want to be more detailed; in the best case there is a better monitoring of the amount of energy invoices. However, energy efficiency is not only an investment for occasional energy saving via lighting, building insulation or renewable energy sources. People, as well as management, of existing infrastructure are key factors for project success. Typical indicators for each unit could be significantly improved through systematic monitoring of energy consumption, making it possible to evaluate and take appropriate action. This issue should be addressed by the responsible technical education institutions.

7/ Conclusion

The CHURCH CARE HOME OF KATERINI METROPOLIS was mainly focused in the care providing services and the costs related to them as the energy costs was thought to depict a very restricted percentage of the total operating costs. Along with this fact, RCHEP manager was lacking information on the potentiality of cutting down the overall yearly budget via the implementation of energy efficiency measures. In the effort to surpass these difficulties the general economic recession has acted positively; the important increase in the energy costs from providers (mainly due to increased taxes imposed by the Greek Ministry of finance) was activated everybody towards energy efficiency.

The case study of this specific RCHEP is depicting the most successful example, within the SAVE AGE project framework. Apart of the basic and detailed action plans, training and education of personnel, meetings with the residents, visibility signs, continuous energy efficiency support, behavioral actions adaptation the RCHEP has implemented a 300.000 € investment towards energy efficiency and, even more important, funding for these action was supported by relevant programme at a 100% level.

It is expected that when the real savings of the energy efficiency investment will be recorded, the RCHEP could proceed with further actions, leading to even more savings in energy consumption.

+ Annex to this report is the detailed action plan of this RCHEP.

2. Xarisseio Home for the Eldery

1/ Identification of the partner

Name of contact: Mr. Tzegkas-expert of Pieriki could be contacted as intermediate.

2/ RCHEP main issues

There is lack of comparative data and national level in order to classify RCHEPs according to their consumption, and because of the special character of the RCHEPs an informal classification system was elaborated within SAVE AGE project, mainly for comparison reasons and in order to graphically support each detailed action plan. Based on the calculated consumptions of each RCHEPs and by considering that the Greek RCHEP with the lowest primary energy consumption per square metre is an "informal reference building", the rest RCHEPs were classified according to their consumptions and their emissions (this RCHEP is a new built unit with envelope and systems that cover the EPBD requirements). The informal classification within SAVE AGE project is based on assumptions and is not a classification on EPBD.

For the XARISSEIO HOME FOR THE ELDERY, classification is as follows:

The XARISSEIO HOME FOR THE ELDERY consumes primary (all types of sources) 315 kWh/m2/year (final consumption: 231 kWh/m2/year), and it is classified in category E of the Informal Energy Certification System which was elaborated exclusively for the SAVE AGE project (details were offered in the detailed action plan). It is the 7th better performance of final energy consumption between the 10 Greek RCHEPs under examination and 6th on primary energy consumption.

If we take into consideration the final energy consumption per resident, this care home with consumption of 8478 kWh/resident/year, presents the same performance (7th). As the unit uses electricity and oil the primary energy consumption per resident is higher, but it is still in the same level (7th) within the 10 Greek examined RCHEPs, 11541 kWh/resident/year.

In comparison with the EUI1 and EUI2 performance indicators, the building presents worst performance at the percentage of 34,70% for the consumption per square meter whilst for the

consumption per resident it presents importantly higher consumption (61,30%), obviously because of high occupation rate and efforts of the management. It could also be related to the financial resources, limited available resources lead to lower energy consumption.

The main energy resource is oil (85%), and as such the emissions are typical for Greece, 80,63 kgCO2/m2/year, (5^{th} performance between the participating RCHEPs), and it is classified in E category of the informal classification system.

3/Action plan of RCEHP

The Action Plan includes the following parts:

6. Building characteristics
7. Special information
8. Energy consumption
9. Equipment and observed behavior
10. Conclusions for the 10 RCHEPs

Annex: Energy consumption and emissions of the 10 participating RCHEPs

The specific measures proposed for this RCHEP in the action plan were (per sector):

Insulation

Full insulation of the envelope, despite the high cost, it will lead to important energy savings, especially in the sector of heating. Fenestration present acceptable level of loses, for those already changed. The total cost of this investment should be taken into consideration, in order to be acceptable at financial level. Nevertheless, since the investment of insulating the building envelope is vast, a lower price could be achieved by contractors, and as such, this investment could be viable.

Ventilation

It was observed that during natural ventilation (during heating period) the heating system is on, leading to important energy waste. Natural ventilation and heating periods within a day should not overlap.

Cooling

Yearly maintenance of the air conditioning units and rational use should be adapted. Use of cooling devices during ventilation or when there is no real need, should be avoided.

Heating

The energy consumption for the specific RCHEP is 141kWh/m2 and 6123 kWh/resident. Compared to indicators EUI3 and EUI4 the building presents at 54,40% worst attitude in the consumption for heating per m2, whilst the consumption per resident is highly higher than the optimum-70,40%,

obviously due to the fact that during the reference year, works were under planning and implementation leading to difficulty in extracting safe results.

It was proposed to change the existing system with a new certified low temperatures system along with creation of independent thermal zones.

The heating boiler should be certified, with multi-grade burner, automatically adjusted.

It could be interesting to educate responsible people for the proper use of heating, not only to achieve energy savings but to enhance the comfort of each guest. Another important element in the heating efficiency is the reaction of the responsible for the maintenance to intervene in case of malfunction and the different approach of empty spaces.

Hot water

For the production of hot water (DHW) the use of solar evacuated tube collectors of total area of approximately 120m2 is proposed. The panels will be installed on the roof of the dining room on aluminum bases and will be electrical-grounded. Through two-pipe system made of copper tubes the system will feed with forced circulation, a steel triple energy boiler with capacity of 2000lt which will be placed in the laundry room. The boiler will be fed through a second serpentine from the heating boiler while it will also have a resistance of 6kW for heating the usage water. The output of the DHW Boiler will connect to the existing three lugs while washing machines will be fed (if they have a double connection to water and internal mixer for regulating the temperature of wash).

Lighting-Appliances

On the roof of the care home it could be installed a P/V power system of at least 11kWp. The system will be electrically-grounded in accordance with the regulations and rules of art. The photovoltaic inverter will feed through batteries that are placed in an appropriately configured space. The batteries again through the Inverter will feed the electrical grid of the care home. The autonomous system is calculated to cover loads of lighting, office equipment, television, and is calculated to connect also network sockets in it. Additionally some of the refrigerators or air conditioners could be connected, but appliances of kitchen and washhouse will continue to be powered directly from the grid. To meet loads the installation of photovoltaic panels of total capacity of at least 11 kW was calculated.

4/ Energy efficiency activities implemented in the RCHEP

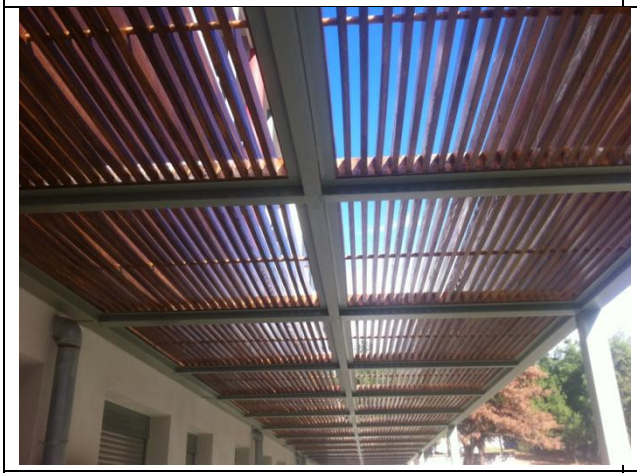
In the XARISSEIO HOME FOR THE ELDERY a high budget energy efficient investment, of 2.500.000 Euros total budget (60% on energy efficient investments)-excluding studies, was implemented, adapting most of the proposals of the detailed action plan, as described above. The full study for the interventions was implemented by individual experts, outside the SAVE AGE project (budget over the2.500.000 €). The renovation is accomplished at one wing of 2500m2, a second part of renovation (3500 m2) will start soon.

Renovation was major. Regarding energy efficiency main features were:

- New heating system with gas (instead of oil).

- Central cooling-ventilation system (instead of splits).
- Fenestration (extremely low U).
- Low consumption lighting system.
- Shadings
- System for collecting rain water and re-use (after chemical process), ar. 25m3.
- High efficiency generator.

Funding was covered mainly by donors.

	
Old façade	New façade
	
Shading	New fenestration
	
Heating system	Heating-hot water

5/ Behavioural measure for residents and visitors

The XARISSEIO HOME FOR THE ELDERY has started, since awareness was raised-at a percent due to the project, their own actions for adaptation of behavioral measures to residents and personnel.

In this RCHEP, due to the system of free entrance-high socialization of residents it was not quite easy to organize a meeting with residents, nevertheless it was management which was dedicated to transfer knowledge in behavioral actions that could reduce consumption.

6/ Monitoring when available

As in most facilities visited, there is no monitoring of consumption, if we want to be more detailed; in the best case there is a better monitoring of the amount of energy invoices. However, energy efficiency is not only an investment for occasional energy saving via lighting, building insulation or renewable energy sources.

Management of this RCHEP has foreseen the energy needs of the building, as such they have decided the major rehabilitation plan. As such they are able to implement two comparison projects;

- between the use of oil and gas for heating and hot water needs
- between the energy needs of the new wing (insulated, new fenestration, shading, new lighting system) and the old wing were such actions are at planning stage.

Both comparison projects could prove the necessity of continuing rehabilitation to 100% of the RCHEP area, and, more important, provide the financial data for such a plan.

7/ Conclusion

The XARISSEIO HOME FOR THE ELDERY was mainly focused in the care providing services and the costs related to them as the energy costs was thought to depict a very restricted percentage of the total operating costs. Nevertheless, the management has foreseen that energy efficiency investments could lead to important reduction on the operating cost, since the RCHEP was rather big, for the Greek market.. In the effort to surpass these difficulties the general economic recession has acted positively; the important increase in the energy costs from providers (mainly due to increased taxes imposed by the Greek Ministry of finance) was activated everybody towards energy efficiency.

The case study of this specific RCHEP is depicting one of the most successful examples, within the SAVE AGE project framework. Apart of the basic and detailed action plans, training and education of personnel, behavioral actions adaptation the RCHEP has implemented a 2.500.000 € investment towards energy efficiency (at 60%) and, even more important, funding for these action was supported by donations.

It is expected that when the real savings of the energy efficiency investment will be recorded, using the two comparison projects aforementioned, the RCHEP could proceed with actions in the remaining wing, leading to even more savings in energy consumption.

+ Annex to this report is the detailed action plan of this RCHEP.

3. Eldery Christian Home, Good Samaritan

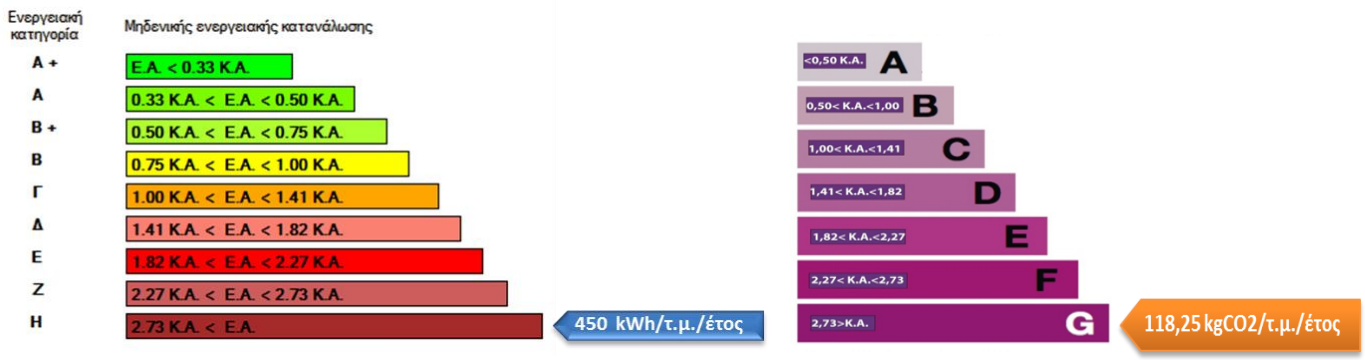
1/ Identification of the partner

Name of contact: Mr. Tzegkas-expert of Pieriki could be contacted as intermediate.

2/ RCHEP main issues

There is lack of comparative data and national level in order to classify RCHEPs according to their consumption, and because of the special character of the RCHEPs an informal classification system was elaborated within SAVE AGE project, mainly for comparison reasons and in order to graphically support each detailed action plan. Based on the calculated consumptions of each RCHEPs and by considering that the Greek RCHEP with the lowest primary energy consumption per square metre is an "informal reference building", the rest RCHEPs were classified according to their consumptions and their emissions (this RCHEP is a new built unit with envelope and systems that cover the EPBD requirements). The informal classification within SAVE AGE project is based on assumptions and is not a classification on EPBD.

For the ELDERY CHRISTIAN HOME, GOOD SAMARITAN, classification is as follows:



The ELDERY CHRISTIAN HOME, GOOD SAMARITAN consumes primary (all types of sources) 450 kWh/m2/year (final consumption: 300 kWh/m2/year), and it is classified in category G of the Informal Energy Certification System which was elaborated exclusively for the SAVE AGE project (details were offered in the detailed action plan) Due to important heating needs, we could assume empirically that it could be classified to F class. It is the 9th performance of final energy consumption between the 10 Greek RCHEPs under examination and also 9th on primary energy consumption.

If we take into consideration the final energy consumption per resident, this care home with consumption of 8521 kWh/resident/year, presents a bit better same performance (8th). As the unit uses electricity and oil the primary energy consumption per resident is higher, but it is still in the same level (8th) within the 10 Greek examined RCHEPs, 12774 kWh/resident/year.

In comparison with the EUI1 and EUI2 performance indicators, the building presents worst performance at the percentage of 34,70% for the consumption per square meter whilst for the consumption per resident it presents in comparison very small higher consumption (10,80%),

obviously because of high occupation rate and efforts of the management. It could also be related to the financial resources, limited available resources lead to lower energy consumption.

The main energy resource is oil (78%), and as such the emissions are typical for Greece, 118,25 kgCO2/m2/year, (worst performance between the participating RCHEPs), and it is classified in G category of the informal classification system, but due to important heating needs, we could assume empirically that it could be classified to F class.

3/Action plan of RCEHP

The Action Plan includes the following parts:

1. Building characteristics
2. Special information
3. Energy consumption
4. Equipment and observed behavior
5. Conclusions for the 10 RCHEPs

Annex: Energy consumption and emissions of the 10 participating RCHEPs

The specific measures proposed for this RCHEP in the action plan were (per sector):

Insulation

Full insulation of the envelope, despite the high cost, it will lead to important energy savings, especially in the sector of heating. Fenestration present acceptable level of loses, as already changed. The total cost of this investment should be taken into consideration, in order to be acceptable at financial level. Nevertheless, due to the fact that fenestration is new and heating consumption is high, the insulation of the envelope is more than a necessity.

Ventilation

It was observed that during natural ventilation (during heating period) the heating system is on, leading to important energy waste. Natural ventilation and heating periods within a day should not overlap.

Cooling

Yearly maintenance of the air conditioning units and rational use should be adapted. Use of cooling devices during ventilation or when there is no real need, should be avoided.

Heating

The energy consumption for the specific RCHEP is 203kWh/m2 and 5684 kWh/resident. Compared to indicators EUI3 and EUI4 the building presents at 68,30 % worst attitude in the consumption for heating per m2, whilst the consumption per resident is higher than the optimum-30,90%,although at lower rate than the consumption per m2, obviously due to the fact that during the reference year high occupation rate was notified.

Due to the fact that the heating production system was rather newly installed, the proposed interventions in the network, in combination with the use of variable speed pump, were proposed in order to result in significant energy savings since they will not be waste on unnecessary heating of unused spaces or overheating of others.

Moreover, it could be interesting to educate responsible people for the proper use of heating, not only to achieve energy savings but to enhance the comfort of each guest. Another important element in the heating efficiency is the reaction of the responsible for the maintenance to intervene in case of malfunction and the different approach of empty spaces.

Hot water

For the production of hot water (DHW) the use of solar evacuated tube collectors of total area of approximately 40m2 is proposed. The panels will be installed on the roof of the dining room on aluminum bases and will be electrical-grounded. Through two-pipe system made of copper tubes the system will feed with forced circulation, a steel triple energy boiler with capacity of 2000lt which will be placed in the laundry room. The boiler will be fed through a second serpentine from the heating boiler while it will also have a resistance of 6kW for heating the usage water. The output of the DHW Boiler will connect to the existing lugs while washing machines will be fed (if they have a double connection to water and internal mixer for regulating the temperature of wash).

Lighting-Appliances

On the roof of the care home it could be installed a P/V power system of at least 11kWp. The system will be electrically-grounded in accordance with the regulations and rules of art. The photovoltaic inverter will feed through batteries that are placed in an appropriately configured space. The batteries again through the Inverter will feed the electrical grid of the care home. The autonomous system is calculated to cover loads of lighting, office equipment, television, and is calculated to connect also network sockets in it. Additionally some of the refrigerators or air conditioners could be connected, but appliances of kitchen and washhouse will continue to be powered directly from the grid. To meet loads the installation of photovoltaic panels of total capacity of at least 11 kW was calculated.

4/ Energy efficiency activities implemented in the RCHEP

In the ELDERY CHRISTIAN HOME, GOOD SAMARITAN as already presented above there is an important consumption for heating, although there is a newly installed heating production system and the fenestration is relatively new and of important resistance factor. As such it was concluded that insulating the building envelope could lead to important savings in energy consumption.

As such a low budget energy efficient investment, of around 25.000 Euros total budget in insulating the envelope was adapted, according to SAVE AGE project's detailed action plan. The renovation is accomplished. Funding was covered mainly by own funding.

Insulating works

5/ Behavioural measure for residents and visitors

The ELDERY CHRISTIAN HOME, GOOD SAMARITAN is one of the RCHEPs selected for placement of visibility signs. Such visibility signs were place in kitchen, laundry, communal areas and, of course, rooms.

Residents were informed on the potentiality of saving energy with their everyday routine. Although cost of energy was not important to them directly, all of them were correlated with rough cost savings and simplified environmental impact.

In this RCHEP meeting with residents during their free time in the TV-room were organised, whilst with some that saw more interest, face-to-face meetings were orgasnised in their rooms

6/ Monitoring when available

As in most facilities visited, there is no monitoring of consumption, if we want to be more detailed; in the best case there is a better monitoring of the amount of energy invoices. However, energy efficiency is not only an investment for occasional energy saving via lighting, building insulation or renewable energy sources. People, as well as management, of existing infrastructure are key factors for project success. Typical indicators for each unit could be significantly improved through systematic monitoring of energy consumption, making it possible to evaluate and take appropriate action. This issue should be addressed by the responsible technical education institutions.

7/ Conclusion

The XARISSEIO HOME FOR THE ELDERY was mainly focused in the care providing services and the costs related to them as the energy costs was thought to depict a very restricted percentage of the total operating costs. Nevertheless, the management with the support of Pieriki and SAVE AGE project has foreseen that there is a major problem with the heating of the building, especially due to the fact that heating production system was newly installed and the fenestration was sufficient. Energy efficiency investment of insulating the envelope could lead to important reduction on the heating cost. In the effort to surpass these difficulties the general economic recession has acted positively; the important increase in the energy costs from providers (mainly due to increased taxes imposed by the Greek Ministry of finance) was activated everybody towards energy efficiency.

The case study of this specific RCHEP is depicting one of the successful examples, within the SAVE AGE project framework. Apart of the basic and detailed action plans, training and education of personnel, behavioral actions adaptation the RCHEP has implemented a 250.000 € investment towards energy efficiency (focused in heating costs, even more important, funding for these action was supported by own funding.

+ Annex to this report is the detailed action plan of this RCHEP.

4. Avgoustineion Church Nursing Home

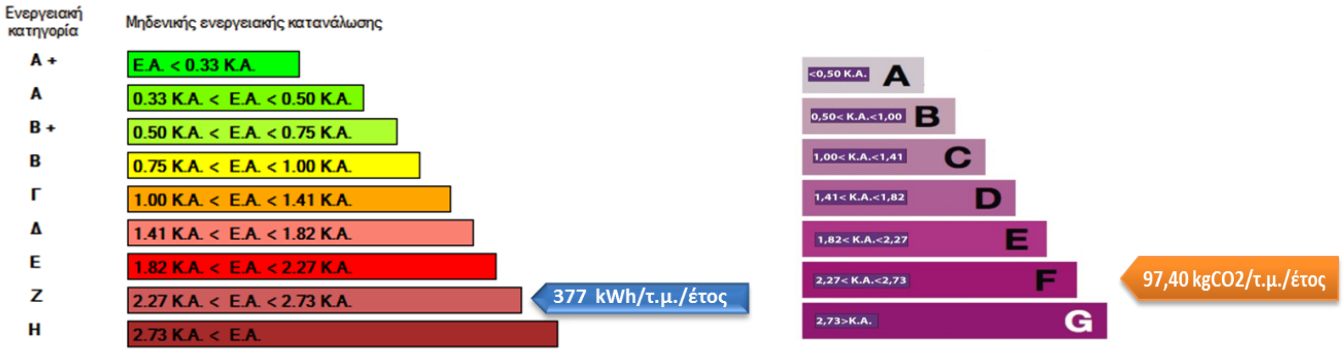
1/ Identification of the partner

Name of contact: Mr. Tzegkas-expert of Pieriki could be contacted as intermediate.

2/ RCHEP main issues

There is lack of comparative data and national level in order to classify RCHEPs according to their consumption, and because of the special character of the RCHEPs an informal classification system was elaborated within SAVE AGE project, mainly for comparison reasons and in order to graphically support each detailed action plan. Based on the calculated consumptions of each RCHEPs and by considering that the Greek RCHEP with the lowest primary energy consumption per square metre is an "informal reference building", the rest RCHEPs were classified according to their consumptions and their emissions (this RCHEP is a new built unit with envelope and systems that cover the EPBD requirements). The informal classification within SAVE AGE project is based on assumptions and is not a classification on EPBD.

For the AVGOUSTINEION CHURCH NURSING HOME, classification is as follows:



The AVGOUSTINEION CHURCH NURSING HOME consumes primary (all types of sources) 377kWh/m2/year (final consumption: 268 kWh/m2/year), and it is classified in category F of the Informal Energy Certification System which was elaborated exclusively for the SAVE AGE project (details were offered in the detailed action plan) Due to important heating needs, we could assume empirically that it could be classified to E class. It is the 8th performance of final energy consumption between the 10 Greek RCHEPs under examination and also 8th on primary energy consumption.

If we take into consideration the final energy consumption per resident, this care home with consumption of 6595 kWh/resident/year, presents a bit better performance (6th). As the unit uses electricity and oil the primary energy consumption per resident is higher, but it is still in the same level (6th) within the 10 Greek examined RCHEPs, 9268 kWh/resident/year.

In comparison with the EUI1 and EUI2 performance indicators, the building presents almost equal performance as the ideal for the consumption per square meter whilst for the consumption per resident it presents, in comparison, lower consumption (35,50%), obviously because of high

occupation rate and efforts of the management. It could also be related to the financial resources, limited available resources lead to lower energy consumption.

The main energy resource is oil (83%), and as such the emissions are typical for Greece, 97,40 kgCO2/m2/year, (9th performance between the participating RCHEPs), and it is classified in F category of the informal classification system, but due to important heating needs, we could assume empirically that it could be classified to E class.

3/Action plan of RCEHP

The Action Plan includes the following parts:

1. Building characteristics
2. Special information
3. Energy consumption
4. Equipment and observed behavior
5. Conclusions for the 10 RCHEPs

Annex: Energy consumption and emissions of the 10 participating RCHEPs

The specific measures proposed for this RCHEP in the action plan were (per sector):

Insulation

Full insulation of the envelope, despite the high cost, it will lead to important energy savings, especially in the sector of heating. Fenestration present acceptable level of loses, as already changed. The total cost of this investment should be taken into consideration, in order to be acceptable at financial level.

Ventilation

It was observed that during natural ventilation (during heating period) the heating system is on, leading to important energy waste. Natural ventilation and heating periods within a day should not overlap.

Cooling

Yearly maintenance of the air conditioning units and rational use should be adapted. Use of cooling devices during ventilation or when there is no real need, should be avoided.

Heating

The energy consumption for the specific RCHEP is 202kWh/m2 and 4962kWh/resident. Compared to indicators EUI3 and EUI4 the building presents at 53.90 % worst attitude in the consumption for heating per m2, whilst the consumption per resident is lopwerthan the optimum-4,50%,although at lower rate than the consumption per m2, obviously due to the fact that during the reference year high occupation rate was notified.

It was proposed to change the existing system with a new certified low temperatures system along with creation of independent thermal zones. The heating boiler should be certified, with multi-grade burner, automatically adjusted. In the exit of the heating boiler a compensation system should be installed with an electrical four-way valve, with a controller which will receive information from the external environment (i.e. temperature) and the temperature of selected areas. Moreover, the circulator

should be altered with a new of variable speed (inverter). In the network electrical gate valves should be installed, splitting the building in areas of independent services. These valves will be adjusted from a central panel board whilst the option of time-programming at week level will be offered.

The proposed interventions in the network, in combination with the use of variable speed pump, will result in significant energy savings since they will not be waste on unnecessary heating of unused spaces or overheating of others.

Moreover, it could be interesting to educate responsible people for the proper use of heating, not only to achieve energy savings but to enhance the comfort of each guest. Another important element in the heating efficiency is the reaction of the responsible for the maintenance to intervene in case of malfunction and the different approach of empty spaces.

Hot water

For the production of hot water (DHW) the use of solar evacuated tube collectors of total area of approximately 40m2 is proposed. The panels will be installed on the roof of the dining room on aluminum bases and will be electrical-grounded. Through two-pipe system made of copper tubes the system will feed with forced circulation, a steel triple energy boiler with capacity of 2000lt which will be placed in the laundry room. The boiler will be fed through a second serpentine from the heating boiler while it will also have a resistance of 6kW for heating the usage water. The output of the DHW Boiler will connect to the existing lugs while washing machines will be fed (if they have a double connection to water and internal mixer for regulating the temperature of wash).

Lighting-Appliances

On the roof of the care home it could be installed a P/V power system of at least 11kWp. The system will be electrically-grounded in accordance with the regulations and rules of art. The photovoltaic inverter will feed through batteries that are placed in an appropriately configured space. The batteries again through the Inverter will feed the electrical grid of the care home. The autonomous system is calculated to cover loads of lighting, office equipment, television, and is calculated to connect also network sockets in it. Additionally some of the refrigerators or air conditioners could be connected, but appliances of kitchen and washhouse will continue to be powered directly from the grid. To meet loads the installation of photovoltaic panels of total capacity of at least 11 kW was calculated.

4/ Energy efficiency activities implemented in the RCHEP

In the AVGOUSTINEION CHURCH NURSING HOME as already presented above there is an important consumption for heating per m2-compared to EUI3, although the consumption per resident is much lower-compared to EUI4. For lowering the heating consumption actions as insulating, alteration of old fenestration, new heating system could be adapted.

Unfortunately, due to lack of funding the actions could not be implemented within the project duration.

5/ Behavioural measure for residents and visitors

The AVGOUSTINEION CHURCH NURSING HOME is one of the RCHEPs selected for placement of visibility signs. Such visibility signs were place in kitchen, laundry, communal areas and, of course rooms.

Residents were informed on the potentiality of saving energy with their everyday routine. Although cost of energy was not important to them directly, all of them were correlated with rough cost savings and simplified environmental impact. In this RCHEP meeting with residents during their free time in the TV-room were organized, whilst with some that saw more interest, face-to-face meetings were organized in their rooms.

6/ Monitoring when available

As in most facilities visited, there is no monitoring of consumption, if we want to be more detailed; in the best case there is a better monitoring of the amount of energy invoices. However, energy efficiency is not only an investment for occasional energy saving via lighting, building insulation or renewable energy sources. People, as well as management, of existing infrastructure are key factors for project success. Typical indicators for each unit could be significantly improved through systematic monitoring of energy consumption, making it possible to evaluate and take appropriate action. This issue should be addressed by the responsible technical education institutions.

7/ Conclusion

The AVGOUSTINEION CHURCH NURSING HOME was mainly focused in the care providing services and the costs related to them as the energy costs was thought to depict a very restricted percentage of the total operating costs. Nevertheless, the management with the support of Pieriki and SAVE AGE project has foreseen that due to lack of funding they would have to concentrate in behavioral subjects, and as such important care was given to this part with meeting with residents and, mainly, with personnel.

The case study of this specific RCHEP is depicting one of the successful examples, within the SAVE AGE project framework, focusing in behavioral measures. Apart of the basic and detailed action plans, training and education of personnel, behavioral actions adaptation the RCHEP has implemented actions focusing in behavioral actions.

+ Annex to this report is the detailed action plan of this RCHEP.

5. Elder Welfare Home, the Saints Anargyroi

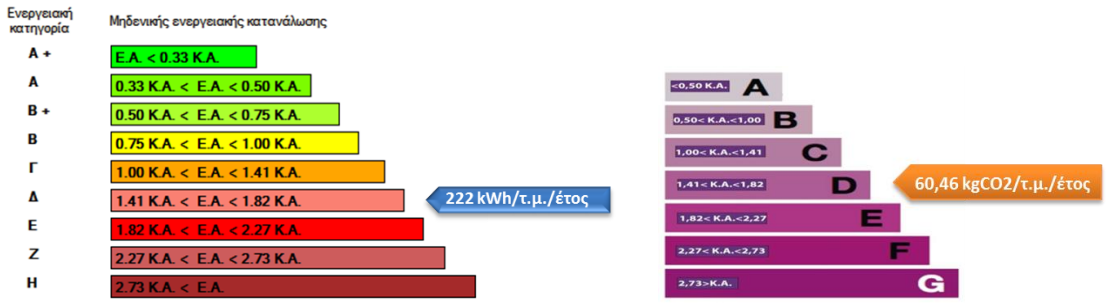
1/ Identification of the partner

Name of contact if authorized: Mr. Tzegkas-expert of Pieriki could be contacted as intermediate.

2/ RCHEP main issues

There is lack of comparative data and national level in order to classify RCHEPs according to their consumption, and because of the special character of the RCHEPs an informal classification system was elaborated within SAVE AGE project, mainly for comparison reasons and in order to graphically support each detailed action plan. Based on the calculated consumptions of each RCHEPs and by considering that the Greek RCHEP with the lowest primary energy consumption per square metre is an "informal reference building", the rest RCHEPs were classified according to their consumptions and their emissions (this RCHEP is a new built unit with envelope and systems that cover the EPBD requirements). The informal classification within SAVE AGE project is based on assumptions and is not a classification on EPBD.

For the ELDER WELFARE HOME, THE SAINTS ANARGYROI, classification is as follows:



The ELDER WELFARE HOME, THE SAINTS ANARGYROI consumes primary (all types of sources) 222kWh/m2/year (final consumption: 104kWh/m2/year), and it is classified in category D of the Informal Energy Certification System which was elaborated exclusively for the SAVE AGE project (details were offered in the detailed action plan) It has the 2nd performance of final energy consumption between the 10 Greek RCHEPs under examination and also 4th on primary energy consumption.

If we take into consideration the final energy consumption per resident, this care home with consumption of 2161 kWh/resident/year, presents the best performance between the 10 Greek RCHEPs). As the unit uses electricity and natural gas the primary energy consumption per resident is higher, but it is still the lowest within the 10 Greek examined RCHEPs, 4633 kWh/resident/year.

In comparison with the EUI1 and EUI2 performance indicators, the building presents almost optimum performance compared to the ideal for the consumption per square meter (52,70% lower) whilst for the consumption per resident it present, also lower consumption (69,40%), obviously because of high occupation rate and efforts of the management. It could also be related to the financial resources, limited available resources lead to lower energy consumption.

The main energy resource is electricity (59%), and as such the emissions should be high, but nevertheless it is lower than expected: 60,46 kgCO2/m2/year, (4th performance between the participating RCHEPs), and it is classified in D category of the informal classification system.

3/Action plan of RCEHP

The Action Plan includes the following parts:

1. Building characteristics
2. Special information
3. Energy consumption
4. Equipment and observed behavior
5. Conclusions for the 10 RCHEPs

Annex: Energy consumption and emissions of the 10 participating RCHEPs

The specific measures proposed for this RCHEP in the action plan were (per sector):

Insulation

Extra insulation in this particular climatic zone and in such a highly-urban environment (Athens city centre) would not consist an investment without sufficient pay-back period.

Ventilation

It was observed that during natural ventilation (during heating period) the heating system is on, leading to important energy waste. Natural ventilation and heating periods within a day should not overlap.

Cooling

Yearly maintenance of the air conditioning units and rational use should be adapted. Use of cooling devices during ventilation or when there is no real need, should be avoided.

Heating

The energy consumption for the specific RCHEP is 43kWh/m2 and 903kWh/resident. Compared to indicators EUI3 and EUI4 the building presents at 60.60 % better attitude in the consumption for heating per m2, whilst the consumption per resident is also extremely lower than the optimum at 76%, which is at higher rate than the consumption per m2, obviously due to the fact that during the reference year high occupation rate was notified.

Due to low consumption for heating, it could be interesting to educate responsible people for the proper use of heating, not only to achieve energy savings but to enhance the comfort of each guest. Another important element in the heating efficiency is the reaction of the responsible for the maintenance to intervene in case of malfunction and the different approach of empty spaces.

Hot water

For the production of hot water (DHW) the use of solar evacuated tube collectors of total area of approximately 15m2 is proposed. The panels will be installed on the roof of the dining room on aluminum bases and will be electrical-grounded. Through two-pipe system made of copper tubes the system will feed with forced circulation, a steel triple energy boiler with capacity of 2000lt which will be placed in the laundry room. The boiler will be fed through a second serpentine from the heating boiler while it will also have a resistance of 6kW for heating the usage water. The output of the DHW

Boiler will connect to the existing lugs while washing machines will be fed (if they have a double connection to water and internal mixer for regulating the temperature of wash).

Lighting-Appliances

On the roof of the care home it could be installed a P/V power system of 11kWp. The system will be electrically-grounded in accordance with the regulations and rules of art. The photovoltaic inverter will feed through batteries that are placed in an appropriately configured space. The batteries again through the Inverter will feed the electrical grid of the care home. The autonomous system is calculated to cover loads of lighting, office equipment, television, and is calculated to connect also network sockets in it. Additionally some of the refrigerators or air conditioners could be connected, but appliances of kitchen and washhouse will continue to be powered directly from the grid. To meet loads the installation of photovoltaic panels of total capacity of at least 11 kW was calculated.

4/ Energy efficiency activities implemented in the RCHEP

In the ELDER WELFARE HOME, THE SAINTS ANARGYROI as already presented above there is no important consumption for heating per m2-compared to EUI3 and EUI4. It was obvious that mainly behavioral actions could lead to consumption corrections. As such only this kind of corrections has been implemented.

5/ Behavioural measure for residents and visitors

The ELDER WELFARE HOME, THE SAINTS ANARGYROI is one of the RCHEPs selected for placement of visibility signs. Such visibility signs were place in kitchen, laundry, communal areas and, of course rooms. Residents were informed on the potentiality of saving energy with their everyday routine. In this RCHEP meeting with residents during lunch was organised.

6/ Monitoring when available

As in most facilities visited, there is no monitoring of consumption, if we want to be more detailed; in the best case there is a better monitoring of the amount of energy invoices. However, energy efficiency for this RCHEP is not only an investment for occasional energy saving via lighting, building insulation or renewable energy sources, but for behavioral measures. People, as well as management, of existing infrastructure are the only key factors for project success.

7/ Conclusion

The ELDER WELFARE HOME, THE SAINTS ANARGYROI was mainly focused in the care providing services and the costs related to them as the energy costs was thought to depict a very restricted percentage of the total operating costs. Nevertheless, the management with the support of Pieriki and SAVE AGE project has foreseen that due to no need for important energy efficiency investments they would have to concentrate in behavioral subjects, and as such important care was given to this part with meeting with residents and, mainly, with personnel.
The case study of this specific RCHEP is depicting one of the successful examples, within the SAVE AGE project framework, focusing in behavioral measures.
+ Annex to this report is the detailed action plan of this RCHEP.

6. Care Home, Theotokos Kykkiotissa

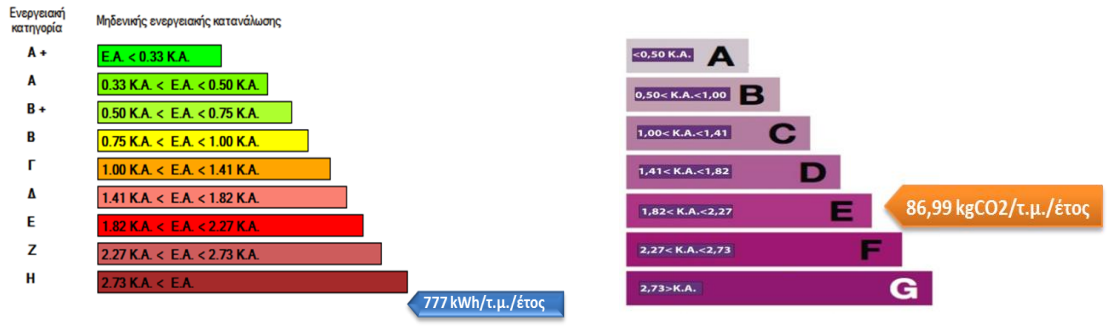
1/ Identification of the partner

Name of contact: Mr. Tzegkas-expert of Pieriki could be contacted as intermediate.

2/ RCHEP main issues

There is lack of comparative data and national level in order to classify RCHEPs according to their consumption, and because of the special character of the RCHEPs an informal classification system was elaborated within SAVE AGE project, mainly for comparison reasons and in order to graphically support each detailed action plan. Based on the calculated consumptions of each RCHEPs and by considering that the Greek RCHEP with the lowest primary energy consumption per square metre is an "informal reference building", the rest RCHEPs were classified according to their consumptions and their emissions (this RCHEP is a new built unit with envelope and systems that cover the EPBD requirements). The informal classification within SAVE AGE project is based on assumptions and is not a classification on EPBD.

For the CARE HOME, THEOTOKOS KYKKIOTISSA , classification is as follows:



The CARE HOME, THEOTOKOS KYKKIOTISSA consumes primary (all types of sources) 777 kWh/m2/year (final consumption: 608kWh/m2/year), and it is classified in category G of the Informal Energy Certification System which was elaborated exclusively for the SAVE AGE project (details were offered in the detailed action plan) It is the building with the worst performance of final energy consumption between the 10 Greek RCHEPs under examination and also worst on primary energy consumption.

If we take into consideration the final energy consumption per resident, this care home with consumption of 10.527 kWh/resident/year, presents the same worst performance (9^{th}). As the unit uses electricity, gas, biomass and oil the primary energy consumption per resident is not so higher, but it is still in the same level (9^{th}) within the 10 Greek examined RCHEPs, 13458 kWh/resident/year.

In comparison with the EUI1 and EUI2 performance indicators, the building presents worst performance at the extreme percentage of 105,78% for the consumption per square meter whilst for the consumption per resident it presents in comparison even higher consumption (126.60%).

The main energy resource is biomass (77,35%), and as such the emissions are typical for Greece, 86,99 kgCO2/m2/year, (7th worst performance between the participating RCHEPs), and it is classified in E category of the informal classification system, although to the important biomass consumption we would expect better classification. It is resulted though that electricity consumption is the main problem.

3/Action plan of RCEHP

The Action Plan includes the following parts:

1. Building characteristics
2. Special information
3. Energy consumption
4. Equipment and observed behavior
5. Conclusions for the 10 RCHEPs

Annex: Energy consumption and emissions of the 10 participating RCHEPs

The specific measures proposed for this RCHEP in the action plan were (per sector):

Insulation

Full insulation of the envelope, despite the high cost, it will lead to important energy savings, especially in the sector of heating along with fenestration change. The total cost of this investment should be taken into consideration, in order to be acceptable at financial level. Nevertheless, due to the fact that heating consumption is high, the insulation of the envelope is more than a necessity.

Ventilation

It was observed that during natural ventilation (during heating period) the heating system is on, leading to important energy waste. Natural ventilation and heating periods within a day should not overlap.

Cooling

Yearly maintenance of the air conditioning units and rational use should be adapted. Use of cooling devices during ventilation or when there is no real need, should be avoided.

Heating

The energy consumption for the specific RCHEP is 470,36kWh/m2 and 8142 kWh/resident. Compared to indicators EUI3 and EUI4, the building presents at 228 % worst attitude in the consumption for heating per m2, whilst the consumption per resident is also much higher than the optimum-216%.

The system must be re-designed from the beginning and be re-installed taking into consideration the option of per space heating and the need for insulation and fenestration change. .

Moreover, it could be interesting to educate responsible people for the proper use of heating, not only to achieve energy savings but to enhance the comfort of each guest. Another important element in the heating efficiency is the reaction of the responsible for the maintenance to intervene in case of malfunction and the different approach of empty spaces.

Hot water

For the production of hot water (DHW) the use of solar evacuated tube collectors of total area of approximately 80m2 is proposed. The panels will be installed on the roof of the dining room on aluminum bases and will be electrical-grounded. Through two-pipe system made of copper tubes the system will feed with forced circulation, a steel triple energy boiler with capacity of 2000lt which will be placed in the laundry room. The boiler will be fed through a second serpentine from the heating boiler while it will also have a resistance of 6kW for heating the usage water. The output of the DHW Boiler will connect to the existing lugs while washing machines will be fed (if they have a double connection to water and internal mixer for regulating the temperature of wash).

Lighting-Appliances

On the roof of the care home it could be installed a P/V power system of at least 11kWp. The system will be electrically-grounded in accordance with the regulations and rules of art. The photovoltaic inverter will feed through batteries that are placed in an appropriately configured space. The batteries again through the Inverter will feed the electrical grid of the care home. The autonomous system is calculated to cover loads of lighting, office equipment, television, and is calculated to connect also network sockets in it. Additionally some of the refrigerators or air conditioners could be connected, but appliances of kitchen and washhouse will continue to be powered directly from the grid. To meet loads the installation of photovoltaic panels of total capacity of at least 11 kW was calculated.

4/ Energy efficiency activities implemented in the RCHEP

In the CARE HOME, THEOTOKOS KYKKIOTISSA as already presented above there is an important consumption and also for heating, although they use biomass as main source. As such it was concluded that insulating the building envelope could lead to important savings in energy consumption in combination with the full redesign of heating system.

Nevertheless, these energy efficient investment, according to SAVE AGE project's detailed action plan, is of important budget and could not be implemented due to lack of funding.

5/ Behavioural measure for residents and visitors

The CARE HOME, THEOTOKOS KYKKIOTISSA is one of the RCHEPs selected for placement of visibility signs. Such visibility signs were place in kitchen, laundry, communal areas and, of course, rooms. With the visibility signs personnel and rResidents were informed on the potentiality of saving energy with their everyday routine.

6/ Monitoring when available

As in most facilities visited, also in CARE HOME, THEOTOKOS KYKKIOTISSA there was no monitoring of consumption, and if we want to be more detailed there is not even monitoring of the amount of energy invoices. Manager and owners were astonished on the amount of energy spent- which was only faced as an existing expense that could not be faced. . Typical indicators for each unit could be significantly improved through systematic monitoring of energy consumption for this RCHEP, making it possible to evaluate and take appropriate action. This issue should be addressed by the responsible technical education institutions.

7/ Conclusion

The CARE HOME, THEOTOKOS KYKKIOTISSA was mainly focused in the care providing services and the costs related and although the energy costs was important and not a restricted percentage of the total operating costs, as for the rest RCHEPs in Greece, no action was undertaken.

The case study of this specific RCHEP is depicting one of the examples requiring emergency action. Consumptions were extremely higher than rest RCHEPs (this was depicted also in the WP2 analysis and key performance indicators) within the SAVE AGE project framework. This was transferred to the managers and owners, but lack of funding was not giving the opportunity to implement actions.

+ Annex to this report is the detailed action plan of this RCHEP.

7. Care Home, the House of companion

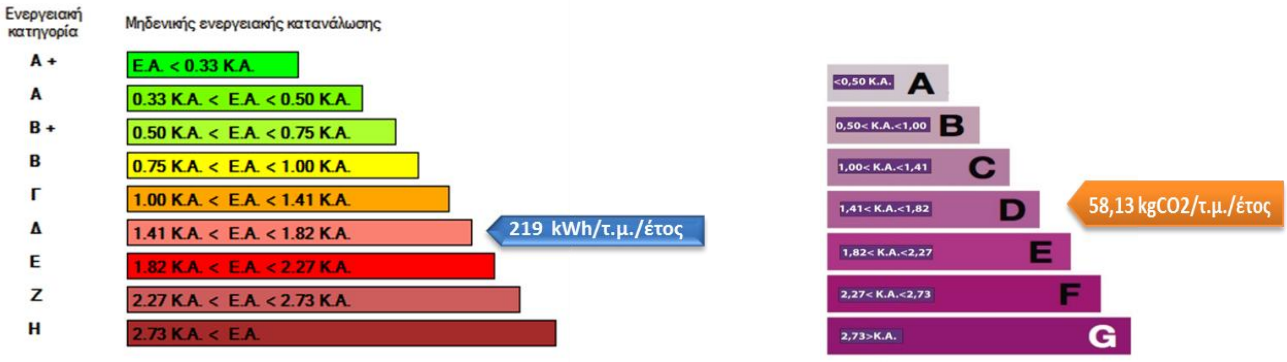
1/ Identification of the partner

Name of contact if authorized: Mr. Tzegkas-expert of Pieriki could be contacted as intermediate.

2/ RCHEP main issues

There is lack of comparative data and national level in order to classify RCHEPs according to their consumption, and because of the special character of the RCHEPs an informal classification system was elaborated within SAVE AGE project, mainly for comparison reasons and in order to graphically support each detailed action plan. Based on the calculated consumptions of each RCHEPs and by considering that the Greek RCHEP with the lowest primary energy consumption per square metre is an "informal reference building", the rest RCHEPs were classified according to their consumptions and their emissions (this RCHEP is a new built unit with envelope and systems that cover the EPBD requirements). The informal classification within SAVE AGE project is based on assumptions and is not a classification on EPBD.

For the CARE HOME, THE HOUSE OF COMPANION, classification is as follows:



The CARE HOME, THE HOUSE OF COMPANION consumes primary (all types of sources) 219kWh/m2/year (final consumption: 139kWh/m2/year), and it is classified in category D of the Informal Energy Certification System which was elaborated exclusively for the SAVE AGE project (details were offered in the detailed action plan). Due to important heating needs, we could assume empirically and based on climatic data that it could be classified to C class. It has the 4th performance of final energy consumption between the 10 Greek RCHEPs under examination and 3rd on primary energy consumption.

If we take into consideration the final energy consumption per resident, this care home with consumption of 4183 kWh/resident/year, presents the 3rd best performance between the 10 Greek RCHEPs). As the unit uses electricity and oil the primary energy consumption per resident is higher, but it is still the 3rd best within the 10 Greek examined RCHEPs, 6570 kWh/resident/year.

In comparison with the EUI1 and EUI2 performance indicators, the building presents optimum performance compared to the ideal for the consumption per square meter (46.20% lower) whilst for

the consumption per resident it present, also lower consumption (45.50%), obviously because of high quality construction, innovative systems and efforts of the management.

The main energy resource is oil (74%), and as such the emissions should be high, but nevertheless it is lower than expected: 58,13 kgCO2/m2/year, (3rd performance between the participating RCHEPs), and it is classified in D category of the informal classification system, but due to important heating needs, we could assume empirically and based on climatic data that it could be classified to C class.

3/Action plan of RCEHP

The Action Plan includes the following parts:

11. Building characteristics
12. Special information
13. Energy consumption
14. Equipment and observed behavior
15. Conclusions for the 10 RCHEPs

Annex: Energy consumption and emissions of the 10 participating RCHEPs

The specific measures proposed for this RCHEP in the action plan were (per sector)

Insulation

The high level of insulation and high quality of fenestration give no space foe any interventions.

Ventilation

It was observed that during natural ventilation (during heating period) the heating system is on, leading to important energy waste. Natural ventilation and heating periods within a day should not overlap.

Cooling

Yearly maintenance of the air conditioning units and rational use should be adapted. Use of cooling devices during ventilation or when there is no real need, should be avoided.

Heating

The energy consumption for the specific RCHEP is 59kWh/m2 and 2250 kWh/resident. Compared to indicators EUI3 and EUI4 the building presents at 47,90 % better attitude in the consumption for heating per m2, whilst the consumption per resident is also extremely lower than the optimum at 49,50%, which is at slight higher rate than the consumption per m2, obviously due to the highly insulated of the building and of the rational use of heating and rest systems by ownership.

Due to low consumption for heating, it could be interesting to educate responsible people for the proper use of heating, not only to achieve energy savings but to enhance the comfort of each guest.

Another important element in the heating efficiency is the reaction of the responsible for the maintenance to intervene in case of malfunction and the different approach of empty spaces.

Hot water

For the production of hot water (DHW) the use of solar evacuated tube collectors of total area of approximately 30m2 is proposed. The panels will be installed on the roof of the dining room on aluminum bases and will be electrical-grounded. Through two-pipe system made of copper tubes the system will feed with forced circulation, a steel triple energy boiler with capacity of 2000lt which will be placed in the laundry room. The boiler will be fed through a second serpentine from the heating boiler while it will also have a resistance of 6kW for heating the usage water. The output of the DHW Boiler will connect to the existing lugs while washing machines will be fed (if they have a double connection to water and internal mixer for regulating the temperature of wash).

Lighting-Appliances

On the roof of the care home it could be installed a P/V power system of around 11kWp. The system will be electrically-grounded in accordance with the regulations and rules of art. The photovoltaic inverter will feed through batteries that are placed in an appropriately configured space. The batteries again through the Inverter will feed the electrical grid of the care home. The autonomous system is calculated to cover loads of lighting, office equipment, television, and is calculated to connect also network sockets in it. Additionally some of the refrigerators or air conditioners could be connected, but appliances of kitchen and washhouse will continue to be powered directly from the grid. To meet loads the installation of photovoltaic panels of total capacity of at least 11 kW was calculated.

4/ Energy efficiency activities implemented in the RCHEP

In the CARE HOME, THE HOUSE OF COMPANION two were the only sectors that corrective actions could be implemented: consumption of electricity and hot water (apart behavioral measures). For his reason and according to the detailed action plan, a low budget energy efficient investment was implemented, of total budget of around 40.000 Euros for renovation of heating system, hot water system and electrical power consumption. Most of the measures were described in the detailed Action Plan, and actions are already accomplished. Moreover, corrective actions are under consideration.

In detail interventions included:

- P/V system (10Kw)
- Conversion of oil powered heating system to gas powered
- Solar collectors for pre-heating of heating water
- Solar collectors for usage hot water

SAVE AGE start-no P/V

SAVE AGE finaisation: P/V installation

Solar collectors

5/ Behavioural measure for residents and visitors

The CARE HOME, THE HOUSE OF COMPANION has started, since awareness was raised-at a percent due to the project, their own actions for adaptation of behavioral measures to residents and personnel.

In this RCHEP, due to the system of high socialization of residents it was not quite easy to organize a meeting with residents, nevertheless it was management which was dedicated to transfer knowledge in behavioral actions that could reduce consumption.

6/ Monitoring when available

As in most facilities visited, there is no monitoring of consumption, if we want to be more detailed; in the best case there is a better monitoring of the amount of energy invoices. However, energy efficiency is not only an investment for occasional energy saving via lighting, building insulation or renewable energy sources.

Management of this RCHEP has foreseen the electrical energy needs of the building along with heating and hot water needs, as such they have decided a focused rehabilitation plan. As such they are able to implement two comparison projects;

- between the use of oil and gas for heating and hot water needs
- between the electrical energy needs before and after P/V installation.

Both comparison projects could prove the necessity of implemented actions and actually prove the pay-back period.

7/ Conclusion

The CARE HOME, THE HOUSE OF COMPANION was mainly focused in the care providing services and the costs related to them as the energy costs was thought to depict a very restricted percentage of the total operating costs. Nevertheless, the management has foreseen that energy efficiency investments could lead to important reduction on the operating cos,. In the effort to surpass these difficulties the general economic recession has acted positively; the important increase in the energy costs from providers (mainly due to increased taxes imposed by the Greek Ministry of finance) was activated everybody towards energy efficiency.

The case study of this specific RCHEP is depicting one of the most successful examples, within the SAVE AGE project framework. Apart of the basic and detailed action plans, training and education of personnel, behavioral actions adaptation the RCHEP has implemented an around 40.000€ focused investment towards energy efficiency and, even more important, funding for these action was supported by own funds-quick pay-back period of the investments.

It is expected that when the real savings of the energy efficiency investment will be recorded, using the two comparison projects aforementioned, the RCHEP could present a European best practice.

+Annex to this report is the detailed action plan of this RCHEP.

8. House Hosting for the Eldery, Holy Merciful

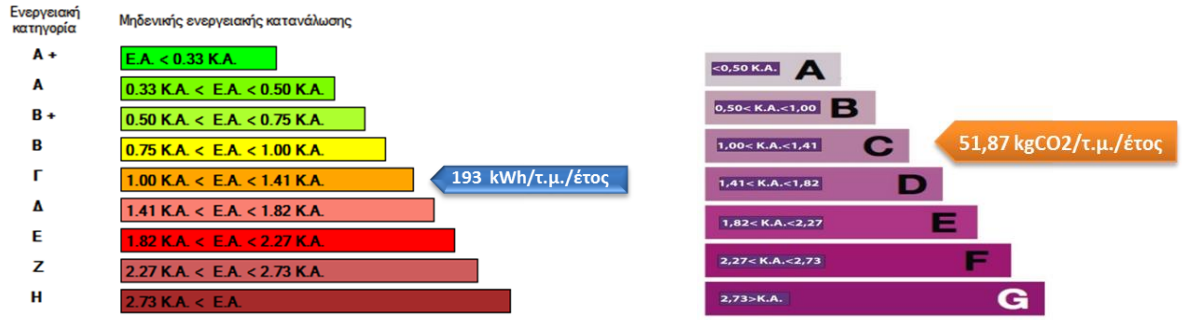
1/ Identification of the partner

Name of contact: Mr. Tzegkas-expert of Pieriki could be contacted as intermediate.

2/ RCHEP main issues

There is lack of comparative data and national level in order to classify RCHEPs according to their consumption, and because of the special character of the RCHEPs an informal classification system was elaborated within SAVE AGE project, mainly for comparison reasons and in order to graphically support each detailed action plan. Based on the calculated consumptions of each RCHEPs and by considering that the Greek RCHEP with the lowest primary energy consumption per square metre is an "informal reference building", the rest RCHEPs were classified according to their consumptions and their emissions (this RCHEP is a new built unit with envelope and systems that cover the EPBD requirements). The informal classification within SAVE AGE project is based on assumptions and is not a classification on EPBD.

For the HOUSE HOSTING FOR THE ELDERY, HOLY MERCIFUL, classification is as follows:



The HOUSE HOSTING FOR THE ELDERY, HOLY MERCIFULconsumes primary (all types of sources) 193 kWh/m2/year (final consumption: 116 kWh/m2/year), and it is classified in category C of the Informal Energy Certification System which was elaborated exclusively for the SAVE AGE project (details were offered in the detailed action plan). The building seems to cover macroscopically the greatest part of EPBD and as such small interventions could lead to B classification. It has the 3th best performance of final energy consumption between the 10 Greek RCHEPs under examination and the 2nd on primary energy consumption.

If we take into consideration the final energy consumption per resident, this care home with consumption of 3568 kWh/resident/year, presents the 2nd best performance between the 10 Greek RCHEPs). As the unit uses electricity and oil the primary energy consumption per resident is higher, but it is still the 2nd best within the 10 Greek examined RCHEPs, 5892 kWh/resident/year.

In comparison with the EUI1 and EUI2 performance indicators, the building presents optimum performance compared to the ideal for the consumption per square meter (45.60% lower) whilst for

the consumption per resident it present, also lower consumption (47.60%), obviously because of high quality construction and efforts of the management.

The main energy resource is oil (64%), and as such the emissions should be high, but nevertheless it is lower than expected: 51,87 kgCO2/m2/year, (2nd performance between the participating RCHEPs), and it is classified in C category of the informal classification system, but due to important heating needs, we could assume empirically and based on climatic data that it could be classified to C class.

3/Action plan of RCEHP

The Action Plan includes the following parts:

1. Building characteristics
2. Special information
3. Energy consumption
4. Equipment and observed behavior
5. Conclusions for the 10 RCHEPs

Annex: Energy consumption and emissions of the 10 participating RCHEPs

The specific measures proposed for this RCHEP in the action plan were (per sector):

Insulation

The high level of insulation and high quality of fenestration give no space foe any interventions.

Ventilation

It was observed that during natural ventilation (during heating period) the heating system is on, leading to important energy waste. Natural ventilation and heating periods within a day should not overlap.

Cooling

Yearly maintenance of the air conditioning units and rational use should be adapted. Use of cooling devices during ventilation or when there is no real need, should be avoided.

Heating

The energy consumption for the specific RCHEP is 42 kWh/m2 and 1292 kWh/resident. Compared to indicators EUI3 and EUI4 the building presents at 57,90 % better attitude in the consumption for heating per m2, whilst the consumption per resident is also extremely lower than the optimum at 62.00%, which is at s higher rate than the consumption per m2, obviously due to the highly insulated of the building and of the heating system and of the rational use of heating and rest systems by ownership.

Due to low consumption for heating, it could be interesting to educate responsible people for the proper use of heating, not only to achieve energy savings but to enhance the comfort of each guest. Another important element in the heating efficiency is the reaction of the responsible for the maintenance to intervene in case of malfunction and the different approach of empty spaces.

Hot water

For the production of hot water (DHW) the use of solar evacuated tube collectors of total area of approximately 20m2 is proposed. The panels will be installed on the roof of the dining room on aluminum bases and will be electrical-grounded. Through two-pipe system made of copper tubes the system will feed with forced circulation, a steel triple energy boiler with capacity of 2000lt which will be placed in the laundry room. The boiler will be fed through a second serpentine from the heating boiler while it will also have a resistance of 6kW for heating the usage water. The output of the DHW Boiler will connect to the existing lugs while washing machines will be fed (if they have a double connection to water and internal mixer for regulating the temperature of wash).

Lighting-Appliances

On the roof of the care home it could be installed a P/V power system of around 11kWp. The system will be electrically-grounded in accordance with the regulations and rules of art. The photovoltaic inverter will feed through batteries that are placed in an appropriately configured space. The batteries again through the Inverter will feed the electrical grid of the care home. The autonomous system is calculated to cover loads of lighting, office equipment, television, and is calculated to connect also network sockets in it. Additionally some of the refrigerators or air conditioners could be connected, but appliances of kitchen and washhouse will continue to be powered directly from the grid. To meet loads the installation of photovoltaic panels of total capacity of at least 11 kW was calculated.

4/ Energy efficiency activities implemented in the RCHEP

In the HOUSE HOSTING FOR THE ELDERY, HOLY MERCIFUL as already presented above there is no important consumption for heating per m2-compared to EUI3 and EUI4. It was obvious that mainly behavioral actions could lead to consumption corrections. As such only this kind of corrections has been implemented.

5/ Behavioural measure for residents and visitors

The HOUSE HOSTING FOR THE ELDERY, HOLY MERCIFUL has started, since awareness was raised-at a percent due to the project, their own actions for adaptation of behavioral measures to residents and personnel.

In this RCHEP, due to small number of residents and new operation it was quite easy to organize a meeting with residents, since it was management which was also dedicated to transfer knowledge in behavioral actions that could reduce consumption.

6/ Monitoring when available

As in most facilities visited, there is no monitoring of consumption, if we want to be more detailed; in the best case there is a better monitoring of the amount of energy invoices. However, energy efficiency is not only an investment for occasional energy saving via lighting, building insulation or renewable energy sources.

Management of this RCHEP could focus in appliances and hot water consumption in order to adapt correction actions that could lead to classification of their care home to B, which is the category for newly built construction in Greece.

7/ Conclusion

The HOUSE HOSTING FOR THE ELDERY, HOLY MERCIFUL was mainly focused in the care providing services and the costs related to them as the energy costs were depicting a very restricted percentage of the total operating costs. Nevertheless, the management has been convinced that energy efficiency investments could lead to reduction on the operating cost, mainly focused on electricity for appliances and hot water production.

The case study of this specific RCHEP is depicting one of the most successful operating RCHEPs in Greece, regarding energy consumption. Framework, and the detailed action plan and training of personnel and residents were more dedicated to behavioral subjects and details of operation.

+ Annex to this report is the detailed action plan of this RCHEP.

9. CARE HOME OF CHALKIDA

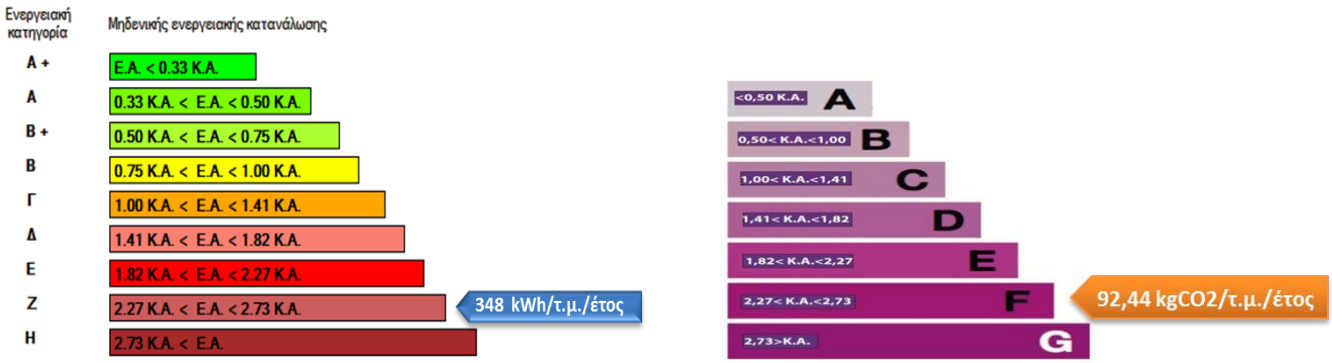
1/ Identification of the partner

Name of contact if authorized: Mr. Tzegkas-expert of Pieriki could be contacted as intermediate.

2/ RCHEP main issues

There is lack of comparative data and national level in order to classify RCHEPs according to their consumption, and because of the special character of the RCHEPs an informal classification system was elaborated within SAVE AGE project, mainly for comparison reasons and in order to graphically support each detailed action plan. Based on the calculated consumptions of each RCHEPs and by considering that the Greek RCHEP with the lowest primary energy consumption per square metre is an "informal reference building", the rest RCHEPs were classified according to their consumptions and their emissions (this RCHEP is a new built unit with envelope and systems that cover the EPBD requirements). The informal classification within SAVE AGE project is based on assumptions and is not a classification on EPBD.

For the CARE HOME OF CHALKIDA, classification is as follows:



The CARE HOME OF CHALKIDA consumes primary (all types of sources) 348 kWh/m2/year (final consumption: 222 kWh/m2/year), and it is classified in category F of the Informal Energy Certification System which was elaborated exclusively for the SAVE AGE project (details were offered in the detailed action plan). It is the 6th better performance of final energy consumption between the 10 Greek RCHEPs under examination and 7th on primary energy consumption.

If we take into consideration the final energy consumption per resident, this care home with consumption of 4877 kWh/resident/year, presents the same performance (4th). As the unit uses electricity and oil the primary energy consumption per resident is higher, but it is still in the same level (4th) within the 10 Greek examined RCHEPs, 7661 kWh/resident/year.

In comparison with the EUI1 and EUI2 performance indicators, the building presents slightly worst performance at the percentage of 7.30 % for the consumption per square meter whilst for the consumption per resident it presents importantly lowest consumption (31,90%), obviously because of

efforts of the management. It could also be related to the financial resources, limited available resources lead to lower energy consumption.

The main energy resource is oil (74%), and as such the emissions are typical for Greece, 92.44_kgCO2/m2/year, (8th performance between the participating RCHEPs), and it is classified in F category of the informal classification system.

3/Action plan of RCEHP

The Action Plan includes the following parts:

1. Building characteristics
2. Special information
3. Energy consumption
4. Equipment and observed behavior
5. Conclusions for the 10 RCHEPs

Annex: Energy consumption and emissions of the 10 participating RCHEPs

The specific measures proposed for this RCHEP in the action plan were (per sector):

Insulation

Full insulation of the envelope, despite the high cost, it will lead to important energy savings, especially in the sector of heating. Fenestration with single glazing should be altered with double glazed fenestration. The total cost of this investment should be taken into consideration, in order to be acceptable at financial level.

Ventilation

It was observed that during natural ventilation (during heating period) the heating system is on, leading to important energy waste. Natural ventilation and heating periods within a day should not overlap.

Cooling

Yearly maintenance of the air conditioning units and rational use should be adapted. Use of cooling devices during ventilation or when there is no real need, should be avoided.

Heating

The energy consumption for the specific RCHEP is 90 kWh/m2 and 1847 kWh/resident. Compared to indicators EUI3 and EUI4 the building presents at 12.20% better attitude in the consumption for heating per m2 whilst the consumption per resident is highly lower than the optimum-47.70%, obviously due to and efforts of the RCHEP management. Moreover, it could be related to financial resources, limited financial resources lead to lack in heating.

It was proposed to change the existing system with a new certified low temperatures system along with creation of independent thermal zones. The heating boiler should be certified, with multi-grade burner, automatically adjusted. In the exit of the heating boiler a compensation system should be installed with an electrical four-way valve, with a controller which will receive information from the external environment (i.e. temperature) and the temperature of selected areas. Moreover, the circulator should be altered with a new of variable speed (inverter). In the network electrical gate valves should be installed, splitting the building in areas of independent services (i.e. old wing, new wing, dining room, etc.). These valves will be adjusted from a central panel board whilst the option of time-programming at week level will be offered.

It could be interesting to educate responsible people for the proper use of heating, not only to achieve energy savings but to enhance the comfort of each guest. Another important element in the heating efficiency is the reaction of the responsible for the maintenance to intervene in case of malfunction and the different approach of empty spaces.

Hot water

For the production of hot water (DHW) the use of solar evacuated tube collectors of total area of approximately 20m2 is proposed. The panels will be installed on the roof of the dining room on aluminum bases and will be electrical-grounded. Through two-pipe system made of copper tubes the system will feed with forced circulation, a steel triple energy boiler with capacity of 2000lt which will be placed in the laundry room. The boiler will be fed through a second serpentine from the heating boiler while it will also have a resistance of 6kW for heating the usage water. The output of the DHW Boiler will connect to the existing three lugs while washing machines will be fed (if they have a double connection to water and internal mixer for regulating the temperature of wash).

Lighting-Appliances

On the roof of the care home it could be installed a P/V power system of at around 5kWp. The system will be electrically-grounded in accordance with the regulations and rules of art. The photovoltaic inverter will feed through batteries that are placed in an appropriately configured space. The batteries again through the Inverter will feed the electrical grid of the care home. The autonomous system is calculated to cover loads of lighting, office equipment, television, and is calculated to connect also network sockets in it. Additionally some of the refrigerators or air conditioners could be connected, but appliances of kitchen and washhouse will continue to be powered directly from the grid. To meet loads the installation of photovoltaic panels of total capacity of at least 5 kW was calculated.

4/ Energy efficiency activities implemented in the RCHEP

In the CARE HOME OF CHALKIDA a low budget energy efficient investment, of 5.000 Euros total budget was implemented, adapting the proposal for heating of the detailed action plan, as described above. A new certified low temperatures system was installed using the same internal system and final units. Budget was covered by own expenses.

5/ Behavioural measure for residents and visitors

The CARE HOME OF CHALKIDA has started, since awareness was raised-at a percent due to the project, their own actions for adaptation of behavioral measures to residents and personnel.

In this RCHEP, due to small number of residents it was quite easy to organize a meeting with residents, since it was management which was also dedicated to transfer knowledge in behavioral actions that could reduce consumption.

6/ Monitoring when available

As in most facilities visited, there is no monitoring of consumption, if we want to be more detailed; in the best case there is a better monitoring of the amount of energy invoices.

However, it is quiet important for this RCHEP to record savings from the new heating system, since it was proposed that heating savings could also include insulation and fenestration with double glazing. In this way it could be recorded savings form the lower budget investment and decide whether it is is worth to go one step beyond.

7/ Conclusion

As in most facilities visited, there is no monitoring of consumption, if we want to be more detailed; in the best case there is a better monitoring of the amount of energy invoices. However, mmanagement of this RCHEP has identified heating as a sector of losses, according to SAVE AGE detailed action plan. As such a low investment action was selected, in order to identify whether consumption could be corrected up to the required point or they should go on with more expensive solutions.

+ Annex to this report is the detailed action plan of this RCHEP.

10. Care unit for the Mature Age, ERATO

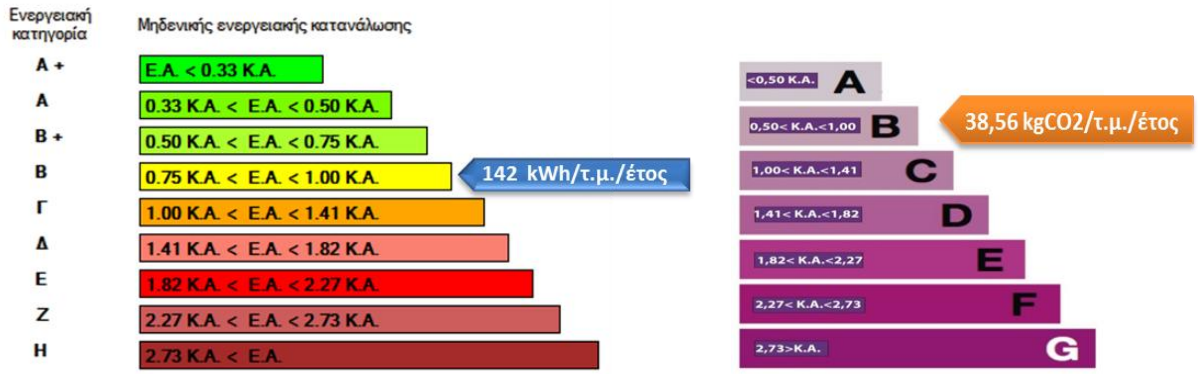
1/ Identification of the partner

Name of contact if authorized: Mr. Tzegkas-expert of Pieriki could be contacted as intermediate.

2/ RCHEP main issues

There is lack of comparative data and national level in order to classify RCHEPs according to their consumption, and because of the special character of the RCHEPs an informal classification system was elaborated within SAVE AGE project, mainly for comparison reasons and in order to graphically support each detailed action plan. Based on the calculated consumptions of each RCHEPs and by considering that the Greek RCHEP with the lowest primary energy consumption per square metre, which is CARE UNIT FOR THE MATURE AGE, ERATO, is an "informal reference building", the rest RCHEPs were classified according to their consumptions and their emissions (this RCHEP is a new built unit with envelope and systems that cover the EPBD requirements). The informal classification within SAVE AGE project is based on assumptions and is not a classification on EPBD.

For the CARE UNIT FOR THE MATURE AGE, ERATO, classification is as follows:



The CARE UNIT FOR THE MATURE AGE, ERATO primary (all types of sources) 142 kWh/m2/year (final consumption: 81 kWh/m2/year), and it is classified in category B of the Informal Energy Certification System which was elaborated exclusively for the SAVE AGE project (details were offered in the detailed action plan). The building seems to cover almost all EPBD specifications and as such interventions could be behavioral or corrective that could lead to B+ classification. It has the 1st best performance of final energy consumption between the 10 Greek RCHEPs under examination and the 1st on primary energy consumption.

If we take into consideration the final energy consumption per resident, this care home with consumption of 9.669 kWh/resident/year. As the unit uses electricity and oil, the primary energy consumption per resident is higher, 16.894 kWh/resident/year. From Chapter 5 of the Detailed Action Plan of the RCHEP "Conclusions for the 10 RCHEPs" it was concluded that the Aged Care Unit "ERATO" presents the largest surface area per occupant in multiple degree compared to the rest RCHEPs along with low occupation rate(21%) and enormous communal spaces that are used in full independently of the occupation rate , and as such the per resident consumption could not lead to safe

results, for this specific RCHEP, they are just recorded.

In comparison with the EUI1 and EUI2 performance indicators, the building presents optimum performance compared to the ideal for the consumption per square meter (42.50% lower) whilst for the consumption per resident it present, slightly lower consumption (2.50%), obviously because of low occupation rate which is overpasses with quality of construction and innovative systems.

The main energy resource is oil (64%), and as such the emissions should be high, but nevertheless it is lower than expected: 38,56 kgCO2/m2/year, (1st performance between the participating RCHEPs), and it is classified in B category of the informal classification system, but due to important heating needs, we could assume empirically and based on climatic data that it could be classified to C class.

3/Action plan of RCEHP

The Action Plan includes the following parts:

16. Building characteristics
17. Special information
18. Energy consumption
19. Equipment and observed behavior
20. Conclusions for the 10 RCHEPs

Annex: Energy consumption and emissions of the 10 participating RCHEPs

The specific measures proposed for this RCHEP in the action plan were (per sector):

Insulation

The high level of insulation and high quality of fenestration give no space for any interventions.

Ventilation

It was proposed during natural ventilation (during heating period) the heating system is on, leading to important energy waste. Natural ventilation and heating periods within a day should not overlap.

Cooling

Use of central cooling system during ventilation or when there is no real need, should be avoided.

Heating

The energy consumption for the specific RCHEP is 21 kWh/m2 and 2552 kWh/resident. Compared to indicators EUI3 and EUI4 the building presents at 68.80 % better attitude in the consumption for heating per m2, whilst the consumption per resident is also extremely lower than the optimum at 48.70%, which is at lower rate than the consumption per m2, obviously due to low occupation rate which is overpassed by the highly insulated of the building and of the heating system and of the rational use of heating and rest systems by ownership.

Due to low consumption for heating, it could be interesting to educate responsible people for the proper use of heating, not only to achieve energy savings but to enhance the comfort of each guest. Another important element in the heating efficiency is the reaction of the responsible for the maintenance to intervene in case of malfunction and the different approach of empty spaces.

Hot water

For the production of hot water (DHW) the use of solar collectors cover needs and as such no interventions were proposed.

Lighting-Appliances

On the perimeter of the care home(roof could not be used due to architectural constraints of the relevant Ministry) it could be installed a P/V power system of at least11kWp. The system will be electrically-grounded in accordance with the regulations and rules of art. The photovoltaic inverter will feed through batteries that are placed in an appropriately configured space. The batteries again through the Inverter will feed the electrical grid of the care home. The autonomous system is calculated to cover loads of lighting, office equipment, television, and is calculated to connect also network sockets in it. Additionally some of the refrigerators or air conditioners could be connected, but appliances of kitchen and washhouse will continue to be powered directly from the grid. To meet these loads the installation of photovoltaic panels of total capacity of at least 11 kW was calculated.

4/ Energy efficiency activities implemented in the RCHEP

The CARE UNIT FOR THE MATURE AGE, ERATO, as already presented above, is newly built and there is no important consumption for heating per m2-compared to EUI3 and EUI4. It was obvious that mainly behavioral actions could lead to consumption corrections.

5/ Behavioural measure for residents and visitors

The CARE UNIT FOR THE MATURE AGE, ERATO has started, since awareness was raised-at a percent due to the project, their own actions for adaptation of behavioral measures to residents and personnel.

In this RCHEP, due to small number of residents and new operation it was quite easy to organize a meeting with residents by the management, since it was management which was also dedicated to transfer knowledge in behavioral actions that could reduce consumption.

6/ Monitoring when available

Monitoring system of the specific system was also a good practice of the SAVE AGE project.

RCHEP "Erato", being a newly constructed RCHEP with an important number of sophisticated elements, has selected to install an automation system for managing building's energy. The installed system is a high-performance automation system for monitoring and managing the RCHEP building's devices and systems, including HVAC, lighting, hydraulics, water, electrical equipment and more. It utilizes open system standards to seamlessly integrate control and information systems within the

RCHEP. It is a simplified tool that offers the opportunity to RCHEP manager to have single-window control over building operations and all the relevant data required to maximize building performance. In addition, the installed system captures current and historical data for advanced analysis and reporting.

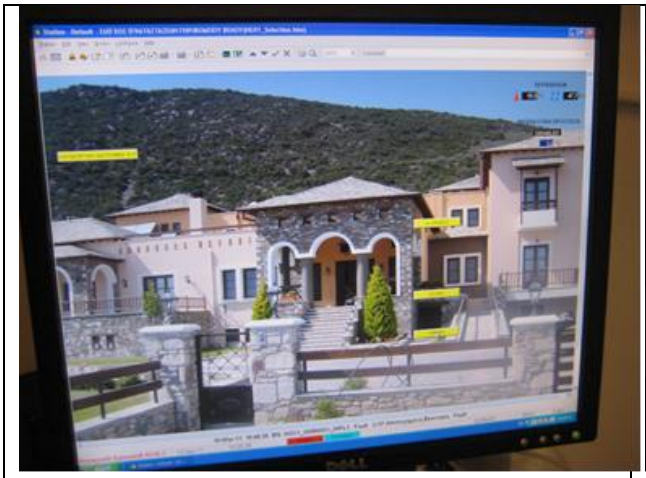
Key features of the installed system are (according to constructor):

- Management of the entire RCHEP from any network PC (manly the RCHEP's server),
- Flexible alarm management ,
- Comprehensive support of HVAC devices for problem diagnosis,
- Powerful analytic tools to enable easy identification of issues,
- Metrics on alarm activity and operator actions,
- More effective management-level reporting,
- Optimization strategies with business-level integration,
- Global scheduling for faster, more efficient system modifications.

Moreover, the installed system maintains an extensive historical record of building data collected at intervals over a virtually unlimited period of time, to help RCHEP to analyze long-term operational patterns and optimize building performance. Once collected, historical data is available for a wide range of reports and uses:

- Tracking and comparison of equipment operation across seasons,
- Comparing current versus historical performance data,
- Developing cost-of-operation spreadsheets,
- Integrating historical data into financial planning.

This specific good practice was not imposed by any existing policy framework; it was the innovative thinking and engineering background of the owners that led to the selection of installing such a system. Moreover, the fact that RCHEP is a new construction helped to the easy and quick installation of the system and to the compliance of the system with the HVAC system and other connected equipment.

	
External system depiction-links to each building's area	Basement system depiction

7/ Conclusion

The installed system, although providing important energy savings, has as primary scope for the RCHEP to provide the optimal internal conditions for the residents, regarding heating, cooling, ventilation and lighting. Nevertheless, it provides important energy savings since it optimizes the consumption in all areas of the RCHEP. For this case study RCHEP, energy expenses account around 7% of the total operating costs. This is lower than the average of the examined RCHEPs, despite being an institution with higher volume, providing important number of extra facilities, and that has important number of common spaces and generally provides luxurious services operating under private standards. The system was installed during construction in this, newly constructed RCHEP, so there are no energy data to the required comparison in order to define actual savings as a result of the system operation. Nevertheless, according to the provider, the energy management services can support the RCHEP to control and dramatically reduce those costs - often by 30% or more. As a result, Erato RCHEP can use those energy savings to improve its facility, make capital investments and improve its bottom line.

The installed building management system redefines what to expect from monitoring and control of the RCHEP's heating, ventilation and air conditioning equipment. The scalable, open system brings the building's occupant needs, operational issues and budget pressures into perfect balance. As a result, the RCHEP gets an unparalleled solution that helps simplify facility management, boost productivity and reduce costs. It offers the possibility to the manager control subsystems, access and analyse data, manage equipment maintenance, see Intranet and Internet pages and generate graphs, charts and reports directly from the desktop.

+ Annex to this report is the detailed action plan of this RCHEP.