CB 13 – Public Company for Persons Service – AZIENDA PUBLICA

Country : IT

SAVE AGE

Save Energy

green energy for elderly

SUMMARY

1.ASP Casa Pia V.Fossombroni

1/ Identification of the RCHEP

ASP Casa Pia V.Fossombroni
Piaggetta Faenzi - 52100, Arezzo (AR)
Dir. Stefano Rossi

2/ RCHEP main issues

The building is quite ancient. It was built in 15th century and it had last renovation in 2009 on heating system.

The walls are not the same for all part of building, they have some part with stone walls, brick walls and concrete walls, but anyway none of them have some insulation layer. Also in this case we have poor thermal performance that has negative impact on energy consumption.
Insulation is also bad due to fixtures. There are single glazed wood windows with big dimension. (see annex). Some windows has more than 2 square meters.

Historical building like this has also another big problem, the high of room. Some of the main room is 4mt height, this mean that one heat an unused space. This heated and unused space has a great impact on energy efficiency, in fact ASP V.Fossombroni compare with same similar buildings has more gas consumption (building heated with gas) and a very low electric consumption thank to a well efficiency lighting system.

There is no mechanical ventilation so staff need to open windows also in winter to let enter air from outside without any heat recovery. Natural ventilation is very common practise inside this RCHEP, every day the windows remain open for 30 minutes each, with an estimated 10% heat loss.

Cooling system is not centralized with some single splitter to serve only needed areas.
Also ASP Fossombroni has a very big laudry with several washing machines that anyway are fairly new and efficient, with hot water input on machines.
Staff need to open shower some minute before to wait hot water. This obviously means water wasting and low efficiency in domestic hot water system.
At the last heating system has low efficiency due to aged gas heater.

3/Action plan of RCEHP

The main goal is a complete replacement of fixtures with PVC double glazed windows.
ASP Fossombroni also need to improve thermal performance of facade with a thermal cladding for external an internal wall insulation. They can save up to 25.000€ per year.
Solar thermal could be very important to save energy for domestic hot water, also because it have the shortest payback time, to save up to 12.000€/years only for hot water cost.

The heater need to be replaced with a new condensation technology gas heater with high efficiency. This renovation and fixtures replacement has the shortest payback time among suggest improvement.

4/ Energy efficiency activities implemented in the RCHEP

ASP V.Fossombroni started in 2009 to replace fixtures with aluminium with thermal cut and PVC all double glazed.
In 2012 they renovate the centralized HVAC system with a new system more efficient to reduce natural ventilation needs and reduce heat loss.

Another good improvement was the installation of low emissivity external film on every big windows. The film block a part of sun radiation and reduce cooling needs for the higher floor during summer time.

5/ Behavioural measure for residents and visitors

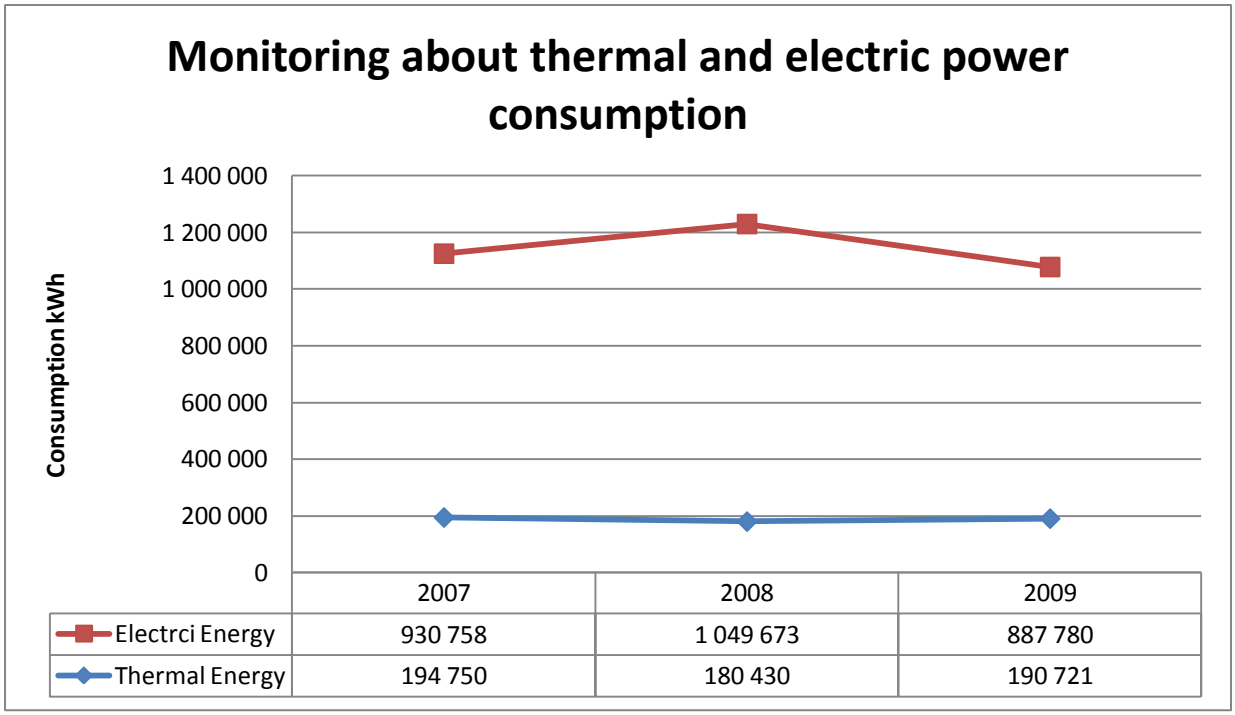
In ASP Fossombroni we promoted visible signs by SAVE AGE kit that we design and distribute to promote an improvement in sensitization and awareness about energy savings and efficiency. The kit has been printing right now, so we will start to distribute it next next week. (See the annex)

The kit has some tools as folder with rules and hint about energy efficiency aim to directors and managers, some folder for kitchen and laundry' staff and stickers for bathroom, hanged door.

SAVE AGE KIT will be very useful in laundry where panel give advice to the staff with behavioural rules that has been explained to the staff. In the future will be prefer medium temperature washing cycles instead of high temperature ones.

6/ Monitoring when available

We are waiting for updated data update to 2012. In 2010 ASP Fossombroni had a 15% of thermal energy decrease and little electric consumption increase. This probability come from a favourable climate but also thank to new well efficiency fixtures.
Update data will permit to confirm the attended trend.



7/ Conclusion

ASP V.Fossombroni has huge gas consumption compared to similar RCHEP due to an old heating system that they need to improve as soon as possible.

Anyway renovation on HVAC system will have a positive confirmation on gas consumption in winter and electric consumption in summer time when some ares need a cooling.
About this point we suggest to renovate the roof with ventilated solution to improve a natural heat extraction in summer.

Future measure should renovate the cladding all around the external wall. The brick and stone walls have very poor thermal performance.

2. ASP Istituto Casa Famiglia Cetona

1/ Identification of the partner

Via San Sebastiano, 16 - 53040 Cetona
Dir. Marusca Tonini

2/ RCHEP main issues

The building is really recent and it is one of few building with insulation layer. The building constructed in 1999, it was design with polystyrene and air cavity to improve thermal performance.

Since 2005 RCHEP Istituto Casa Famiglia, installed a photovoltaic panel on entire roof (see pictures in annex) in a 27kWp system. So building in quite efficient and energy consumption are very low compared to the other italian RCHEP partners.

Heating system is new and it use an efficient gas heater that anyway is not used to supply hot water to washing machine. In fact in laundry there are many equipment that produce hot water by electric energy, with high power consumption up to 30kW.

Other critic element inside RCHEP is refrigerator in the kitchen. Staff have many single refrigerators set up to different temperature, but SAVE AGE best practises have focused on more efficient solution like room refrigerator that are more efficiency. So we proposed this type of renovation for future improvement.
RCHPE has not mechanical ventilation that due heat loss to have inside air exchange during windows opening.

3/Action plan of RCEHP

Windows are in good condition with wood double glazed windows but fixtures without thermal cut that could be improved in next future.

Cooling system is not so efficient due to single splitter without external compressor that are less efficient than other technology like centralized cooling external group.
RCHEP needed also a temperature control system, to improve temperature uniformity and save thermal energy in some very hot elderly rooms and cold offices. By detailed action plan we proposed to general board to improve control system with automatic thermo valve on water heater.

We propose also to substitute single refrigerator with room refrigerator to save up to 30% of electric energy.
Finally we suggest to introduce solar thermal panel next to photovoltaic to save
on domestic hot water and gas.

4/ Energy efficiency activities implemented in the RCHEP

ASP Istituto Casa Famiglia decided to install a new temperature control system in 2011 to improve heat uniformity inside every areas of building thank to SAVE AGE action plan.
Next to this renovation general board decided to plan an extension of original building by an old near building that need a global renovation (see pictures in the annex). The board would like to move all the offices in new building and enlarge elderly common space. This new plan has required all economic attention during last year, so manager did not make any other improvement about the energy efficiency of the old building to install solar thermal panel on the roof of new building.

Anyway we can estimate a reduction of 5% in energy consumption thank to temperature control system, that will be confirmed as soon as we will have last year energy consumption data.

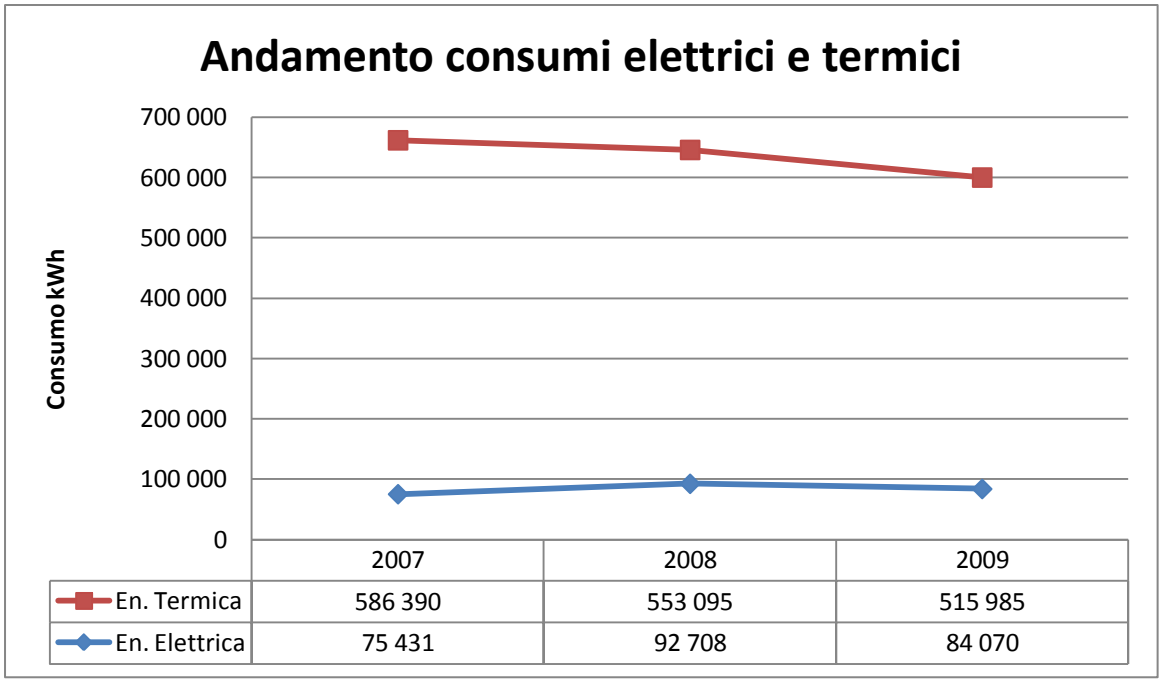
5/ Behavioural measure for residents and visitors

The manager is still continuing to stimulate the staff in right behaviour, mainly by controlling the windows open time during winter season.
ASP Istituto Casa Famiglia is using our visible signs of SAVE AGE kit that we design and distribute to promote an improvement in sensitization and awareness about energy savings and efficiency.
As soon as we will have some picture about italian partners with SAVE AGE KIT, we will add some of it into the annex.
Manager of ASP Istituto Casa Famiglia also organized meeting with staff to explain the SAVE AGE KIT panel that we distribute to promote right behaviour in laundry and kitchen.

6/ Monitoring when available

Thanks to the indicated retrofitting (new temperature control system) ASP Istituto Casa Famiglia has now very low energy consumption with a 13% decrease in thermal energy consumption between 2007 and 2009, but it is attended another energy reduction after 2011 due to renovation.

Next graph is update to 2009 and it show the trend of electric and thermal power consumption that seem to be flat and very low in the last two years.
As soon as we will have update data , we will insert them in the picture.



7/ Conclusion

ASP Istituto Casa Famiglia had good thermal consumption decrease in 2009, so general board but general manager invest in thermal regulation system in 2009 to have a quality comfort increase and an energy cost reduction. The RCHEP also will invest in a new solar thermal panel for future office building to provide also low cost hot water for elderly.

Thank to these measures, ASP Istituto Casa Famiglia reach a 13% of energy decreases until 2010 and new 5% in energy reduction will be possible thank to new regulation system, that forced staff to open windows also in winter in some very hot areas.
Now this RCHEP is one of the most efficient building we have in Italy among our partners.

3. ASP Giovanni XXIII

1/ Identification of the partner

Viale Roma, 21 - 40139 Bologna
Dir. Arch. Giovanni De Carolis

2/ RCHEP main issues

The ASP Giovanni XXIII is the biggest among italian partners with its 28.610 square meters. The building built in 1966 had some renovation during '70 and the last in 2009.
The main problem is the big size of RCHEP, with no insulation facade and wall, that have brick and some layer with beton. Thermal performance are quite poor.

Windows and doors are in wood or aluminium without thermal cut and single glazed, so all the perimetric wall has a lot of thermal bridges. Also the roof have no insulation layer, so the higher floor have a huge amount of heat that is a real problem in summer.

In 2000 ASP Giovanni XXIII installed an external HVAC system to cool a part of the building but unfortunately it was undersized that result in many single external splitter to cool other areas in summer. This solution was very bad and the consequence was a big increase in energy consumption.

There was no mechanical ventilation so staff need to open windows also in winter to let enter air from outside without any possible heat recovery exchange.
Heating system is quite recent, and it use gas heater with good efficiency (see annex).

3/Action plan of RCEHP

We produced an action plan to reduce energy consumption with this renovation:
Solar thermal could be very important to save energy for domestic hot water, also because it have the shortest payback time, to save up to 70.000€/years only for hot water cost. Heat water cost is a serious issue due to the huge number of elderly inside the RCHEP something like 800.

Every day ASP Giovanni XXIII consume about 55.000 lt of hot water, without inside laundry.
ASP Giovanni XXIII also need to install a thermal cladding for external an internal wall insulation. They can save up to 70.000€ per year with an estimated global cost of 400.000€.
New windows with PVC and double glazed could reduce heat loss, reducing the energy cost.
We have also to consider that ASP Giovanni XXIII is one of the most efficiency RCHEP in Italy despite of its size.

We also suggest to this RCHEP to implement a cogeneration system to produce both heat and electric energy and cover a part of energy need. This could be very profitable for ASP Giovanni XXIII due to real big size and high energy demand.

4/ Energy efficiency activities implemented in the RCHEP

ASP Giovanni XXIII thank to SAVE AGE has started some renovation activities that will continue in 2013.

First of all starting from 2011, general board needs to remove asbestos in a RCHEP's wing. New roof is sandwich with thermal insulted and ventilated that delivery a real gain even in winter (reduce heat loss) and in summer (thank to ventilation). New roof reduce the cooling needs during summer time , so power consumption will decrease. (see annex for pictures).
In 2012 ASP Giovanni XXIII installed new HVAC ventilation unit with heat recovery to reduce natural ventilation need and heat loss. (see annex pictures). Also in 2012 they installed the first LED lamps inside the elderly rooms. They gradually substitute every lamps in next 3 years.

In 2013 it is attended a new renovation of an entire wing of the building. ASP Giovanni XXIII will install 3000 square meter external thermal cladding to reduce heat loss of the area. It is expected a saving of 20.000€ per year.

5/ Behavioural measure for residents and visitors

In 2012 thanks to SAVE AGE some managers had a training in energy efficiency to increase them awareness about this topic and mainly to improve they managing capability about energy issue of the RCHEP.

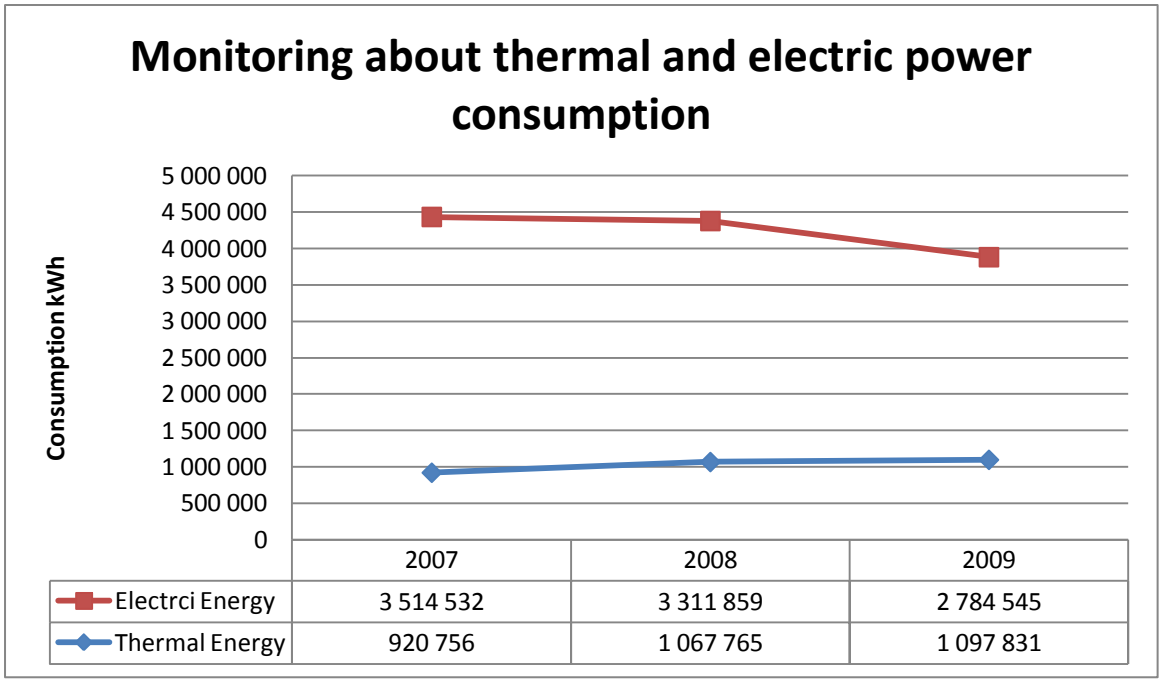
In Italy to promote visible signs in all its partners and many other RCHEPs by a SAVE AGE kit that we design and distribute to promote an improvement in sensitization and awareness about energy savings and efficiency. The kit has been printing right now, so we will start to distribute it next next week. (see the annex)

The kit has some tools as folder with rules and hint about energy efficiency aim to directors and managers, some folder for kitchen and laundry' staff and stickers for bathroom, hanged door.

As soon as we will have some picture about italian partners with SAVE AGE KIT, we will add some of it into the annex.

6/ Monitoring when available

We are waiting for updated data update to 2012. In 2011 ASP Giovanni XXIII had a 12% of thermal energy decrease and 5% increase of electric energy consumption due to new HVAC unit.
Starting from the last months of 2013, is attended a decrease in gas consumption and an important gas consumption decrease thank to new thermal cladding on external facade.



7/ Conclusion

ASP Giovanni XXIII has great gas consumption due to poor walls thermal performance and natural ventilation need, that force employees to open windows also in winter.
ASP Giovanni XXIII will invest 120.000€ in a new thermal cladding, and 40.000 to build new ventilation system.

A wing of building is now have an insulated roof with ventilation to extract heat in summer time. This roof allow also to reduce cooling energy consumption.
Future measure should implement a gas cogeneration system to save a huge amount of gas and electric energy and provide the main part of RCHEP's energy needs. Anyway this is a real big investment about 1 milion of euros.

4. ASP Istituto Maria Redditi

1/ Identification of the partner

Via Salvador Allende n. 1 – Torrita di Siena

Dir. Lucia Mazzetti

2/ RCHEP main issues

The building is really recent. It open in 2009, so during the monitoring phase we had only 2009 and 2010 energy consumption data.

ASP Istituto Maria Redditi has insulated wall with polystyrene and concrete.

Since 20059 RCHEP ASP Istituto Maria Redditi, had big problem with heating system and electric system. The first had tremendous energy cost, even in summer and hot season, despite of an efficient new gas heater. About electric system they had and have until today big problems with reactive energy consumption.

RCHEP has other issue in kitchen and in laundry where there are many equipments that use electricity to heat the water without hot water come from gas heater, with very high electric power consumption effect. About kitchen staff use many small refrigerator that "eat" the same electric power of bigger room refrigerator. So we proposed this type of renovation for future improvement.

RCHPE has mechanical ventilation to provide air exchange and cooling capabilities in summer season. Unfortunately systems was oversized, so motor power and no inverter technology delivery the actual problems on high reactive energy level.

3/Action plan of RCEHP

Windows are in good condition but there are many single glazed fixtures, in aluminium without thermal cut that could be improved in next future.

RCHEP needed also a temperature control system, to improve temperature uniformity and save energy in some very hot elderly rooms and cold offices. In detailed action plan we proposed to improve control system with automatic thermo valve on water heater.

We propose also to substitute single refrigerator with room refrigerator to save up to 30% of electric energy.

We finally suggest to introduce solar thermal panel to save energy on domestic hot water.

Furthermore, electric system need to be fixed about the high reactive energy consumption probably due to oversized ventilation motor that could do electric load unbalancing with consequent high cost.

4/ Energy efficiency activities implemented in the RCHEP

ASP Istituto Maria Redditi fixed some issue during 2010 and 2011 trying to reduce energy consumption. Reactive energy is now monitored by a specific analysis that aim to find to source of the problem.

RCHEP will not invest in kitchen and laundry because the district with hall are scheduling to build up a new centralized building to provide cooking and laundry service to the public building of the area.

General board is going to invest in roof improvement, using the large areas for a solar thermal system to reduce gas consumption. Actually they are in a preliminary analysis phase, but there is the will to complete this measure.

5/ Behavioural measure for residents and visitors

This is the main element where RCHEP will invest in next future, by stimulating right behaviour staff, and controlling the windows open time during winter season. In fact even there is mechanical ventilation, staff usually open the windows some minutes in the morning.

ASP Istituto Maria Redditi will improve its staff behaviour by using our SAVE AGE kit content to improve and sensitize awareness and efficiency (refer to annex to see SAVE AGE KIT panels for kitchen, laundry and elderly rooms.

As soon as we will have some picture about italian partners with SAVE AGE KIT, we will add some of it into the annex.

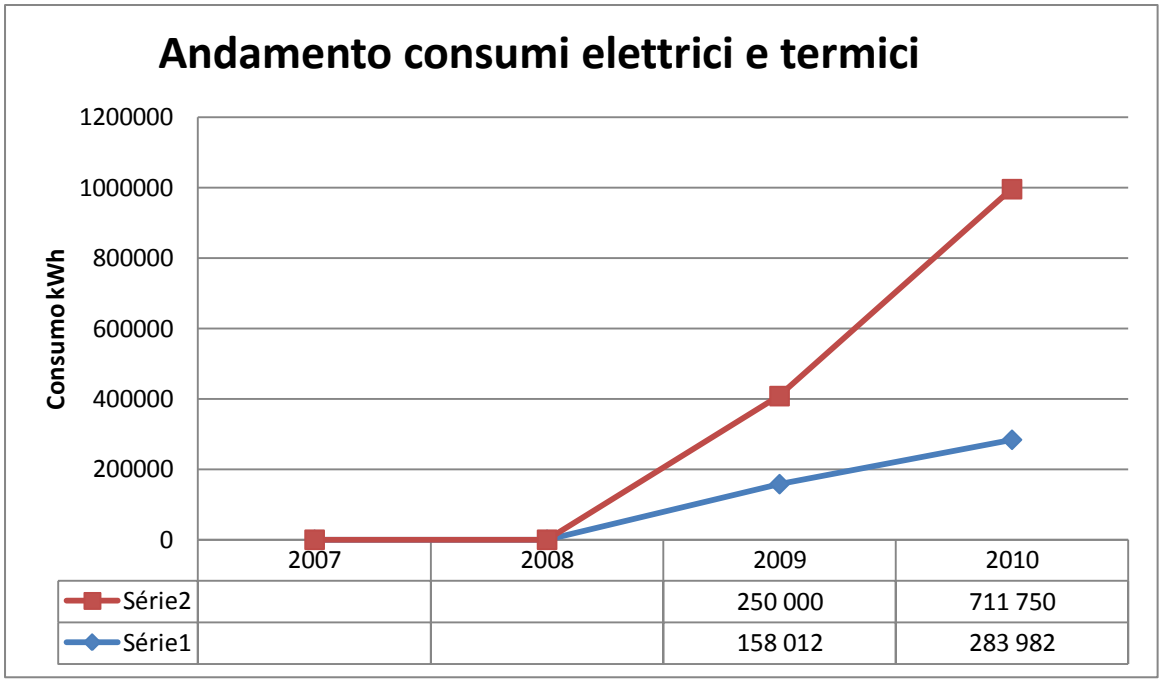
Manager of ASP Istituto Maria Redditi continuous promote awareness for staff with meeting and frequent check on equipment use.

6/ Monitoring when available

Today we don’t know if the introduced measures have giving back an energy consumption decrease.

As soon as we will have update data, we will know the result and the effective energy saving, but we can estimate a 5% of energy consumption reduction.

Next graph is update to 2010. Starting from 2009, when RCEP started its activity, trend seem to increase, but we consider that 2010 is the first entire year of activity, that need to be compared with 2011 and 2012 data. As soon as we will have update data , we will insert them in the picture.



7/ Conclusion

ASP Istituto Maria Redditi had an important thermal consumption increased between 2009 and 2010. General board might invest in a roof renovation introducing solar thermal panel to provide low cost hot water for elderly.

Also kitchen and laundry need to be improved but probably during 2014, the district will have a completely new building to centralize cooking and laundry services, so there is not much time to cover the payback time of every investment on these areas.

RCHEP also introduce some measure on electric system to reduce reactive energy consumption and the cost of electric energy.

We also need to confirm our estimation about potential saving, but we think 5% could be a realistic estimation.

5. ASP L.Martelli

1/ Identification of the partner

Via della Resistenza 99 - Figline Valdarno

Dir. Daniele Raspini

2/ RCHEP main issues

The building is ancient, and it was built in the first years of 20th century. ASP Martelli has some part with stone walls and other part in concrete walls, but anyway there is no insulation layer everywhere. So also ASP Martelli has an relevant heat loss. Fixtures are quite good, with double glazed aluminium without thermal cut windows.

Heating system is very efficient, the gas heater has high efficiency near to 98%.

Another problem is related to hot water system. ASP Martelli has very high hot water usage. Staff need to open showers some minutes before to wait hot water. So there are wasted water for every elderly's shower.

There is centralized HVAC, but ventilation it is not used so staff open windows in winter time to improve air quality losing a lot of heat. Heating system have a centralized control, so in winter there very hot temperature in office and higher floor and colder zone. It is frequent to find opened windows in winter time to cool some rooms.

Lightning system need to be improved with more efficient lamps, have motion sensor to avoid always switch on lamps during daylight time.

Laundry has a lot of machines : 2 dryers and 4 washing machines. The main part of laundry's equipments use electric energy to produce and this surely influence electric power consumptions. If we consider the consumption of all laundry equipments, installed electric power is about 70kW, very high power consumption, that is responsible of about 15% of yearly electric power consumption.

3/Action plan of RCEHP

Action plan for ASP Martelli, provide the main needed renovation to improve energy efficiency. The first points are lighting system improvement with LED technology introduction.

Solar thermal panel could save a lot of gas, so ASP Martelli could save up to 10.000€/years only for domestic hot water cost, this renovation has the shortest payback time in the scheduled action plan.

Future improvement could look at cogeneration system with gas micro turbine to produce hot water and electric energy to feed and provide the main energy needs of the RCHEP.

Washing machine replacement could provide high potential saving due to high electric power demand. Future equipment should prefer gas dryers and washing machine with hot water input from hot water system.

4/ Energy efficiency activities implemented in the RCHEP

ASP Martelli has already decided to install solar thermal panel. You can see a rendering of what it will be , in the annex pictures.

The system will have 5 solar thermal panels to produce up to 1000lt hot water per day. Surface will have about 10 square meters.

Training session to improve awareness for laundry and kitchen staff, to sensitize in using more efficiency work organization, to prefer medium temperature washing cycle and to modify cooking organization to reduce heating food trolley time usage.

General board is evaluating the installation of new thermoregulation system to improve temperature uniformity at every floors and between rooms at the same floor. The action plan aim to install a remote thermo regulator controller on every water heater to control it from a centralized board.

5/ Behavioural measure for residents and visitors

We print and distribute visible signs in all our partners and many other RCHEPs by a SAVE AGE kit to promote and improve sensitization and awareness about energy savings and efficiency in staff focusing on kitchen and laundry staff. The kit has been printing right now, so we will start to distribute it as soon as possible. (see the annex for kit content).

The kit is composed by some different tools as folder with rules and hint about energy efficiency for strategic energy efficiency investment, some folder for kitchen and laundry' staff and stickers for bathroom, and elderly rooms and hanged doors.

As soon as we will have some picture about italian partners with SAVE AGE KIT, we will add some of it into the annex.

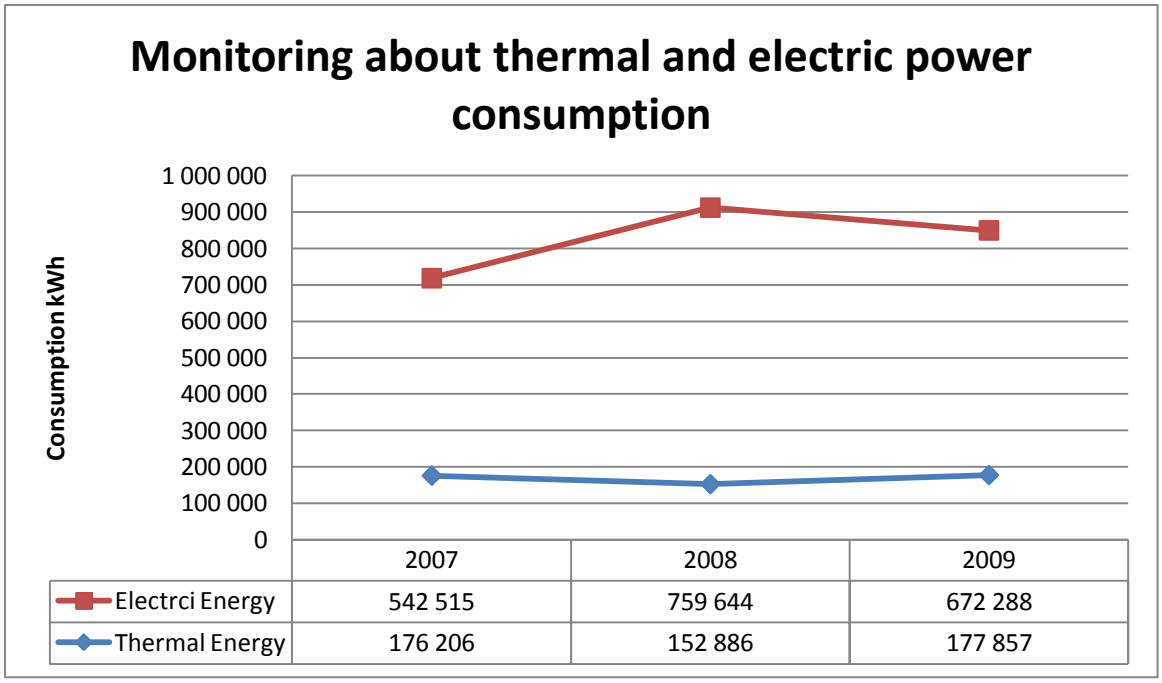
By the way about energy consumption of laundry and kitchen, we organized meeting with staff to analyze the main causes of power consumption and we have proposed advice for correct equipment use. Kitchen and laundry staff will also have specific panel with power consumption data of its equipments and the right behaviour to save energy.

6/ Monitoring when available

Data consumption will be update to 2012. In 2008 ASP L.Martelli had a 20% increase in thermal energy consumption, due to exceptionally cold climate. In last three years 2010-2012 we attend a global decrease in consumption thank to greater attention and sensitize of staff, and better temperature control inside the RCHEP. New thermal controller will ensure at least 5% of energy reduction.

In 2013 with solar thermal panel system that will be installed till the end of June a 15% of thermal energy consumption reduction is attended.

Electric power consumption is quite constant in last three years. This means that lightning system and cooling are still efficient.



7/ Conclusion

ASP L.Martelli has an important heat loss due to the age of the building and no insulation layer inside the external walls. This RCHEP will implement solar thermal and automatic thermal regulation system to reduce its energy consumption.

Solar thermal system will allow to reduce thermal energy demand up to 15% yearly,

ASP Martelli will also start to build a completely new area to increase capability in 2014-2015. The new area will affect also the existing part that will be improved with complete thermal cladding for the new section and a partial thermal cladding for the oldest area.

Electric power consumption could be reduce through a laundry equipments and lightning system renovation, that will be take in account for next purchase.

6. ASP Casa di riposo della Misericordia

1/ Identification of the partner

Via Dante Alighieri n° 7 – Siena
Dir. Silvia Guerrini

2/ RCHEP main issues

The building is rather new but they do not have insulation inside the wall, very common for RCHEP buildings in Italy. ASP Casa di riposo della Misericordia is one of the most performance parteners buildings. They have the lowest energy consumption about thermal energy among italian partners. Thank to the detailed action plan, we focus the good energy performance on the difference between this RCHEP and the other ones. ASP Casa di riposo della Misericordia is the only RCHEP that has solar thermal panels to produce domestic hot water, and this is the main reason to the good thermal energy performance.

Anyway it has not mechanical ventilation that due heat loss to have inside air exchange with windows opening.

Water piping system is quite new but staff need to wait hot water. So RCHEP installed recirculation pumps to solve this issue and save water and energy.

3/Action plan of RCEHP

Windows are in good condition with wood double glazed windows but single glass and some areas that could be improved with PVC double glazed windows.

The roof was an important element. RCHEP need to renovate it to reduce heat loss in higher floor and insulation in summer time. We suggested to install ventilation roof type to facilitate heat extraction.

RCHEP needed also a temperature control system, to improve temperature uniformity and save thermal energy in some very hot elderly rooms.

External cladding could save a lot of energy up to 25% of thermal energy cost, with a payback time of 7 years.

4/ Energy efficiency activities implemented in the RCHEP

ASP Casa di riposo della Misericordia invest in 2009 in solar thermal panel to reduce domestic hot water cost.

In 2010 RCHEP also renovate the roof, but unfortunately they do not have financial capabilities to install also thermal cladding, so general board postpone this operation thinking to an insulation of not heated attic, to preserve as much heat loss as insulated roof. They will schedule this operation for the next year.

ASP Casa di riposo della Misericordia also installed thermal valve on water heater in 2011. They achieve 7 temperature zones. Thank to new control system they can now set up different temperature in each zone to avoid energy wasting.

The manager also try to improve staff behaviour with advice for kitchen and laundry staff. Manager also check staff behaviour in every elderly rooms, calling back anybody that leave the windows open. So there is a lot of attention in staff behaviour to keep attention high improving any saving aspect.

5/ Behavioural measure for residents and visitors

In Italy to promote visible signs in all its partners and many other RCHEPs by a SAVE AGE kit that we design and distribute to promote an improvement in sensitization and awareness about energy savings and efficiency. The kit has been printing right now, so we will start to distribute right now. (see the annex)

The kit has some tools as folder with rules and hint about energy efficiency aim to directors and managers, some folder for kitchen and laundry' staff and stickers for bathroom, hanged door.

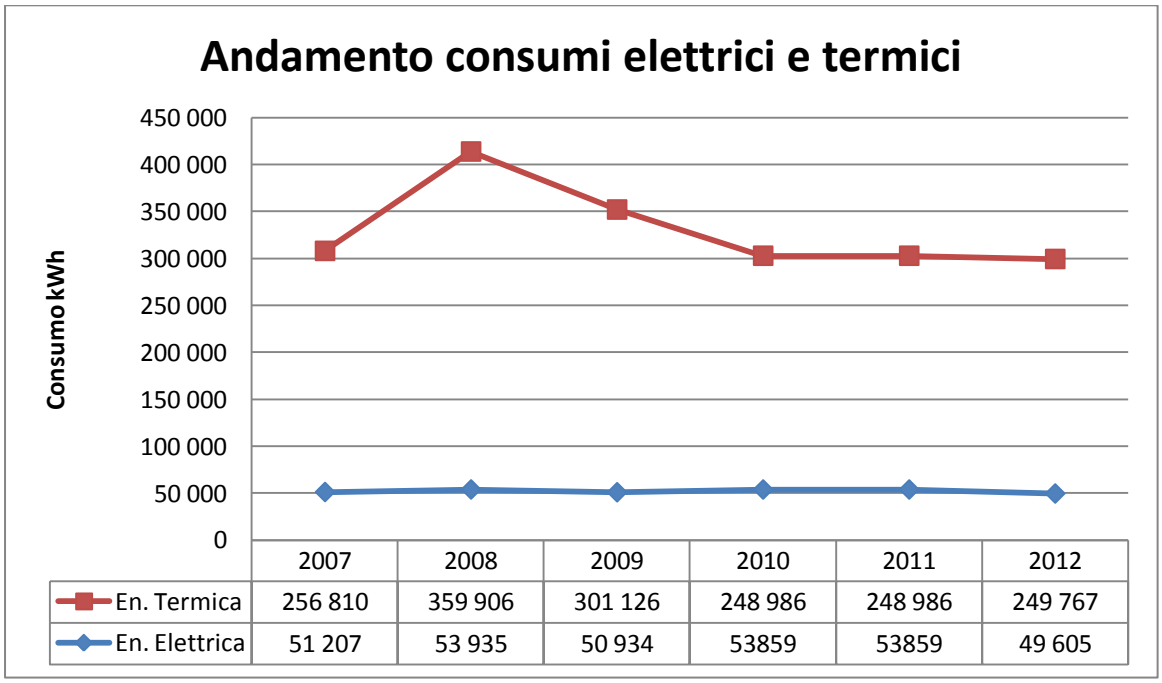
As soon as we will have some picture about italian partners with SAVE AGE KIT, we will add some of it into the annex.

By the way about energy consumption of laundry and kitchen, RCHEPS also organized some meeting with staff to improve equipment use and for example temperature setting in washing machines.

6/ Monitoring when available

Thanks to the indicated retrofitting (solar thermal panel and in 2011 new temperature control system) ASP Casa di riposo della Misericordia has the lowest energy consumption with a 25% decrease in thermal energy consumption between 2009 and 2011.

Next graph is update to 2012 and it show the trend of electric and thermal power consumption that seem to be flat and very low in the last two years.



	2007	2008	2009	2010	2011	2012
En. Termica	256 810	359 906	301 126	248 986	248 986	249 767
En. Elettrica	51 207	53 935	50 934	53859	53859	49 605

7/ Conclusion

ASP Casa di riposo della Misericordia had high thermal power consumption in 2007, so general board decide to reduce energy cost with some measure. The RCHEP invested in energy saving, with new solar thermal panel in 2009. They retrofit the roof in 2010, but postpone the insulation of attic for next year to have financial capabilities to invest.

In 2011 RCHEP also installed a thermal control system to avoid temperature mismatch between different areas. Managers also stimulate good behaviour in laundry and kitchen to avoid energy waste due to bad equipment use.

Thank to these measures, ASP Casa di riposo della Misericordia reach a 25% of energy consumption reduction and this RCHEP is the most efficient building we found in Italy among our partners.

7. ASP Pio Istituto Campana

1/ Identification of the partner

Via F.Donati 100 – Seravezza (LU)
Dir. Eugenia Stefanini

2/ RCHEP main issues

The building is on two building, one for residential care home and one for office. This last one was very ancient and not efficient, so there was a lot of energy due to a bad use of office buildings.

The main building wall has no insulation with two brick rows without any other internal cavity.

The main problems about the energy performance are the bad thermal performance of the walls and the huge number of not efficient washing machine with inside electric water heating. The heating system is quite new with good performance gas heater. It could be very profitable to introduce equipments with hot water input from the external water system.

There is no mechanical ventilation so staff need to open windows also in winter to let enter clean air from the outside without any possible heat recovery exchange.

ASP Pio Campana has a new project about a complete renovation of the main building to increase also the number of elderly rooms and the number of beds. The renovation will start in 2014, and the company will build a complete new extra area and a complete renovation of the actual main building. Fortunately they do not have any constrains about historical buildings.

The heating is quite new and fairly efficiency, but the boiler was very old and bad condition external insulation. The cost about domestic hot water is getting higher due to this issue, because the boiler can loss part of the heat of the water inside.

3/Action plan of RCEHP

Solar thermal could be very important to save energy for domestic hot water, also because it have the shortest payback time, to save up to 12.000€/years only for hot water cost.

ASP Pio Campana also need to install a thermal cladding for external an internal wall insulation. They can save up to 20.000€ per year.

The laundry need to became more efficient with behavioural changes and with a more accurate control on water and electric energy consumption of every washing machine, to check every not justified changes in power consumption.

The boiler has to be replaced with more efficient one, to avoid heat loss due to bad insulation.

4/ Energy efficiency activities implemented in the RCHEP

ASP Pio Campana has built a new office building where they has installed a completely new heating system with an high efficient Mitsubishi Q-ton heat pump (see picture) for domestic hot water and heating system.

The old boiler has been replaced with a new one (see picture) , so thermal loss has been cut off.

Pio Campana RCHEP will start in 2014 to build the new area and renovate the existing one. The design phase has already implemented a new solar thermal system Viessman, with 12 square meter of panel to produce up to 1600 lt hot water every day. It could cover about 80% of daily hot water needs.

Manager installed In the laundry and in the kitchen two meter to measure and keep track of the heat and electric consumption of these areas. Any unexpected energy consumption variation will be simply find and analize.

5/ Behavioural measure for residents and visitors

In Italy to promote visible signs in all its partners and many other RCHEPs by a SAVE AGE kit that we design and distribute to promote an improvement in sensitization and awareness about energy savings and efficiency. The kit has been printing right now, so we will start to distribute it next next week. (see the annex)

The kit has some tools as folder with rules and hint about energy efficiency aim to directors and managers, some folder for kitchen and laundry' staff and stickers for bathroom, hanged door.

As soon as we will have some picture about italian partners with SAVE AGE KIT, we will add some of it into the annex.

ASP Pio Campana has high energy consumption in the laundry, so the behavioural rules indicated on the SAVE AGE laundry panels has been explained to the staff. In the future will be prefer medium temperature washing cycles instead of high temperature ones.

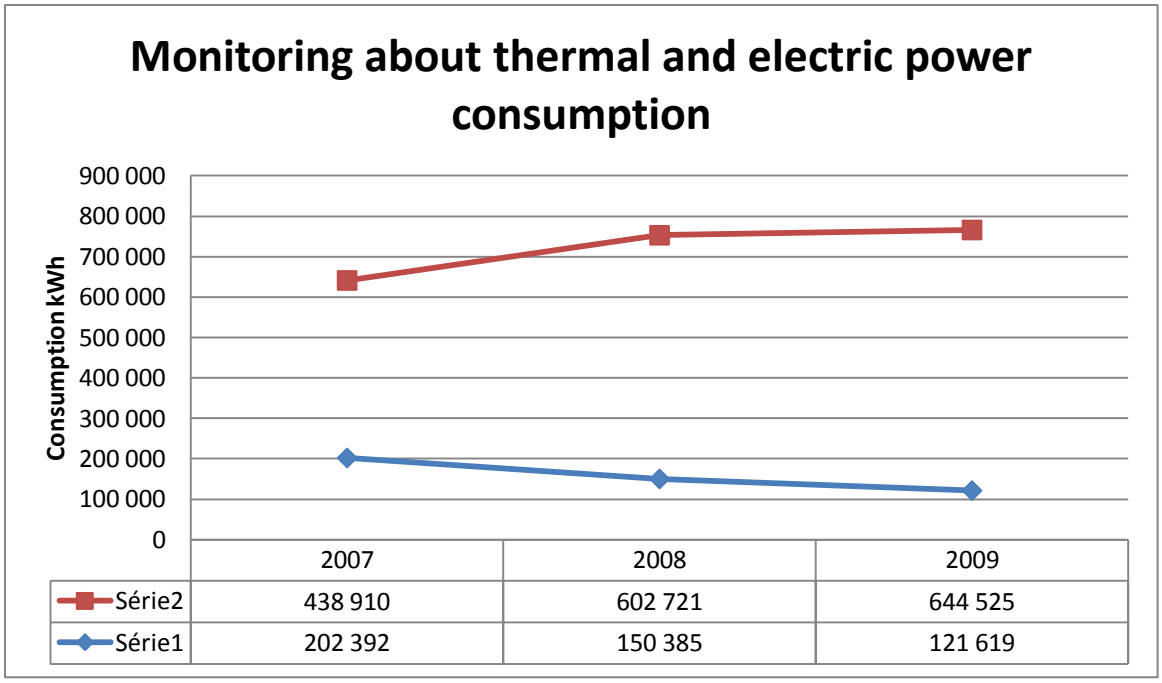
New washing machine will be buy with hot water input, to reduce dramatically electric consumption on every cycle.

6/ Monitoring when available

We are waiting for updated data update to 2012. In 2010 ASP Pio Campana had a 15% of thermal energy increase and 50% decrease in electric energy consumption.

Starting from the last months of 2012, is attended a decrease in gas consumption and an increase of electric consumption due to the new office building that are heated by high efficiency heat pump, while the old gas heated building is now close and unsed.

With new boiler it is attended a 5% of energy saving, while new solar thermal panel can achieve another 15% of energy saving but only in 2014.



7/ Conclusion

ASP Pio Campana has great gas consumption due to an old hot water boiler that has been replaced with a new more efficient one.

ASP Pio Campana has started to design an extension of the main building, where will be invest up to 20.000 for a new solar thermal systems, and 50.000 to realize a thermal cladding for the new sector of the building. The new areas will be more energy efficiency, but we need to wait in 2014 to see the results.

The new building will have also an insulted roof with ventilation to extract heat in summer time. This roof will allow also to reduce cooling energy consumption.

Future measure should renovate the cladding all around the external wall. The brick wall have very poor thermal performance.

8. APSP S.Chiara

1/ Identification of the partner

Borgo S. Stefano, 153 56048 Volterra (PI)
Dir. Fabrizio Calastri

2/ RCHEP main issues

The building is very ancient with external brick wall and internal stone wall with no insulation. The walls are very thick between 30 to 60cm.

So the main problem is automatically the thermal performance of the walls the has an estimated thermal transmittance of 0.25m^2K/W, very high value.This produce one of the highest energy consumption for italian RCHEPs.

Other big issue concern about energy consumption is the low efficiency of gas heater that co-participate in energy cost arising.

Heating system has a poor centralized control, so staff denote very hot temperature in some rooms and cold areas elsewhere. This issue bring staff to open windows to reduce temperature, with obvious low efficiency.

There is no mechanical ventilation so staff need to open windows also in winter to exchange air with consequent heat loss. Water piping system is quite old. Staff need to open showers some minutes before to wait hot water. So there are wasted water for every elderly's shower, so hot water estimated cost are very high.

As many other buildings also Volterra city have many historical place with a lot constrains about visible aspect of the buildings. Also ASPS S.Chiara has many constrains so they can't save energy by installing solar thermal panel on the roof., even thought the building has a great potential saving by solar thermal energy.

3/Action plan of RCEHP

The first renovation we suggest was a thermal cladding to improve wall performance.

Also solar thermal could be very important to save energy for domestic hot water, with a short payback time. This can save up 10.000€/years only for hot water cost.

APSP S.Chiara also need to install more efficient centralized an accurate control heating control system so we suggest ThermoZYKLUS systems to reduce temperature unevenness using also wireless features.

4/ Energy efficiency activities implemented in the RCHEP

APSP S.Chiara implemented some measure but a lightning system improvement with some new high efficiency and LED lamps (see annex).

Other renovation like solar thermal and the installation of external blinders are not possible in this RCHEP, due to historical constrains before explained. Also for this reason administrative board of ASP S.Chiara, is trying to move in other area with no or less constrains.

ASP S.Chiara are not able to make more renovation due to a hard finance situation that limit any type of investment.

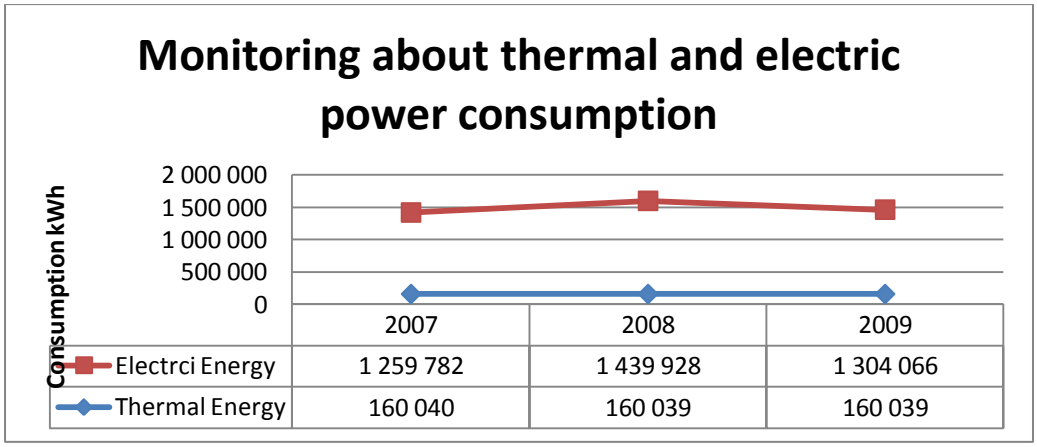
5/ Behavioural measure for residents and visitors

Also in this RCHEP we promote visible signs by a SAVE AGE kit that we design and distribute to promote an improvement in sensitization and awareness about energy savings and efficiency. We will start to distribute it next week. (see the annex)
As soon as we will have some picture about italian partners with SAVE AGE KIT, we will add some of it into the annex.

The ASP has already introduce their own visible signs and recommendations for their staff, to improve sensibility and awareness.
ASP S.Chiara has external kitchen and laundry service so, it is not useful to schedule training training session for the staff.

6/ Monitoring when available

We are waiting for updated data to 2012. In 2007-2009 ASP S.Chiara had the same average thermal energy consumption and almost the same electric energy consumption.
We will update these data with 2011 and 2012 for a more accurate analysis about energy consumption trend.



7/ Conclusion

ASP S.Chiara has big issue due to the age of the building. The budget is the main issue for this italian RCHEP. Economic crisis and political issues are decreasing elderly in this RCHEP. Furthermore any technical renovation like solar thermal panels and external cladding is contrasted by public officers and laws.

The actual situation for S.Chiara RCHEP is not so clear, so managers and staff prefer to understand their future before decide to invest on energy efficiency or otherwise look for another building where renovation and energy saving are really possible.

9. ASP S.Domenico

1/ Identification of the partner

Via Colle dei Fabbri n. 8 – Pescia (PT)

Dir. Riccardo Pergola

2/ RCHEP main issues

The building is very ancient so the thick stone wall has no insulation, very common for RCHEP buildings in Italy. The main problems about the energy performance are an oldest heating system based on hot water heater and fan coil for common rooms. There is no mechanical ventilation so staff need to open windows also in winter to let enter clean air from the outside without any possible heat recovery exchange. Water piping system is quite old. Staff need to open showers some minutes before to wait hot water. So there are wasted water for every elderly's shower. The cost for hot water are very high, also due to heating system.

Other problem come from constrains about ancient origin of the building. Managers need to have a permission from superintendence for cultural heritage that allow to install panel. The building have a great potential saving using solar thermal panels. In fact they have a huge area on the roof south slope that could be cover with panel for domestic hot water.

3/Action plan of RCEHP

Heating system have an old and low efficiency oil heater, that need to be replaced with a new gas high efficiency heater (see annex).

Solar thermal could be very important to save energy for domestic hot water, also because it have the shortest payback time, to save up to 10.000€/years only for hot water cost.

ASP S.Domenico also need to design and install a thermal cladding for external an internal wall insulation. They can save up to 15.000€ per year.

Some areas have single glazed windows that should be substitute with a double glazed windows with thermal cut.

4/ Energy efficiency activities implemented in the RCHEP

ASP S.Domenico need to renovate a part of the building. The renovation start during last months of 2013. During this renovation, managers will install PVC double glazed windows to improve insulation.

RCHEP S.Domenico has already bought a new high efficiency (condensing technology) gas heater. They will have the new heating system till the end of June.

S.Domenico's Managers have also tried to find some founds to install solar thermal panel on the south pitch roof. They have an authorization from superintendence to install integrated solar thermal panel. The foundation, that have an administrative role in ASP S.Domenico thanks to SAVE AGE project and action plan, agree to provide found for this improvement. So till the end of 2013 ASP S.Domenico

will install a new solar thermal panel to save energy on domestic hot water, and a new recirculation pumps to provide immediately hot water in bathrooms and save also hot and cold water (see annex).

5/ Behavioural measure for residents and visitors

In Italy to promote visible signs in all its partners and many other RCHEPs by a SAVE AGE kit that we design and distribute to promote an improvement in sensitization and awareness about energy savings and efficiency. The kit has been printing right now, so we will start to distribute it next next week. (see the annex)

The kit has some tools as folder with rules and hint about energy efficiency aim to directors and managers, some folder for kitchen and laundry' staff and stickers for bathroom, hanged door.

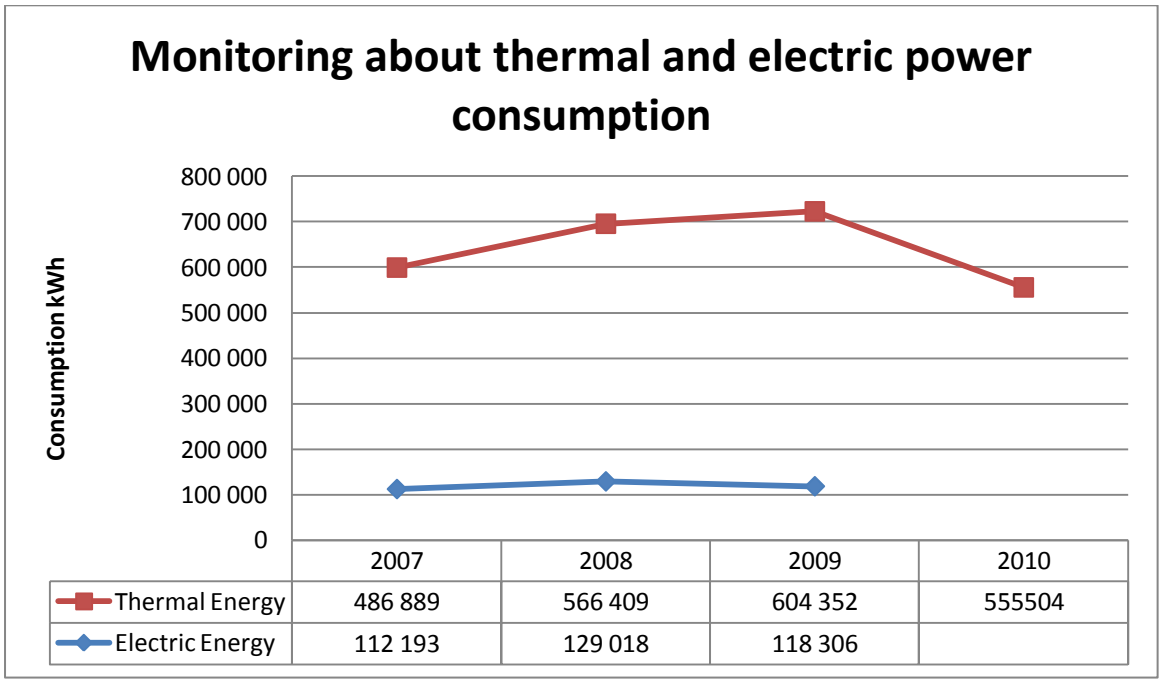
As soon as we will have some picture about italian partners with SAVE AGE KIT, we will add some of it into the annex.

By the way about energy consumption of laundry and kitchen, we have also organized some meeting with staff to analyze the main causes of power consumption and we have proposed some advice for equipment substitution by preferring gas oven instead of electric one, and washing machine that can draw hot water from hot water system instead of using electric resistance to heat water for washing cycle. Kitchen and laundry staff will also have a specific service panel with power consumption data of its equipments and the right behaviour to save energy and detergent.

6/ Monitoring when available

We are waiting for updated data up to 2012. In 2010 ASP S.Domenica had a 10% decrease in thermal energy consumption due to new double glazed windows.

With new gas heater by the end of Juve, it is attended a 20% of cost saving and 15% of energy saving, while new solar thermal panel can achieve another 15% of energy saving by the end of the year.



	2007	2008	2009	2010
Thermal Energy	486 889	566 409	604 352	555504
Electric Energy	112 193	129 018	118 306	

7/ Conclusion

ASP S.Domenico has big issue due to the age of the building. The RCHEP have some money to invest in energy saving, with external thermal coating on the roof and on the wall and installing solar thermal panel on the roof. Despite of this, they are bounded by the law and by superintendence that must monitor on cultural heritage like many italian RCHEP's building.

Unfortunately in Italy we have laws that require the implementation of energy saving measures and other laws that obstacle this implementation. This is an important barrier in energy saving processes for almost all the RCHEP. The budget is the second issue for any italian RCHEP.

Anyway we observe that all the italian managers in RCHEP prefer to invest on equipments rather than low cost measure as staff training.

After many years and many troubles, they finally had an authorization by town hall to install solar thermal panel. ASP S.Domenico is now looking for a company to install the new system.

Future measure should renovate the cladding on external wall. The stone wall are very thick but there are a lot of splay that reduce thermal conductibility. Future activities should aim to install a thermal cladding on external wall and to prosecute a renovation on the windows with double glazed type with thermal cut.

10. Centro di degenza Domus Meridiana

1/ Identification of the partner

Via Sottomonte 4, 39055 Laives (BZ)
Dir. Marco Maffeis

2/ RCHEP main issues

The building is new, it was finished in 1996 and it had a first renovation in last years. Centro di degenza Domus Meridiana, the only RCHEP partner in north area of Italy, near Bolzano, and it has a particular climate, very cold in winter and very hot in summer.

The building has an important insulation with double air cavity and glass fiber for 35cm of total thickness. They have aluminium fixtures with thermal cut and double glazed windows.

So this RCHEP has the best building envelope we found in SAVE AGE italian partners but despite of this, they also have the worst energy consumption performance.

During winter there are some areas on highest floor colder that the lower floor, probably due to the presence of unheated space under the roof. This space is a technical shaft for ventilation and cooling system.

Heating system is efficient, the gas heater has high efficiency near to 95%.

The main issue is electric energy consumption that is very high related to building area, while gas consumption is quite good and in line with the italian average. So it is important to search main issue in electric equipment, that some analysis has been found in cooling system.

In fact building has a very good behaviour in winter season with good insulation, but very bad behaviour in summer time, when the heat enter through large windows and it have not any way out or extraction system as well as cooling system that need to keep on continuously in summer.

Centro di degenza Domus Meridiana has not very high hot water usage. Water system is very efficient with no water waste during elderly's shower.

Lightning system is quite efficient with tubular fluorescent lamps that are substitute thank to an efficient management services. Some area have motion sensor to avoid always switch on lamps during daylight time.

This RCHEP has not an internal laundry service, so there is not washing machine. Any service is completely externalized.

3/Action plan of RCEHP

Action plan for Centro di degenza Domus Meridiana, aim to reduce electric energy consumption due to overheating in summer.

The first measure should be to provide some shield for all glass surface to reduce heat access, also by low emissivity film on external glass surface.

Solar thermal panel could save a lot of gas, so Centro di degenza Domus Meridiana could save up to 6.000€/years only for domestic hot water cost, this renovation has the shortest payback time in the scheduled action plan.

Future improvement measure could look at cogeneration system with gas micro turbine to produce hot water and electric energy to feed and provide the main energy needs of the RCHEP.

4/ Energy efficiency activities implemented in the RCHEP

In last renovation the not heated attic has been insulated with wood fiber (see annex pictures).

This is the first measure the company introduced in its organization.

The second measure consist in new energy system management. Company need to keep controlled energy cost to understand and improve any lack starting from the monitoring on energy consumption on high energy demand equipments. Company is using a software tools by Conject to acquire and analyze energy consumption data.

General board is evaluating the installation of low emissivity film on all glass facade area to reduce the heat transfer in summer. There are a lot of glass surface specially the high entire glazed central tower.

5/ Behavioural measure for residents and visitors

Like the rest of RCHEP, also Centro di degenza Domus Meridiana received our behavioural kit to promote and stimulate awareness.

The kit will be put in kitchen in elderly rooms and bathrooms, common areas with hanged doors.

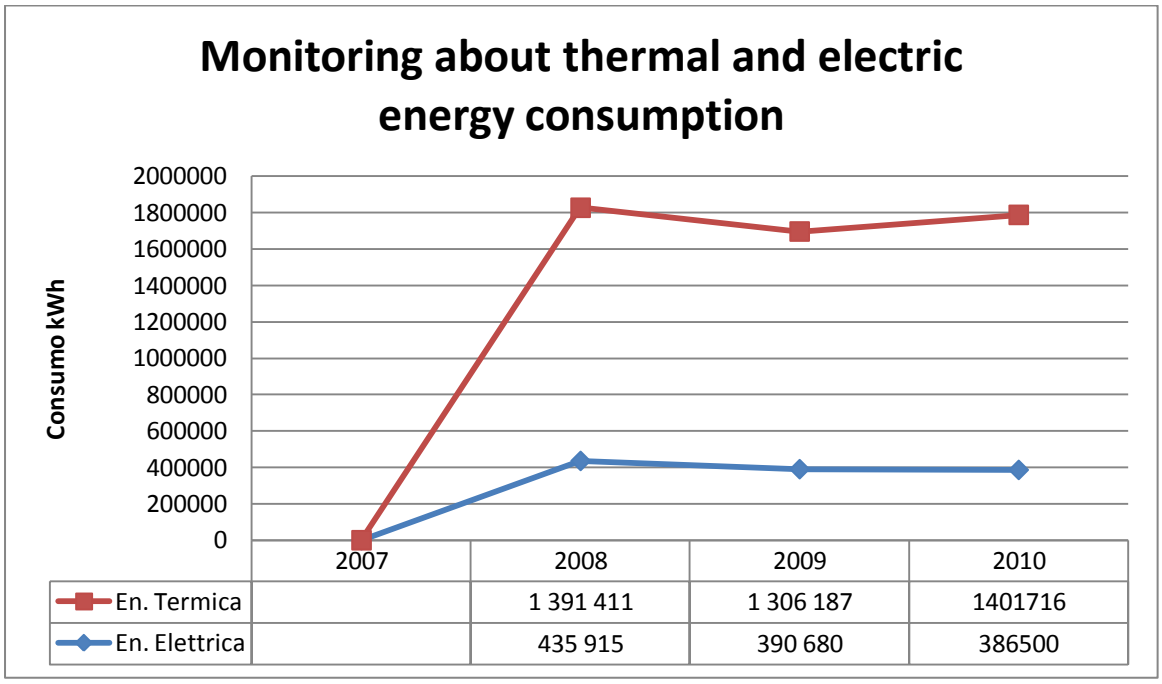
As soon as we will have some picture about italian partners with SAVE AGE KIT, we will add some of it into the annex.

During last meeting with RCHEP managers explain the correct behaviour for kitchen staff specially about the correct use of food trolley heater. Company has many food heater trolley, up to six, with 5kWh each, so their use can be reduced only with correct cooking organization and distribution. The electric energy save can go up to 5% on total energy consumption.

6/ Monitoring when available

Data consumption will be update to 2012 as soon as available. In 2009 company had a 10% decrease in thermal energy consumption, but in 2010 energy consumption was the same of 2008 due to exceptionally cold climate. In last two years 2011-2012 we attend a global decrease in consumption thank to greater attention and sensitize of staff, and mainly thank to attic insulation.

Electric power consumption is slow decreasing trend, with a 13% of reduction in last three years. The trend need to be confirmed with last data. We attend the same reduction also in 2011 and 2012 due to contribution of new low emissivity film on the facade.



	2007	2008	2009	2010
En. Termica		1 391 411	1 306 187	1401716
En. Elettrica		435 915	390 680	386500

7/ Conclusion

Centro di degenza Domus Meridiana has an important heat loss due to the designing choice to use large windows and glazed surface on facade.

In winter it permit to catch heat from the sun, but the same is dramatic in summer time.

Solar thermal system will allow to reduce thermal energy demand up to 15% yearly and next to already implemented measures will allow a global 20% of energy saving.

Electric power is slowly decreasing in last year thank to action plan and a better behaviour in kitchen and among entire staff.

New attic insulation will probably reduce thermal energy cost of about 10% in 2012.