



BIOCLIMATIC RENOVATION OF T.E.I PATRAS DORMITORYS (KOUKOS)

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WHY A BIOCLIMATIC BUILDING?

The passive solar house based on the principles of bioclimatic design. Bioclimatic design is design of buildings based on local climate, to utilize solar energy and natural phenomena of change, to ensure thermal and visual comfort.

The bioclimatic design and implement hybrid passive (low energy) design principles / systems using mechanical heating, mechanical refrigeration, mechanical ventilation and artificial lighting only as supplementary means. This results in reducing the consumption of fossil fuels, minimizing the use of air conditioning equipment for the cooling of buildings and reducing consumption of electricity for the use of artificial lighting. Therefore bioclimatic design saves energy and improves the atmosphere of the planet.

A building built "bioclimatic" will remain cool in summer with minimum use of air conditioning in winter while the operation of the calorific rays of the sun to provide much heat the interior with minimum consumption of oil or electricity.

All this translated into significant savings for the household budget but also to a healthier indoor environment (climate) compared with a conventional building.

The cost of building a house is no different from the corresponding cost of a contract with the same quantitative characteristics (surfaces, uses, floors) after basically used the same materials.

The difference arises in the design of buildings and because the bioclimatic design follows the basic rules concerning the orientation of the building (South-South Eastern) and local climate

SAMPLES OF OTHER BIOCLIMATIC BUILDINGS:



Stages

- Study thermical losses
- Study thermical profits
- General bioclimatic ideas for old buildings
- Solutions applicable and economically affordable

CONCLUSION:summary value of the bioclimatic building

FRONT VIEW OF THE DORMITORY



BACK VIEW OF THE DORMITORY

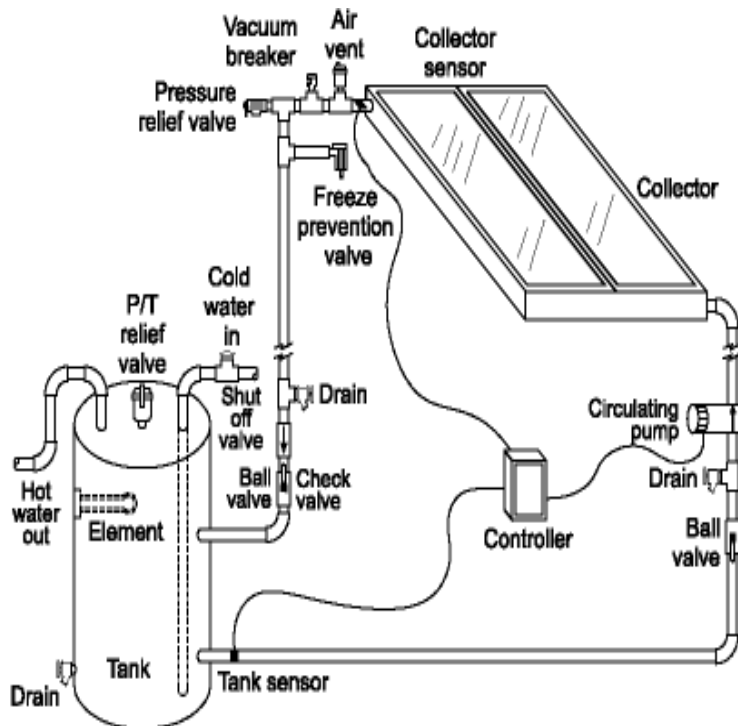


SIDE VIEW



IDEAS:

- PV THERMAL SYSTEMS INSTALLATION WITH SOLAR COLLECTORS (for domestic hot water heating, building illumination)



SOME TYPICAL APPLICATIONS OF PV THERMALS

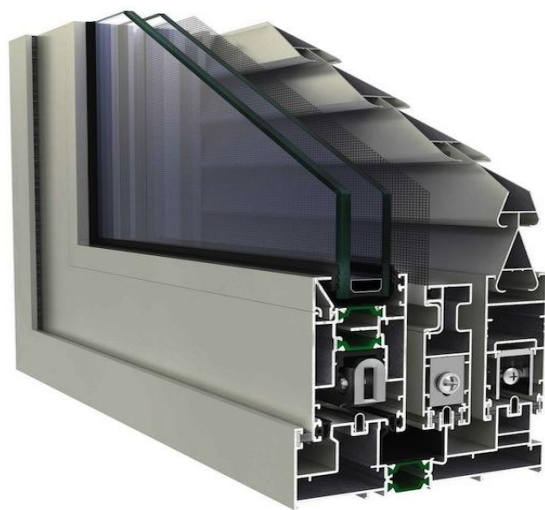


INSTALL PV MODULES ON WALLS

- ON THE FRONT SIDE OF THE BUILDING WHICH IS WEST ORIENTATED WE CAN INSTALL PV MODULES ON VERTICAL WALLS(PV SOLAR WALLS)

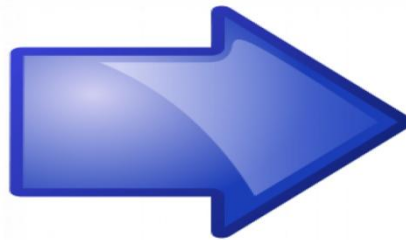
PV WALLS APPLICATIONS





CHANGE THE BURNER WITH HEAT PUMPS

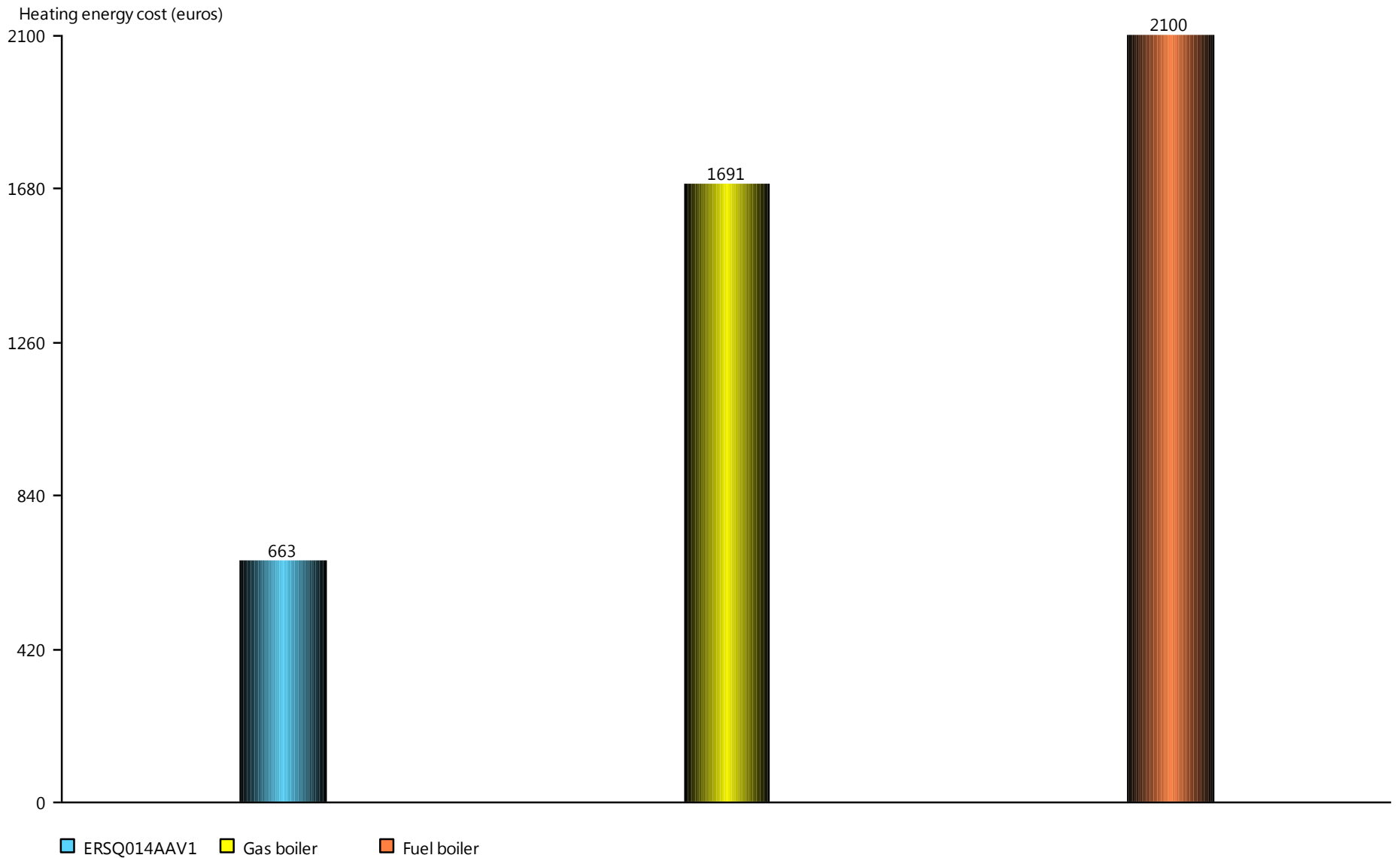
Ιδανικό για καυστήρα κεντρικής θέρμανσης



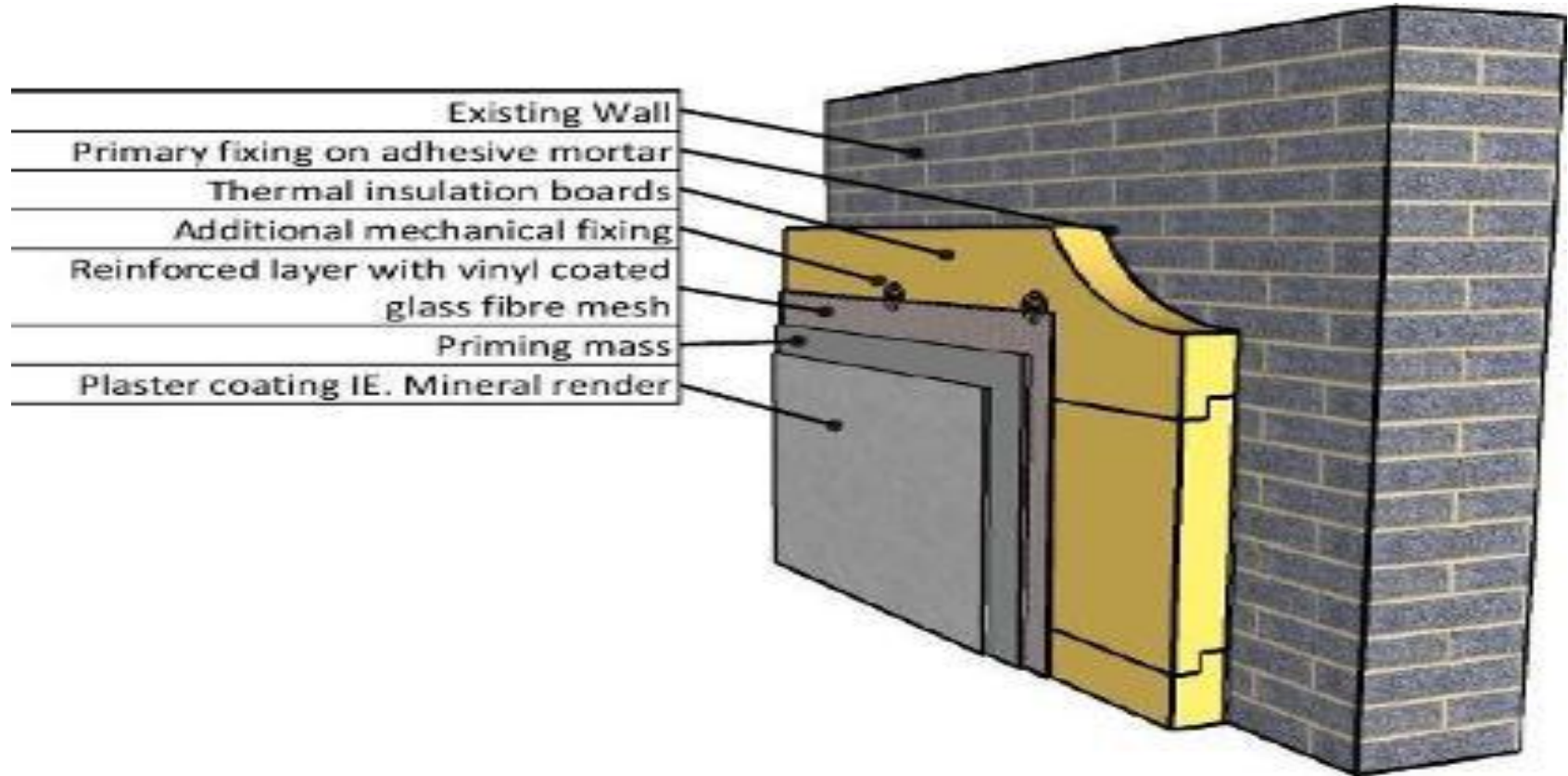
WHY?

- We achieve more quickly the desired temperature
- The same facility can achieve cooling and heating
 - Lower operating cost (44% less energy than conventional air conditioners and heating performance to be significantly higher than the boiler)
 - Emit no pollutants so environmentally friendly and reduce dramatically the number of leaks that may occur

TYPICAL EXAMPLE FOR 16KW NEEDS



"WALL INSULATION: EXTERNAL INSULATION"



- energy efficiency technology allow to save 30% costs of heating
- smart looking elevation available in different structure and colors
- externally resistant surface, sometimes called “self cleaning”
 - comfortable internal atmosphere at home
 - external insulation prevent water condensation in rooms and protect against damp and fungus
 - most popular render method in the whole Europe used successfully more than 15 years

SHADOWING



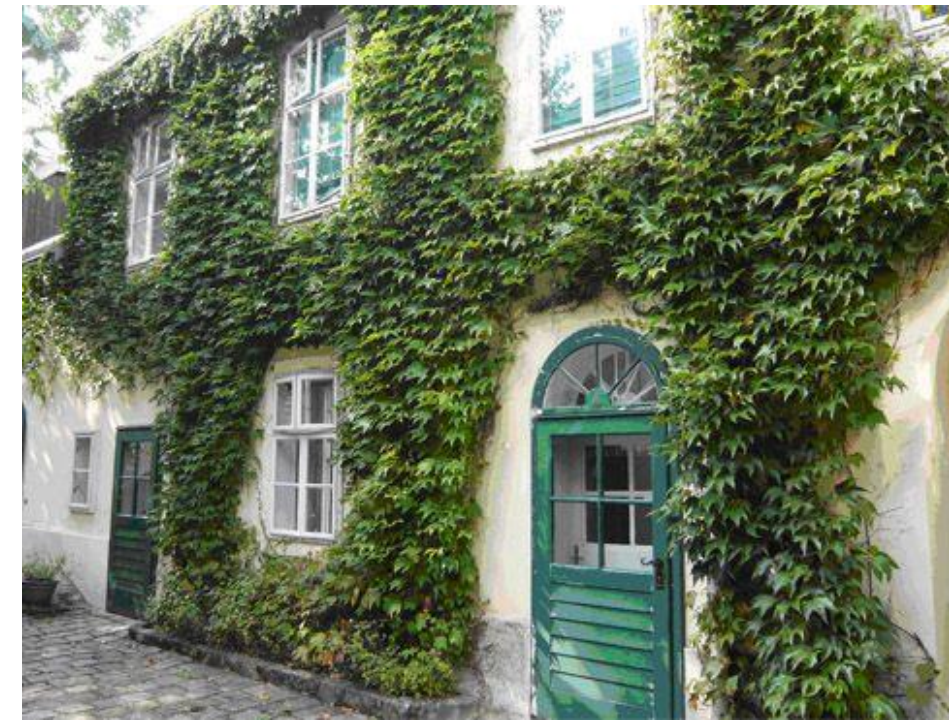
By placing tents



- Shadowing cuts out the sun rays and increases the thermal insulation of the building especially at summer
- Also cuts out the wind at winter which helps in wind insulation and reduces the thermal losses



Natural shading



CHANGE THE BULBS



The LED lamps achieve the same effect of light, consuming 10 times less energy than incandescent lamps or 3-4 times smaller than the energy-saving lamps

CONCLUSIONS

WE HAVE TO RENOVATE THE BUILDING DUE TO THE FOLLOWING:

- NEED OF FREE OF CHARGE ENERGY FOR D.H.W
- REDUCE ELECTRICAL ENERGY COST BECAUSE OF PV MOUNTED PANELS
- REDUCE THERMAL LOSSES WITH EXTERNAL WALL INSULATION AND REPLACE OLD FRAMES WITH NEW (ALLUMINIUM MADE) ONES

THANK YOU
FOR YOUR ATTENTION!!!!