УДК 620.92

ECONOMIC CONSIDERATION OF DEVELOPING POTENTIALS OF ALTERNATIVE ENERGY IN THE STRUCTURAL ENGINEERING AS A PART FOR OVERCOMING ECONOMIC CRISES.

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The author describes in the article possibilities, how immediately and in future specific measures in the structural engineering from the problems in economic crises can become counteracted affect by the fact that less energy must be bought.

Key words: *alternative energy, economic crises, climate change, passive house*

The worldwide economic crisis and the nuclear accidents have given occasion to come along about the development of social systems thoughts. Hence, a huge number of the possibilities are included in considerations. Some of them are energy-economic considerations at national level as well as on the local needs. Almost half of the power demand is required for the heating and water warming by buildings. The purchase of gas or oil at national level means a reduction of the foreign currency. At local level it concerns the inhabitants of the houses. By the citizens are called three most-called motives for ecological construction:

· Energy costs save: 86 %
· Environmental protection: 76 %
· Healthy life: 59 %

And three most important measures:

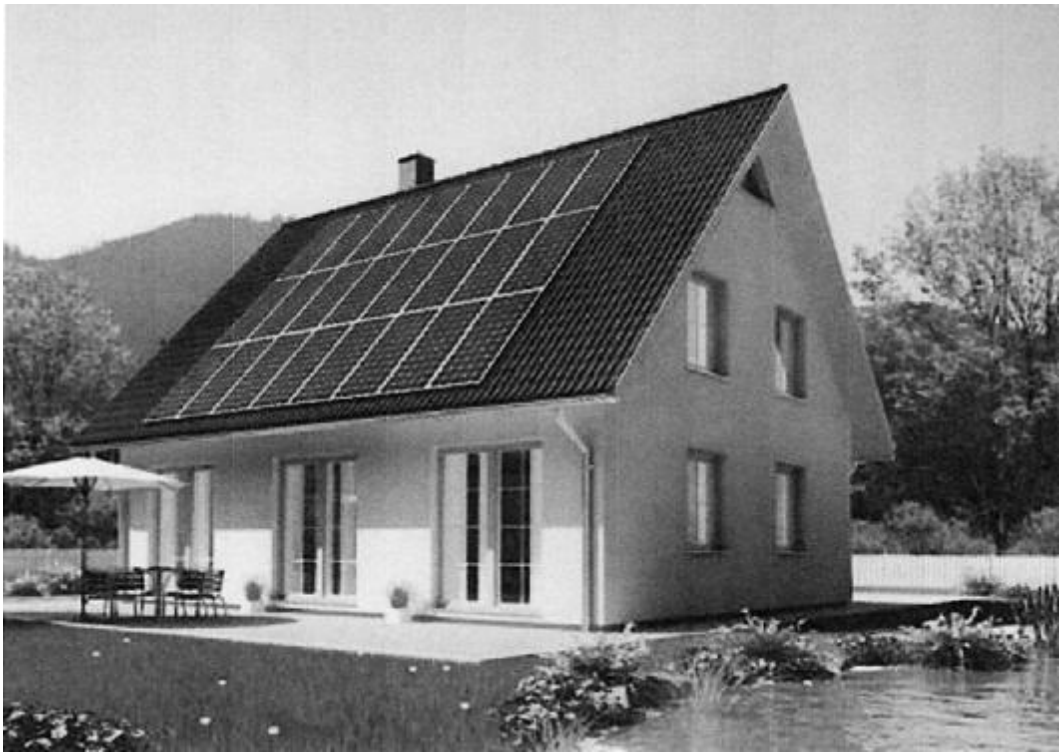
· Heat insulation: 84 %
· Modern heating installations: 71 %
· Ecological building materials: 44 %

If one looks at the reserves and at resources of the fossil energy sources, one can assume from the fact that in the medium term nothing will change.

On the other hand, it is clear that the biggest part of the energy import will also occur in future from a few supplier countries. Because it concerns, moreover, with the fossil fuels not regenerative stocks, their use must be also guaranteed for later generations.

Today, hence, I look at the dwelling house continuance in connection with regenerative energy systems. By the different possibilities from an energy mix, the following possibilities arise to the sensible use:

Model nr.1



Model nr.2

·The solar warm supply with active and passive systems, mostly in the form of heatings and water warming with solar collectors

· The photovoltaic change of sunlight in electric energy

· The use of the kinetic energy of the wind

· The water power to the electric energy production

· The geothermal energy supply, divides into energy supply close to surface and hydrothermal geothermal energy use

· The biomass to which plants and animals count as well as rubbish and remains

To the local systems we look at the heating of buildings.

The total expenses expose themselves together:

· Development expenses

· Cost (financing expenses, capital costs)

· Consequential costs (energy costs, operating expenses, administrative costs)

· Back building cost.

In my consideration I only enter the cost with the subtitle «capital costs» and on the consequential costs with the subtitles „energy costs and operating expenses". The portion of the costs for a lifetime of 50 years amounts therefore:

- Energy delivery costs: 41 %
- Capital costs: 29 %
- Repair: 25 %
- Operating expenses: 5 %

The price trend of natural gas and oil has been rising during the last 8 years by approx. 80%.

With oil price of approx. 115 Dollars / barrels the energy costs are almost unaffordable. The rise in prices will rise in future further disproportionate.

Although a gigantic volume of not used solar energy is available, this is used only for 0.05% yearly. The biggest part of costs in a house are the energy costs. These are considerably to be influenced if far-reaching considerations are done with the new building or with a renovation. Without this the cost curve goes to unaffordable heights. Hence, is to be proceeded according to the following criteria to hold the influenceable curve in a low level. Hence, the following performed criteria are to be followed and to pursue:

- Planning

- establishment
- operation and use
- rebuilding and modernisation
- empty state
- utilisation

Today under observance of these criteria it is possible to build a house without heating system.

These houses are known as passive houses. The heating warmth need of passive houses may amount at most to 15 kWh / mI. This is caused by „passive technologies".

Such passive technologies are:

· Optimised heat insulation of the building cover and the windows
· Warm bridges free constructions
· Solar energy use by optimum creation of the building
· Highly efficient warm recovery from the exhaust air and passive warming of the fresh air by earth storage
· Optimum density of the building cover

Such a house has been built in Switzerland, in the city of Thun. The measuring results of 6 years have proved an average energy consumption value of 8.61 kWh mI of a year. If these consumption values of a 100 mI house are converted, energy costs arise from 14.18 € / month or 170.13 € / year, with a price of 0.1975€ / kWh.

Hence, it is Time for intelligent living with the following advantages:

· Energy price independently
· Nearly no heating energy costs
· Low mortgage interest
· Healthy living by controlled airing
· Warm recovery from exhaust air
· Solar energy use by optimum creation of the building
· Warming of the outside air by an earth register (winter case)
· Cooling of the outside air by an earth register (summer case)
· Optimised heat insulation of the building cover

CONCLUSIONS

The area of the alternative energy is a main development field in research and technology. With the today's technologies it is possible to use energy which is almost inexhaustible. On account of the future energy development even more attention must be brought to this area on the part of the industrial nations and by the politics. In consideration of the rising population development and the rising power demand increasing attention to the energy supply must be laid. Hence, a support of the alternative energy must be called, beside the best possible information about conveyor possibilities and their exploitation.

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