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Cristian Paul Chioncel, Thomas Nierhoff, Petru Chioncel, Gillich Nicoleta, Florin Berinde

Study of the Photovoltaic Potential from the Location Resita

The present paper wants to be a first contact in analyzing and knowing the solar photovoltaic potential from Resita, this, in fact means, the 45 parallel in our country. This issue will be obtained through monitoring the produced electric energy and injected in the public grip. The research studies are extended over a period of two years to have a more exact evolution of the monitories parameters. These researches results will be then directly used in planning of photovoltaic plants in our country.

1. Introduction

The problem of the global earth heating, the climatic changes and the finite fossil energy resources leads in front the regenerable energy resources. From those, the photovoltaic energy will have, loud analyzes made by the European Union in field of renewable energies, a rapidly and constant growth. In our country the so called green energy law appeared, that has foreseen special prices for the kW of green energy to encourage, from economic point too, a growth and extension of renewable energies.

2. Experimental Photovoltaic Plant in Resita

In the location of the students' cultural house (CCS) from Resita, in autumn 2006, a photovoltaic module, obtained through sponsoring from the Schueko Company, of 350 Wp, was connected through an inverter and an special electronic energy counter on the public grid.

The actual scheme of the installation is presented in figure 1. It can be observed that the scheme is build of from the solar photovoltaic module, protected through a direction diode, the inverter with a capacity of maximal 400W. The out-

put of the inverter injects directly, through a special electronic counter, the converted DC into AC energy 220V and 50Hz, in the public grid.

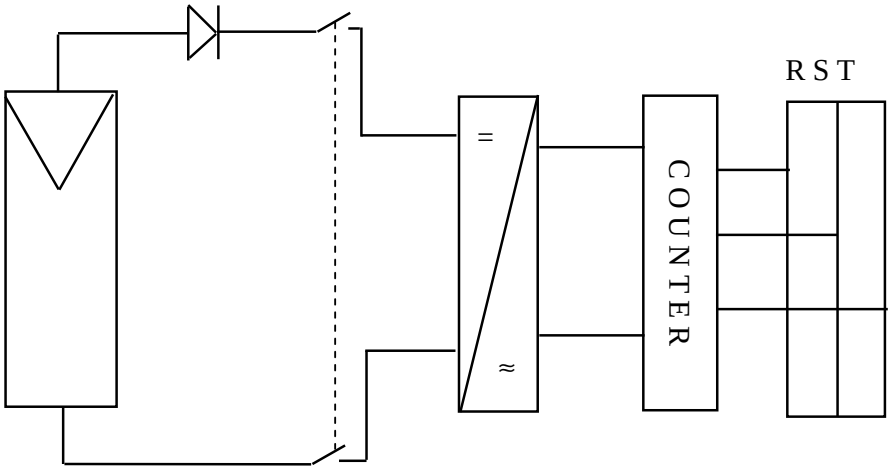

Figure 1. Scheme of the photovoltaic plant from the location CCS of the "Eftimie Murgu" University

3. Synthesis of the energetically parameters

The produced energies diagram shows the monitories month February, March, April, Mai and partial June.

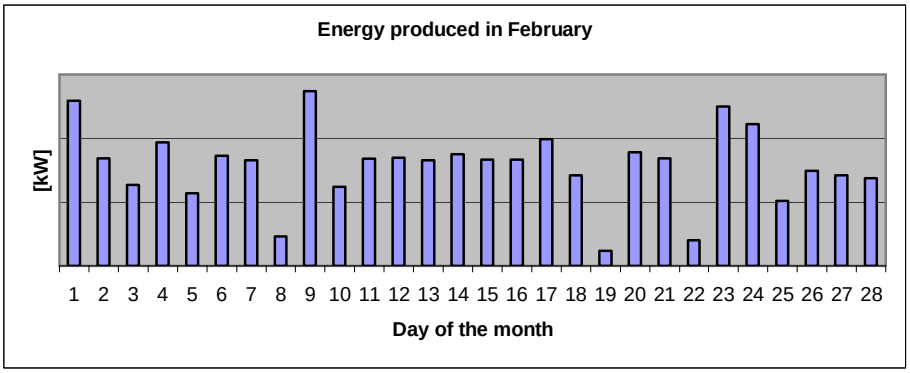

Figure 2. Energy diagram produced in February

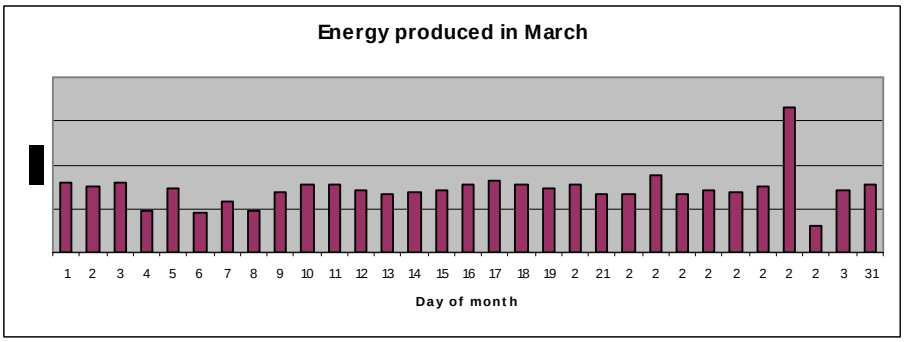

Figure 3. Energy diagram produced in March

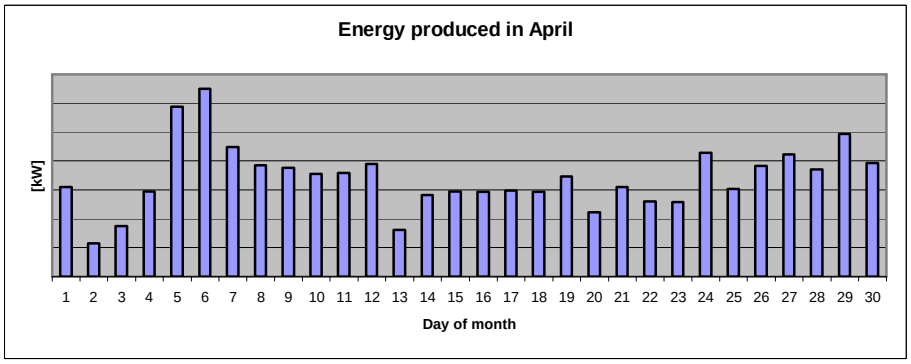

Figure 4. Energy diagram produced in April

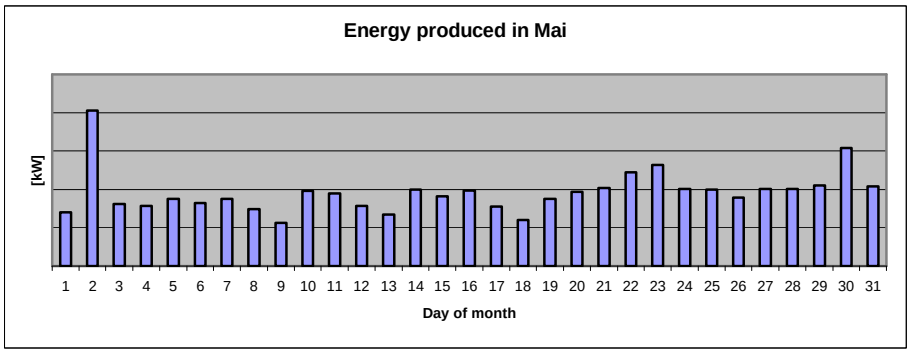

Figure 5. Energy diagram produced in Mai

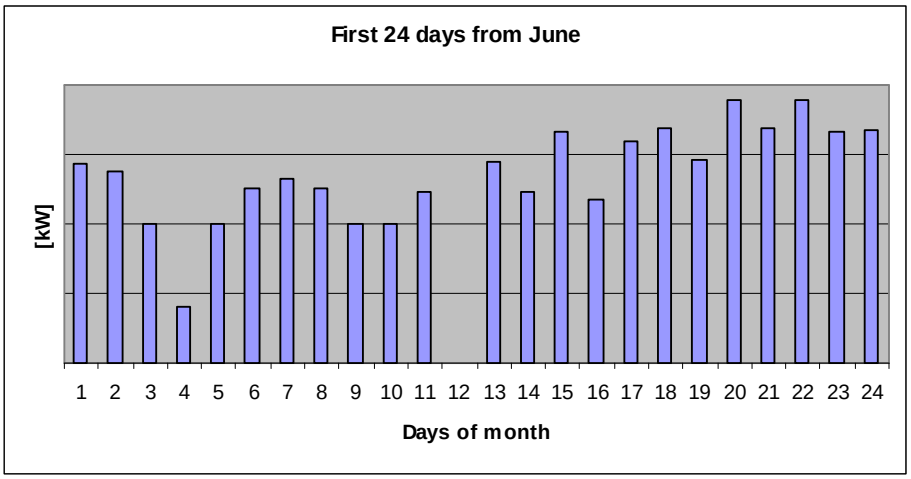

Figure 6. Energy produced in the monitorised first 24 days of June

The next diagram shows the monthly produced energy from October 2006 until June 2007.

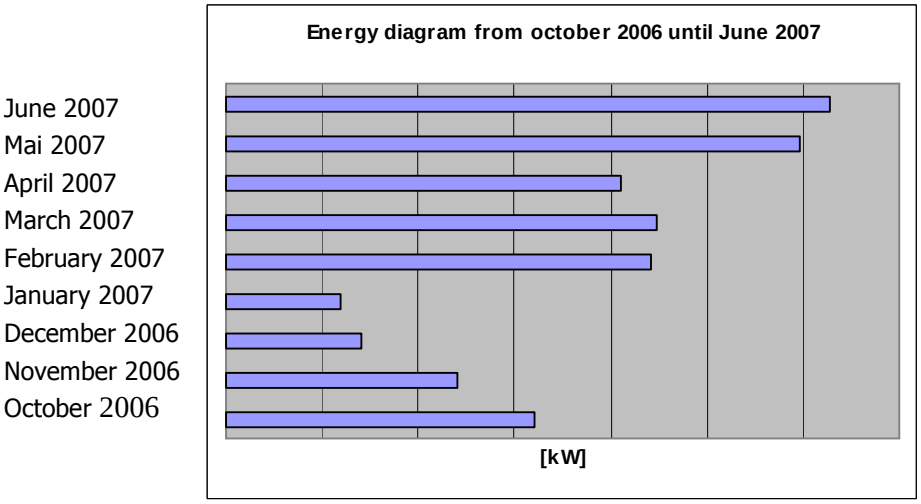

Figure 7. Energy produced since October 2006 until June 2007

The produced energy in February, figure 2, has three maximal points, on the first, ninth and twenty-third day. A very low production was registered on the 8-th, 19-th and 22 of the month. The used inverter has the propriety to inject also a very low energy in the public grid, lass then 3W. So, if the natural condition is not proper for photovoltaic energy production, the inverter can convert a very low produced DC energy too.

In March, figure 3, the produced energy was mostly constant, just in 28-th a much higher energy production was registered. Comparing the energy production from March with that in February, it was a little higher, with lower variations.

Figure 4 presents the evolution of the energy production in April 2007. Expecting the second day of April, when the energy production was very low, the evolution of the diagram shows a fluctuant evolution of the photovoltaic energy, not mostly constant like it was a month before, in March, but with final the same amount of produced energy like in February and April.

A first substantial growth of the produced energy was registered in Mai, figure 5, when days with a very low energy production, like measured in February, March ore April haven't been met.

The same growth of the produced energy was continued in June, figure 6. With just 24 days of monitoring presented in this paper, the energy production is higher than in each month before registered. Also the maximum values from this month are higher than the maximum before obtained, constant high. With one exception, the twelve day is without any registration, cause of a damage that was eliminated on this day.

A general overview of the energy production, showing the energy produced during a month, is given in figure 7. With this diagram a direct comparison of the monitories month, starting from October 2006 until the end of June 2007 can be simple made. The two winter month, December and January, have given the lowest photovoltaic energy production while in October we have a similar production like April.

4. Conclusion

To extend the performance analyze of this module and generally to obtain more information about the solar photovoltaic potential of this region, a new set of parameters, from the system that is now used for the research activity, has to be measured. Those are the solar radiation, the produced DC voltage and DC current from the photovoltaic module, the module and ambient temperature. This will allow fulfilling more researches about the different parameters and the way they influence the photovoltaic conversion of the module, like the dependence to the module temperature ore the angle of the module. This information will be hold and structured in an online data based, where from, in real time, the monitorised parameters of the installation will be able to be interrogated and compared.

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Addresses:

- Assist. Eng. Cristian Paul Chioncel, "Eftimie Murgu" University of Reşiţa, Piaţa Traian Vuia, nr. 1 - 4, 320085, Reşiţa, c.chioncel@uem.ro
- Researcher Ing. Thomas Nierhoff, F.H. Gelsenkirchen, Germany, thomas.nierhoff@fh-gelsenkirchen.de
- Prof. Dr. Eng. Petru Chioncel, "Eftimie Murgu" University of Reşiţa, Piaţa Traian Vuia, nr. 1 - 4, 320085, Reşiţa, p.chioncel@uem.ro
- Prof. Dr. Eng. Nicoleta Gillich, "Eftimie Murgu" University of Reşiţa, Piaţa Traian Vuia, nr. 1 - 4, 320085, Reşiţa, n.gillich@uem.ro
- S.l. Dr. Eng. Florin Berinde, "Eftimie Murgu" University of Reşiţa, Piaţa Traian Vuia, nr. 1 - 4, 320085, Reşiţa, f.berinde@uem.ro