Modular equipment for voltage dips monitoring

Goal of the project: The main objective of the project was to achieve the transfer of know-how from University to industry. With other words, the objective of the project was to develop a prototype for a voltage dip monitoring system designed within a postdoctoral research project.

Short description of the project:
The project was a joint venture between the University and industry. The idea of the project started from results obtained in a passed research project and the necessity of the implementing of these results in a voltage dip monitoring device.

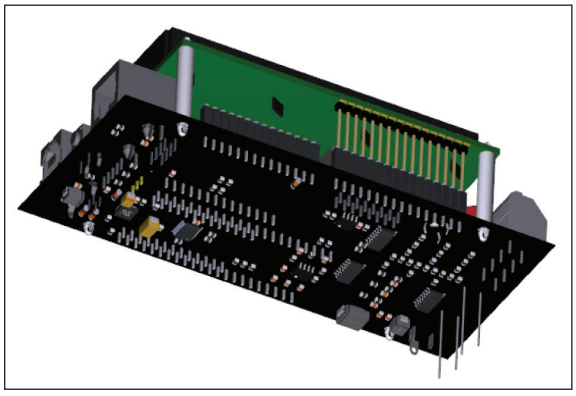
The motivation of the project is due to the fact that in technical literature there are summarized the problems caused by a lack of power quality, stating that in Europe the costs consumer due to power quality problems is approximately 100 billion Euros, of which more than a half are due to voltage dips and short interruptions. In addition, the power quality monitoring devices currently available are made according to the existing international standards. These standards require identifying only two parameters of voltage dips, namely voltage amplitude and dip duration, which are reported to the acceptability curve CBEMA (Information Technology Industry Council). These conclusions are found in the technical documentation of the newest voltage quality monitoring devices. In addition these devices save data in files with special format (own), which involves the acquisition of file conversion programs.

The device was designed in order to be easily used at low voltage level from all the electricity consumers: industry and domestic. It means that is small enough as it can be installed together with the classical overcurrent protections.

Implementation period:
19.07.2012-18.12.2012

Project implemented by: Power Engineering Department from UPT in partnership with SC Rheal SRL Timisoara (SC Rheal is the beneficiary of the results)

Main activities: Starting from results of the postdoctoral project and considering the beneficiary's request, the hardware of the monitoring device was redesigned. The scope of redesigned was to implement the voltage dip monitoring device in a modular way. To achieve this criteria the printed circuit board was reduced using different techniques. First it was reduced the number of acquiring channels. Second it was used different techniques to reduce the dimensions of the printed circuit board. The minimum dimensions of the device were reached by handmade design assisted with computer of the printing circuit board.



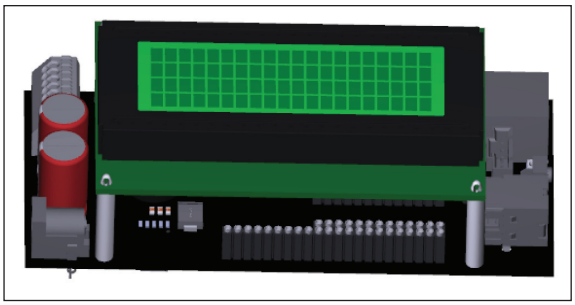
Another activity was to develop and test the device. In this sense, the necessary materials and equipments were purchased. The electronic components were attached to the printed circuit board. The device was tested in laboratory. First it was calibrated by comparing with other equipments and then was tested with standard signals by comparing with results obtained with consecrated monitoring devices.

"Intellectuals solve problems, geniuses prevent them."

Albert Einstein

Finally the device was tested with real signals obtained by applying real data to programmable signal generators

Results:
The main result of the project is the prototype of the voltage dip monitoring device. In these conditions the results can be detailed as follows:
•Prototype of the monitoring device;
•Digital document containing the electrical circuits of the printed circuit board;
•Technical details regarding mounting of electronic components;
•Technical details regarding device assembly;
•Technical documentation regarding software update;
•Technical documentation regarding using the device.



New technology used in this device and also the entire monitoring device represent intellectual properties and will be protected accordingly.

The beneficiary of the project (SC Rheal SRL) receives the prototype of the device together with all results mentioned above. Also, the beneficiary came into possession of source code of the software part of the monitoring device. The beneficiary will make all the necessary efforts to homologate the device and to insert in mass production and commercialization.

So it can be said that the goal of the project (to transfer the know-how from University to industry) was achieved.

Fields of interest: The main fields of interest connected with the project applicability and implementation, in electrical networks, are: voltage dips (monitoring and analysis), power quality (monitoring and analysis, including all power quality parameters and indices); embedded system for power engineering.

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Research centre:
Research centre for Power Systems Analysis and Optimization

Aplicability and transferability of the results:
The results obtained during research project were entirely transferred to the beneficiary of the research project and can be applied in industry for mass production. The equipment can be installed in electrical network for voltage dips monitoring, at any voltage level, both by electrical energy suppliers and consumers.

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