



Welcome to the fifth newsletter of JELARE

In this edition, you can learn about the past and forthcoming activities of the JELARE project.

Focus of this issue is the transnational research and technology transfer pilot module on rural electrification technology. Find out more about the research on micro hydro systems in Chile and the implementation of a renewable energy technology demonstration centre in Bolivia.

Moreover, we invite you to note the date of the final international JELARE seminar in Germany to be held on 29 September 2011 in Hamburg.

About the JELARE project

JELARE is a co-operation project involving universities from Bolivia, Brazil, Chile, Germany, Guatemala and Latvia, funded by the EU programme ALFA III. The aim of JELARE is to foster innovative labour market-oriented educational and research approaches in the field of renewable energies at Latin American and European institutes of higher education.

Fostering Innovative Labour Market-Oriented Educational and Research Approaches in the Field of Renewable Energy at Latin American and European Institutes of Higher Education.

JELARE book publication on renewable energy market needs is now available



The comprehensive report on the findings of the JELARE labour market survey is now available in book form as Renewable energy market needs: a perspective from Europe and Latin America, edited by the JELARE partners José Baltazar Salgueirinho Osório de Andrade Guerra and Youssef Ahmad Youssef from UNISUL. The book not only covers the results of the labour market survey undertaken in each JELARE country (Bolivia, Brazil, Chile, Germany, Guatemala and Latvia), it also provides a transnational comparison of all the results, as well as a general overview of the renewable energy situation in each partner country.

The book is available for download at: <http://www.jelare-project.eu/Downloads/JELARE-Renewable-Energies-Market-Needs-Book.pdf>

University of Chile develops micro hydro systems for rural electrification

As one of the last initiatives focused on the promotion of renewable energies and its integration into the electrical market, small hydro has experienced significant growth. Its continuous growth in the energy mix is the result of a wide variety of factors, including technological maturity, competitiveness, and high availability of resources that can be exploited both technically and economically. It is also important to

Bibliographic information:

Renewable energy market needs: a perspective from Europe and Latin America.

José Baltazar Salgueirinho Osório de Andrade Guerra, Youssef Ahmad Youssef organisers – Palhoça: Ed. Unisul, 2010, 286 p., 21 cm. ISBN 978-85-86870-48-X
Bibliography: pp. 279-285



consider that the experiences gained by local generating companies and funding institutions have improved their willingness to support these kinds of projects.

However, there are minor hydraulic resources associated with rural electric consumption that are environmentally friendly and can be efficiently exploited to provide a sustainable energy solution. Most of the solutions available for the supply of isolated systems frequently require expensive conditioning to synchronize with the power system. Thus, when the power system reaches the micro hydro location, these units cannot be easily operated and are therefore abandoned.

The limited supply and technological development of micro hydro solutions with a few kW (1-100) generates a clear interest in the development of a micro hydro unit capable of automatic operation for isolated and grid-connected conditions. This development presents a good alternative to exploiting water resources located near isolated locations and the power system.

In the context of the experience gained in the development of micro hydro units and the support provided by the JELARE Project, a plug and play micro hydro unit of 10 KW has been proposed. This development is being carried out as one of the pilot modules of work package 2, which is the stand-alone solution for rural electrification.

The development of the unit is based on improvements to be made to a standard micro hydro turbine. Improvements include expanding its functions and converting it into a smart unit at a competitive price, simple installation and compatibility with the distributed generator integration schemes.

The capabilities described above are not identified in the actual mar-



ket; on the contrary the capabilities available on the proposed unit are listed below:

- Automation: a completely automatic unit can be operated by users without a technical background. Compared to other existing micro hydro units, the unit can be combined with the required equipment to operate in a fully automated manner.
- Grid connection: although it can function as a stand-alone generator, this micro hydro can also operate as a generator within a distribution network. Actual energy prices and the estimated costs for a series development of this unit create a potential for 10 KW and a reasonable water inflow; capital recovery is about 3 to 4 years. This final point creates business opportunities for a savings concept/energy sales to people in other sectors who have the resources available.
- "Plug and play" concept: the objective of this development is to design a product with a simple and standardised installation in order to be competitive with a standard combustion engine of about the same size. In this sense, the micro hydro unit has the advantage of not requiring fuel, as well as simple and low-cost maintenance.

International coordination meeting for JELARE technology transfer pilot module held in Bolivia

The international coordination meeting for the joint execution of pilot module 2 "Technology and knowledge transfer for rural electrification with renewable energies" was held at the Bolivian Catholic University from 22 to 25 November, with the participation of the partners from Germany (Hamburg University of Applied Sciences) and Brazil (Universidade do Sul de Santa Catarina). The meeting was geared towards presenting concepts for the local implementation of pilot module 2 in each country, coordinating further cooperation, and transferring knowledge among the JELARE partners for the optimisation of the pilot module execution. The first day was used for an internal meeting of the partners to exchange details about the individual pilot module concepts and plan further joint activities.

Professor Timon Kampschulte from the Hamburg University of Applied Sciences presented the "Solar home system training stand", which will be constructed by students in the RE Masters Programme at the university as a tool to train students in the use, operation and maintenance.



nance of solar home systems for rural electrification in developing countries. Professor Baltazar D'Andrade Guerra and Professor Rodrigo Althoff, from UNISUL in Brazil, presented their concept for a prototype of an automated photovoltaic system which will be implemented at their university campus for capacity building and research purposes.

Finally, Franziska Buch, project manager of the JELARE project at the Bolivian Catholic University, presented the Renewable Energy Technology Demonstration Centre which is currently being implemented at the Rural Academic Unit (UAC) of Batallas and which belongs to the Bolivian Catholic University.



The Demonstration Centre has various objectives with regards to education, capacity building, technology transfer and dissemination of renewable energies in rural areas. On the one hand, the centre will be used by the UAC to modernise the agroindustry study programme by introducing a new "Renewable Energy Technologies for Agriculture and Food Production" module into the curriculum. With the planned introduction of a bachelor and post-graduate programme in (renewable) energy, the centre will also function as an external laboratory for engineering students at the Bo-

livian Catholic University. Furthermore, the centre will be home to a capacity building seminar on "Use, operation and maintenance of solar home systems" for municipal technicians, which will be held in the Rural Academic Unit.

For more information, please visit: <http://www.jelare-project.eu/news.html>

News from partners

Chile hosted the International Conference and Fair on Education, Research & Employment in the Renewable Energy Sector

Santiago, 11–12 November 2010

This conference and fair was specifically aimed to cover areas such as funding, initiatives and research projects in renewable energy, as well as work experience and technology transfer in the areas of renewable energy and climate change. It was organised by the Department of Electrical Engineering and the Department of Industrial Engineering in the Faculty of Physical Sciences and Mathematics at the University of Chile.

On the one hand, this conference exposed Chilean researchers and renewable energy professionals to the forefront of research in this field. Furthermore, it also allowed Chilean researchers to obtain solid feedback while establishing collaborative networks. Last but not least, it allowed Chilean professionals to meet local and foreign faculty members, which is very significant when it comes to encountering different approaches.

The conference was inaugurated by Mr Francisco Brieva R., Dean of the Faculty of Physical Sciences and Mathematics and Professor Walter Leal from Hamburg University of Applied Sciences. They both highlighted the importance of renew-



able energies development and, in particular, the education provided by institutions of higher education in Chile and Latin America.

Lectures on the primary topics of the event were given by Chilean experts such as Rodrigo Palma and Luis Vargas, faculty members of the Department of Electrical Engineering at the University of Chile, Mari-cel Gibbs, Manager of Chile CO₂ Agency (also from the University of Chile), and Carolina Galleguillos, Director of the Centre for Renewable Energy (CER), as well as Ms Susan Agüero, representative of the Delegation of the European Union in Chile.

On the second day of this conference, Mr Fernando Mancilla-David (University of Colorado in Denver) provided an outstanding lecture on "Construction, modelling, analysis and control of small-scale wind turbines", which was very well received by the attendees.

The conference took place at the Gorbea convention hall of the Faculty of Physical Sciences and Mathematics of the University of Chile from 11 to 12 November 2010 with over 100 participants.

Forthcoming events

JELARE meeting in Guatemala: the Galileo University Honoris Causa Doctorate to Prof. Dr. Walter Leal and the international seminar on "Higher education institutions' challenges in renewable energy" in Guatemala

From 2 to 6 May 2011, the Galileo University of Guatemala will host all JELARE partners as part of the 2011 annual JELARE meeting. The meeting's general objective is to share the experiences gained after two years of JELARE implementation on research, curriculum modernisation and technology transfers on renewable energy.



At the end of the first day, a ceremony will be held, with all Galileo University authorities in attendance, to confer the Honoris

Causa Doctorate to Dr (mult.) Dr h.c. (mult.) Walter Leal. The title extended to Dr Leal acknowledges his contribution to renewable energy and climate change. Furthermore, it recognises his valuable contribution to European and Latin American scientific and technological cooperation, particularly in Guatemala.

For more information, please visit: <http://www.jelare-project.eu/events.html>

Final international JELARE seminar – Renewable Energy: Technology Transfer and Development Cooperation
Hamburg, 29 September 2011
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For more information, please visit: <http://www.jelare-project.eu/events.html>

Renewable energy database

The JELARE project is collaborating with the EU project "DIREKT – Small Developing Island Renewable Energy Knowledge and Technology Transfer Network" to set up a global renewable energy database. The objective of the renewable energy database is to foster dialogue and cooperation between universities, research institutions and companies undertaking research and development in the field of renewable energy.

For more information and free registration, please visit: <http://www.jelare-project.eu/database.html>

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