

NEWSLETTER

June 2013 - n.4

ALPSTORE



Energy Storage for the Alpine Space



AlpStore 1st Summer School in Ljubljana.

On the last 27th and 28th June the 1st **AlpStore Summer School** has been organized in Ljubljana, at the University of Ljubljana, Faculty of Electrical Engineering, addressed in particular to public utility companies and regional decision makers. Around 50 people took part to the two days event that aimed to develop the knowledge and information on **AlpStore** project – the energy turnaround and new storage technologies. The **AlpStore** project will lead to assessments, what kinds of storage means are reasonable to be used to different extents in different regions – from the technological as well as the economical perspective.

Several speakers introduced different perspectives of the AlpStore: on the first day Ludwig Karg, executive director of B.A.U.M. Consult, gave a presentation on Energy Transition focusing on the German contest, while Prof. Dr. Marco Merlo (Politecnico di Milano) illustrated the Italian and European scenario. Following speakers, Dr. Michael Stoehr (B.A.U.M. Consult) and Gabriele Grea (Bocconi University Milan) presented respectively the challenge toward storage and electric mobility. On the second day other technical presentations have been delivered: Dr. Radovan Serbec, from the University of Ljubljana, spoke about the ICT Architectures form Smart Grids, followed by Dr. Jurij Curk (EUREl Engineering) who talked about VRB Energy Storage and Dr. Francesco Regazzoni (ALaRI Institute of the University of Lugano) on ICT Security and Storage. The second day ended with Prof. Dr. Miran Gaberšček who gave a speech on Low Carbon Technologies.

In the picture above: Managing director of B.A.U.M. Consult Ludwig Karg giving presentation on Energy Transition and Region at 1st AlpStore Summer School.



Dear Reader,

welcome at the fourth issue of **AlpStore** newsletter with a report on the 1st **AlpStore Summer**

School, which was held in the city of Ljubljana, on the 27-28th June, along with the **3rd Transnational Partner Meeting**. Moreover you can find here the presentation of the Slovenian pilot that will be implemented during **AlpStore** lifetime by the 3 partners involved in the action: Business support centre Kranj (RDA-BSC), University of Ljubljana, Faculty of Electrical Engineering and the Municipality of Jezersko.

I'm also very proud to announce the next **AlpStore** meetings we are organizing in Mantua, Italy: **4rd Transnational Partner Meeting**, on **14-15th October 2013** and the **1st AlpStore Technical Symposium**, on the **14th October afternoon**: it will be mainly addressed to Lombardy (Central Northern Italy Region) Decision Makers for Regional Development and companies of the sector.

I hope you will enjoy reading!

Ludwig Karg
Project Responsible

For more information about the presentations of the 1st **AlpStore Summer School** and the **1st AlpStore Technical Symposium** please visit AlpStore web site:

www.alpstore.info

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Slovenian pilot project: Operation of REDOX flow batteries with photovoltaic modules

In a small mountain village Jezersko, Gorenjska region, Slovenia, AlpStore partners RDA-BSC, UL and Municipality of Jezersko will install flow battery storage system together with photovoltaic generation unit (PV) and charging station for electric vehicles. The aim of the pilot project named "Operation of REDOX flow batteries with photovoltaic modules – PV-REDOX" is to show the benefits of energy storage system (REDOX flow batteries) operating with renewable energy sources in remote areas of the Alpine Space region. PV-REDOX will demonstrate the feasibility and effectiveness of such system, from where guidelines for future implementations will be derived.

The main anticipated deliverables of the pilot project can be summarized as follows:

- Demonstrate PV system with REDOX flow batteries to enable off-grid operation of the Municipality of Jezersko;
- Demonstrate load balancing and voltage profile support with PV-REDOX system;
- Demonstrate how to increase the penetration levels of RES into the distribution networks by using energy storage systems;
- Define and quantify performance requirements, operating practices and cost/benefits levels associated with the PV-REDOX;
- Display the benefits of using RES-battery systems to general public and future users;
- Promotion of renewable energy sources.

Anticipated transnational and innovative elements are:

- Development of cross-border energy concepts for the use of RES;
- Establishment of cross-border cooperation between companies in the field of RES and energy storage;
- Breakthrough in the use of efficient and environment friendly energy in the range of the Slovenian-Austrian state border;
- Innovative system design as a combination of RES unit and energy storage technology;
- Innovative utilization of RES-battery systems and innovative operation schemes to increase the reliability of electricity supply in remote areas of the Alpine Space region.

Project partners in the Slovenian pilot region are:

- Business support centre Kranj (RDA-BSC), Kranj, <http://www.bsc-kranj.si>
- University of Ljubljana, Faculty of Electrical Engineering, Ljubljana, <http://www.fe.uni-lj.si>
- Municipality Jezersko, Zgornje Jezersko, <http://www.jezersko.si>

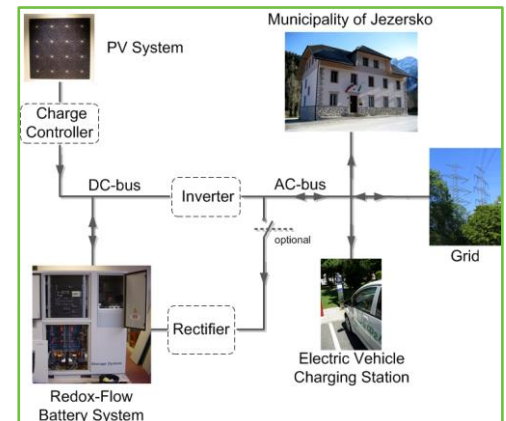
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Implementation

PV-REDOX



In the picture above: Simplified scheme of the PV-REDOX pilot project: flow battery, PV generation unit and electric car charging station.

Basic technical characteristics

Module	Power	Other
VRB	7 kW	48 V _{dc}
PV	10 kW	70 m ²
Electronics	10 kW	48-56 V _{dc}

In the table above: Basic technical characteristics of the flow battery and PV generation unit.

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