

Summary sustainable energy sessions

Monday 17 – Tuesday 18 – Wednesday 19 October 2016

With a broad interest of about 200 participants in total, the Sustainable Energy session discussed 3 major topics:

The emergence of new business ecosystems for building energy solutions: Digital energy platforms and their impact in our living rooms and cities.

Based on examples in the cities of e.g. Glasgow and Antwerp (“City of Things” project) one can state that opening of big data in the energy field is happening right now. Sensor networks are expanding rapidly, delivering detailed information on the consumption behaviour and patterns. Construction data of buildings are linked to observations from planes or satellites. As illustrated by Proximus, big data platforms are bringing all this valuable information together. A recent initiative in this context is also linked to the “Flanders Energy Cluster” where the ambition of an energy cloud platform is being shaped.

The main challenge is to translate this multitude of data into added value knowledge and easy-to-use applications for the inhabitants of the buildings and the cities. At the same time new business models need to be put in place to operate this new ecosystem. System and service providers, cities, bottom-up initiatives from consumers, energy companies, grid-operators, knowledge institutes,...: they all need to find their place and benefits in this ecosystem.

The Dutch example of Stroomversnelling with the ambition of more than 100.000 smart renovations is a typical example showing how the future renovation activity can be based on a service oriented approach, based on smart building components and new roles for construction, energy and housing companies.

VITO-EnergyVille is ready to take up the challenge to be the key player in translating energy data of the built environment into specific knowledge for companies, cities and consumers. The “energy data platform” for renovation and the ECO-district tool developed by VITO-Energyville are specific examples of this. VITO-EnergyVille wishes to establish a regular interaction with players in this field and to deploy new living labs in the field of energy data in the built environment.

Providing affordable thermal comfort: technological challenges and market uptake of geothermal solutions, low temperature heating & cooling grids and the role of thermal storage.

A full day programme: from deep geothermal energy as a sustainable source to advanced heating and cooling grids as intelligent end-use. Breaking VITO research combined with the realisation of a unique deep geothermal plant on the Balmatt site in Mol (B), has proven that risk contingency for deep geothermal projects has improved considerably. As such the financial viability of deep geothermal plants with heat and power production has made a new progress.



Both the Flemish/Dutch and the European potential are considerable and could lead to a significant local employment. The Flemish legislation is following this evolution actively and next steps are planned.

It is clear that the financial viability of geothermal energy is also linked to the combination with heating and cooling grids. In this context the European Commission has recently put forward heating and cooling grids as a strategic priority and the District Heating and Cooling platform is preparing a common roadmap.

Heating and cooling grids are equally important in the use of the large amount of residual heat available in different sectors (industry but also HVAC,..), e.g. 1 GW in the harbour of Antwerp. As illustrated by the Heat Map Flanders a systemic approach is necessary to find the right transformations between temperature levels. Also new technologies, as e.g. Qpinch, transforming heat to higher temperatures (e.g. industrial heat) need to be taken into account in finding the proper links between supply and demand.

From the about 60 ideas on heating grids in Flanders, a limited number is currently economically feasible, based on information of the grid operators. This is of course related to the low gas prices. Therefore we need to look for further coupling of heating and cooling grids to other infrastructure works and to further enhance the profits and lower the cost of the components in the system. To tackle this challenge VITO-EnergyVille has the ambition to be a leading European innovator in the 4rd generation heating networks, with intelligent thermal storage, control algorithms and substations.

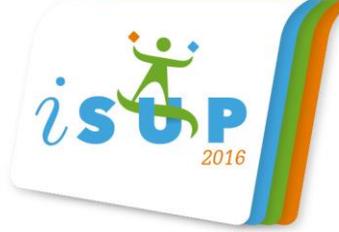
Storing electricity in buildings. The large scale implementation of electric storage in the built environment as a source of flexibility: how to bring fiction into reality.

Due to a fast decline in costs, the market of electrical storage is expected to grow significantly in the coming years. Both the progress of electrical or hybrid cars and the introduction of stationary batteries will contribute to this trend. It is however clear that to make a large scale introduction possible a combination of services delivered by the battery will be needed. A single business case will not be sufficient.

The interaction of the energy and material competences is also a challenge. EMIRI developed specific roadmaps with specification targets for different types of batteries. In this context the life cycle aspect of batteries needs to be integrated. The specific value chain for re-use batteries, coming from hybrid or electrical cars, re-tuned for stationary application and finally being recycled is a clear challenge for the coming years.

No matter the business case, the technology or the application, the life time and security of the batteries is a key issue. For this VITO-EnergyVille focuses on the battery management system with state of health, state of charge,... as key features. New battery management systems have proven to enhance the life-time of Li-ion batteries significantly.

Finally, several questions need further fact based analysis and experience: combination of demand side response and electrical storage, grid or consumer driven storage, ownership of electrical storage,...



Building further on the i-SUP2016 discussions, VITO-EnergyVille is actively calling upon the participants to continue the open, fact based discussion and to form an interactive ecosystem leading to impact in the market and society.