

BRIDGE

*Integrating the energy sector with the
buildings, transport and industry sectors*

Minutes of the session

November 13th, 2019

EUW 2019 - Paris

The INTENSYS4EU Project supports BRIDGE activities and has received funding from the European Union's H2020 Research & Innovation Programme under grant agreement No 731220.

EUW 2019, Paris – EC Session on Integration

EU project zone – 13 November 2019, 14:00 – 17:15

The session invites projects representatives to discuss their approach to integrate the building, transport and industry sectors in the energy grid management, so that they can contribute to the grid stability for the benefit of the whole system, by offering flexibility in energy consumption or production.

The different PPT presentations are uploaded in the restricted area of the BRIDGE website. More information about the BRIDGE project presented during the afternoon can be found in the BRIDGE Brochure (<https://www.h2020-bridge.eu/>).

Part 1

14:00-14:05	Introduction by the Commission, Eric Lecomte (DG ENER.C2)
	Presentation of the agenda and participants.
14:05-14:15	Policy context – Regulatory, Antonio Lopez-Nicolas (DG ENER.C1)
	<p>Sector integration is about holistic link between different sectors: transport, heating & cooling, industry, agriculture, electricity. Four possible ways of sector integration are highlighted:</p> <ul style="list-style-type: none"> - Direct electrification, e.g. heat pumps, electric vehicle; - Decarbonizing sectors like aeronautics and industry is less evident: solutions will rely on P-to-G, Hydrogen, e-liquids, e-gases; - Efficient use of resources: waste heat form industry and data centres; - Energy storage and sector interfaces. <p>The rationale for sector integration is that we have today an electrical power system with 31% of RES – with a target of 55% renewables in electricity by 2030.</p> <p>Decarbonization effort in the energy sector will not be enough if the transport and heating & cooling sectors are not all integrated. We have to optimise the system as a whole. What could be done to remove barriers? Incentives taxes, etc. are looked at.</p>
14:15-14:25	Policy context – R&I, Eric Lecomte (DG ENER.C2)
	Integrating the electricity together with the heating sector, industry, agriculture and transport sectors will be performed notably through other energy vectors. Biogas, synthetic gas, hydrogen will play a bigger role not only as energy vector for industry but also as feedstock, in order to reach carbon neutrality at lowest cost.

	<p>Under H2020, EUR 5.9 billion are dedicated to energy, a significant budget for energy through several calls. BRIDGE initiative gathered 44 high TRL projects since the beginning (about 500M€ of funding).</p> <p>Fuel Cell Hydrogen and SPIRE private-public partnerships are other H2020 programmes that tackle the decarbonization challenges in the industry. The SPIRE is looking how to decarbonize the industry, through industrial symbiosis and heat/power use flexibility.</p> <p>Examples of Fuel Cell Hydrogen projects: H2FUTURE, GrInHy2.0; national project: HYBRIT (Swedish funding).</p>
14:25-14:55	<p>Presentations of projects (5' per project) and Q&A – focus on technical benefits/challenges of sector integration, moderated by Mariana Stantcheva (INEA)</p> <p>The questions addressed are: what are the sectors and energy vectors integrated; how they integrate these sectors, via open or closed platforms and how can the Platforms work together; how do they contribute to stabilise the grid for the benefit of the whole system?</p> <p>The main points discussed are highlighted below by project.</p>
InteGRIDy, Javier Valiño	<p>The InteGRIDy project touches upon Building and Transport integration with the aim to facilitate the optimal and dynamic operation of the Distribution Grid. Interoperability is performed with Cross-functional Standardized Interfaces API layer. With 27 tools, covering different layers, the Cross-functional Modular Platform developed within the project, enables data exchange and integrate innovations with different TRL and precommercial tools.</p>
PLANET, Mariapia Martino	<p>The PLANET project is developing solutions to use other network infrastructures (i.e., gas network and district heating) as energy buffer for accommodating the electricity produced in excess by renewable energy source-based power plants. The excess of energy is converted through innovative conversion systems, e.g.:</p> <ul style="list-style-type: none"> - Power-to-Heat connected to buildings, by exploiting their thermal inertia (Virtual Energy Storage); - Power-to-Heat directly connected to district heating and improve decarbonization of heating network. <p>The electricity grid conditions are improved at 15-min level, i.e., considering intraday conditions.</p>
IElectrix, Pierre- Jacques Le Quellec	<p>The aim of the IElectrix project is to promote the enabler role of the DSO to connect energy communities' customers to the electricity distribution network. One of the objectives is to increase local use of renewables and grid resilience.</p> <p>Four European and one India real-scale demonstrators are deployed within the project in order to demonstrate the essential role of the DSO. Every country has specific constraints. Mobile storage units, demand side response schemes and grid digitalization will be</p>

	<p>implemented in the different demonstrators. The flexibility is looked at from the generation side. Regarding the contribution to stabilise the grid, network stability use cases including Resiliency will be studied.</p>
<p>INTEGRID, Ricardo André</p>	<p>The INTEGRID project covers two main goals:</p> <ul style="list-style-type: none"> - demonstrate how DSO can play a role for market facilitator; - test and validate solutions in an integrated environment enabling DSOs to plan and operate the network in a stable, secure and economic way. <p>InteGrid applications cover several assets from wind turbines to water facilities, buildings, commercial facilities, etc. The platform developed within the project bridges the gap between the distribution grid technical needs and its stakeholders. InteGrid is ensuring replicability in a multi-geography demonstrator. Reminder of the time frame within which InteGrid solves the grid constrains: It covers intraday time frames in both LV and MV sides, bridging consumers and distribution grid needs in a smart grid paradigm. The demonstration will end in June 2020 and the results will be shared at that time.</p>
<p>RESPOND, Laura Martinez</p>	<p>The RESPOND project aims to develop solutions that will deliver demand response at the building level. It proposes optimized control option for end consumer. Three utilities participate to test the RESPOND solution in the residential sector.</p> <p>One of the main objectives of the project is to engage building occupants for adapting their behaviour and use the high penetration of renewables energy argument to promote the demand response. Moreover, the RESPOND solution creates new business opportunities.</p>
<p>PACE, Thomas Vanhouwaert</p>	<p>The PACE project develops Fuel Cell micro-Cogeneration unit. The main objectives are to bring hydrogen to home and produce their own electricity and heat, as well as reduce the cost of the technology without subsidies from the government. The technology can be used for charging EV and powering heat pumps.</p>
<p>14:55-15:20</p>	<p>Panel discussion on technical aspects, with projects participants and European Commission</p> <p>The questions addressed are: How to better work together across the projects, to overcome the challenges, maximise the benefits and share lessons learned?</p> <p>The main points discussed during the panel discussion are highlighted below by project.</p>
	<p>RESPOND: Regarding demand response, more specific regulation for privacy data is requested, in addition of the GDPR.</p> <p>IElectrix: A closed platform is used but based on international standards for the mobile apps, ensuring interoperability and the development of plug and play systems are needed. In India, recommendations about fees and regulations have to be formulated to the regulation bodies.</p>

	<p>PLANET: Industrial data are interoperable. An open-source middleware is under development.</p> <p>Social acceptance of the solutions?</p> <p>INTEGRID: The first way is to inform the people and establish a trust-based relationship with local communities. If utilities are able to explain why the data are needed it will avoid most of the issues about social acceptance. The drivers are different depending on the communities and the sector that you want to integrate (residential, industrial, commercial customers etc). The strategies have to be adapted.</p> <p>IElectrix: Storage system enable to consume the locally produced electricity. In India, a High-School have been integrated. Students can spread the messages to their parents, families and communities (Bottom-up approach).</p> <p>InteGRIDy: Make things simple is key. Explain clearly who you are, the benefits for the customer and stress the fact that it is free for them to participate to such initiatives.</p> <p>RESPOND: Data collection is a matter of trust, offering incentives (reduction for the participants, etc) is recommended. Being transparent is also key.</p> <p>Financial aspects of the solutions: what are the challenges?</p> <p>Reminder: Incentives to engage the citizens are needed.</p> <p>PACE: Microgeneration is still very new with high prices. In Japan the technology starts to hit high numbers and the prices are dropping.</p> <p>What are the regulatory challenges?</p> <p>IElectrix: in Europe, most of the DSOs cannot own their battery system, except in some countries. There is a need to understand the operation conditions of the grids in each country where the project want to be implemented.</p> <p>Tools for Business models and replicability are needed: select the tools the best suited, see if the tools are applicable or not? In which way? It is important to see how it is replicable in other countries.</p>
15:30-15:45	<i>Coffee break</i>

Part 2

15:45-15:50	Introduction by the Commission, Eric Lecomte (DG ENER.C2)
	Presentation of the agenda and participants.
15:50-16:00	ETIP SNET focus on sector integration - messages from preliminary white paper on sector coupling - Antonio Iliceto (ETIP SNET vice chair)
	<p>Presentation of ETIP SNET works and sector coupling white paper. The ETIP SNET wants to address the whole system. Link with national research programs to find synergies, as well as with H2020 projects. Regarding the missions, extending global industrial leaderships is key.</p> <p>The Vision 2050 was published in 2018, and now the group is working on a 10-years roadmap and on the Implementation Plan 2020-2023. What is Sector coupling? The optimisation among multi-energy options for feeding industrial processes. Characteristics for storage in electric and other energy system shall be defined precisely. The white paper provides rational and categorization among storage and end-uses.</p>
16:00-16:30	<p>Presentations of projects (5' per project) and Q&A – focus on business models of sector integration, moderated by Eric Lecomte (DG.ENER.C2)</p> <p>The questions addressed are: what are the sectors and energy vectors integrated, how do they contribute to stabilise the grid for the benefit of the whole system and what is the added value of the integration? How the value of the services is shared and what is the business case?</p> <p>The main points discussed are highlighted below by project.</p>
WiseGRID, Alvaro Nofuentes	<p>The WiseGRID tools cover solar power, wind power, better management of distribution grid, integrating electromobility field and management of the batteries as well as smart homes and larger buildings. The WiseGRID cockpit has been imagined: it is a framework developed to manage the tools in a collaborative way and sustain the integration of different sectors. Business models were studied for each individual tool and the synergies between the solutions were explored to enhance the utilisation of the portfolio solution.</p>
Electrific, Maria Perez Ortega	<p>The Electrific project covers the E-mobility sector to have a smart vehicle grid integration and to enable the use of electric vehicle to balance the grid. The need to increase awareness to facilitate the use of electric vehicles is stressed as well as the importance of the link with local renewables. Tools were developed to combine the interests from the users and from the grid sides, including a charging plan:</p> <ul style="list-style-type: none"> - Need to create pricing system that will convince people not to charge when the demand is too high and stabilise the grid; - Monitoring the grid at local level, with % of renewables available and get reward;

	<ul style="list-style-type: none"> - Help the grid stability by scheduling fleets and booking the charging system. <p>Win-win business cases have been identified for the complete solution within the project.</p>
<p>COMPILE, Tomi Medved</p>	<p>The aim of COMPILE is to empower the local energy systems and foster energy communities. The project uses key exploitable results from other EU projects:</p> <ul style="list-style-type: none"> - Four technical tools including a whole management system and rules; - Two creation tools to help people understand the problem and get them involved (Operations Support System and Decision Support System). <p>The added value of the project is the stimulation of people to choose renewables solutions. For example, the module developed in the Value tool is a decision support tool for consumers or communities that want to start, join the energy community or just add additional flexible units (add new PV, batteries, EV charging, CHP) to EnC (for Energy Communities, name of the module developed in the project). It will also allow them to explore different business models and see their profitability. The community and cooperation aspect enable an easier integration of Renewable Energy Sources (RES). Sector integration will explore the possibilities of provision of Ancillary services.</p>
<p>GOFLEX, Ludwig Karg</p>	<p>The GOFLEX project global objective is to allow flexibility as a good on the market, through, among others, commercial demos. It is stressed that utilities would need open cloud-edge platform with an 'app store' providing services to their customers. In the end, the aim is to optimize BRP (Balance Responsible Party), DSO (Distribution System Operator) and other operating activities. Above all, reliable frameworks and protection of investment are needed. Within the project, two platforms were created:</p> <ul style="list-style-type: none"> - Flexibility market platform; - Aggregator platform.
<p>NOVICE, Daniel Ring</p>	<p>Within the NOVICE project, Energy Performance Contract (EPC) is used to enhance contract combining energy efficiency and demand response. It helps building owners to maximise value of their assets in offering their flexibility to the grid operator. It also leads to faster repayment of investments.</p>
<p>16:30-17:00</p>	<p>Panel discussion, with projects participants and European Commission</p> <p>The questions addressed are: how to better work together across the projects, to overcome the challenges, maximise the benefits and share lessons learned.</p>

	<p>Benefits and cost reductions have been highlighted. To valorise the flexibility of providers in the market, it needs a remuneration. Would it be enough? Are the costs reduction enough to remunerate the flexibility providers?</p> <p>The main points raised during the panel discussion are highlighted below by project.</p> <p>Electrific: At a local level it is not sufficient but in the future at a country level it could be different. There is currently a lack of dynamic pricing regulation and it is a big issue. Flexibilities definition could be very different depending on country situation.</p> <p>GOFLEX: Large scale deployment of electromobility will require Electric Vehicles (EV) batteries to be flexible, otherwise the grids will not be able to charge all EV at the same time (e.g. in the evening). Dynamic pricing and market models' platforms (dealing platforms) would be useful for dynamic prices and shall be adapted to the needs of the grid.</p> <p>WiseGRID: Low prices of electricity are obviously not sufficient to convince flexibility providers to consume less during pick consumption period. Regarding the prosumer it will depend on their motivation (hospital vs private owners etc). Sectors specificities are essential concerning their reactivity to low price.</p> <p>COMPILE: It is not just a price issue. Including flexibility options for end-users should become mandatory in the future.</p> <p>NOVICE: It is not all about the money, for instance the EPC model doesn't require investment from the end-user at the beginning of the project. An automated trading for the consumers is needed to enable the installation and release the regulation. Make easier the use of flexibility devices and have a faster implementation in the communities are pointed out.</p> <p>What should be done at EU level to overcome barriers etc?</p> <p>WiseGRID: Repository is important to keep the lessons learned, BRIDGE initiative is here for that.</p> <p>ETIP-SNET: Longer lifecycle for EU projects websites are important to not lose the outputs, making it mandatory could be a solution. It should be compulsory for new projects to look at those websites.</p> <p>EC: It would be interesting to gather all the R&I initiatives together (ETIP SNET, BRIDGE, Era.Net) and not duplicate existing platforms</p>
17:10-17:15	Closing
	<p>EC: In the project's demonstrations, it seems difficult to reward sufficiently the flexibility services and develop business models, because of the lack of dynamic electricity prices. Another reason is also that, with the limited penetration of intermittent renewables (RES) (on</p>

	<p>supply side) and EV (on demand side), there are not yet grid stability problems.</p> <p>In the future, flexibility and scheduling of EV charging, among others, will be needed when the penetration of EV and RES will be higher. In the next period, it will be important to see how BRIDGE could work on collecting and preserving results from projects.</p>
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