



Plenary 4 - Sector Integration – Decarbonisation through multi-energy carrier integration

Plenary 4 was hosted by the Magnitude and Planet projects, with the goal of presenting sector integration from the perspective of different actors in the energy system. Spatial aspects of integrating energy sectors at all levels were considered. Barriers, approaches and recommendations were outlined and discussed during the session.

Summary of Presentations:

Welcome and introduction, Alessandro Provaggi (Euroheat & Power / DHC+ Technology Platform)

- Energy integration is a key pillar of the Green Deal. During the Summer, the European Commission released a strategy on energy integration to break silos between the different networks. A more circular pathway based on energy efficiency is needed.

Sector integration from the multi-energy system operator and aggregator perspective, Christophe Gutsch (cyberGRID)

- Multi-energy systems (MES) can be used to explore synergies between energy networks. The Magnitude project has deployed technical simulation at a range of sites. Static consumption is needed to balance the electricity grid. MES act as both a generator and consumer of electricity

Small and medium prosumers in Flexibility Markets: the Italian case, Federico Boni Castagnetti (IREN)

- IREN is a multi-utility based in the North-West of Italy. Their work in the PLANET project consists of the integration of RES in the electricity network and coordination of energy vectors to overcome balancing problems.

Impact of Sector Coupling – exemplary aspects from Heating and Power-To-Gas, Dieter Most (Siemens)

- A 90% CO₂ reduction is possible in Europe with pan-European cooperation around sector integration. If we don't follow the optimum pathway, we will need carbon-negative technologies and huge hydrogen usage, which brings increased costs. District heating has a key role to play, it is a future-proof technology that can facilitate heat recovery and provide flexibility to the broader energy system.



The whole system approach: a regulatory perspective on sector integration, Luca Lo Schiavo (ARERA – Italian Authority for energy)

- Regulators and market and grid operators have to the net benefit to the entire energy system when making investment decisions. Currently, regulation of the energy system is structured vertically covering only a few sectors, which can be sub-optimal. We need to consider network operators as a whole (transmission and distribution), the whole chain of the system (from generation to supply) and finally looking at energy across sectors e.g. water, waste-management, district heating. Institutional building is the first barrier.

Key Session Outcomes:

- Energy integration is a key pillar of the European Green Deal. The silos dividing different energy networks can be broken down by adopting a circular approach, with energy efficiency as a central priority.
- Multi-energy systems can act as both generators and consumers of electricity and allow for exploration of the synergies between the different energy networks.
- District heating systems, integrating large-scale heat pumps are a key technology for enabling cost-efficient sector integration, especially at local level and in rural areas. DH is future proof, can facilitate heat recovery and can provide flexibility and energy storage.
- Customers are fundamental to the energy transition. Energy communities are increasingly becoming and important actor in the energy system, enabling the participation of a wide variety of stakeholders.
- Mobility is an increasingly important topic – big changes are coming, we need price signals and an integrated approach to avoid over investment.
- Cooperation is essential on European level and between sectors. 90% CO2 reduction is possible in Europe with pan-European smart cooperation aimed at integrating different energy sectors.

The image shows a video conference interface with five participants in a grid: Alessandro Provaggi, Luca Lo Schiavo, Dieter Most, Christoph Gutschi, and Federico Boni Castagnetti. Below the grid is a presentation slide for 'Plenary 4' on 'SECTOR INTEGRATION – DECARBONISATION THROUGH MULTI-ENERGY CARRIER INTEGRATION'. The slide features logos for planet, Magnitude, and a QR code. It also includes the text 'Slido.com #EMP_E2020', the date '07/10/20', and the text 'MAGNITUDE • EMP-E'.