



SPECIAL SESSION XXIX

Zero-carbon refuelling/recharging infrastructures and grids PNRR MOST Spoke 7 – Connected networks and Smart Infrastructure

ORGANIZED AND CHAIRED BY

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ABSTRACT

The transport sector, composed of road and rail mobility, shipping, aviation, and pipeline transport, is one of the greatest energy consumers with a significant share of global CO₂ emissions. In 2022, CO₂ emissions increased up to 8 gigatons (Gt), 3% more than in 2021. Giving more attention to mobility sectors, it is possible to observe that cars and vans, trucks and buses, and rail are most responsible for around 3.53 Gt, 2.28 Gt, and 0.094 Gt of global CO₂ emitted, respectively. Therefore, an immediate mobility sector's green transition is required. In this context, the Clean Vehicles Directive is introduced with the goal of promoting clean mobility solutions in public procurement, giving a significant boost to the demand and further diffusion of zero emission vehicles as fuel cell electric vehicles (FCEV) powered by hydrogen or battery electric vehicles (BEV) powered by batteries. However, it is not possible to develop a market for FCEVs and BEVs without adequate distribution infrastructures.



This special session aims to collect and present the research activities focused on the design and development of new hydrogen refueling infrastructures and infrastructures grid-based needed to support the sustainable mobility, founded on clean and green energy vectors, on the exploitation of renewable energy sources and on information exchanging among vehicle-infrastructure. Different issues are of interest and can support the aim of this research:

- **the maximization of the economic and environmental benefits of refueling/recharging infrastructures,**
- **the optimal management of the energy streams (hydrogen and electricity) in zero-carbon refueling/recharging stations;**
- **the integration of infrastructures in micro-grids and in sites with different renewable sources;**
- **benefits and challenges of implementing data space ecosystems to connect mobility infrastructure with refuelling and charging stations;**
- **devices and technologies for the development of advanced CCAM Services**