




Name	Tobias Christoph Brunner	
Affiliation	HYNERGY GmbH, Germany	
Invited Plenary Lecture		
Presentation Title	C ₂ H ₂ CRYOGAS hydrogen storage and refueling – a promising technology for ground, rail, ship and even aerial transportation	
Abstract (150 words)	<p>Hydrogen onboard storage is one of the key remaining challenges of hydrogen mobility with either fuel cell (FC) or hydrogen internal combustion engines (H₂ICE). 35 MPa gaseous compressed hydrogen storage (CGH₂ 35 MPa) has become the mainstream storage technology for heavy-duty transportation and rail applications: 70 MPa gaseous compressed hydrogen storage (CGH₂ 70 MPa) has been established as mainstream technology for passenger cars and light-duty vehicles. As for aviation, low-pressure liquid hydrogen storage (LH₂) is the most investigated option due to its density and weight advantages. All the aforementioned technologies come with challenges of either low density (35 and 70 MPa CGH₂) or evaporation losses (LH₂).</p> <p>C₂H₂ CRYOGAS hydrogen storage and refueling as previously tested for passenger cars by BMW and now developed for heavy-duty applications by Cryomotive is a promising candidate to overcome all challenges. C₂H₂ CRYOGAS at 40 MPa can combine very high density with low evaporation losses while being compliant to FC as well as H₂ICE and showing flexibility to be produced by either compressing LH₂ or by cryo-cooling of CGH₂.</p> <p>The presentation will elaborate on key advantages, remaining challenges and the way of C₂H₂ CRYOGAS hydrogen storage and refueling technology to market starting in 2025/26.</p>	
Biographical Sketch (150 words)	<p>Dr. Brunner is a Managing Director and Co-Owner of Hynergy GmbH, a Hydrogen Energy and Mobility Engineering company in Germany, of Cryomotive GmbH, a Startup company to develop cryogenic hydrogen storage and refueling technology for heavy-duty vehicles, as well as of Hydrogenity GmbH, a company to produce green hydrogen via water electrolysis and deliver it to mobility and industry customers in Germany. From 2016 to 2020 he also served Great Wall Motors as their VP Fuel Cell R&D. Before co-founding Hynergy GmbH in 2015, Dr. Brunner has been serving BMW Group in various roles for more than 10 years, most recently as head of BMW's Technology Project Hydrogen Fuel Cell. Under Dr. Brunner's supervision several fuel cell electric vehicle prototypes and test fleets as well as novel cryogenic storage and refueling technologies have been developed and demonstrated.</p>	