



Establishing and Supporting Hydrogen Energy Supply Chains



H2fc2018
International Hydrogen & Fuel Cell Conference
14-15 MAY 2018
NTNU, Trondheim, Norway



Programme

14 -15 May 2018

NTNU

Kalvskinnet Campus

Sverres gate 12, 7012 Trondheim, Norway

In collaboration with:



SPONSORS



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Monday 14th May 2018

Auditorium KA TBA001		Room KA SGA237
08:00 – 08:30	<i>Start and registrations</i>	
08:35 – 08:45	Opening of the conference Bjarne Foss Pro-Rector for Research NTNU, Norway	
08:45 – 08:55	<i>NTNU Energy strategic international initiatives</i> Johan Hustad Director of NTNU Energy, Norway	
AM SESSION	CHAIR: Johan Hustad, Director of NTNU Energy	CHAIR: Sigrid Lædre, SINTEF, Norway
08:55 - 09:20	KEYNOTE: ENERSENSE: Energy efficiency, storage, and sensor nexus Prof. Odne S. Burheim NTNU, Norway	
09:20 – 09:40	Bjørn Simonsen (on behalf of Everett B. Anderson) Proton OnSite, USA	
09:40 – 10:00	<i>Coated stainless steel as bipolar plates in anion exchange membrane fuel cells</i> Sebastian Proch SMT R&D, AB Sandvik Material Technology Sweden	
10:00 - 10:30	<i>Refreshment break</i>	
10:30 - 10:50	<i>A clean switch to clean energy – Fuel cell hybrids in mobility</i> Rohit Prasad Proton Motor Fuel Cell Germany	<i>Hydrogen reactor for Rydberg matter and ultra-dense hydrogen, a replication of Leif Holmlid</i> Sindre Zeiner-Gundersen University of Iceland Iceland
10:50 - 11:10	<i>Hydrogen in remote energy systems</i> Bernhard Kvaal TrønderEnergi Norway	<i>Scale effect in LaNi5-based alloys used in bio-hydrogen purification and storage</i> Anna Pykhtina Moscow Institute of Physics and Technology, Russia
11:10 - 11:30	<i>Hydrogenics HyPM™ Fuel Cell Power Modules - 15 Years of Defining Innovation, Usability and System Framework</i> Mark Kammerer Hydrogenics Germany	<i>Characterization and modelling approaches for PEM-HT fuel cells</i> Christophe Turpin & Théophile Horde LAPLACE University of Toulouse Safran Power Units Institute of Technology (IRT) Sait Exupéry France
11:35 - 12:00	KEYNOTE: Fuel cell buses for Scandinavia Bjørn Simonsen NEL Hydrogen, Norway	

12:00 - 13:00	Lunch	
PM SESSION	CHAIR: Graham Smith, SINTEF, Norway	CHAIR: Kristian M. Lien, NTNU, Norway
13:00 - 13:25	<i>Adventures in the hydrogen and fuel cell supply chain</i> KEYNOTE: Dr Kerry-Ann Adamson 4th Energy Wave UK	
13:30 - 13:50	<i>Hydrogen – flexibility in the energy system</i> Geir Magnar Brekke Statkraft Norway	<i>Reducing N₂O and CO₂ emissions from WWTPs by co-reforming of the biogas and digestate liquor to renewable H₂</i> Pelayo García-Gutiérrez School of Chemical and Process Engineering University of Leeds, UK
13:50 - 14:10	<i>Zero-emission freight trains</i> Federico Zenith SINTEF Norway	<i>An economic assessment of hydrogen energy production in Norway</i> Mahdis Moradi NTNU, Norway
14:10 - 14:30	<i>Thermal hydrogen compressors have entered the market</i> Jon Eriksen Hystorsys Norway	<i>Efficiency of on-site hydrogen production from hydrocarbons as compared to electrolysis of water</i> Mohamad Mustafa Artic University of Norway UiT, Norway
14:30 - 14:50	<i>Hydrogen supply chain in California: The race to renewable hydrogen</i> Cory Shumaker California Hydrogen Business Council USA	<i>A modular design approach for PEM electrolyzers with homogeneous operation conditions and highly efficient heat management</i> Florian J. Wirkert Westfälische Hochschule University of Applied Sciences Germany
14:50 - 15:10	<i>Cathode catalysts of sputtered Pt₃Y for PEMFCs</i> Björn Wickman Department of Physics, Chalmers University of Technology Sweden	<i>Microstructured nickel electrodes for improved efficiency of the oxygen evolution reaction</i> Michael T.Y. Paul Department of Chemistry Simon Fraser University, Canada
15:10 – 15:30	<i>Hydrogen Value Chains and Commercialization Opportunities: an Australian perspective</i> Attilio Pigneri Hydrogen Utility Australia	<i>Techno-economic assessment of ammonium bicarbonate based RED system for electricity and hydrogen production</i> Odne S. Burheim Department of Energy and Process Engineering NTNU, Norway
15:30 - 16:00	Refreshment break	

MID-PM SESSION	CHAIR: Alejandro Oyarce Barnett, SINTEF	CHAIR: Björn Wickman, Chalmers, Sweden
16:00 - 16:25	<i>Hydrogen as energy carrier in a sustainable energy system</i> KEYNOTE: Dr Steffen Møller-Holst SINTEF, Norway	
16:30 - 16:50	<i>Electrochemical materials for hydrogen technologies: how the supply chain can support OEMs</i> David Hodgson PV3 Technologies, UK	<i>Value of hydro power flexibility for hydrogen production in constrained transmission grids</i> Espen Flo Bødal NTNU Norway
16:50 - 17:10	<i>First experiences of hydrogen fork lifts at ASKO</i> Roger Sæther ASKO Norway	<i>Ageing integration in PEMFC stack simulator for onboard prognostic purposes in electrical bus applications</i> Nadia Yousfi Steiner FEMTO-ST, CNRS, Université Bourgogne Franche-Comté, France FCLAB, CNRS, Université Bourgogne Franche-Comté, France
17:10 - 17:30	<i>Pressurised H2 solutions for the maritime Segment</i> Tomas Tronstad HYON, Norway	<i>Development of durable and ultra-low platinum loaded gas diffusion electrodes applicable as PEM fuel cell cathodes</i> Pit Podleschny Westfälische Hochschule (WHS) Ruhr-University Bochum (RUB), Germany
17:30 - 17:50	<i>Upscaling the production of high temperature polymer electrolyte fuel cells – an assessment of reproducibility, performance and durability</i> Hans Aage Hjuler DPS, Denmark	<i>The influence of argon, air and hydrogen on thermal conductivity of GDL and temperature gradients in PEMFCs</i> Robert Bock Department of Energy and Process Engineering NTNU, Norway
17:50 - 18:10	<i>Learnings from MARANDA project: Towards a hybrid FC based marine powertrain system</i> Laurence Grand-Clément PersEE, France	<i>Temperature distribution in a new composite material for hydrogen storage – Design study of different cooling concepts</i> Lars Baetcke Hamburg University of Technology (TUHH) Germany
18:10 - 18:30	<i>Design and development of a laboratory for the study of PEMFC system for marine applications</i> Thomas Lamberti DIME-TPG Polytechnic School, University of Genoa, Italy	<i>Impact of dynamic operation in the degradation of alkaline water electrolysis stack providing grid services</i> Vanesa Gil Hernandez The Aragonese Foundation for Research & Development (ARAID) Foundation for the Development of the Hydrogen Technologies, Aragon (FHa), Spain
18:30 - 20:00	Poster & Networking session inc. buffet (sponsored by NTNU) – Room KA 102 (next to canteen)	
20:00	End of Day 1 Conference	

Tuesday 15 th May 2018		
Auditorium KA TBA001		Room KA SGA237
08:00 - 08:30	Start and registrations	
AM SESSION	CHAIR: Anders Ødegård, SINTEF, Norway	CHAIR: Odne S. Burheim, NTNU, Norway
08:30 - 08:55	Advancing fuel cell commercialization in a global economy KEYNOTE: Shanna D. Knights Ballard Power Systems, Canada	
09:00 - 09:20	<i>Large scale hydrogen solutions</i> Randi Mette Hegseth Statoil Norway	<i>Pre-normative research on vented hydrogen deflagrations: status and prospects</i> Trygve Skjold Gexcon, Norway
09:20 - 09:40	<i>Bipolar plates for PEM systems</i> Sigrid Lædre SINTEF Industry NTNU, Norway	<i>Pore-scale simulation of flow through gas diffusion layers</i> Daniel Niblett University of Manchester, UK
09:40 - 10:00	<i>The regulative status for the approval of hydrogen as fuel and fuel cells</i> Hans-Christian Koch-Wintervoll DNV GL AS Norway	<i>Metal hydrides for hydrogen based energy storage</i> Volodymyr A. Yartys IFE/NTNU Norway
10:00 - 10:30	Refreshment break	
10:30 - 10:50	<i>Advanced ceramic materials for fuel cell technologies</i> Anne Dalager Dyrli Cerpotech, Norway	<i>Large-scale hydrogen production and liquefaction for regional and global export</i> David Berstad SINTEF, Norway
10:50 - 11:10	<i>Large scale hydrogen production renewable deployment and green economy</i> Adamo Scrceni Thyssenkrupp Germany	<i>The use of X-ray computed tomography for elucidating the materials design of gas diffusion electrodes</i> Jennifer Hack Electrochemical Innovation Lab, Department of Chemical Engineering, University College London, UK
11:10 - 11:30	<i>Fuel cell development at ElringKlinger</i> Jürgen Kraft Elring Klingersindre Germany	<i>Low-frequency EIS for PEM fuel cell diagnostics</i> Ivar J. Halvorsen SINTEF Mathematics & Cybernetics, Norway
11:35 - 12:00	KEYNOTE: Hydrogen-economy and open research issues Prof. Daniel Hissel FCLAB, Université de Franche-Comté, France	
12:00 - 13:00	Lunch	

PM SESSION	CHAIR: Shanna D. Knights - Ballard Power Systems, Canada	CHAIR: Bruno G. Pollet, NTNU, Norway
13:00 - 13:25	<p><i>The slow and inevitable death of the PEMFC heart. The corrosion of Pt materials in acidic media</i> KEYNOTE: Prof. Gregory Jerkiewicz Queen's University Canada</p>	
13:30 - 13:50	<p><i>Hydrogen in the maritime: A task under the IEA hydrogen implementing agreement</i> Ingrid Schjøberg NTNU Norway</p>	<p><i>Renewable hydrogen needs in the biomass to liquid process</i> Odne S. Burheim NTNU Norway</p>
13:50 - 14:10	<p><i>Electric powertrain technology for fixed wing aircrafts</i> Steffen Poggel Deutsches Zentrum für Luft- und Raumfahrt e.V. Germany</p>	<p><i>Electrocatalytic properties of Ru@Pt core-shell nanoparticles</i> Frode Seland NTNU, Norway</p>
14:10 - 14:30	<p><i>Status and upscale of the Swiss hydrogen cycle</i> Thomas Walter H2 Energy Switzerland</p>	<p><i>Lock-in thermography as a diagnostic tool for water detection and quantification in Polymer Electrolyte Fuel Cells (PEFCs)</i> Lara Rasha Electrochemical Innovation Lab, Department of Chemical Engineering, University College London, UK</p>
14:30 - 14:50	<p><i>Gaseous Fuels for Maritime Propulsion Systems – Operational Experiences, Safety and Training</i> Vilmar Æsøy NTNU Ålesund, Norway</p>	<p><i>Effect of rapid solidification on the electrochemical performance of Zr-Ti Laves based alloys as a negative electrode of Nickel Metal Hydride Batteries</i> Ika Dewi Wijayanti Department of Battery Technology, Institute for Energy Technology (IFE), Kjeller Department of Mechanical Engineering, ITS, Surabaya, Indonesia</p>
14:50 - 15:10	<p><i>Green transport in rural areas</i> Thomas Bjørdal NVES (G-PaTRA) Norway</p>	<p><i>Preliminary design of high speed passenger ferry</i> Fredrik Aarskog Institute for Energy Technology (IFE), Kjeller Norway</p>
15:10 - 15:30	<p><i>Carbon free hydrogen production from natural gas – Adding value through sustainable solutions</i> Torkild Reinertsen Reinertsen New Energy Norway</p>	<p><i>Non-technical issues for realising hydrogen propulsioned passenger crafts</i> Trond Strømgen Maritim Association Sogn&Fjordane Norway</p>
15:30 - 16:00	Refreshment break	

MID-PM SESSION	CHAIR: Kristian E. Vik, NHF, Norway	CHAIR: Federico Zenith, SINTEF, Norway
16:00 - 16:25	Progress in hydrogen safety research and engineering KEYNOTE: Prof. Vladimir Molkov HySAFER, University of Ulster UK	
16:30 - 16:50	<i>SH2IFT – Safe Hydrogen Fuel Handling and Use for Efficient Implementation</i> Anders Ødegård SINTEF Norway	<i>Rational design of transition metal nanocatalysts (H2O2O - CritCat)</i> Jaakko Akola NTNU Norway
16:50 - 17:10	<i>Value chain cooperation to implement hydrogen in the energy system</i> Ole Svendgård Fornybarklyngen (Renewable Energy Cluster) Norway	<i>Liquefied biogas as a hydrogen carrier for fuel cells</i> Kristian M. Lien NTNU Norway
17:10 - 17:30	<i>Local hydrogen supply for zero emission transport</i> Øystein Ulleberg IFE Norway	<i>Liquid hydrogen releases show dense gas behaviour</i> Olav Roald Hansen Lloyd's Register Consulting Norway
17:30 - 17:50	<i>The feasibility of hydrogen production in a circular economy context</i> Kyrre Sundseth SINTEF Norway	<i>Heat Management of Gas Switching Water Splitting for Efficient Carbon-Free Hydrogen Production from Natural Gas</i> Ambrose Ugwu Norwegian University of Science and Technology, Trondheim, Norway
17:50 - 18:10	<i>The use of power ultrasound for the fabrication of ORR and OER catalysts</i> Bruno G. Pollet NTNU Norway	<i>The hydrogen project in Hemne municipality</i> Helen Hartel Helen Hartel Rådgivning AS Norway
18:15 - 18:30	Closing remarks Bruno G. Pollet & Anders Ødegård	
18:30	End of H2fc2018	