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# HydrogenDays 2021

## Hydrogen Days 2021 – Final Programme

### 24.3. 2021

| 24.3.                     | Duration | End   | Contribution                                            | Speaker                    | Organization                         |
|---------------------------|----------|-------|---------------------------------------------------------|----------------------------|--------------------------------------|
| Chairperson: Karel Bouzek |          |       |                                                         |                            |                                      |
| 9:00                      | 0:10     | 9:10  | Organizers welcome                                      | Karel Bouzek/Karin Stehlík | UCT Prague/HYTEP, CZ                 |
| 9:10                      | 0:05     | 9:15  | Auspice's welcome                                       | Karel Havlíček             | Ministry of Industry & Trade MIT, CZ |
| 9:15                      | 0:05     | 9:20  | Auspice's welcome                                       | Richard Brabec             | Ministry of the Environment, CZ      |
| 9:20                      | 0:05     | 9:25  | Auspice's welcome                                       | Luděk Sosna                | Ministry of Transportation, CZ       |
| 9:25                      | 0:05     | 9:30  | Auspice's welcome                                       | Tomáš Burdych              | Ministry of Regional Development, CZ |
| 9:30                      | 0:05     | 9:35  | Auspice's welcome                                       | Marek Svoboda              | Ministry of Foreign Affairs, CZ      |
| 9:35                      | 0:05     | 9:40  | Sponsor's welcome                                       | Daniel Jiříčka             | ÚJV Řež, CZ                          |
| 9:40                      | 0:15     | 9:55  | European Hydrogen Strategy                              | Bart Biebuyck              | FCH JU, BE                           |
| 9:55                      | 0:10     | 10:05 | Importance of Research and education in H2 technologies | Olaf Jedicke               | Hydrogen Europe Research, BE         |



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|----------------------------|------|-------|------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------------------------------|
| 10:05                      | 0:15 | 10:20 | Germany's National Hydrogen Strategy: goals, next steps and European initiatives                     | Stefan Kaufmann             | Federal Ministry of Education and Research, DE      |
| 10:20                      | 0:15 | 10:35 | The Hydrogen Strategy of the Netherlands and the implementation phase                                | Rodrigo Pinto Scholtbach    | Ministry of Economic Affairs and Climate Policy, NL |
| 10:35                      | 0:15 | 10:50 | Hydrogen Strategy of the Czech Republic                                                              | Petr Mervart                | Ministry of Industry and Trade, CZ                  |
| 10:50                      | 0:20 | 11:10 | <b>Break</b>                                                                                         |                             |                                                     |
| Chairperson: Karin Stehlík |      |       |                                                                                                      |                             |                                                     |
| 11:10                      | 0:15 | 11:25 | Ústí Hydrogen Valley                                                                                 | Martin Mata                 | Innovation Center of the Ústí Region, CZ            |
| 11:25                      | 0:15 | 11:40 | Smart specialisation study on hydrogen technologies in Kosice region                                 | Maros Halama                | TU Košice, SK                                       |
| 11:40                      | 0:15 | 11:55 | Current status and prospects for development of hydrogen value chain in Sweden                       | Vitaliy Tsvyntarnyy         | Business Sweden, SE                                 |
| 11:55                      | 0:15 | 12:10 | Chilean Hydrogen Association (H2 - Chile) – Promoting a Green Hydrogen Ecosystem                     | María Paz de la Cruz        | Chilean Hydrogen Association, RCH                   |
| 12:10                      | 0:10 | 12:20 | Q&A                                                                                                  |                             |                                                     |
| 12:20                      | 1:00 | 13:20 | <b>Lunch</b>                                                                                         |                             |                                                     |
| Chairperson: Matthias Jahn |      |       |                                                                                                      |                             |                                                     |
| 13:20                      | 0:20 | 13:40 | Decarbonising Freight Transport - The Role of Hydrogen-Based Fuels                                   | Robert Steinberger-Wilckens | University of Birmingham, UK                        |
| 13:40                      | 0:20 | 14:00 | Fuel Cells for mobile applications – technological approaches towards cost effective mass production | Thomas von Unwerth          | TU Chemnitz, DE                                     |



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|---------------------------------------|------|-------|--------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------|
| 14:00                                 | 0:20 | 14:20 | Characterisation of subassemblies and fast in-line quality assessment in Fit-4-AMandA project    | Martin Biák                | TU Chemnitz, DE                   |
| 14:20                                 | 0:20 | 14:40 | <b>BREAK</b>                                                                                     |                            |                                   |
| Chairman: Robert Steinberger-Wilckens |      |       |                                                                                                  |                            |                                   |
| 14:40                                 | 0:20 | 15:00 | Green hydrogen – a key component for CO2 emission mitigation in industrial processes             | Matthias Jahn              | Fraunhofer IKTS, DE               |
| 15:00                                 | 0:20 | 15:20 | Production of renewable hydrogen from solar power in Litvínov                                    | Václav Bystrianský         | UniCre, CZ                        |
| 15:20                                 | 0:20 | 15:40 | QualyGridS - Standardized qualifying tests and business cases of electrolyzers for grid services | Regine Reissner            | German Aerospace Center (DLR), DE |
| 15:40                                 | 0:20 | 16:00 | <b>BREAK</b>                                                                                     |                            |                                   |
| Chairperson : Thomas von Unwerth      |      |       |                                                                                                  |                            |                                   |
| 16:00                                 | 0:20 | 16:20 | Linde FuelCell – Advantages and product overview                                                 | Josef Bartoníček           | Linde Material Handling, CZ       |
| 16:20                                 | 0:20 | 16:40 | Fuel cell cargo bicycles for emission-free logistics                                             | Torsten Knöri              | German Aerospace Center (DLR), DE |
| 16:40                                 | 0:20 | 17:00 | Hydrogen storages for flat box-shaped design spaces in electric vehicle architectures            | Michael Ruf                | BMW AG, DE                        |
| 17:00                                 | 0:20 | 17:20 | Nanotechnological approaches as promising ways for effective hydrogen storage                    | Ivan Saldan                | CEITEC, CZ                        |
| 17:20                                 | 0:05 | 17:25 | Wrap up of day 1                                                                                 | Karel Bouzek/Karin Stehlík | UCT Prague/HYTEP                  |



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## 25.3. 2021

| 25.3.                        | Duration | End   | Contribution                                                                                                          | Speaker                     | Organization                                         |
|------------------------------|----------|-------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------------|
| 9:00                         | 0:10     | 9:10  | Welcome by Chairman                                                                                                   | Václav Bystrianský          |                                                      |
| 9:10                         | 0:20     | 9:30  | Teaching FCH Technologies in a Masters' Course across Europe                                                          | Robert Steinberger-Wilckens | University of Birmingham, UK                         |
| 9:30                         | 0:20     | 9:50  | The Hydrogen Lab in Görlitz (HLG): a joint research platform                                                          | Maciej Satora               | Fraunhofer-Gesellschaft IWU, DE                      |
| 9:50                         | 0:20     | 10:10 | Green Hydrogen – case studies from other European countries                                                           | Martin Dittrich             | Bilfinger Tebodin, CZ                                |
| 10:10                        | 0:20     | 10:30 | European Hydrogen Backbone – A dedicated hydrogen infrastructure                                                      | Karin Stehlík               | NET4GAS, CZ                                          |
| 10:30                        | 0:20     | 10:50 | <b>BREAK</b>                                                                                                          |                             |                                                      |
| Chairperson: Regine Reissner |          |       |                                                                                                                       |                             |                                                      |
| 10:50                        | 0:20     | 11:10 | Energetic Analysis and Optimization of Decentral Micro Hydrogen Refuelling Stations Using Electrochemical Compression | Linda Schorer               | Research Cluster Electrochemistry, DHBW Mannheim, DE |
| 11:10                        | 0:20     | 11:30 | New Low Power Modular PEMFC for Transportation Applications operating under Harsh Conditions                          | Christophe Kinkelin         | Univ. Grenoble Alpes/CEA, FR                         |



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|----------------------------|------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------|
| 11:30                      | 0:20 | 11:50 | Direct catalytic methanation of carbon dioxide in biogas                                                                                          | Jan Kulas               | ÚJV Řež, CZ                                                                  |
| 11:50                      | 0:20 | 12:10 | Fiber-like structure on proton exchange membrane created by magnetron sputtering and plasma etching as a catalyst support for water electrolyzers | Tomáš Hrbek             | Charles University, CZ                                                       |
| 12:10                      | 0:20 | 12:30 | <b>BREAK</b>                                                                                                                                      |                         |                                                                              |
| Chairperson: Martin Paidar |      |       |                                                                                                                                                   |                         |                                                                              |
| 12:30                      | 0:20 | 12:50 | NiFe anodes for advanced alkaline electrolysis                                                                                                    | Stefan Loos             | Fraunhofer Institute for Manufacturing Technology and Advanced Materials, DE |
| 12:50                      | 0:20 | 13:10 | High performance alkaline water electrolyser with highly porous non-noble metal electrodes produced by air plasma spraying                        | Fatemeh Sanaz Razmjooei | German Aerospace Center (DLR), DE                                            |
| 13:10                      | 0:20 | 13:30 | Separators for alkaline water electrolysis based on porous polymeric diaphragms modified by graft-polymerization of acrylic acid                  | Lubomir Stano           | Comenius University in Bratislava, SK                                        |
| 13:30                      | 1:00 | 14:30 | <b>LUNCH</b>                                                                                                                                      |                         |                                                                              |
| Chairperson: Martin Biák   |      |       |                                                                                                                                                   |                         |                                                                              |
| 14:30                      | 0:20 | 14:50 | Evaluation of the influence of anion selective material and preparation method on a performance of CCM-MEA in alkaline water electrolysis         | Michaela Plevová        | University of Chemistry and Technology, Prague, CZ                           |
| 14:50                      | 0:20 | 15:10 | Progress in introducing membranes into alkaline water electrolysis                                                                                | Karel Denk              | University of Chemistry and Technology, Prague, CZ                           |



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| 15:10                    | 0:20 | 15:30 | Aerosol synthesis of nanoparticles for deposition of catalytic layers                                                              | Tomáš Němec                  | Institute of Thermomechanics, Academy of Science, CZ |
| 15:30                    | 0:20 | 15:50 | Ir-decorated Pt nanoparticles for unitized regenerative fuel cell catalyst                                                         | Lucinda Blanco Redondo       | Charles University, CZ                               |
| 15:50                    | 0:20 | 16:10 | <b>BREAK</b>                                                                                                                       |                              |                                                      |
| Chairperson: Tomáš Němec |      |       |                                                                                                                                    |                              |                                                      |
| 16:10                    | 0:20 | 16:30 | Experimental study on the catalyst coated membrane of PEM electrolyzer                                                             | Amadeu Rocha                 | University of Porto, PT                              |
| 16:30                    | 0:20 | 16:50 | Electrochemical behaviour of H <sub>3</sub> PO <sub>3</sub> in a Pt/H <sub>3</sub> PO <sub>4</sub> system at elevated temperatures | Martin Prokop                | University of Chemistry and Technology, Prague, CZ   |
| 16:50                    | 0:20 | 17:10 | Epoxy resin/graphites composites for PEM FCs' Bipolar Plates                                                                       | Alina M. Darabut             | Charles University, CZ                               |
| 17:10                    | 0:20 | 17:30 | Closing ceremony                                                                                                                   | Karel Bouzek / Karín Stehlík | UCT, Prague/ HYTEP, CZ                               |

## Poster section

| Contribution                                                                                | Author                          | Organization                                 |
|---------------------------------------------------------------------------------------------|---------------------------------|----------------------------------------------|
| Activities of the Joint Programme on Fuel Cells and Hydrogen in EERA                        | Martin Páidar   Karel Bouzek    | UCT Prague, CZ                               |
| Electric bicycle powered by the hybrid energy source using PEMFC hydrogen-oxygen fuel cells | Andrzej Raźniak, Mateusz Łasica | AGH University of Science and Technology, PL |
| Hybrid power source involving 2kW polymer membrane fuel cell stack for supplying drone      | Andrzej Raźniak                 | AGH University of Science and Technology, PL |
| Regional hydrogen trains on Czech railways – A techno-economic analysis                     | Federico Zenith                 | SiNTEF, N                                    |
| MAMA-MEA: Mass Manufacture of MEAs Using High Speed Deposition Processes                    | Martin Biák                     | TU Chemnitz, DE                              |



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|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------|
| Indication of proton conduction in the La <sub>2-x</sub> AxNi <sub>1-y</sub> FeyO <sub>4+δ</sub> cathode materials for SOFC/SOFC-H+ | Artem Gilev                                        | Ural Federal University, RU            |
| Material degradation testing in solid oxide electrolysis / fuel cell                                                                | Petra Dvořáková<br>Ruskayová                       | Research Center Rez, CZ                |
| Solid oxide electrolysis / fuel cell loop                                                                                           | Aleš Kejla                                         | Research Center Rez, CZ                |
| Development of an alkaline electrolyzer for storing electric power in the hydrogen form                                             | M. Kludský, J.<br>Čermáková, A.<br>Doucek          | UJV Řez, CZ                            |
| Nickel based electrode as cathode catalyst in alkaline water electrolysis                                                           | Jana Záchenská,<br>Maroš Ábel, Matilda<br>Zemanová | Slovak University of<br>Technology, SK |
| NiCoP cathode catalyst for electrochemical water splitting: Structural and electrochemical characterization                         | Martin Durovic,<br>Jaromir Hnat, Karel<br>Bouzek   | UCT Prague, CZ                         |
| Enhanced photocatalytic H <sub>2</sub> production from H <sub>2</sub> S on metal modified CdS-ZnS semiconductors                    | M.A. Mersel, L. Fodor,<br>O. Horváth               | University of Pannonia, HU             |
| Hydrogen Evolution Reaction on CoMo- and MoNi-alloy Modified Nickel Foam Surface                                                    | M. Łuba, M.<br>Kuczyński                           | University of Warmia and<br>Mazury, PL |