Hydrogen, Fuel Cells and Electromobility at German Airports

16.09.15 Lampoldshausen

NOW GmbH
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NOW GmbH
National Organization Hydrogen and Fuel Cell Technology

- Government-owned company (100 %); founded in 2008
- Supervisory board: BMVI (Chair), BMWi, BMBF, BMUB
- Advisory board: strategic controlling and development of the programmes

Both programmes address the market preparation
Some time ago - Aviation industry began thinking green

- Sustainable air-mobility
- Objectives of aviation associations


Green international activities (what and where?)
Hydrogen and Fuel Cell Projects – in the past

USA, 2010
San Francisco International Airport is planning a Hydrogen Refueling Station (HRS)

Canada, April 2009
Diverse Hydrogen applications (HRS, Bus, baggage tow car) at Pierre Elliott Trudeau and Vancouver International airport

England, February 2010
DHL und London Stansted Airport sign contract for Hydrogen On Site Trials (HOST).

Netherland, Nov. 2009
Trial with baggage tow car of with KLM Equipment Service (KES) at Amsterdam Schiphol Airport

Japan
HRS at JHFC Kansai Airport
Green national activities (what, where and how?)
Hydrogen and Fuel Cell Projects: the past – the future

Airport Hamburg
- tow cars (2006)
- Airbus HH FC-APU

Airport Munich
- HRS & Trial forklift (2004)

Advantages:
- Economies of scale
- Create synergies
- Gain & Exchange informations
- Higher public visibility and attention

Airport Frankfurt
- FC Car (2006)
- Trial FC-UPS (2011)

Airport Stuttgart
- HRS (ab 2009)

German Airport Alliance

German Airport Alliance for Hydrogen and Fuel Cells
gathering partners for cooperation
WG Hydrogen, Fuel Cells, E-Mobility at German Airports
5 years anniversary & external advantages

15th meeting on 17th Sept. 2015

Technology deployment:
- 16.09.2015 Joint Clean Sky FCH JU Workshop on FCH Technologies in Lampoldshausen
- 11.03.2015 Visit of a chinese Delegation at NOW in Berlin
- 22.01.2014 Visit of a chinese Delegation at NOW in Berlin
- 13.06.2013 Aerospace Alternative Fuels and Associated Environmental Impacts Symposium in Brussels
- 25.11.2011 representatives of Oslo Airport in Berlin
- Working Group introduced

WG Hydrogen, Fuel Cells, E-Mobility at German Airports
5 years anniversary & internal advantages

33 Guest Speakers
(Supplier Presentations)

For the exchange of experience and knowledge
WG Hydrogen, Fuel Cells, E-Mobility at German Airports

Latest news

Working Group „Hydrogen, Fuel Cells and Elektromobility at airports“

… Working Scope opened for Electromobility

… Ground Power Unit with Fuel Cell at FRA, HAM and STR was in discussion

… new WG members

… Airport Munich gets actively involved

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Potential project-segments for Fuel Cell applications
Project example: NIP-Project 03BV116
Antares H3 – emission free fuel cell propulsion

Projectdata:
- Project consortium: Lange Aviation, DLR
- Funding budget 4,5 Mio. €
- 01.03.10 - 28.02.14

Technical specifications
Max speed: >200km/h
Range: > 750km
Hydrogen storage: 5kg (at 350bar)
Max. power fuel cell system: ca. 33kW
Fuel cell system efficiency: max.52%

Project example: NIP-Project 03BV113
Multi Functional Fuel Cell System (MFFCS)

Projectdata:
- Funding budget 7,15 Mio. €
- January 2010 – December 2013

Project consortium:
Airbus, EADS Deutschland, Apparatebau Gauting, Berner & Mattner Systemtechnik,
Deutsches Zentrum für Luft- und Raumfahrt (DLR), Diehl Aerospace
Project example: Vienna Airport
Noise measuring with Fuel Cell Power Supply

- Unbegrenzte Messdauer
- Kanisteraustausch bei Bedarf (etwa 10-15 Wochen, 1L=1,1kWh=€ 4,--)
- Lebensdauer-Stack 6.000h
- LiFePO4-Batterie (60Ah, 3.000 Zyklen, schnell-ladefähig)

Project example: Stuttgart Airport
eFleet

Projectdata:
- March 2013 - February 2016
- Projectbudget 2.3 Mio. €
**Project example: Airport Frankfurt**

**E-PORT AN: Catering, Plane-towing and taxiing**

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**LSG eLift:**
Development of Catering-Car on the base of emissionfree Elektromobility
- January 2013 - June 2016
- Projectbudget 2.9 Mio. €

[Link](www.e-port-an.de)

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**TaxiBOT:**
- Certifying, Trial and Integration of Pilot driven towings
- January 2013 - June 2016
- Projectbudget 2.5 Mio. €
- (first demonstrator in 2008)

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Thank you for your attention.