

Transport Fuel R&D-institutions and projects in Austria

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Transport Fuels: Crucial factor and driver towards sustainable mobility

R&D-projects, research institutions and funding programs in Austria, Europe and global cooperation within the International Energy Agency

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in cooperation with  

Content of Presentation

- Austrian Agency for Alternative Propulsion Systems
- R&D institutions and projects
- National and European policy goals
- Legal and institutional framework conditions
- Vehicle and fuel industry in Austria
- Funding and networking activities of the Austrian Ministry for Transport, Innovation and Technology

Austrian Agency for Alternative Propulsion Systems

PPP between industry, research and technology policy as strategic cooperation for the development and market introduction of alternative propulsion systems and fuels

- Additional support activities for industry and research beyond public funding of R&D projects.
- Stimulating the co-operation of complimentary partners in order to overcome the “chicken and egg problem”.
- Building up interdisciplinary research co-operations and comprehensive and trans-sectoral demonstration projects.
- Compiling and summarizing all available information on alternative propulsion systems.
- Analyzing technological trends and evaluating technology foresight and assessment studies.

Austrian Agency for Alternative Propulsion Systems

- Creating supportive framework conditions (funding budget for R&D-Programs, privileged access to sensitive areas, fuel taxation, codes, emission targets or technical standards) in order to avoid barriers for innovation.
- Discussing topics and organization of BMVIT program calls with A3PS members in order to optimize the funding instruments.
- Informing extensively and in detail about all regional, national and international funding opportunities.
- Harmonizing regional and national research activities in order to avoid duplication of efforts and to achieve a critical mass in the international perception.

Austrian Agency for Alternative Propulsion Systems

- Supporting the definition of interesting niches for Austrian research institutions within international development and R&D processes.
- Facilitating the integration in national and international networks as well as participation in FP6 projects and other research activities.
- Networking with FP7, EU-technology platforms, ERA-NET's, IEA and other activities.
- BMVIT as neutral partner for all stakeholders and facilitator in joining consortia or integrating technology users in demonstration projects by public procurement.
- Promoting all alternative propulsion systems and fuels (hybrids, BEV, FCV, biofuels, CNG, hydrogen, ...)

Austrian Agency for Alternative Propulsion Systems

- A3PS pursues no own research but supports R&D institutions by information-, research- and cooperation management.
- Focusing on vehicle technology but taking aspects of environmental and energy policy and technologies into account (sustainability in fuel production, Kyoto commitment, security of supply,...).
- Reducing development risks by promoting multi-use technologies with economic value beyond vehicle applications (improved electric motor, electronics, simulation, material research,...).
- The early stage in the innovation cycle offers small countries and companies high economic opportunities and strong impact on the developing process.

Austrian Agency for Alternative Propulsion Systems

- Clear distinction of the thematic promotion of A3PS and its strategic partnership with industry and research from the operational duties of the Austrian Research Promotion Agency FFG (evaluating proposals, signing contracts, funding projects and controlling their results).
- Marketing for Austrian technology expertise and the engineering and product know-how of the members by publications and presentations at conferences.
- Providing additional support to Austrian R&D institutions by new A3PS employees.
- Making BMVIT confident to invest so heavily in this technology field by assembling already 27 partners in the Agency.

Austrian Agency for Alternative Propulsion Systems



- Giving Austrian research institutions a long-term security in planning and investments due to a clear public commitment beyond election terms.
- Pursuing a technology breakthrough in a key area of the energy and transport industry by gaining synergies in a strategic and determined public private partnership between industry, research institutions and policy makers.

27 Members of A3PS:



Industrial Partners:

AVL List

Magna Steyr

OMV

Plansee

Fronius International

GE Jenbacher

AustriaTech



Rethinking Propulsion.

University Institutes

- University of Natural Resources and Applied Life Sciences
- TU Vienna - Institute for ICE and Automotive Engineering
- TU Vienna - Institute of Chemical Technology and Analytics / Electrochemistry
- TU Vienna - Institute of Electrical Power Systems and Energy Economics
- TU Vienna - Institute for Thermodynamics and Energy Conversion- ITE
- TU Vienna - Institute of Chemical & Process Engineering
- TU Graz - Institute for ICE and Thermodynamics
- TU Graz - CD - Laboratory for Fuel Cell Systems
- TU Graz - Institute of Electrical Measurement and Measurement Signal Processing

SME's and Research Institutes

- ALPPS Fuel Cell Systems
- Bitter Group
- HyCentA Research
- Joanneum Research
- Arsenal Research
- Austrian Research Centers
- ECHEM - Centre for Applied Electrochemistry
- Profactor Group
- Austrian Bioenergy Centre
- Biovest Consulting
- Austrian Hydrogen Association

A3PS - Portfolio

- Stimulating the cooperation of complimentary partners, building up interdisciplinary research co-operations and trans-sectoral demonstration projects.
- Providing, compiling and analyzing information (technology foresight and assessment, studies, lectures, workshops, conferences, travel reports,...).
- Creating innovation friendly framework conditions (Regulatory- and fiscal policy, fuel taxation, endowment of research programs, 7. FP, codes and standards, emission limits, access to sensitive areas,...).
- International networking and marketing for Austrian R&D competence and the product and engineering Know How of A3PS members.

European Policy Goals

- Reduction of greenhouse gases (as of 1990) by at least 20% by 2020
- Increasing energy efficiency by 20% until 2020
- 20% renewable energy by 2020
- 10% Biofuels by 2020
- Reduction of fleet emission to 120/130g CO₂/km until 2012



Goals of the Austrian Government

- Increase the share of alternative fuels in the transport sector to 10% until 2010, and 20% in 2020.
- 5% of the new registered cars should contain an alternative propulsion system by 2010.
- Increase the share of renewable energy on the total energy consumption to at least 25% until 2010 and seen from today's share, double it to 45% until 2020.
- Implementation of E-85 and methane filling stations.
- Establishment of a methane based fuel with a bio-methane content of at least 20% until 2010.
- Improvement of the regulatory framework for the biogas feed-in.

European Framework Conditions



- White Book of the European Commission
 - CO₂-emissions of the transport sector 1990 to 2010 will increase by 50% to ca. 1.113 Mrd. t.
 - More than 30 % of the total European energy consumption is allotted to the transport sector
 - Dependency of the transport sector from crude oil (about 98 %) must be decreased by alternative fuels
- March 2003 Directive 2003/30/EC
 - January 1st 2005 2 % energ.
 - January 1st 2010 5.75 % energ.

Austrian Legislation

- Amendment to the “Kraftstoffverordnung” implements Directive 2003/30/EC into national law in November 2004
 - October 1st 2005 2.5 % energ.
 - October 1st 2007 4.3 % energ.
 - October 1st 2008 5.75 % energ.
- Since October 2005 4.7 %vol. of biodiesel blended to diesel
- Sustainable fuels share of 3.54 % energ. in transport sector 2006

Total Sales of Biodiesel

- 321,000 t biodiesel sales volume in 2006
- 288,500 t sold as 4.7 % vol. blend
- 32,500 t sold in pure form or in higher blends
- 94% of sold diesel fuel were 4.7 %vol. blend in 2006

National Biodiesel Production

- Ten biodiesel plants in operation in 2006
- Total capacity ca. 199,000 t
- National production of 121,665 t biodiesel in 2006
- 11,693 t exported
- 77,404 t sold as 4.7 %vol. blend
- 32,568 t sold in pure form or in higher blends

Forecast

- 2007 forecast capacity of 440,000 t biodiesel
- Three new plants in operation
- Three plants expanding their capacity

Situation of other Sustainable Fuels



- 2006 estimated 10,000 t of pure vegetable oil used mainly in agricultural sector
- Ethanol plant in Pischlsdorf (Niederösterreich) is expected to go into operation in June 2008 with a capacity of 160,000 t/year
- Biogas almost completely used for electricity generation

Automotive Industry in Austria

- Automotive Industry is a global key industry sector and one of the most successful branches in Austria
- More than 175.000 employees
- Turnover of 35 Billion€/a (>10% of GDP)
- High competence on the drive train (AVL, BMW, GM-Opel, Magna,)
- Change of the drive train has direct and strong impact on Austrian industry
- Change is already visible
 - Trend towards electrification of the drive train
 - Successful introduction of hybrid cars

A3 Program (Austrian Advanced Automotive Technology)



- 4 calls for proposals (2002-2006)
 - 152 Proposals
 - 78 projects approved (international evaluation)
 - Total project volume 39.6 Mio. €
 - Promotion of 20.4 Mio. €

- 2 calls for Lighthouse Projects (2005 and 2006)
 - 25 Proposals
 - 8 projects approved (international evaluation)
 - Total project volume 7.4 Mio. €
 - Promotion of 3.4 Mio. €

A3plus Program

First call was open until October 2007

- 23 proposals received
- 18 projects approved (international evaluation)
- 20 Mio.€ total project volume
- 5 M € fundig volume

BMVIT funding follows the following principles (1)

- Broad Selection of funding schemes for individual needs of R&D (FWF, Bridge Program, FFG, K-plus, COMET, Seed financing, AWS, Climate & Energy Fund, ...).
- Neutral position concerning different technological options.
- Neutral position concerning different applicants.
- Confidentiality during evaluation process in order to secure IPR's of applicants.
- Grants awarded according to the competitive principle through invitation for proposals.
- Stimulation and use of synergies from the cooperation of complementary partners.
- Integration of future users of technologies in the development process.

BMVIT funding follows the following principles (2)

- Integration of know-how beyond the automotive industry in the engineering process.
- Fundamental technology change instead of incremental improvements
- Promotion of the whole innovation cycle from studies to demonstration projects, creation of new education concepts, preparation of the public for technological changes.
- Optimization of the overall vehicle system by tuning of subsystems.
- Optimization of the transport system through intermodal and interoperable connection of transport carriers.

Fuel Projects in the A3-Program:

- Environmentally-friendly urban bus and goods traffic systems
- Straw pyrolysis
- Bio-SOFC Drive
- Bioethanol
- Bioethanol in the Otto engine
- BioSNG fuelling station
- CNG600-mono
- Heavy Duty Zero emission (HDZ)
- ALTANKRA
- Biogas in the Otto engine
- BTL in the Diesel engine
- CEP2020
- ICUT

Fuel Project Partners in A3-Projects:

- OMV AG
- AVL List GmbH
- ALPPS Fuel Cell Systems GmbH
- FJ BLT Wieselburg
- AGRANA Bioethanol GmbH
- Biomasse Kraftwerk Güssing GmbH & Co KG
- Renet Kompetenzknoten Güssing - Inst. f. Erneuerbare Energie
- MAGNA STEYR Fahrzeugtechnik AG & Co KG
- ECHEM Kompetenzzentrum für Angewandte Elektrochemie GmbH
- Joanneum Research Forschungsgesellschaft mbH
- Austrian Research Centers GmbH – ARC
- TU Graz - Institute for ICEs and Thermodynamics
- Univ. of Natural Resources, Vienna – Div. of Agricultural Engineering
- Univ. of Vienna – Institute of Risk Research
- TU Vienna - Institute for ICEs and Automotive Engineering
- TU Vienna - Institute of Chemical Engineering
- TU Vienna - Institute of Electric Plant and Energy Management

International Cooperation and Networking



- EU-Technology Platform BIOFUELS (Dr. Dorda chairman of Mirror Group of National Delegates)
- EU-Technology Platform ERTRAC
- EU-JTI “Fuel Cells and Hydrogen”
- EU-R&D-Framework Program 7
- IEA-Implementing Agreement “Hybrid & Electric Vehicles”
- IEA-Implementing Agreement “Advanced Motor Fuels”

Reflection of BTP Mirror Group on SRA:

- R&D is the key to bring costs down and to multiply the biofuel yield per acreage in order to avoid competition with food production.
- Social acceptance is crucial taking ethical considerations and environmental consequences into account. A certification system is needed to guarantee sustainability standards as foreseen in EU directive.
- Predictable framework conditions needed to establish confidence of investors to implement capital-intensive innovative technologies.
- Efficient information system needed to avoid data misinterpretation.
- Even if national policies are different due to structural and climatic differences member states are united by the common goal of a sustainable transport and energy system and the targets set on the EU-level for greenhouse gas reduction.

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