

Development of Fuel Cell and Hydrogen Technologies

supported by Austria's Alternative Propulsion Systems Council
and the R&D-Programme "Austrian Advanced Automotive Technology"

The Austrian Ministry of Transport, Innovation and Technology (BMVIT) is strongly committed to promote technological breakthroughs in the fields of **transport, environmental and energy technologies** as their implementation in industrial applications offers not only brilliant **employment** opportunities, but also solutions for pressing **ecological** and **transport** problems. In this regard **fuel cells** and **hydrogen** offer unique advantages concerning **energy efficiency, security of energy supply** and the reduction of **noise** and **exhaust emissions**.

The **automobile industry** is a particularly successful segment of the Austria's economy and one of the most important economic sectors in the world. It continuously initiates, but also requires outstanding technological achievements in order to meet tightening environmental standards and rising demand for more comfort. However, in order to secure the long-term **competitiveness** of this industry it is necessary to invest in R&D to prepare technological breakthroughs in time and to compete with countries with lower wages.

In 2001 the BMVIT launched therefore the R&D-Programme "**A3 - Austrian Advanced Automotive Technology**", concentrating on highly innovative research projects with increased development risk, which receive higher levels of funding than is usually provided by technology promotion programmes. The goal is to achieve real **technology breakthroughs** and not incremental improvements to existing technologies. Grants are awarded according to the **competitive principle** through invitation for proposals.

A3 covers the entire **innovation cycle** and offers funding from basic research to demonstration projects. Furthermore, projects will also be funded which adapt **education and training** to the new requirements and create an adequate supply of qualified **human resources**. Another pillar of the programme supports **international networking**, mobility and **co-operation** between **researchers**.

A3 strives as well for synergies from **interdisciplinary co-operation** between industrial, university and non-university research and between suppliers and users of technologies in **joint R&D projects**. A3 targets support at all developments which one institution cannot carry out alone, but which require strategic planning and the expertise of a number of partners. Therefore, only consortia consisting of **at least 3 partners** may submit project proposals.

Due to the dramatically increased importance of alternative propulsion systems the BMVIT extended A3 in 2004 by the "**Austrian hydrogen and fuel cell initiative**" in order to stimulate the development of **all** kind of **alternative engines** and **fuels** (including hybrids, CNG, and biofuels). In accordance with Austrian environmental and energy policy the focus in terms of hydrogen production is upon **renewable** sources of energy. A number of research institutes in Austria are pursuing technological solutions, which are outside the mainstream of international development. This opens up interesting **niches** and the chance for a unique selling position. To minimise development risks, the BMVIT welcomes also projects which offer **multiple benefits** for other areas of technology regardless of the success of fuel cell and hydrogen.

Until July 25, the third call for proposals in A3 was open for projects developing alternative propulsion systems as well as **vehicle electronics, material research** and **production technologies**. 41 proposals were submitted which will be selected after evaluation and realised together with the 39 projects from the first two calls.

Lighthouse projects are a new instrument of BMVIT to support the market introduction of emerging new technologies. Complementary to the A3 calls the BMVIT supports by them

large pilot and demonstration projects in order to proof the successful operation of new technologies, to assemble providers and users of technologies as well as all other relevant stakeholders in one project, to prepare the public for technological change, and to learn from still existing problems and improve the performance of these new technologies. These lighthouse projects focus only on alternative propulsion systems and fuels.

15 million Euro of funding are available for A3 and lighthouse projects for the years 2005 and 2006 (5 M€ for the third A3 call 2005, another 5M€ for the A3 call in 2006 and 5M€ for lighthouse projects).

The market introduction of alternative propulsion systems and fuels needs a more **active technology policy** to overcome the "chicken and the egg problem" between automotive and fuel industry each waiting for first steps and investments from the partners. Therefore the BMVIT provides not only funding by its programmes but offers a broad portfolio of **additional support activities** for Austrian research institutions.

Following the principles of **modern technology policy** the BMVIT is convinced that public authorities can facilitate the development of new technologies far beyond financial contributions. Therefore, the BMVIT has decided to establish a new institution called the **Austrian Propulsion Systems Council (A.P.S.C.)** with the following field of activities:

- build up interdisciplinary research co-operations and comprehensive and trans-sectoral demonstration projects.
- stimulate the co-operation of complimentary partners in order to overcome the "chicken and egg problem".
- adopt supportive legal framework conditions (like fuel taxation, privileged access to sensitive areas and emission or technical standards) in order to avoid barriers for innovation.
- discuss topics and organisation of programme calls with all relevant stakeholders in order to optimise the funding instruments.
- inform extensively and in detail about all national and international funding opportunities.
- analyse technological trends and evaluate technology foresight and assessment studies.
- support the definition of interesting niches for Austrian research institutions within the technological development.
- facilitate the integration in national and international networks as well as participation in FP6 projects and other research activities.
- represent Austria's position on FP7, EU-technology platforms, ERA-NET's, IEA and other activities.
- coordinate regional research activities in order to avoid duplication of efforts and to achieve a critical mass in the international perception.
- give Austrian research institutions a long-term security in planning and investments due to a clear public commitment beyond election terms.

The **A.P.S.C.** will broadly promote the development and employment of alternative propulsion systems and fuels supporting as agency Austrian research institutions in their technological development projects and platform for their national and international activities.