

# Most significant recent H<sub>2</sub>FC - related developments in Austria

*Dynamik mit Verantwortung*



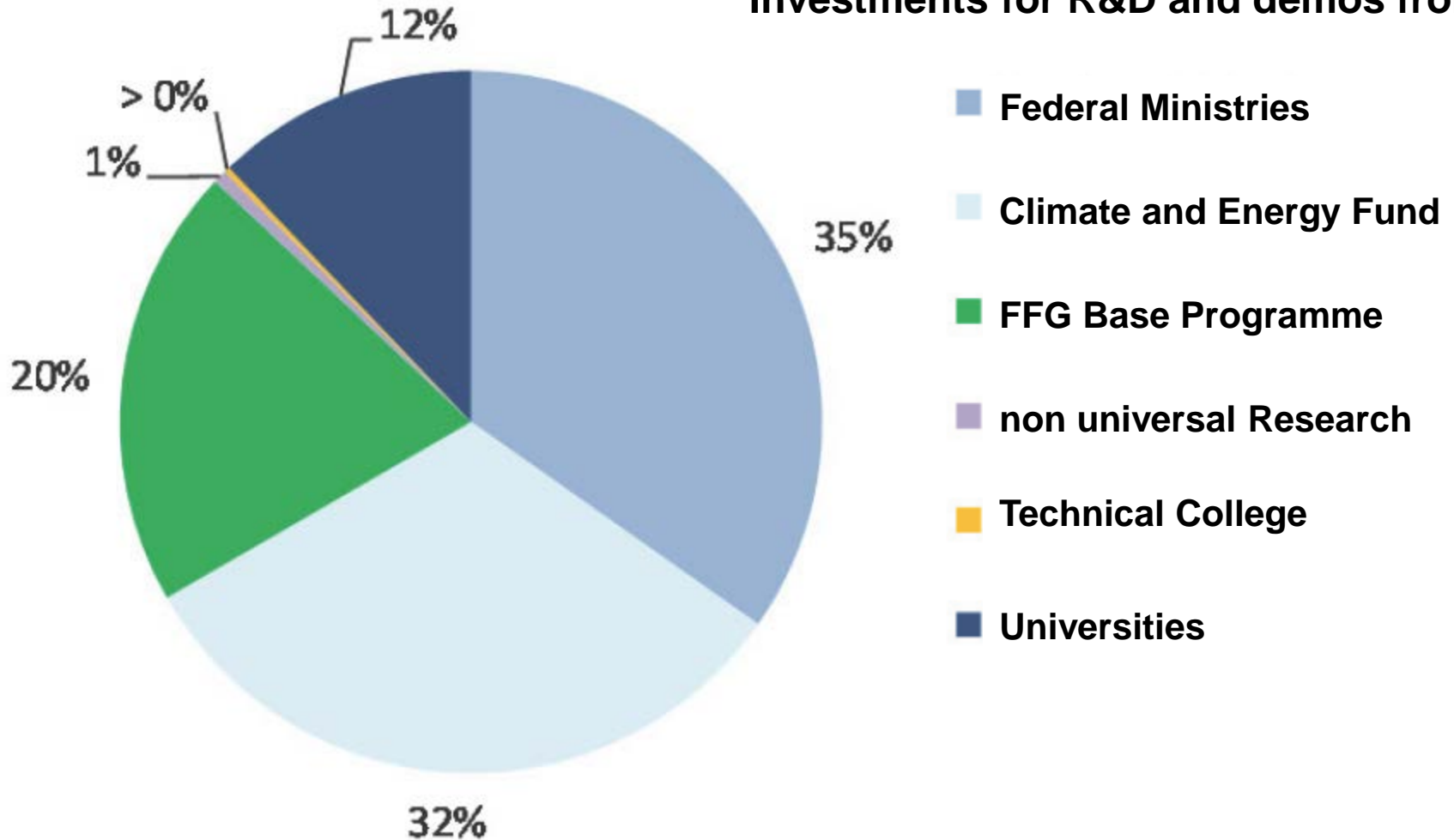
# Thematic FCH-focus in Austria

All fuel cell and hydrogen components and systems are covered in research and industry, but special expertise exists in:

- Hydrogen tank systems (cryogenic and high pressure from Magna for BMW and Daimler and for space applications)
- SOFC-components and systems (Plansee for Bloom Energy, APU from AVL, Treibacher for raw materials, TU Vienna and Leoben for SOFC-research)
- Engineering, development tools and test bench from AVL (PEM and SOFC)
- Green hydrogen production from biogenic feedstock as well as photovoltaics (Güssing, Profactor, Joanneum, TU Vienna, Fronius)
- Hydrogen refilling stations (in Graz with additional R&D-facilities, in Vienna from OMV building up network to neighboring countries)

# Austrian Players financing FCH-R&D and demos

Investments for R&D and demos from:



# bmvit-Program „Mobility of the Future“

Program running 2012 - 2020

Thematic Field: “**Transport Technologies**”

(responsibility: Andreas Dorda)

Research Areas:

- Development of alternative drives and fuels for all vehicle classes of surface transport
- Liquid and gaseous alternative fuels
- E/E Architecture
- Lightweight components and vehicles

**Call 2012: 5 FCH projects funded with 3,6 Mio. EUR**

# bmvit-Program „Mobility of the Future“

**Call 2013: Budget 6,75 Mio. EUR with 4 Mio. EUR focus on FCH**

Call open from October 30<sup>th</sup> 2013 until February 12<sup>th</sup>

## **Projects of the following areas are funded**

- Fuel Cell Components and Systems
- Hydrogen Storage Technologies
- Hydrogen Supply Infrastructure
- Hydrogen Distribution
- R&D-Infrastructure
- System and Vehicle Integration

## Examples of Research Topics

- Materials, Components and Auxiliaries for Fuel Cell Systems
- Functional, harmonized and integrated development of fuel cell and hydrogen technologies
- Safety Concepts for hydrogen (storage) systems
- Hydrogen distribution for R&D and demos
- Techniques of measurement and testing for development of fuel cell and hydrogen systems
- Development of shared fuel cell system platforms to generate synergies between different application areas with the target to increase unit numbers and reduce costs
- Functional integration of fuel cell components
- System integration of fuel cell and hydrogen components
- Vehicle integration

# Demos

First Public HRS in Austria (October 2012)



Launch of field trials for the E-LOG biofleet (June 2013)





# ELAAN PROJECT

## Development of 80V FC-Battery Hybrid System for Industrial Application

Project duration: 10/2013 – 09/2016



### Municipal Vehicles

Voltage: 80V

Power: **2 x 10kW / 30kWp**

Environment: Outdoor / public roads



### Class 1 Forklift Trucks

Voltage: 80V

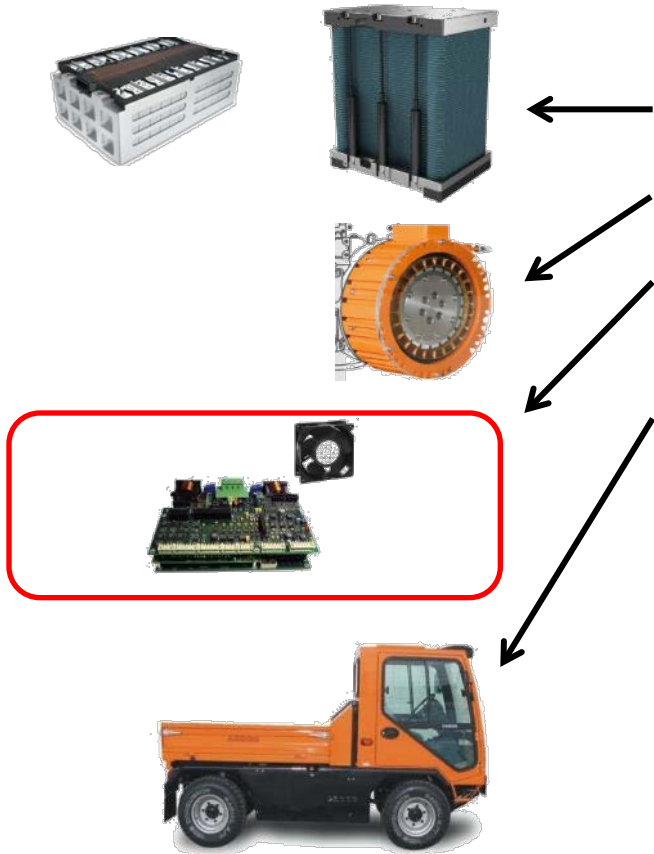
Power **1 x 10kW / 30kWp**

Environment: Indoor / outdoor plant grounds, public roads

\*Elektrischer Antriebsstrang für Arbeits- und Nutzfahrzeuge (ELAAN)



# ELAAN PARTNERSHIP



- **ElringKlinger:** Battery & FC Stack
- **Heinzmann:** Electric Drive Train
- **Fronius:** Powerelectronics, Control & Systemintegration
- **LADOG:** Vehicle Integration
- **Fraunhofer ISE:** System Characterisation & Engineering

# ACKNOWLEDGEMENT OF FUNDERS

- German partners receive funding from the German Federal Ministry of Economics and Technology (BMWt)
- The Austrian partner is supported with funds from the „Mobility of the Future“ program of the FFG – Austrian Research Promotion Agency



**Strategic cooperation  
between industry, public authorities  
and research institutions**

## FCH related PPPs

- Austrian Agency for Alternative Propulsion Systems (A3PS)

A3PS was established in 2006 by bmvit as a strategic public-private partnership for a close cooperation between industry, research institutions and the ministry with the common goal to develop alternative propulsion systems and fuels and to introduce them on the market.

- FCH Cluster Austria

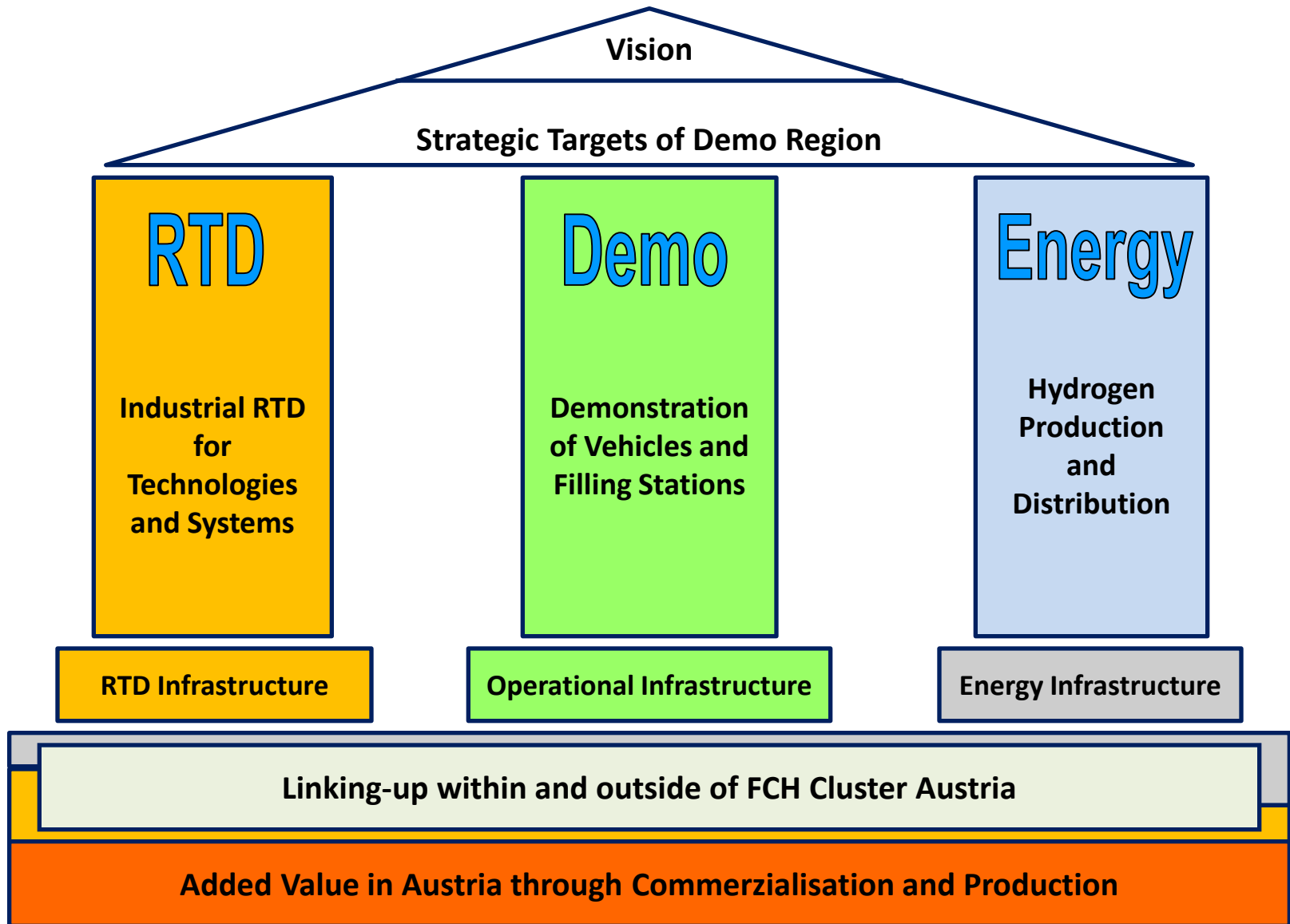
In order to concentrate and to coordinate the Austrian knowledge and competence in the field of fuel cells and hydrogen the FCH Cluster Austria was initialized in 2012 and is coordinated by the Austrian Agency for Alternative Propulsion Systems (A3PS).

# FCH-Cluster Austria

# FCH Cluster Austria: Participating Institutions



# The 3 pillars of the FCH Cluster Austria





**Thank you for your attention!**

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