

EUROPEAN INSTITUTE FOR INNOVATION

HyTrEc–Guidance for SMEs

SME innovations case study guide

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The following paper lists a selection of national funding programs in the North Sea Region that support hydrogen technology and / or hydrogen infrastructure.

Content

Introduction.....	3
United Kingdom –England and Scotland.....	3
Office of Low Emission Vehicles – Ultra Low Emission Vehicles.....	3
Investment in new technologies.....	3
Funding.....	4
Process and application.....	5
Scottish Green Bus Fund - Transport Scotland.....	5
Purpose.....	5
Funding.....	5
Process and application.....	6
Local Energy Challenge Fund.....	6
Purpose.....	6
Funding.....	7
Process and application.....	7
Technology Strategy Board (TSB).....	8
Department of Energy and Climate Change (DECC).....	8
Engineering and Physical Sciences Research Council (EPSRC).....	8
Best Practices.....	9
Germany.....	12
ZIM – Zentrales Innovationsprogramm Mittelstand (Central Innovation Programme SME)	12
Purpose.....	12
Funding.....	12
Process and application.....	13
NIP – Nationales Innovationsprogramm Wasserstoff- und Brennstoffzellentechnologie (National Innovation Program Hydrogen and Fuel Cell Technology).....	13
Purpose.....	13
Funding.....	13
Process and application.....	13
Best Practices.....	14
Belgium.....	16

INTERREG IV program for the region Flanders – South Netherlands.....	16
Purpose.....	16
Funding.....	16
Process and application.....	16
Best Practices.....	17
Denmark.....	19
EUDP.....	19
Purpose.....	19
Funding.....	19
Process and application.....	19
ForskEL - Support for research and development of environmentally friendly power generation technologies.....	20
Purpose.....	20
Funding.....	20
Process and application.....	21
Best Practices.....	21
Sweden.....	23
Tillväxtverket - Swedish Agency for Economic and Regional Growth.....	23
Purpose.....	23
Fordonstrategisk forskning och innovation (FFI).....	23
Purpose.....	23
Funding.....	24
Process and application.....	24
Norway.....	25
Best Practices.....	25

Introduction

The following paper lists a selection of national funding programs in the North Sea Region that support hydrogen technology and / or hydrogen infrastructure. It describes the application procedure for SME's and estimates whether the procedure is very complex or not. In addition the following questions are addressed:

- What is the scope of the program?
- Is it a program that supports hydrogen especially or is it a program under which hydrogen technology and infrastructure can be funded amongst other alternative fuels / technologies?
- Is it limited to SMEs or can other entities like R&D participate?
- Is it strictly national or can parties from other countries participate?
- Is it a co-funding program?
- Who is eligible for funding? Who is allowed to apply?
- How is the program financed?
- Which authorities are involved?
- What is the average duration of the application process?
- If possible, the complexity of an application. If the application is user-friendly, especially for SMEs.

Further, to gain an impression of the funding landscape, the paper presents a few best practices of each country.

United Kingdom –England and Scotland

Office of Low Emission Vehicles – Ultra Low Emission Vehicles

The Office of Low Emission Vehicles offers a funding programme for ultra-low emission vehicles. Specific hydrogen funding opportunities were published in autumn 2014. The Office for Low Emission Vehicles (OLEV) is a team working across government to support the early market for ultra-low emission vehicles (ULEV). OLEV provides over £900 million to position the UK at the global forefront of ULEV development, manufacture and use. This contributes to economic growth and helps to reduce greenhouse gas emissions and air pollution on UK roads. The government has set an ambitious vision for almost every car and van to be a zero emission vehicle by 2050. From the above mentioned £900 million the Office for Low Emission Vehicles) provides £400 million to advance ULEV technology and encourage people to buy and drive ULEVs as well as features plans to provide capital investment of over £500 million up to 2020 to support the shift to ULEVs and enhance so called action for roads.¹

Investment in new technologies

The OLEV works closely with industry and other government departments to develop and strengthen the capability of ULEV manufacturing and its associated supply chain in the UK.

¹ <https://www.gov.uk/innovation-get-support-and-advice#get-specialist-knowledge-for-small-businesses>

They actively participate in the joint government and industry UK-H₂Mobility project. Thus, the OLEV have evaluated the potential for hydrogen fuel cell electric vehicles in the UK and developed a roadmap for commercial deployment from 2015. Hence, the OLEV projects targeted at low and ultra-low vehicle technologies, designed to promote research, design, development and demonstration in the UK:

Funding

To encourage more people to drive ULEVs the Office of Low Emission Vehicles offers the following grants:

- The Plug-in Car Grant
- The Plug-in Van Grant
- The Electric vehicle home-charge scheme
- Grants to provide residential on-street and rapid charge-points for plug-in vehicles
- A Grant fund for the installation of plug-in vehicle charging infrastructure at train stations
- A Grant scheme for the installation of plug-in vehicle charge-points on the UK government and wider public sector estate

Recharging infrastructure

Additionally the OLEV have set out a strategy for the development of recharging infrastructure to support electric and plug-in hybrid vehicles. Therefore, a Plugged-in Places funding programme was set in place to inform future development of the UK's recharging network.

Support for fleets

Fleet are well known for advertisements and visibility. Hence, to alert ULEV within the society the OLEV provides the following funding and support to fleets considering purchasing low emission vehicles:

- The Low Carbon Vehicle Procurement Programme (LCVPP), providing funding for public sector fleets purchasing hybrid vans
- fleet consultancy through the Energy Saving Trust's Plugged-in Fleets initiative
- the ultra-low emission vehicle (ULEV) readiness project for central government departments and wider public sector body

Interaction with the energy system

The Department of Energy & Climate Change (DECC) in combination with the OLEV and the Office of the Gas and Electricity Markets (Ofgem) consider the interaction of plug-in vehicles with the energy system and take into account the:

- additional demands the electrification of transport might place on the electricity system
- contribution that plug-in vehicles might make in terms of system balancing and the transition to smart grids, and energy security

Process and application

In autumn 2014 the criteria of the scheme and announce when the scheme were published and open for applications. The program shall encourage Original Equipment Manufacturers, suppliers, small and medium-sized companies, R&D organisations and academic institutions with the potential to build on the UK's existing capabilities, deliver a global competitive advantage and achieve economic benefit for the UK to apply. The program welcomes participants already established in the UK, as well as those looking to set up a base in the UK intending to expand their activity in the UK beyond the end of any funding arrangement.

Scottish Green Bus Fund - Transport Scotland

The aim of the Scottish Green Bus Fund is to help support and hasten the introduction of new low carbon buses across Scotland. Support from the Fund, through 3 rounds of the Scottish Green Bus Fund, has helped secure purchase of 94 new low carbon emission buses. A further 32 new low carbon buses purchased under round 4 are expected to join the Scottish Fleet by April 2015.²

Purpose

The aim of the fund is to further support the wider roll out of low carbon buses across Scotland and builds on the success of previous rounds of the Scottish Green Bus Fund. Bids can be made to the Scottish Green Bus Fund 5 for grant to help buy new Low Carbon Emission Buses (LCEBs) – both double decker and single decker buses, including midibuses but not minibuses. Thus bids of the following are allowed:

- Bus Operators (including Community transport operators)
- Local Authorities (LAs)
- Regional Transport Partnerships (RTPs)
- Companies leasing/renting LCVs to the above bodies in Scotland.

Funding

- The Scottish Green Bus Fund 5 will operate as a Challenge Fund with a fixed budget of around £4.75 million in the financial year 2014-2015
- Grants will be offered to successful bidders for up to 80% of the price differential between a LCV and its diesel equivalent
- No more than £1.5 m will be offered to any one bidder (though joint bids can be submitted for more than £1m)

² <http://www.transportscotland.gov.uk/public-transport/scottish-green-bus-fund>

- Bus companies should bear in mind that the £1.5 m maximum applies collectively across all their subsidiary companies.

Process and application

- The Bidding Document details how the fund will operate and should be read carefully before submitting a bid
- Bus Operators and Companies leasing/renting LCVs should use the so called “Bidding Proforma” to make their bid
- Local authorities and Regional Transport Partnerships should use this “Bidding Proforma” to make their bid
- Guidance for Bus Manufacturers is available see “Certification of Dedicated Gas Buses” as Low Carbon Vehicles
- The Scottish Green Bus Fund suggests that LAs and RTPs consider initiating any tendering exercises for proposed vehicles at the same time as preparing their bid. They will then be best placed to proceed should their bid be successful.

Local Energy Challenge Fund

The Local Energy Challenge Fund was launched on the 18th August 2014 by the First Minister, Alex Salmond, to support a transition to a different approach to energy generation and consumption. Funding for major demonstration projects providing transformative and innovative local energy solutions not restricted to hydrogen.³

Purpose

The Local Energy Challenge Fund was launched on the 18th August 2014 by the First Minister, Alex Salmond, to support a transition to a different approach to energy generation and consumption. Funding for major demonstration projects providing transformative and innovative local energy solutions not restricted to hydrogen. Examples of projects that could be supported under the Local Energy Challenge Fund include:

- Energy storage.
- Hydrogen injection into gas grid or for sustainable transport.
- Alternative low carbon marine transport.
- Integrated energy efficiency.
- Demand-side management to maximise local energy production.
- Linking local generation to local district heating scheme.

Especially, large-scale local low carbon demonstrator projects which show a local energy economy approach linking local energy generation to local energy are requested. This could include projects looking to develop innovative distribution and storage solutions, and with an overall aim to create more local value and benefit. Round 2 of the fund is being developed in partnership with the Low Carbon Infrastructure Transition Programme (LCITP).

³ <http://www.localenergyscotland.org/challenge>

Funding

The fund provides feasibility and development funding to develop projects to go forward to phase 2 funding.

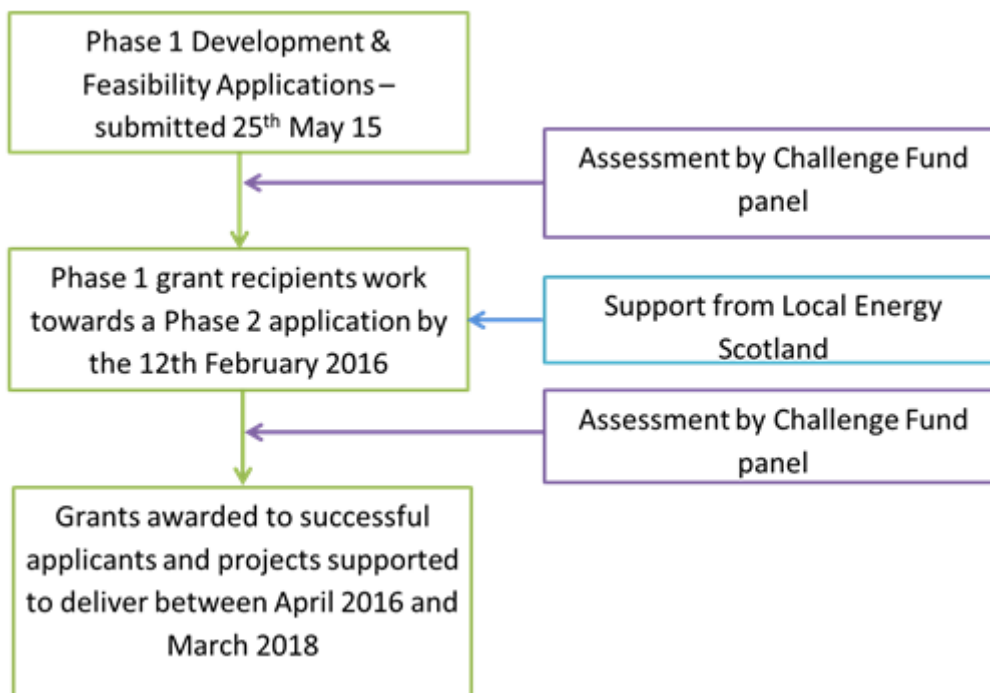
- £20 million in grants & loans
- Phase 1 - Grants up to £30,000 were available to support project development and application writing.
- Phase 2 – £500k to £6 million per project
- Intervention levels of up to 100% are available.

Process and application

The Local Energy Challenge Fund will operate in two phases:

- Phase 1 (Development Funding)
- Phase 2 (Challenge Funding).

Phase 1 was opened to applications between 18th August and 10th October 2014. Support is available through Local Energy Scotland to develop your Phase 2 Local Energy Challenge Fund applications. Thus a 12 month grant period between April 2015 and March 2016 will be opened. Applications are expected from organisations such as a community group, registered charity, community benefit society, community interest company, local authority, registered social landlord, academic institution, third sector, or a commercial organisation. Applications to Phase 1 can be made by a single organisation or via a consortium/ partnership with a project lead organisation that receives funds and signs up to the grant conditions.



Technology Strategy Board (TSB)

The TSB is not specific for hydrogen but have a number of tools and funding streams specifically for SMEs. Transport is a priority area – low carbon vehicles innovation platform. Funding streams specific to SMEs. Thus, the TSB acts like an energy Catalyst funding mechanism TSB provides funding worth £70 million. The maximum available amount of funding for a single project is up to £25 million for the first round. Further information about the program can be found on the following website:

<https://www.gov.uk/government/organisations/innovate-uk>

Department of Energy and Climate Change (DECC)

The innovation funding for low-carbon technologies of the DECC is not specifically for hydrogen. However, it allows various projects to place a bid. The overall budget of the program is about £200 million. Further information about the program can be found on the following website: <https://www.gov.uk/innovation-funding-for-low-carbon-technologies-opportunities-for-bidders>

Engineering and Physical Sciences Research Council (EPSRC)

EPSRC is the main UK government agency for funding research and training in engineering and the physical sciences, a broad range of subjects – from mathematics to materials science –not specifically hydrogen. The overall budget of the program is about £850 million. Further information about the program can be found on the following website:

<http://www.epsrc.ac.uk/>

Best Practices

Name of the SME: ULEMCo (Ultra Low Emission Mileage Company), a spinoff of Revolve Technologies Ltd - <http://ulemco.com/>

Short description of the SME: ULEMCo Ltd, based on Liverpool, was founded in 2014 as a spin out of Revolve Technologies, with founding directors Amanda Lyne and Paul Turner, to commercialise their intellectual property and capability in hydrogen combustion engine technology.

Annual turn overs: newly established company, figures not yet available

Project description and amount of subsidies: received an investment of £150,000 from The North West Fund for Energy & Environmental, which is managed by 350 Investment Partners www.thenorthwestfund.co.uk In 2014 Revolve Technologies established ULEMCo Limited in Merseyside, to retrofit diesel transit vans to enable them to run on commercially available hydrogen. ULEMCo Ltd is a spin-out from automotive design and consultancy firm Revolve Technologies. The technology allows vehicle fleet managers to significantly reduce their carbon dioxide emissions to ultra-low levels. ULEMCo Ltd is a new Merseyside business in the process of exploiting its hydrogen diesel combustion technology in commercial vehicles has secured a £150,000 investment from The North West Fund for Energy & Environmental, which is managed by 350 Investment Partners. The firm, based on Princes Parade, Liverpool, will use the investment to identify commercial fleets in the region, and across the UK, which will benefit from a reduced carbon foot print while still having the full range capability of standard diesel vehicles.

Alongside various partners, ULEMCo already supports a fleet of 20 vehicles across a range of hydrogen hubs in the UK (Two in Aberdeen which were part funded by the North Sea Region programme as part of the HyTrEc project). The company is targeting commercial fleet retrofits to grow the market significantly over the next 18 months, and then expand into other vehicle types over the longer term. Part of its growth plans include creating a hydrogen re-fuelling network in Merseyside, to capitalise on the existing local infrastructure for this “green” fuel. The North West Fund for Energy & Environmental has invested £12.8m to date with 30 per cent invested in the Liverpool City Region. Investments in the Liverpool City Region include Acal Energy, Acoustic Sensing Technologies Limited, Ultromex, Community Switch, Arvia Technologies and SignLights. The investment into ULEMCo has been made by The North West Fund for Energy & Environmental, which is financed jointly by the European Investment Bank and the European Regional Development Fund and managed by 350 Investment Partners. Revolve Technologies have also recently established a collaboration agreement with ITM Power plc to provide the breakthrough refuelling solution by enabling vehicle operators to generate their own hydrogen fuel using ITM’s patented electrolyser.

Name of the SME: ITM Power - <http://www.itm-power.com/>

Short description of the SME: The principal activity of ITM Power is the design, manufacture and sale of hydrogen energy systems for energy storage and clean fuel production. ITM Power plc was admitted to the AIM market of the London Stock Exchange in 2004 and rose its initial funding of £10m gross in its IPO. Further funding rounds of £28.5m in 2006, £5.4m in 2012, £2m in 2013 and £10m in 2014 have been completed. The Company has now made the transition from a research and development company to a product manufacturer and technology provider. The Company has both a strong base of intellectual property and engineering expertise for providing complete hydrogen solutions.

Project description and amount of subsidies: Grant income at year end 2014 = £1.370m (2013 £1.358m). ITM Power is a partner in a number of European and Nationally funded projects. They have recently been contracted to supply three electrolyser-based refuelling stations to London under the EU FCH JU funded HyFive project. The contract is worth approximately £2.8 million (€3.3m) to ITM Power. In 2013 they were awarded a grant of €0.35m (£0.31m) to work with a consortium to demonstrate energy efficient technologies and energy storage solutions for non-residential buildings under the CommONEnergy project and funded under the Seventh Framework Programme (FP7-2013-NMP-ENV-EeB). They have previously received funding from a range of sources to enable them to design, test and develop their products. For example they built the transportable high pressure refuelling unit (HFuel) with support from the Technology Strategy Board (TSB) and partners Gateway to London and Revolve Technologies.

Number of employees: 65

Name of SME: Logan Energy - <http://www.logan-energy.com/>

Short description of the SME: Logan Energy delivers energy solutions incorporating fuel cells. Offer a full turnkey service – delivering system design, integration, installation and maintenance. Established in 1995, no other organisation has the depth or range of experience of different applications. Logan Energy is responsible for the installation of more than 140 fuel cell solutions. Installed globally more than 18MWe of fuel cells, in the UK alone this has recently passed the 1MWe mark. Expertise in the application of fuel cells includes electricity generation, combined heat and power (CHP), combined cooling heat and power (CCHP or tri-generation) utilising a number of base fuels ranging from natural gas and LPG through various bio-fuels to anaerobic digester gases.

Project description and amount of subsidies: Logan Energy is a partner in a number of European and Nationally funded projects. In 2008 Scottish Enterprise, through its co-investment fund, bought a 15 per cent stake, in the company. The Scottish Investment Bank is a division of Scottish Enterprise which operates Scotland-wide, in partnership with Highlands and Islands Enterprise. It operates a suite of funds including; The Scottish Seed, the Scottish Co-investment, the Scottish Venture and the Scottish Loan Fund to support Scotland's SME funding market to ensure that businesses with growth and export potential have adequate access to growth capital, see www.scottish-enterprise.com/sib

Number of employees: less than 20

Germany

ZIM – Zentrales Innovationsprogramm Mittelstand (Central Innovation Programme SME)

Purpose

ZIM is a funding program for small and medium sized enterprises (SME) with business operations in Germany that want to develop new or significantly improve existing products, processes or technical services. As the cooperation partner of an SME, public and private non-profit research and technology organisations (RTO) are also eligible. The program is open to all branches and technological sectors. ZIM provides a reliable source of support for innovation efforts since 2008. It is open for every kind of innovation in every branch of business. The development of innovative technologies, products and services is funded. There are different types of projects and cooperation that are funded, from the funding of single enterprises to the funding of cooperation networks with several SMEs and research institutions. The aim of ZIM is to sustainably increase the innovative capacity and competitiveness of SMEs including craft businesses and independent professions and in doing so contribute to their growth and the generation of new jobs. Thus, ZIM offers the following:⁴

- Multiple funding variants for custom-fit funding
- Possibility for continuous application
- Easy application and quick decision processes

Funding

The eligible costs for the ZIM individual project exceed 380,000 euros. The overall budget of ZIM is approximately 4 billion Euros. The financial transfer takes a non-repayable grant in the form of a share of funding to the following funding rates: The funding rate is between 35 % and 55 % of the eligible costs, depending on the applying SME. Eligible costs are staff costs, investments and overheads.

- **Individual projects:** Funding of research and development (R&D) projects within one SME: [Contact: EuroNorm GmbH](#)
- **Cooperation projects:** Funding of cooperative R&D projects between SMEs or SMEs and RTOs: [Contact: AiF Projekt GmbH](#)
- **Cooperation networks:** Funding of management of innovative company networks and R&D projects generated by them: [Contact: VDI/VDE Innovation + Technik GmbH](#)

⁴ <http://www.zim-bmwi.de/>

Funding is also provided for services and consultation related to marketing activities (e. g. technology, transfer, services, and intellectual property rights etc. – “DL”). Companies are eligible if their ZIM individual or cooperative project has been approved for funding.

Process and application

Application procedure is quite easy and comprehensive. The interested SMEs have to fill in an application form. They have to describe what they like to achieve with the project and how the company in particular and the business in general would profit from service, technology or innovation to be developed.

NIP – Nationales Innovationsprogramm Wasserstoff- und Brennstoffzellentechnologie (National Innovation Program Hydrogen and Fuel Cell Technology)

Purpose

Funding addresses application-oriented industrial research and experimental development within the area of Hydrogen and Fuel Cell Technology. It is the aim to achievement the marketability of technologies in the mobile, stationary and portable fields, to establish value added chains and to secure the technological leadership as well as to apply the technologies in Germany. To meet these challenges, Germany is well placed. The Federal Republic has a population in the hydrogen and fuel cell technology among the leading nations in Europe. To further expand this leading position, the federal government has established in February 2008, the National Organisation for Hydrogen and Fuel Cell Technology (NOW). Their mission is to promote the development and market preparation of internationally competitive products of hydrogen and fuel cell technology. The National Innovation Program for Hydrogen and Fuel Cells (NIP), the Federal Ministry of Transport and digital infrastructure (BMVI) together with the Federal Ministries of Economics and Technology (BMWt), Education and Research (BMBWF) as well as environmental, conservation, construction and Nuclear Safety (BMUB) an applied ten-year support program launched. Hence the federal governments as well as industry each provide 700 million euros for funding.⁵

Funding

The eligible costs for the NIP individual project are variable. The overall budget of NIP is approximately 1.4 billion Euros for a 10 year time frame (2006 – 2016). The funding is up to 50 per cent of the eligible costs, depending on the applying SME. Eligible costs are staff costs, investments and overheads.

Process and application

The application process is a two-stage process. In a first step the applicants have to elaborate a draft of their project idea, describing what they want to achieve and what the

⁵ <http://www.bmvi.de/SharedDocs/DE/Artikel/G/foerderrichtlinie-fuer-das-nationale-innovationsprogramm-wasserstoff-und-brennstoffzellentechn.html>

benefits of their project or technology will be. The successful candidates will be asked to hand in a full application.

Best Practices

Name of SME: NuCellSys GmbH – The Fuel Cell System Company

<http://www.nucellsys.com/index.dhtml/475558df395bb352155t/-/deDE/-/CS/-/Unternehmen>

Short description of the SME: NuCellSys develops next-generation fuel cell systems for automotive applications. NuCellSys GmbH is a Company of the Daimler Group and worldwide the leader in development and manufacturing of fuel cell systems for transportation applications. Within the Fuel Cell Alliance between Daimler, Ford, and AFCC (Automotive Fuel Cell Cooperation), NuCellSys is responsible for system engineering and design, component and software development, as well as system validation and integration. NuCellSys has run a small-scale series production of fuel cell systems since 2003.

Project description and amount of subsidies: The “Development of an optimized hydrogen storage system for the commercialization of fuel cell vehicles” is a NIP funded project with regard to future systems of this project is based on the field experience gained, the slender structure high functional integration with minimized component size and fewer interfaces. This should on one hand increase the quality, durability and reliability and on the other hand lower system weight and costs significantly. Alternative materials and production processes, a sleek HSS / vehicle integration concept and a production-oriented design are additional elements on the way to commercialization of fuel cell vehicles for larger quantities. The individual steps include basic investigation and preliminary design of the HSS, concept development and evaluation of vehicle integration, the high-pressure lines and connection elements of the support system and the refuelling interface including construction and testing of DUTs. For the HSS concept an extensive testing and validation program will help to draw conclusions on a series-ready design. The project started in June 2010 and finished in December 2011. The budget of the project was approximately €2 million and 990,000€ of it was funded through the NIP.

Number of employees: approximately 160

Name of SME: SolviCore GmbH & Co. KG – <http://www.solvicore.umicore.com/en/>

Short description of the SME: The Fuel Cell System Company SolviCore GmbH & Co. KG was founded on July 1st, 2006 by its parent companies Umicore and Solvay. The 50-50 joint venture is based in Hanau, at Umicore's main R&D site in Germany. SolviCore currently employs more than 50 people in research, development, production and sales of membrane electrode assemblies (MEA) and related compounds, to be used in fuel cells (FC) applications. Within its product line Greenerity™, SolviCore develops and supplies products for four different applications: hydrogen-, reformate- and direct-methanol fuel cells as well as for PEM-water-electrolysis. These components for fuel cells are manufactured on specially developed or adapted pilot production lines. Umicore and Solvay, two global industrial groups which respectively enjoy a global leading position in precious metal catalysts and polymer technology, have the ambition to play a major role in the development of fuel cell technology through SolviCore. The joint venture will be built on these core competencies and the experience of ten years of development in the area of fuel cell technology. SolviCore can also draw on Umicore's world-leading position in metals management and precious metal recycling (closed loop concept), which will be required to control the cost of fuel cell products in the future.

Project description and amount of subsidies:

The main idea of the project "1 MW-PEM-water electrolyser-system" is to produce hydrogen through water electrolysis which will be fed into the natural gas grid. The five project partners E.ON, Hydrogenics, SolviCore, German Centre for Aerospace and the Fraunhofer Institute for Solar Energy Systems ISE have joined forces in order to use a PEM (proton exchange membrane) –Electrolysers and evaluate and analyse both, the technical as well as the economic conditions for the implementation of Power to Gas optimize. The project includes the development of the first and so far the world's largest prototype PEM electrolyser with a rated electrical output of 1 MW and a subsequent practice test the Hamburg-Reitbrook E.ON location. The hydrogen thus produced is fed into the local distribution network of the city of Hamburg. The trial operation of the electrolyser began in 2014 and is scheduled for a period of one year. The PEM electrolysis of a semi-permeable polymer membrane is generated from pure water by means of the electrode under high pressure hydrogen. The space required for the stack (cell stack) is reduced compared to the alkaline electrolysis to about one-thirtieth. In addition, the PEM performs better dynamics and allowed a temporary overload driving. Compared to conventional technology, the new plant is setting new standards of compactness and performance. The project started in November 2012 and will finish in October 2015. SolviCore GmbH & Co. KG project budget was approximately €2.35 million and about 50 per cent of it is funded (€1.13 million)

Number of employees: more than 50

Belgium

INTERREG IV program for the region Flanders – South Netherlands

Due to the fact that Belgium does not have any hydrogen specific funding program the following part describes an INTERREG IV project called: “Waterstofregio Flanders- South Netherlands”.⁶

Purpose

The program connects the regions of Flanders and South Netherlands, incorporating policy level planning and the long lasting and tangible effects of projects. These are the foundations of the future transnational projects, which will create added value to partner regions and beyond. A principal aim of the Programme is to expand the scope of territorial cooperation and focus on high quality projects in innovation, the environment, accessibility, and sustainable and competitive communities. The purpose of the project is the demonstration of hydrogen infrastructure, applications and an education program within the region of the South-Netherlands (Brabant, Limburg and Zeeland) and Flanders (Belgium)

Funding

The eligible costs for the NIP individual project are variable. The overall budget of for the entire project was 15 million Euros. 75% of the eligible costs for this project are subsidized. “Expenditure actually paid out” are the key words in terms of assessing the eligibility of expenditure under the INTERREG IV. No expenditure can be reimbursed unless it is directly linked to the approved budget and based on invoices that have actually been paid. Activities that are not described in the approved application are as a general rule ineligible. Eligible costs are staff costs, investments, overheads, sub-contracting, control, financial charges, Scrap-value for equipment etc.

Process and application

Procedure: European public procurement.

- Applications have to be submitted as part of a partnership. Every partnership must include at least 2 beneficiaries from 2 different countries. However, projects should have a positive effect on large parts of the programme area so only meeting the minimum requirements will generally be a considerable weakness.
- A legal entity (organization or enterprise) based in the programme area in order to apply is necessary. Partners from outside the programme area can be part of a partnership under special conditions.
- All project developers are asked to submit an Expression of Interest. If the programme’s Steering Committee approves the Expression of Interest, the project will be asked to develop and submit a Full Application. If this is approved, the

⁶ <http://archive.northsearegion.eu/ivb/content/show/&tid=75>

project will receive a contract and can start work. ⚠ The Expression of Interest is a short form allowing the Steering Committee to decide whether a project proposal fits the programme and whether the planned partners, activities, budget and results seem realistic to deliver the idea.

- The purpose of the Expression of Interest is to allow new and especially inexperienced beneficiaries to experiment with a project proposal without making a significant time and budget commitment. It also allows the Steering Committee to provide recommendations and/or conditions before the Full Application is submitted, such as requesting the inclusion of another country or private sector stakeholders etc.
- After an Expression of Interest is approved, the project team must submit a Full Application to one of the next two meetings of the Steering Committee. The next two meetings will be after approximately 6 and 12 months – meaning that all documents will have to be submitted to the programme between 3 and 9 months after approval of the Expression of Interest.
- The Full Application requires detailed activity plans with targets, budgets and timelines, as well as technical information and funding guarantees from beneficiary organisations. A lump sum payment of €20,000 is offered to cover preparation costs provided that the final submitted application lives up to quality requirements.

Best Practices

Name of SME: E-Trucks Europe - <http://e-truckseurope.com/en>

Short description of the SME: E-Trucks Europe is a small company that look at innovative possibilities for clean transport. It rebuilds new and used trucks to full electric, which makes it possible to drive without emission and noise, ideal for applications in cities such as refuse collection, city-distribution and container transport. They operate from offices within the Netherlands and Belgium, but can also provide trucks and technology abroad.

Project description and amount of subsidies:

- 600.000 euros were funded for a first time hydrogen refuse collection truck, which now drives weekly in Eindhoven to pick up refuse.
- It was a first build refuse truck on hydrogen, in the Netherlands and Belgium, after the build it got a lot of attention from municipalities whom were very interested in the concept of silent and clean refuse collection. Also al lot of interest from abroad was registered.
- E-Trucks did not experience difficulties with funding procedure.
- It would make the process of receiving the funds easier with less bureaucracy

Number of employees: n.a.

Name of SME: Hydrogenics - <http://www.hydrogenics.com/>

Short description of the SME: Hydrogenics, is a worldwide leader designing, manufacturing, building and installing industrial and commercial Hydrogen Systems around the globe with over 60 years of experience. Hydrogenics offer world leading expertise for a range of applications, including:

- Hydrogen generators for Industrial processes and Fueling stations
- Hydrogen fuel cells for electric vehicles, such as urban transit buses, commercial fleets, utility vehicles and electric lift trucks
- Fuel cell installations for freestanding electrical power plants and UPS systems (uninterruptible power supply)
- Hydrogenics is pioneering “Power-to-Gas” the world’s most innovative way to store and transport energy

Hydrogenics Corporate headquarters are located in Mississauga, Canada with manufacturing facilities located in Germany and Belgium. We have other corporate and sales offices, and hydrogen installations, operating in several countries around the world. Hydrogenics Corporation is a publicly listed company on the NASDAQ (stock symbol HYGs) and the TSX (stock symbol HYG).

Project description and amount of subsidies: 850.000 euro was funded for a novel and complete hydrogen refuelling station in Belgium. It was the first gaseous hydrogen fuelling station for hydrogenics and also the first one to be built in Belgium

Number of employees: approximately 65

Denmark

EUDP

The Danish Energy Agency engages nationally and internationally in production, supply and consumption of energy - as well as the efforts to reduce emissions of greenhouse gases. The work of the Danish Energy Agency involves matters relating to energy supply and consumption, as well as Danish efforts to reduce carbon emissions. The Agency is also responsible for Danish building policy and promotes more sustainable building with regard to energy consumption, use of materials and economic issues. The Agency is responsible for the entire chain of tasks linked to energy production and supply, transportation and consumption, including energy efficiency and savings as well as Danish national CO2 targets and initiatives to limit emissions of greenhouse gasses. The Agency supports building-policy initiatives to increase the productivity and quality of building as well as the operation and maintenance of buildings, with focus on sustainable building. The Agency also collaborates with the building sector to establish a good framework for the industry.⁷

Purpose

The main objective of the EUDP is to ensure the development and demonstration of new energy technologies, which can reduce dependency on fossil energy, and which can contribute to minimising the CO2 burden and the environmental impact of energy consumption. The projects must focus on developments in relation to existing technologies and solutions, the possibility of solutions that can be replicated and scaled up/down, as well as financial competitiveness. Furthermore, this call for applications provides the option of applying for funding for preliminary projects to participate in EU development and demonstration projects launched through realisation of “New Entrants Reserve” allowances. EUDP funding is awarded with an expectation that the projects funded will lead to market implementation of the new products and technologies developed by the project. An important objective is to ensure involvement of private investors in projects. It is important to concentrate on functionally delineated projects, with innovative and patentable technological content that is deemed technically practicable and which meets a market demand and has a well-defined customer target.

Funding

- 400 million DK/year
- No maximum limit for single projects / enterprises

Process and application

Applications can be submitted for funding for projects regarding all types of energy technologies which meet the above objective. The EUDP especially encourages submission of innovative projects within energy efficiency (construction, processes, appliances etc.)

⁷ <http://www.ens.dk/en>

with significant commercial potential. Applications may also be submitted for funding research that improves or supports demonstration, as well as for funding certain other activities, including IEA projects, cf. section 2.3. A number of criteria are applied in assessing the research, development and demonstration projects; criteria covering both energy and commercial aspects. The completed application form should include the technical project description and the commercial prospects. The application form must relate specifically to the actual project, and it must explain calculations, analyses and assumptions. The EUDP considers a completed application form as a business plan. The applicant may furthermore enclose a detailed business plan as an annex. The requirements to meet the commercial criteria are less extensive for research projects than they are for development and demonstration projects. Funding pursuant to section 7(1) of the EUDP Act may be given to private and public commercial enterprises or knowledge institutions domiciled in Denmark. Applications may also be submitted by consortia of relevant research environments.

- Application deadline two times per year
- May and September

ForskEL - Support for research and development of environmentally friendly power generation technologies.

In 1998, the Danish Parliament (Folketinget) decided to split up the Danish electricity sector into generation, transport and sale of electricity. The TSO (Transmission System Operator) was asked to provide the necessary coordination of the required research and development in this area. This led to the establishment of the ForskEL-programme.⁸

Purpose

ForskEL is a PSO-financed research programme, the purpose of which is to support the development and integration of environmentally friendly power generation technologies for grid connection, and each year a call for funding is implemented. The programme budget is determined by the Danish Minister for Climate and Energy, who also approves the focus areas of the annual calls on Energinet.dk's recommendation. PSO is short for Public Service Obligation. Projects within the ForskEL programme must support the political objectives as well as Energinet Denmark's strategy. The ForskEL-programme continuously develops in order to adapt to current requirements. This means that input received from users and other energy research programmes are implemented in the programme to the extent possible. Similarly, recommendations made in evaluations carried out, such as the report prepared by the Alexandra Institute A/S in 2009 are also integrated.

Funding

- The program has an annual financial frame of DKK 130m.
- Normally around 50 million DK per year.

⁸ <https://www.forskel.dk/Pages/default.aspx>

Process and application

- The deadline for the application for funds in 2016 is 10. September 2015. The call will be published later.
- Electronic project applications are legally binding, and the company, to which the person responsible for the project belongs, as well as the other project participants confirm via the application that they are willing to accept the responsibility of implementing the project.
- Creation and submission of an application requires that the user has read and accepted the rules for applications under the ForskEL programme.

Best Practices

Name of SME: H2 Logic A/S - <http://www.h2logic.com/com/>

Short description of the SME: H2 Logic A/S is a leading manufacturer of hydrogen refuelling stations that provides fuel cell electric vehicles with the same fast fueling and long range as conventional vehicles today. Since incorporation in 2003 H2 Logic has invested significantly in R&D that has brought hydrogen refuelling station to a level where products are offered for the early market for roll-out of larger networks of hydrogen refueling stations. Today H2 Logic is one among few global leaders on fast refueling for FCEVs with a market share of 40% of all new hydrogen refueling stations in Europe in 2013. Hydrogen refuelling station technology is used on a daily basis across Europe for fueling of vehicles from leading international car manufacturers. The ambition is to keep this position and act as a preferred supplier of hydrogen refuelling stations for international infrastructure operators such as oil, energy and gas companies. H2 Logic is a profitable company with a steady growth since 2003 and employs highly qualified engineering and market skills within hydrogen.

Project description and amount of subsidies:

Funds were used to develop hydrogen refuelling stations. The amount of subsidies varies due to different funds. Funding made it possible for H2Logic A/S to be among the three leading industries in Europe building hydrogen filling stations. As such no difficulties with funding procedures have been encountered. Any application occurs in competition with other applications submitted.

Number of employees: approximately 40

Name of SME: IRD A/S - <http://www.ird.dk/>

Short description of the SME: IRD fuel cell A/S is a high technology company that develops and produces fuel cell. IRD was established in 1978 by Dr. J.S Lundsgaard. IRD has specialized in producing the best Direct Methanol Fuel Cell systems, electrolysers and micro CHP's. This is achieved through extensive research programs, to refine the technology behind the systems. IRD devotes the research, development, and production of fuel cells – from small components to entire systems. Developing top-quality fuel cells requires many years of experience and knowledge, as well as the expertise of a variety of specialists.

Project description and amount of subsidies: Funds were used to develop PEM and DMFC fuel cell technologies and PEM electrolysis. Also to demonstration of micro combined heat and power. The amount of subsidies varies due to different funds. Funding has made IRD world leading in micro combined heat and power with hydrogen as fuel. As such no difficulties with funding procedures have been encountered. Any application occurs in competition with other applications submitted.

Number of employees: n.a

Sweden

Tillväxtverket - Swedish Agency for Economic and Regional Growth

The Swedish Agency for Economic and Regional Growth is a national government agency tasked with promoting entrepreneurship and regional growth. Our mission is to strengthen the competitiveness of Swedish enterprises. The agency targets small and medium-sized enterprises (SMEs) or future entrepreneurs directly and work to improve the general framework for doing business. The agency's most important tools are knowledge, networks and financing. Based on their knowledge of the requirements for enterprises and regions to grow, the agency builds networks for cooperation and finance initiatives that strengthen the business sector.⁹

Purpose

No specific program for hydrogen and fuel cells. SME in the hydrogen and fuel cell business can and have from time to time benefitted from general funding programs for example regarding cleantech, export, or market analysis.

Fordonstrategisk forskning och innovation (FFI)

FFI is a partnership between the Swedish government and automotive industry for joint funding of research, innovation and development concentrating on Climate & Environment and Safety. Initially set to run from 2009-2012 with no definite ending year. FFI has R&D activities worth approx. €100 million per year, of which half is governmental funding. The background to the investment is that development within road transportation and Swedish automotive industry has big impact for growth. FFI will contribute to the following main goals: Reducing the environmental impact of transport, reducing the number killed and injured in traffic and Strengthening international competitiveness. Currently there are five collaboration programs:

- Energy and Environment
- Traffic Safety and Automated Vehicles
- Electronics, Software and Communication
- Sustainable Production
- Efficient and Connected Transport systems¹⁰

Purpose

The government commissioned VINNOVA to design a strategic collaboration programme relating to the Swedish automotive industry and based on the automotive research programme which expires in 2008-2010. The new programme, FFI, has a four-year planning horizon and no definite finish date. Implementation is to take place in collaboration

⁹ <http://www.tillvaxtverket.se/>

¹⁰ <http://www.vinnova.se/en/FFI---Strategic-Vehicle-Research-and-Innovation/>

between industry and universities/institutes. The programme is to concentrate on social goals in regard to environment, energy and traffic safety in combination with industrial competitiveness and employment in Sweden. Two thirds of the project portfolio will comprise climate and environment and one third will be aimed at safety. Ancillary projects within production technology, new technologies and materials may be included. Thus the aim of the program is the following:

- Decrease environmental impact of road transport (in which recently HFC has been added as a possible area of funding)
- Reduce the number of injuries and fatalities in traffic
- Strengthen the international competitiveness

Funding

- 100 million Euros per year from 2009.
- 50/ 50 public/ private.
- Two project for Fuel Cells have been approved by FFI so far:
 - New polymer FC for vehicles, KTH and Volvo AB. Budget 1 million euro
 - SOFC development for use in APU within vehicles, Chalmers, Topsö, Sandvik and Volvo AB. Budget 700.000 Euro.

Process and application

VINNOVA develops a number of programmes and activities within strategic areas. Some programmes are funded and staffed by VINNOVA alone, while others are carried out in partnership with other organisations in Sweden or abroad. Most programmes involve active cooperation between the private business sector, universities and/or research institutes as well as the public sector. Some of the programmes are open to international and bilateral collaborations. All applications to VINNOVA's programmes must be made via VINNOVA's eServices Portal. The eServices Portal is a web-based interface containing services for anyone who intends to apply for a grant and who has an ongoing project with VINNOVA. Each project must involve or have support (by a letter of intent) from at least one industrial contractor. Industrial contractors are:

- AB Volvo
- FKG (a cluster organization of suppliers for automotive industry)
- Scania CV AB
- Volvo Cars

Norway

Best Practices

Projects supported by Transnova, Norway

ORGANISATION	PROJECT	SUPPORT (NOK)	YEAR
GasPlas AS	Mobile H2 Plasma Reactor	9 000 000	2010 - 2012
HyNor Lillestrøm	Introduksjon av hydrogen som drivstoff, basert på lokal produksjon fra fornybare energikilder	4 900 000	2010 - 2012
Kunnskapsbyen Lillestrøm	NextMove – samarbeid med Sverige og Danmark om nullutslippskjøretøy	330 000	2011 - 2013
Kunnskapsbyen Lillestrøm	Hydrogen Gardemoen – mulighetsstudie	300 000	2011
Kunnskapsbyen Lillestrøm	OBS!Hydrogen	225 000	2014
Kunnskapsbyen Lillestrøm	HyNor Introduksjon	300 000	2014 - 2015
Prototech	Videreutvikling av framdriftssystemer for skip basert på hydrogen og brenselceller	1 750 000	2010
Prototech	Hydrogenstasjon i Bergen	400 000	2013 - 2014
RotoBoost H2 AS	Kompakt hydrogenproduksjon	2 800 000	2012 - 2014
RotoBoost H2 AS	Kompakt hydrogenproduksjon	3 286 000	2014
Ruter	Demonstrasjon av hydrogenbusser	12 000 000	2010 - 2016
SINTEF	H2moves Oslo	12 000 000	2010 - 2012
SINTEF Materialer og kjemi	Hydrogen til transport fra fornybar energi i Midt-Norge	250 000	2012 - 2013
Transportøkonomisk Institutt (TØI)	Tiltakskatalog for transport, miljø og klima	500 000	2011
Veolia Transport Bane as	Utvikling av trippelhybrid buss	50 000	2010
Zero	Miljøvennlige drivstoff og kjøretøy	1 275 000	2010 -

			2011
Zero	Zero Emission Rally 2010	400 000	2010
Zero	Første del av HyNor fase 2	3 600 000	2009 - 2011
Zero	Zero Emission Rally 2011	500 000	2011
Zero	Tilleggsfinansiering av Next Move	1 950 000	2012 - 2014
Zero	Virkemidler for å bygge hydrogenstasjoner	60 000	2012
Zero og Green Highway	Zero Emission Rally 2012	700 000	2012