New all-European high-performance stack: design for mass production

Fact Sheet

Project Information

NELLHI

Grant agreement ID: 621227

Status
Closed project

Start date
1 May 2014

End date
30 April 2017

Funded under
FP7-JTI

Overall budget
€ 2 858 447,20

EU contribution
€ 1 633 895

AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE, L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE
Italy

Objective

This project combines European know-how in single cells, coatings, sealing, and stack design to produce a novel 1 kW SOFC stack of unprecedented performance, together with the proof of concept of a 10 kWe SOFC stack. Improvements over the state of the art in cost, performance, efficiency, and reliability will be proven, covering all top-level objectives mentioned in the topic. The stacks will be developed according to system integrators’ requirements guided by an industrial steering group. The target application of the development is stationary and residential combined heat and power production based on natural gas, and will form the basis for Elcogen Oy’s commercial SOFC stack technology. All manufacturing methods, stack designs, and materials are chosen so that they are suitable for mass production and enable 1000 €/kW profitable stack price, which is a significant improvement to current state of the art. These methods, designs, and materials have been demonstrated successfully in
small-scale and require the scale-up to suit manufacturing of 10 kWe SOFC stacks. For example, high performance of Elcogen cells and short stacks were already demonstrated with 100x100 mm2 cell size, but in this project cells and stack will be further improved and scaled up to larger 120x120 mm2 size. The project is based on the products of industrial partners and motivated by their interest to consolidate an optimized supply-chain and subsequently commercialize a high-performance product at very sharp prices. To this effect, the activity will pay great attention to designing the stack for mass production processes. One industrial partner is involved for each key function: Elcogen AS (cells), Elcogen Oy (stack assembly and production), Sandvik (interconnects and coatings), and Flexitallic Ltd (sealing). Selected research institutions complete the partnership to focus the development process towards a reliable product.

Field of science

/ engineering and technology/materials engineering/coating and films
/ engineering and technology/environmental engineering/energy and fuels/fossil energy/gas
/ engineering and technology/mechanical engineering/manufacturing engineering/product engineering
/ social sciences/economics and business/economics/production economics

Programme(s)

Topic(s)

Call for proposal

FCH-JU-2013-1

Funding Scheme

JTI-CP-FCH - Joint Technology Initiatives - Collaborative Project (FCH)

Coordinator

AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE, L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE

Address

Lungotevere Grande
Ammiraglio Thaon Di Revel 76
00142 R

Activity type

Research Organisations

EU contribution

€ 335 856,40
Participants (8)

**TEKNOLOGIAN TUTKIMUSKESKUS VTT**

Finnish

Address: Tekniikantie 4 A, 02044 VTT Espoo

Activity type: Research Organisations

Website Contact the organisation

Administrative Contact

Angelo Di Guglielmo (Mr.)

**AKTSIASELTSE LECOGEN**

Estonian

EU contribution: € 111,520

Address: Valukoja 23, 11415 Tallin

Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)

Website Contact the organisation

Administrative Contact

Enn õunpuu (Mr.)

**ELCOGEN OY**

Finnish

EU contribution: € 265,650

Address: Niittyvillankuja 4, 01510 Vantaa

Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)
Teknologian tutkimuskeskus VTT Oy
Finland
EU contribution
€ 319 540
Address
Vuorimiehentie 3
02150 Espoo
Activity type
Research Organisations
Administrative Contact
Enn õunpuu (Mr.)
Website
Contact the organisation

FLEXITALLIC LTD
United Kingdom
EU contribution
€ 123 372
Address
Scandinavia Mill Hunsworth Lane
BD19 4LN Cleckheaton
Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)
Administrative Contact
John Hoyes (Mr.)
Website
Contact the organisation

BORIT NV
Belgium
EU contribution
€ 212 846,60
Address
Lammerdries 18 D
2440 Geel
Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)
Administrative Contact
Website
Contact the organisation
AKTIEBOLAGET SANDVIK MATERIALSTECHONOLOGY

Sweden
EU contribution
€ 106 010

Address
811 81 Sandviken

Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)

Website
Contact the organisation

Administrative Contact
Mats Lundberg (Dr.)

CLAUSTHAler UMWELTTECHNIK INSTITUT GMBH

Germany
EU contribution
€ 159 100

Address
Leibnizstrasse 21-23
38678 Clausthal Zellerfeld

Activity type
Research Organisations

Website
Contact the organisation

Administrative Contact
Ralph-Uwe Dietrich (Dr.)

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