



InnoEnergy
Knowledge Innovation Community

Impact door innovatie

Lucienne Krosse, July 5th, Delft

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Who we are

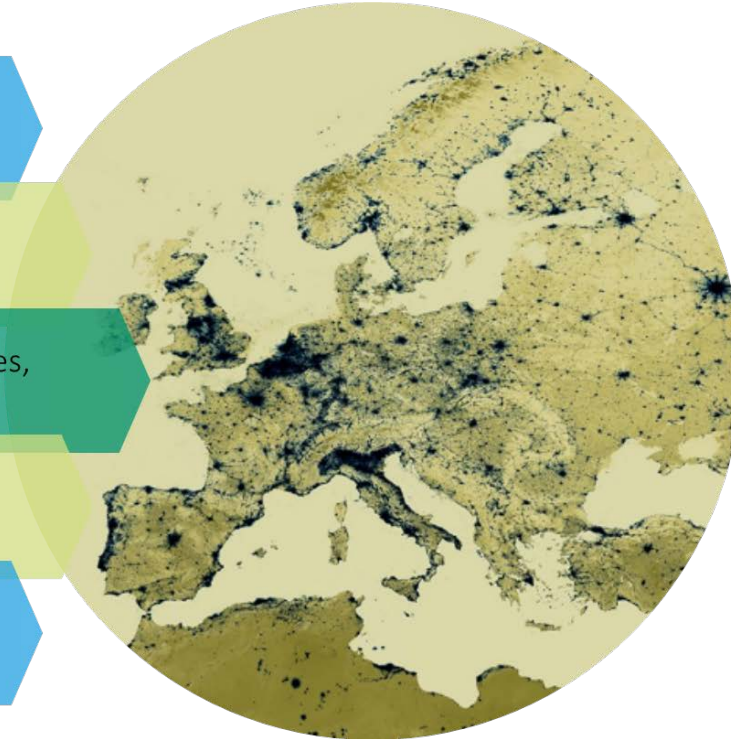
Europe's engine for innovation
in sustainable energy

Empowering every stage
of the innovation process

Investing in people, technologies,
businesses

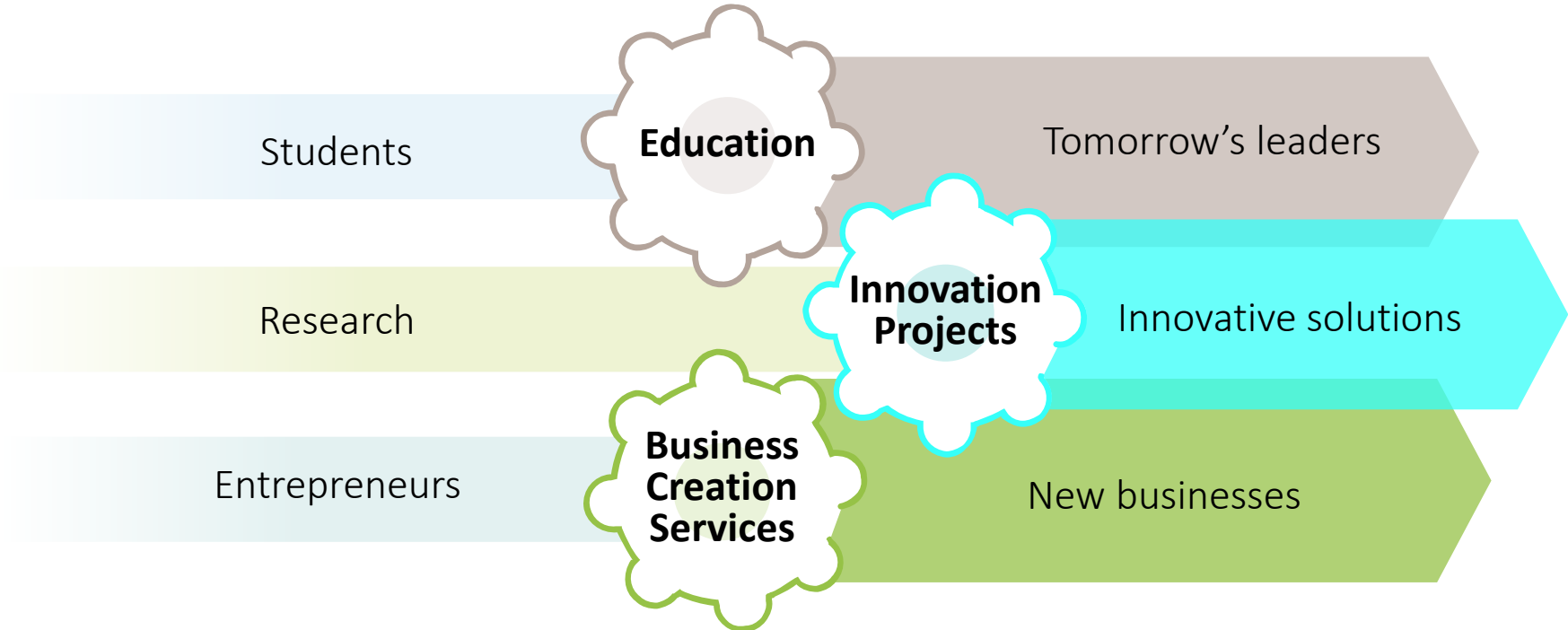
Established 2010:
supported by the EIT

Public-private partnership
aiming for financial
sustainability



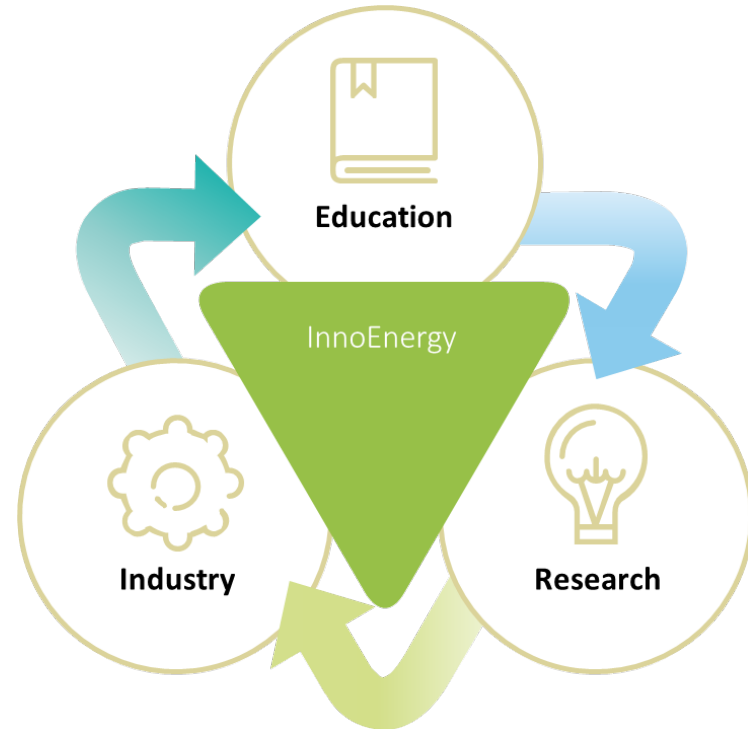
The Innovation Engine for Europe

InnoEnergy



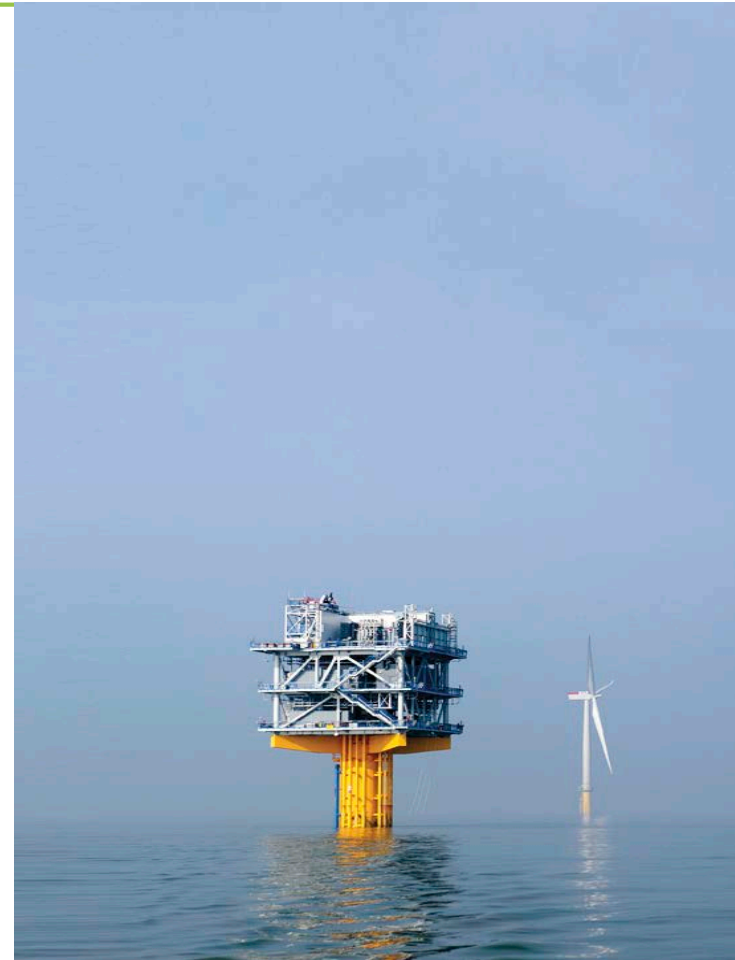
Bringing the knowledge triangle to life

- ✓ Strengthen EU innovation
- ✓ Creates tomorrow's entrepreneurs
- ✓ Increases sustainable growth
- ✓ Encourages global competitiveness



Our goal: sustainable energy

- ✓ Ensure security and safety of supply
- ✓ Reduce costs in the energy value chain
- ✓ Reduce CO2 emissions
- ✓ Improve European competitiveness
- ✓ Remove barriers to innovation
- ✓ Encourage sustainable growth
- ✓ Create jobs



Thematic fields and technology focus



Clean coal and gas technologies



Energy storage



Energy efficiency in industry



Energy from chemical fuels



Renewable energies



Smart and efficient buildings and cities



Smart electric grid



Nuclear instrumentation

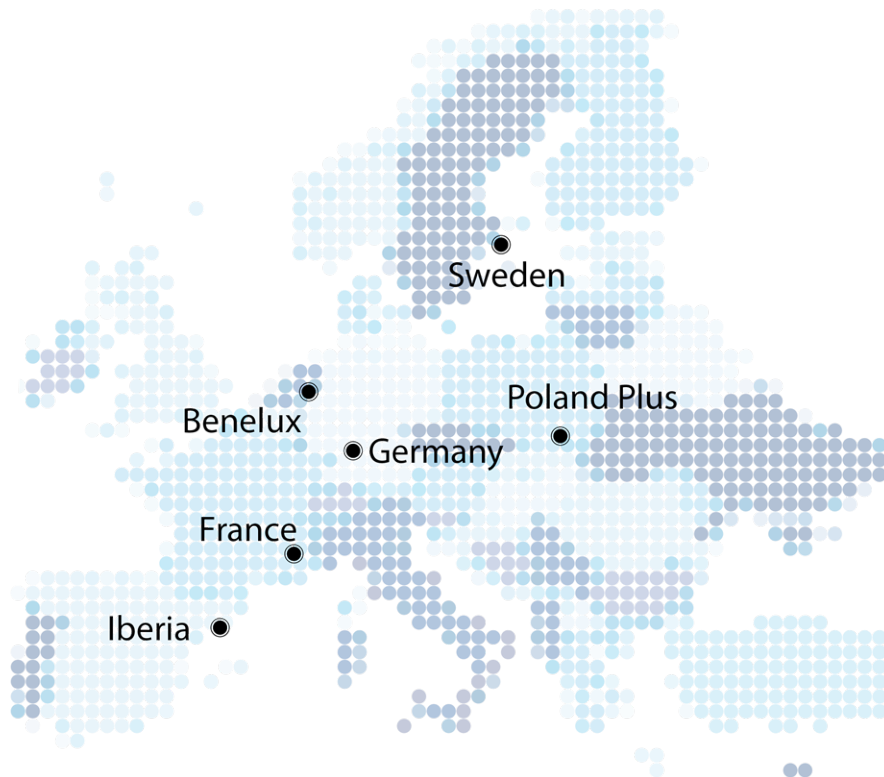
Making connections: the power of the network

6 co-location centres

26 shareholders

250 additional partners

Activities in 17 countries



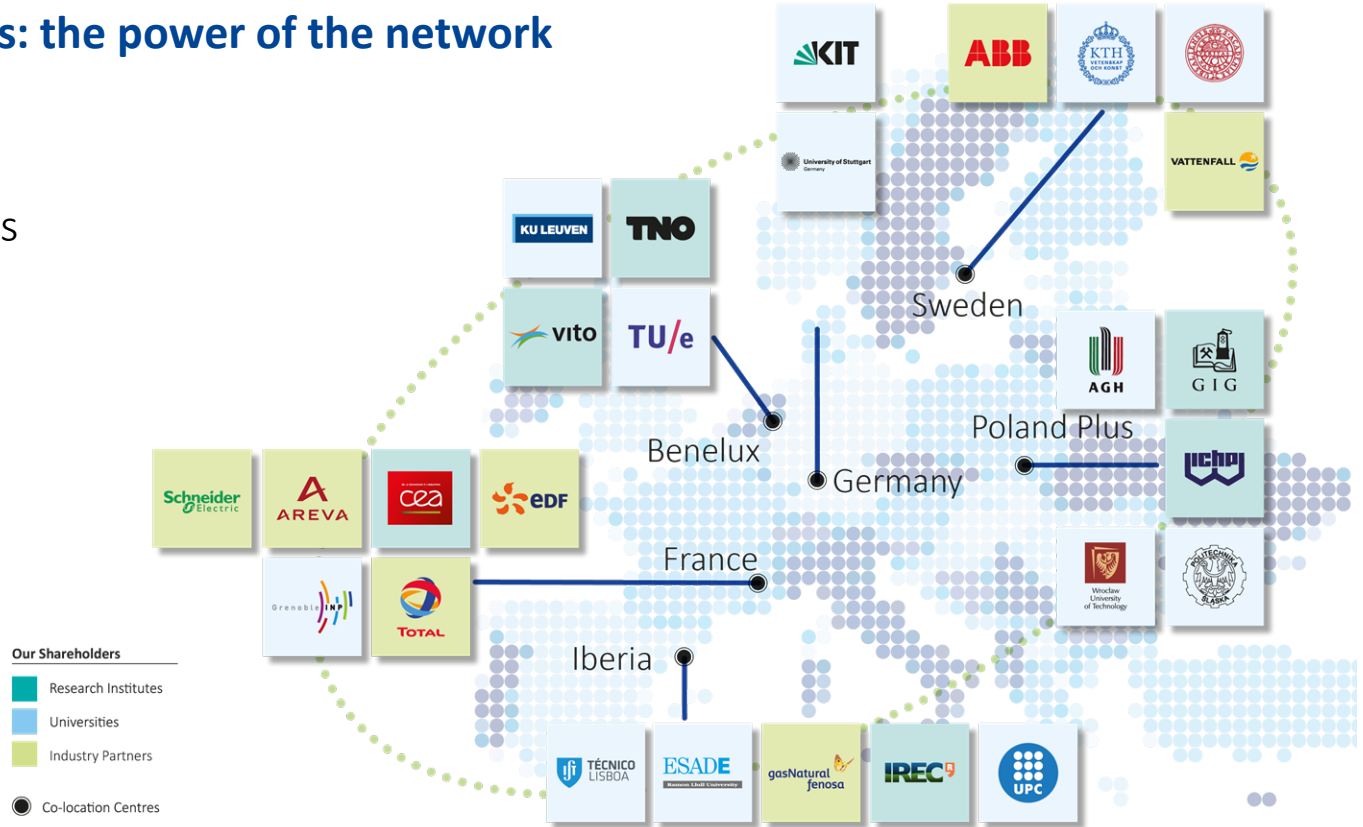
Making connections: the power of the network

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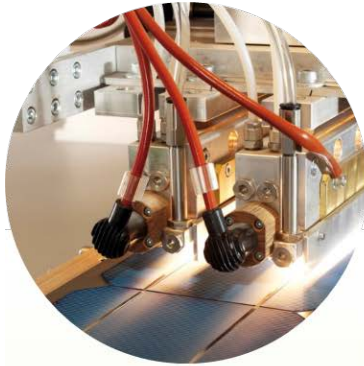
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For every stage of the innovation journey



Innovation
Projects



Business Creation
Services



Education

Connecting ideas and industry, innovators and business partners



Simplifying the journey from lab to launch



Partners, skills and resources



Market needs and potential customers



Shorten time to market



Financing and investment



A commercial product in 5 years

Expanding the circle of innovation in Europe's energy sector

Turning prototypes into commercial products

1



Prototype

2



Project

3



Finance

4



Support

5

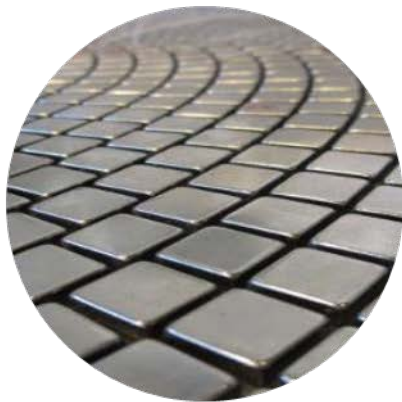


Success

Innovation success

HYMES

**Hydroelectric
mechanical energy
storage**



Energy storage

MrCySeMoL

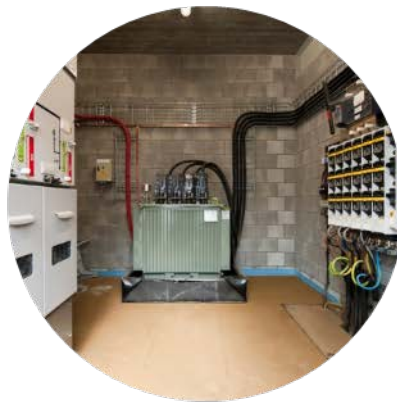
**Cyber security
tool**



Smart electric grid

Active Substations

**Proactive
monitoring**



Smart and efficient
buildings and cities

250

Project partners
across Europe

77

Patents filed

78

Products and services
supported

3

Manufacturing
facilities constructed

147

Million euros of InnoEnergy
investment

1.2

Billion euros
in project costs

3

Billion euros in forecasted sale

Connecting entrepreneurs and start-ups to markets and customers



Tailored business support: the InnoEnergy Highway



Product: potential, development, pilot, launch



Market: opportunities, positioning, modelling, planning



People: capabilities, training, support, mentoring



Finance: seed money, VCs, angels, equity

**Viable technologies, sustainable businesses,
entrepreneurial spirit**

Support from business plan to first sale



Entrepreneurial success

Technoturbines

***Energy recovery
through hydraulic
turbines***

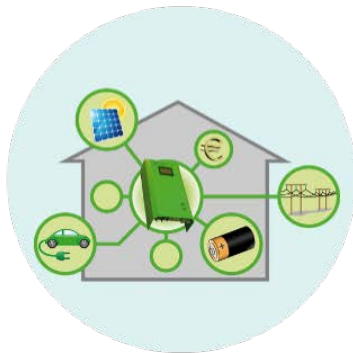


Spain

Energy efficiency

Ferroamp

***Distributed energy
storage for smart
grids***



Sweden

Smart electric grid

NAWATEchnologies

***Ultra-fast
batteries***



France

Energy storage

162

Early start-ups
supported

80

Companies created

33

Million euros
of external
investment raised

1,884

Business ideas
captured

Connecting graduates and employers, researchers and industry



Combining technical knowledge and commercial awareness



Improve career prospects



Deepen the industry's talent pool



Encourage innovation and entrepreneurship



Increase competitiveness

**Delivering smart people, skills and connections
to Europe's energy sector**

A new approach to sustainability

Connected
at the heart
of Europe's
energy sector

Collaborative
bringing skills
and resources
together

Commercial
self-sustaining
public-private
partnership

Challenging
new ways
of working
and thinking



Some innovations

Orientation independent, building integrated, solar domestic tap water production

Challenge

- South orientation is key for current solar heated tap water systems
- Implementation is hampered due to the poor aesthetics of most current systems

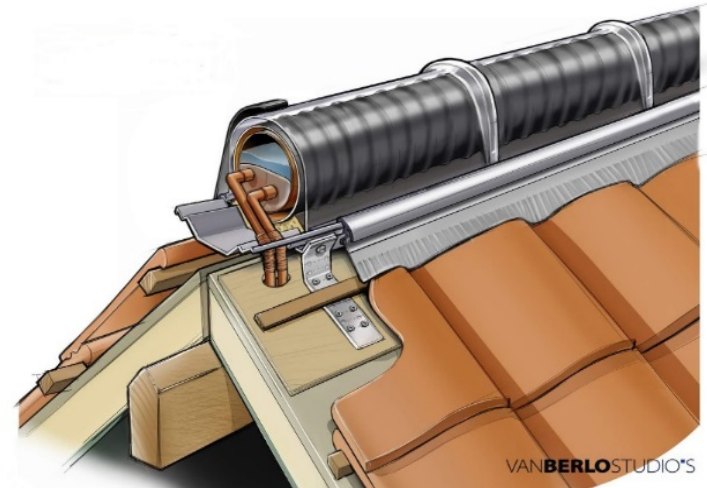
Solution

- A solar domestic hot water system that can be mounted on the ridge of the roof in a modular way
- High energy performance, robust (no overheating or freezing risk), easy to install also in existing and monumental buildings

Value Proposition

- Cost savings
- Easy installation
- Aesthetics: almost not visible from street level

SunRidge



Aesthetic integrated solar energy roofing solution

Aerspire

Challenge

- increasingly stringent energy label requirements for residential buildings
- End user acceptance: aesthetics

Solution

AER is a roofing system that generates photovoltaic electricity and hot water (solar thermal heat), integrated in glass panels that fully replace conventional roofing materials and suit every type of tilted roof.

Value Proposition

- Designed to be a component
- Equal life span compared to today's standard roofing materials
- Optimal water retaining surface, no additional materials needed



 **AERSPIRE**
Aesthetic Energy Roofs

<http://www.aerspire.com>

Solution available

A turn-key solution for affordable, sustainable and nearly energy autarkic residential quarters and communities

evohaus irq

Video Link: <https://youtu.be/K-ZPeLKpVkl>

Challenge

- Passive housing addresses the need for lower energy use, but is not yet accessible for the lower and mid-incomes
- Investment cost for power autarkic projects are very high

Solution

- Max self-consumption of PV in combination with passive housing
- Efficient use, cost-effective energy storage
- Load shifting possibilities within the quarter
- Local ESCo with participation of inhabitants

Value Proposition

- Reliable, foreseeable and affordable supply of energy
- Lower total energy cost and increased independency: level of 70% energy autarky, energy cost (heating and electricity) of ca. 500 €/year for ca. 100m² apartment
- Active participation of tenants



evohaus irq
intelligente residenz quartiere

<http://www.evohaus.de>

Solution is available

SolidCity is a public lighting system with integrated smart cities platform providing a mixture of functionalities

Challenge

- Public lighting is being replaced by more efficient technologies
- Smart city functionality is not easily to access for different companies (proprietary)

Solution

- Public lighting system with integrated smart cities platform, enabling other smart cities functionalities such as traffic congestion detection, air pollution etc without extra investments
- New (cross-sectional) business opportunities based on sensor networks, big data and IT

Value Proposition

- Non-proprietary
- Business case already feasible for one functionality (LED public lighting)
- Data owned by municipality

SolidCity



Low-cost and scalable electricity storage, independent of energy capacity and power

Challenge

- A lack of affordable and scalable electricity storage solutions, suited to compensate for the existing mismatches in production and demand when energy is generated from renewable sources

Solution

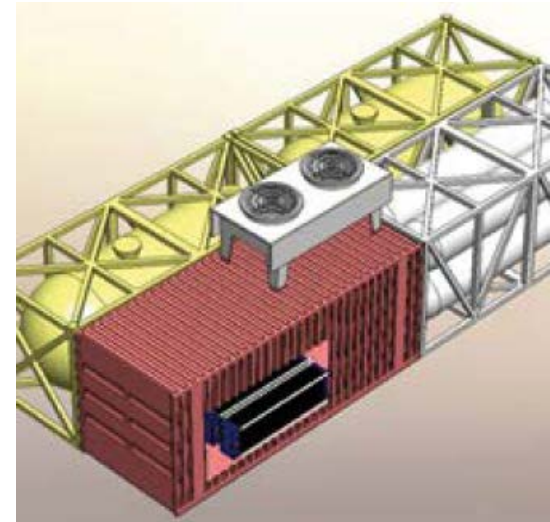
- Hydrogen-Bromine flow battery
- An innovative solution for hydrogen handling, robust membranes and non-corrosive materials
- More efficient electrochemistry than current battery systems
- No oxygen reduction reaction and, as such, no high activation loss

Value Proposition

- Low cost energy storage, independent of energy capacity and power, a short start-up time
- Modularly scalable from kW to MW
- No oxygen reduction reaction and no high activation loss, zero emissions

Elestor

<https://www.youtube.com/watch?v=gb5AQf4WLis>



<http://www.elestor.nl>

Support implementation and thus increasing impact

- ✓ New investment instrument, specifically for international upscaling and industrialization
- ✓ Leverage European partner network to support implementation
- ✓ Extend partner network to support international implementation and sales
- ✓ Business development support from InnoEnergy offices



Lucienne Krosse

Lucienne.Krosse@innoenergy.com

+31 6 11 47 91 27



www.innoenergy.com



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