SMART ENERGY ECOSYSTEMS AND TEST PLATFORMS

Pia Salokoski
Nordic views on NEW ENERGY STORAGE technologies
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Smart Energy Program
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Responding to the challenge of climate change
Contributing to the transformation of the energy sector
Actions

Ecosystems
Test Platforms
Pilots and Demonstrations

- Smart Charging of Electric Vehicles
- Smart Homes and PV
- Energy Storage
- Power to Gas
- Balancing
- Microgrids, Energy Communities
- Advanced Monitoring
- Distribution Automation
- Controllable Loads and Energy Efficiency
- System Management and Design
- Market Design
- Aggregator
Smart Otaniemi aims to solve systemic challenge - the biggest question of smart energy.

Smart Energy Åland
100% Renewable Island
An integrated renewable energy system with sector coupling and system integration in focus.

Batteries from Finland

Blue Electrification
Power to X to power and products
Test platforms in Finland

- **Smart Otaniemi**
  - Unique place with innovation environment, VTT’s research centre and Aalto University campus
  - Startups
  - 5g network
  - Students as consumers
  - Living lab with real customers involved
  - Developing and demonstrating system-level solutions
  - Legislation and market models supporting transition

- **Åland Islands**
  - Society scale, comprehensive but small enough
  - Excellent wind and solar conditions
  - 60% renewable with now decided investments
  - Self-governed
  - Full society of 30 000 citizens
  - Readiness up to 125 % RESe
  - 0.5% of Finnish GDP, electricity consumption, population etc.
Business Finland is starting to build multibillion business ecosystem in the field of batteries.
LEADING COUNTRY IN SUSTAINABLE PRODUCTION OF RAW MATERIALS

Finland is the only significant European producer of raw materials for electric vehicle batteries.

EXCELLENT PLATFORM FOR COMPONENT AND CELL MANUFACTURING

Finland offers an compelling location for companies aspiring to meet the growing European demand for battery components and cells.

INNOVATIVE APPLICATIONS AND WIDE ECOSYSTEMS

Finland is globally known for its innovation and low carbon solutions for energy sectors.

FORERUNNER ON RECYCLING

As proof point of our competences EU has given Finland leading role on battery recycling research.
BATTERY VALUE CHAIN
“Blue Electrification”
“NeoCarbon 2.0”
Transforming energy markets
Creating emerging markets
Renewable energy developments by controlled exploitation of CO₂ cycles

Strategic modelling of global transition of technologies, by country on an hourly level

Electricity - Solar & Wind, Batteries, Storage

CO₂ sources
- Air
- Energy sector
- Industry

CO₂ capture

Water Electrolysis

CO₂

H₂

N₂

O₂

CO₂ sources

CO₂ capture

Bioprocess

Synthesis

Energy storage

Energy production

Sustainable new materials

Ammonia

Methane

Methanol

Dimethyl ether

Synthetic net-emission-free drop-in fuels:
- Cars, trucks
- Marine
- Aviation
- Working machines

Electricity Heat
Cool Balancing

System Efficiency and Grid Management
Thank you!