



# ZEHTC

## Zero Emission Hydrogen Turbine Center

“ With renewable energy sources, green hydrogen and gas turbines combined, we can store energy and achieve a reliable and sustainable energy system

In the project ZEHTC a demonstration plant will be built to show how hydrogen and gas turbines, renewable energy production and energy storage works together in a future flexible and sustainable energy system.

The project aims to use excess energy from gas turbine tests performed at the production site in Finspång and electricity from solar panels, to produce hydrogen in an electrolyzer. The hydrogen will be used as a fuel in gas turbines.

In a local microgrid, it will be possible to optimize the use of energy through storage, as hydrogen or in battery. Hydrogen created at the plant will be used in further research and development of the hydrogen turbines, in order to reach the target to run the gas turbines solely on 100% hydrogen with zero CO2 emissions, latest by 2030.



### Project Duration

01.10.2019 - 30.09.2022

### Project Budget

Total Budget: € 3,494,875.-

Funding: € 1,425,440.-

### Project Coordinator

Siemens Energy (Sweden)

### Project Partners

- Finspång Municipality (Sweden)
- County Board East Sweden (Sweden)
- Chalmers University (Sweden)
- University of Bologna (Italy)
- Linde Gas AB (Sweden)

### Project Website

[www.zehtc.org](http://www.zehtc.org)

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Unrestricted  
ERA-Net Smart Energy Systems



This project has received funding in the framework of the joint programming initiative ERA-Net Smart Energy Systems. The initiative has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreements no. 646039 and no. 755970.

### ERA-Net Smart Energy Systems Joint Call 2018

This project has been awarded funding within the ERA-Net SES Joint Call 2018 for transnational research, development and demonstration projects. EUR 33.4 Mio of funding have been granted to 23 projects from 16 regions and countries.

## Main Objectives

Decarbonization of the Siemens Finspång test facility by the reuse of power from the gas turbine tests, renewable energy production and the use of hydrogen as fuel.

Knowledge sharing regarding hybrid, power-to-gas and smart micro grids solutions with local, regional and global networks of municipalities, utilities and industries.

Demonstrating de-carbonization island mode solutions to customers and communities world-wide as a basis for promotion of hybrid solutions, power-to gas, energy storage, optimization of smart micro grids and use of hydrogen as fuel (co-firing) in gas turbines.

Develop competences to optimize the use of gas turbines in the changing energy system as part of hybrid, energy storage and smart grid solutions. Develop competence to operate low NOx gas turbines on fuel mix containing higher proportions of hydrogen with the target to reach 100% hydrogen as fuel in gas turbines by 2030.

Contribute to the development of a sustainable society regionally, nationally, globally through providing solutions that are enabling communities to meet increasing energy demands with reduced CO2 emissions.

## Expected Main Results

Technology:

- Gas turbine integration with renewables, energy storage and smart grids demonstrated and evaluated.
- Hydrogen fired gas turbine combustion technology advanced.

Marketplace:

- Demonstrated solutions for energy storage in battery and hydrogen
- Demonstrated gas turbine fuel flexibility complementing renewables.
- Optimized models for future energy system with regard to gas turbine hydrogen combustion.

Adoption:

- Demonstrator of a sustainable energy system
- Broad awareness for hydrogen compatibility of gas turbines
- Collaboration in power-to-X community

## Joint Programming for Flourishing Innovation from Local and Regional Trials towards a Transnational Knowledge Community

[www.eranet-smartenergysystems.eu](http://www.eranet-smartenergysystems.eu)

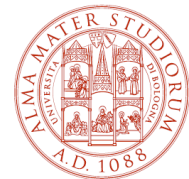


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