

## BIG HIT

Building Innovative Green Hydrogen  
systems in an Isolated Territory: a pilot for  
Europe

**BIGHIT**

European  
**Hydrogen**  
Week



Jesús Simón

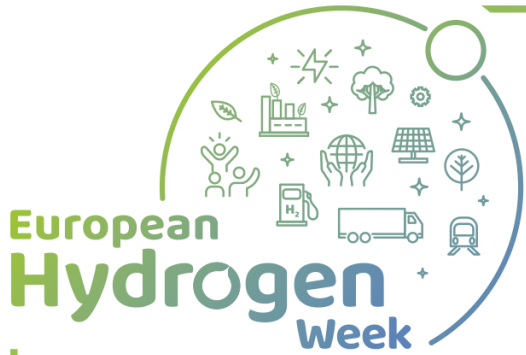
Aragon Hydrogen Foundation

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#PRD2020  
#CleanHydrogen





# Project Overview

**Call year:** 2015

**Call topic:**  
FCH-03.2-2015:  
Hydrogen  
territories

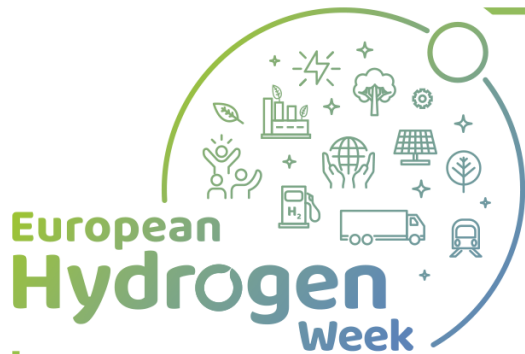
**Project dates:**  
1st May 2016 - 30th April 2022

**Total project budget:**  
circa. 13m€

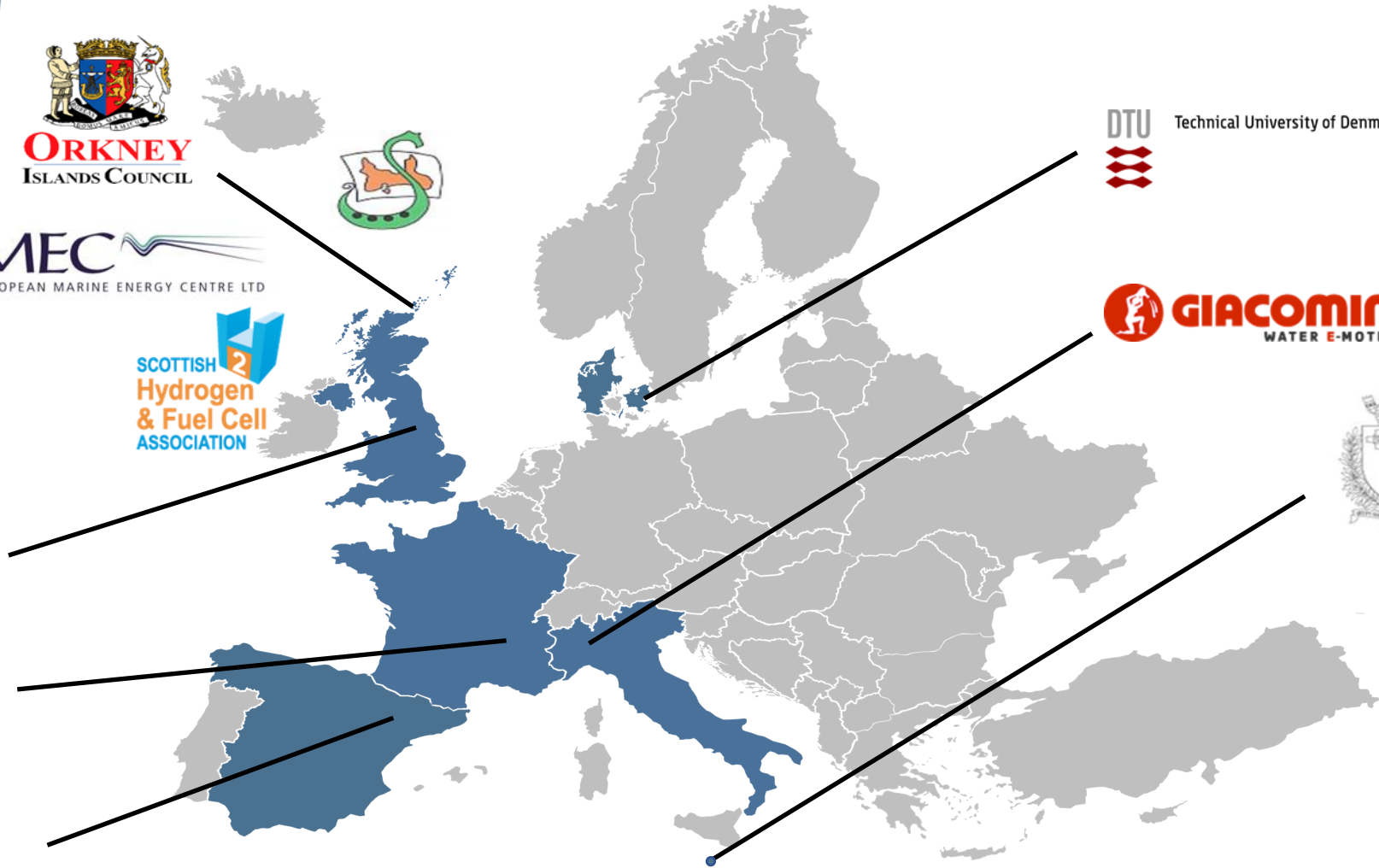
**BIG HIT**

**% stage of implementation**  
01/11/2019: 70 %

**FCH JU max. contribution: 5m€**  
**Other financial contribution: circa.**  
8m€



# Partners



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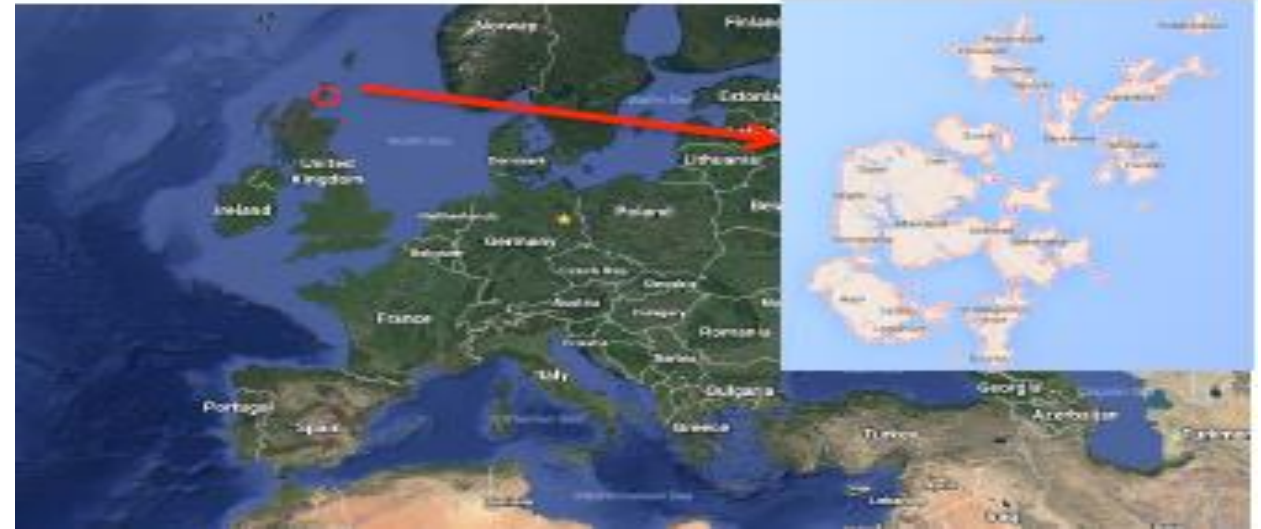
# Project Summary



20 islands  
~21.000 inhabitants



58MW RES  
47MW wind +  
wave/tidal



## PROBLEM/NECESSITY

- Orkney-UK interconnector  
30MW capacity
- Electricity grid overloaded
- 20-30% RES annual curtailment



## SOLUTION FOR ORKNEY

- Transition to local low carbon economy,
- Electricity, transport and heat demand  
via hydrogen
- Local energy storage



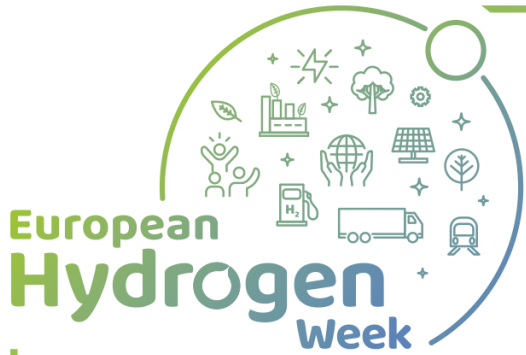


# Project Summary

## H2 Local Energy System

- ✓ Supply: green H<sub>2</sub> from wind & tidal
- ✓ Transport/distribution H<sub>2</sub> by road and ferry
- ✓ End-use: H<sub>2</sub> for heat, power & transport





# Project Progress

## Operation Phase

Concept  
“Hydrogen  
Territory”

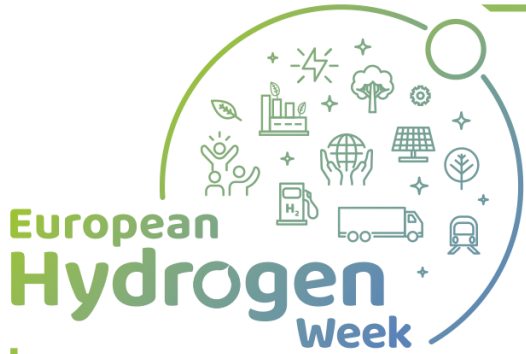


- H2 production: > 200 kg of H2 generated
- H2 logistics
  - H2 transported from Shapinsay (production site) to Kirkwall (HRS, FC harbour) by ferry
  - Certifications for maritime transport

- >100 kg H2 dispensed to the range extender FC vans

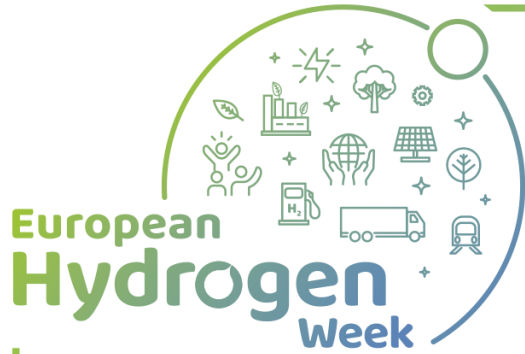
VIN	Operating hours	Odometre (km)
VF1FW0ZHC57328479	479	18 184
VF1FW0ZHC57328480	345	11 986
VF1FW0ZHC57328476	146	11 266
VF1FW0ZHC57328478	162	8 007
VF1FW0ZHC57328477	107	5 956
Total	1 239	55 399

- Data from FC Harbour and H2 catalytic boiler in progress



# Risks, Challenges and Lessons Learned

- Complexity of deployment of H2 across entire value chain (legal, logistics, boundaries/interfaces)
- Logistical challenges (geography, remoteness, materials, climate)
- RCS challenges (pre-commercial deployment)
- Management of PPPs & private/public co-funding (don't overpromise)
- Allowances for complex Project Management, Engineering & Integration (contingency)
- Operational competence: local training & up-skilling
- Ongoing local community involvement



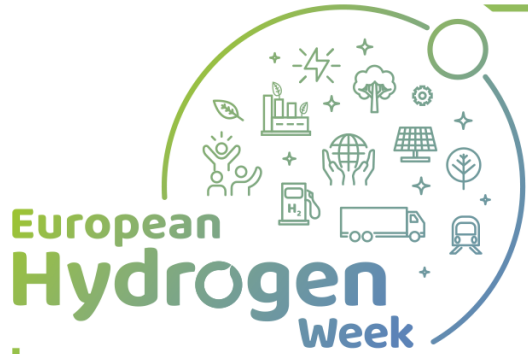
# Building upon BIG HIT - Next Steps

- Scaling-up: > 70m€ investment in place for hydrogen deployment in Orkney (HYSEAS III, ReFLEX, ITEG, HyDIME projects)
- Replication & co-operation with other EU regions (ongoing through HTP platform)
- Scaling-up - Hydrogen Valleys & Islands:
  - ✓ EU flagship initiatives building upon BIG HIT
  - ✓ Development of local hydrogen ecosystems (sector coupling, deployment across entire value chain, pre-commercial scale)
  - ✓ Facilitate PPPs & private/public co-funding structures
  - ✓ Apply technical/financial/logistics knowledge (de-risking)



**Lessons learnt replicable to other projects & regions!**





# What the Hydrogen Territories Platform (HTP) is?

Interregional platform that will help members understand how regions can successfully replicate the BIG HIT project concept of hydrogen-based integrated local energy systems, in their respective territories.

## Tools:

- Website
- Replicability tool
- Webinars and face to face meetings (if possible due to Covid-19 situation)

The Platform is chaired by the Foundation for Hydrogen in Aragon (FHA) and the Scottish Hydrogen and Fuel Cells Association (SFHCA), in the framework of the BIG HIT project and with the support of their project partners.

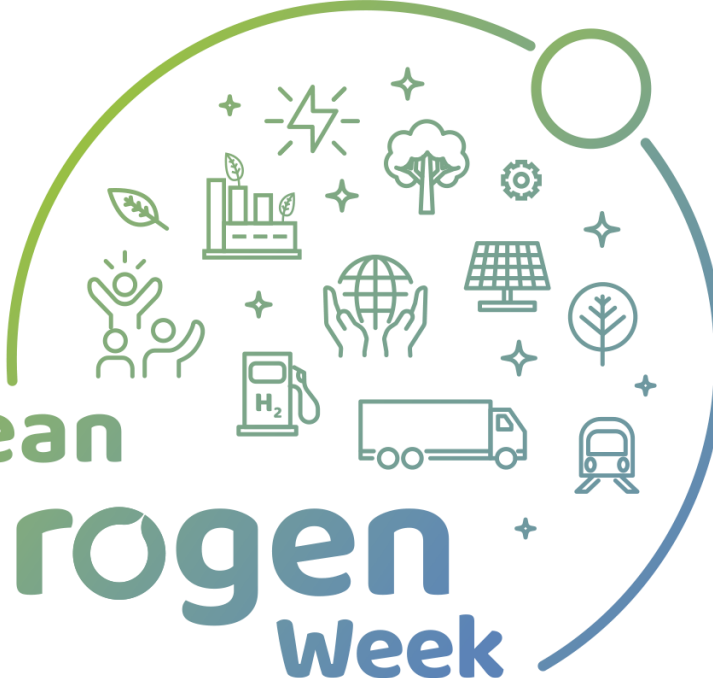
**Website (<http://h2territory.eu/>)**



**H<sub>2</sub>TP** BIG HIT

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