



# FLAGSHIPS

## Clean waterborne transport in Europe

Floro – 18/09/2019

# Project overview

**AMBITION:** Illustrate the business viability and promote social acceptability of zero-emission shipping based on hydrogen and fuel cells

## FEATURES

Total Budget: 6.8 MEUR  
Duration: 4 years, 2019-2023



A total of 1 MW installed on-board fuel cell power



On-site hydrogen production with electrolysis powered by renewable electricity



FUEL CELLS AND HYDROGEN  
JOINT UNDERTAKING

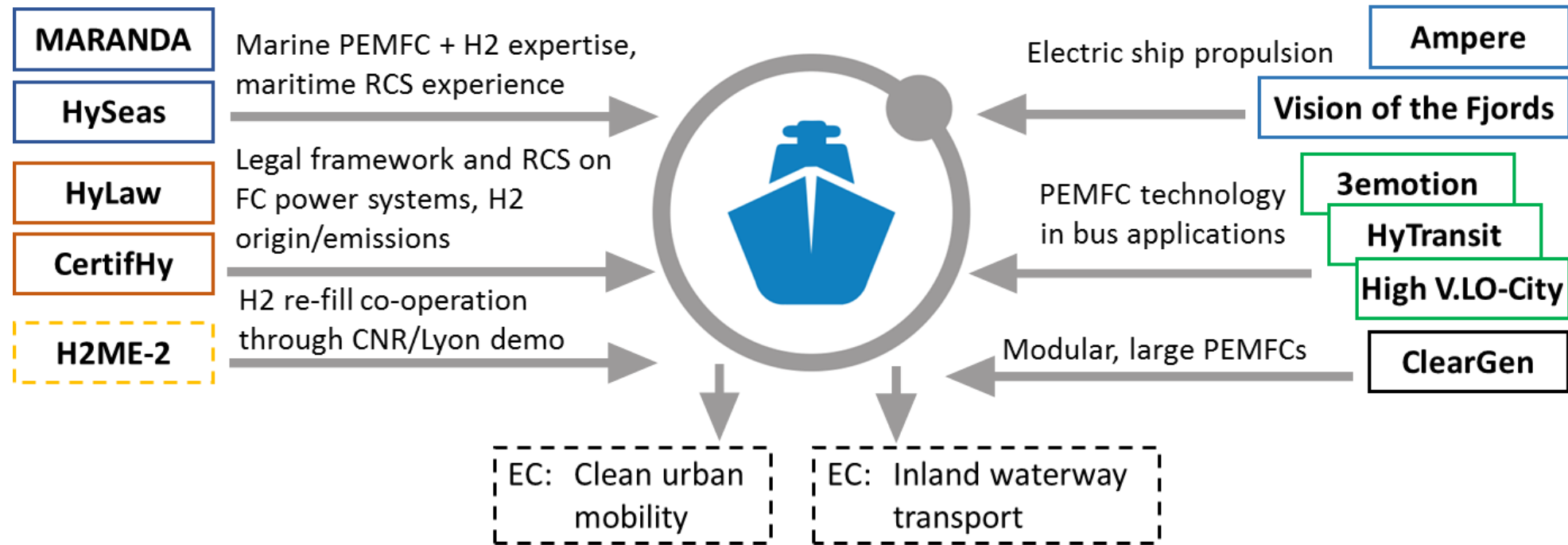


# Project objectives

- Raise the global readiness level of hydrogen-powered zero-emission waterborne transport
  - Develop and deploy H2+FC vessels in two commercial applications
    - Reach runtime of at least 18 months in day-to-day operation
  - Drive the uptake of H2 fueling infrastructure for hydrogen vessels
  - Develop and strengthen supply chains for the marine FC & H2 technology
  - Clarify approval practices for hydrogen ships

# Building on long-running experience

- Past experience from electric and fuel cell transport applications is leveraged for pan-European commercial benefit



# Two hydrogen flagships

## VESSEL 1:

### LYON

#### GASEOUS HYDROGEN

A push-boat operating as a utility vessel on one of the most demanding rivers, the Rhône.



## VESSEL 2:

### STAVANGER

#### LIQUIFIED HYDROGEN

A passenger and car ferry operating as part of the local public transport network.



FUEL CELLS AND HYDROGEN  
JOINT UNDERTAKING



# New builds to replace



Passenger & car ferry

- Stavanger area Norway
- 600 kW FC power



Pusher

- Lyon, France
- 400 kW FC power

# Timeline

**Specification**

**Design**

**Build**

**Test & approval**

**2019-2020**

**2021-2022**

**Operation in commercial service**



# Project consortium

## Overarching

- VTT
- Ballard
- Persee
- NCE Maritime Cleantech

## Team Stavanger

- Norled
- LMG Marin Norway

## Joining soon...

- Westcon P&A

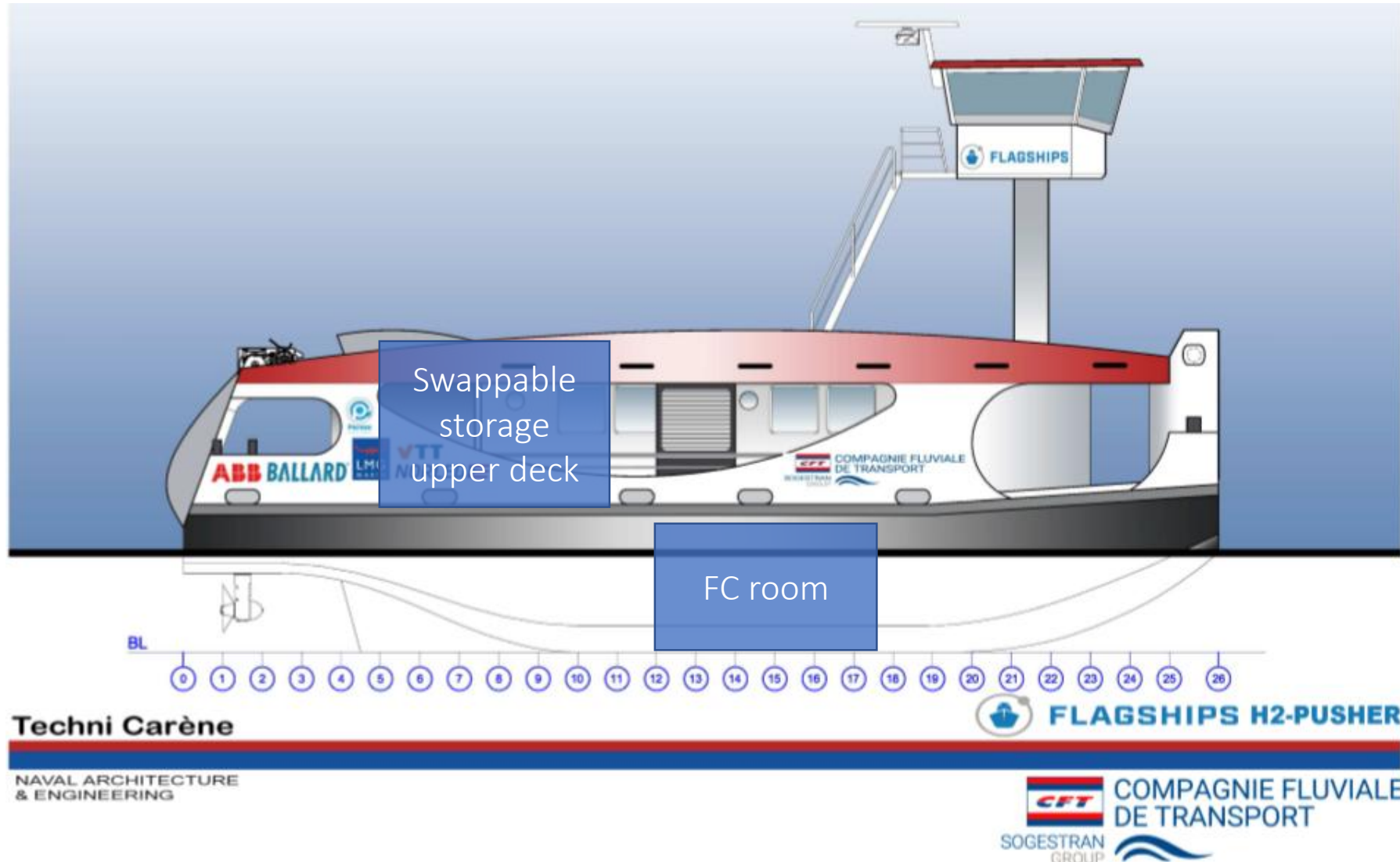
## Team Lyon

- CFT
- ABB
- LMG Marin France





# Focus on Lyon pusher





# Contact points

- Coordinator: VTT Technical Research Centre of Finland Ltd.
  - Antti Pohjoranta, [antti.pohjoranta@vtt.fi](mailto:antti.pohjoranta@vtt.fi), tel. +358-40-5709825
- HFC supervision: Persee
  - Laurence GRAND-CLEMENT, [lgc@pers-ee.com](mailto:lgc@pers-ee.com)



# FLAGSHIPS

[www.flagships.eu](http://www.flagships.eu)

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