Market development of electrolysis systems taking system services into account

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Market development of electrolysis systems taking system services into account

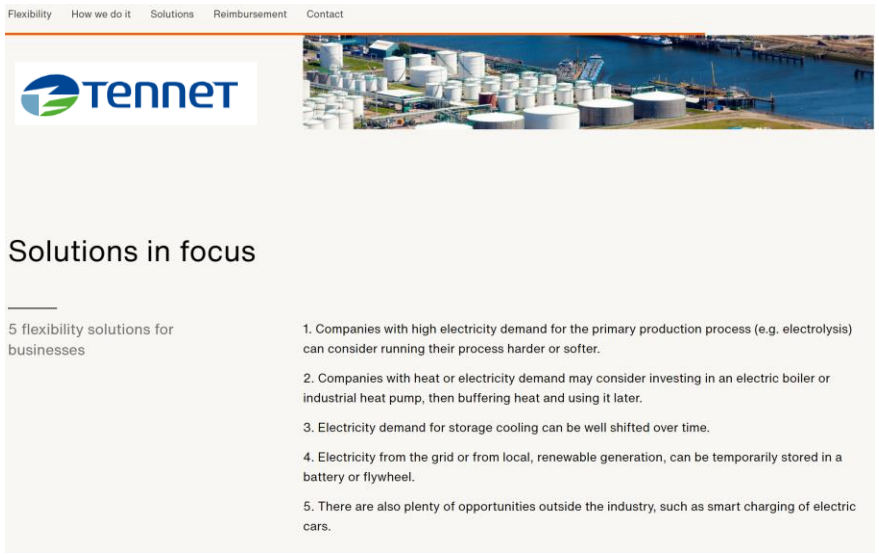
- Core requirements
- H2 in the power grid
- H2 on/off grid

Core requirements

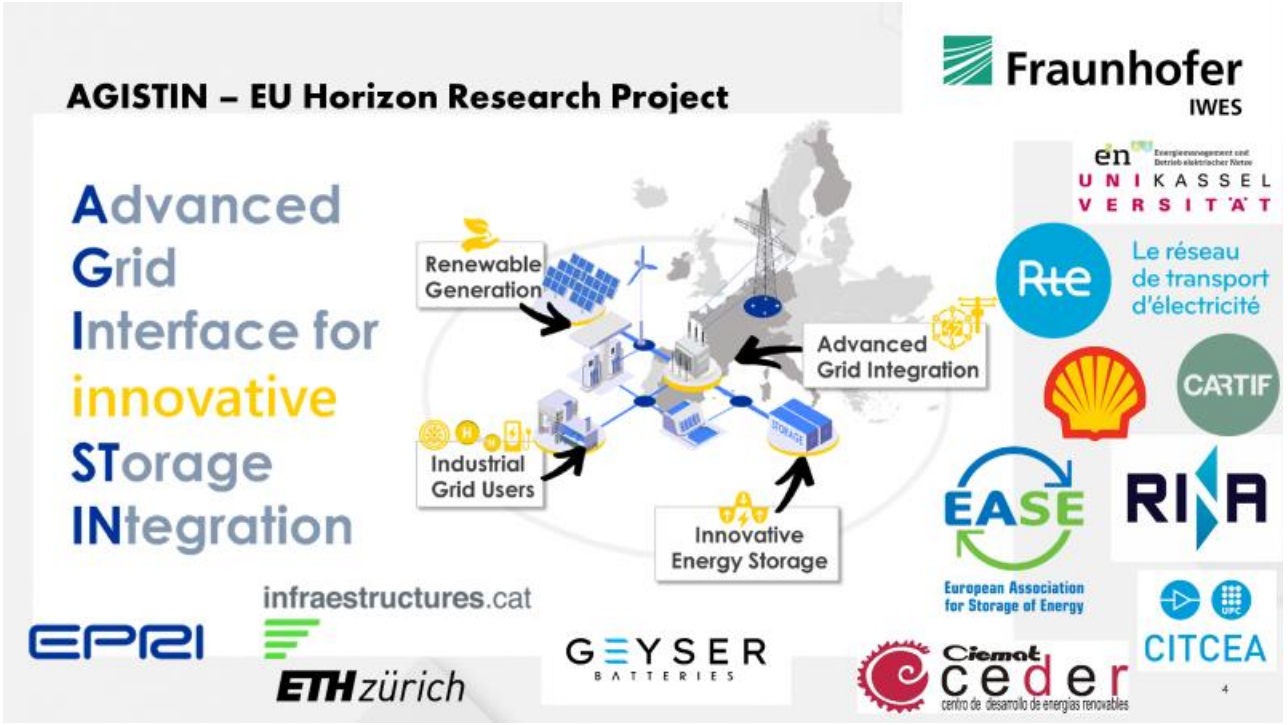
- Power quality INTO the electrolyser (DC)
- Power quality INTO the grid (harmonics, power factor, connection compliance)
- Match of electrolyser performance with requirements / revenues for ancillary services
  - Stack
  - BoP
- Balance of costs and benefits
  - CAPEX (more filtering, pf compensation etc.)
  - OPEX (degradation/lifetime)
- Unknowns?
  - Long term degradation/lifetime effects for DC power quality (amplitude, frequency inc. cycling)

H2 in the power grid

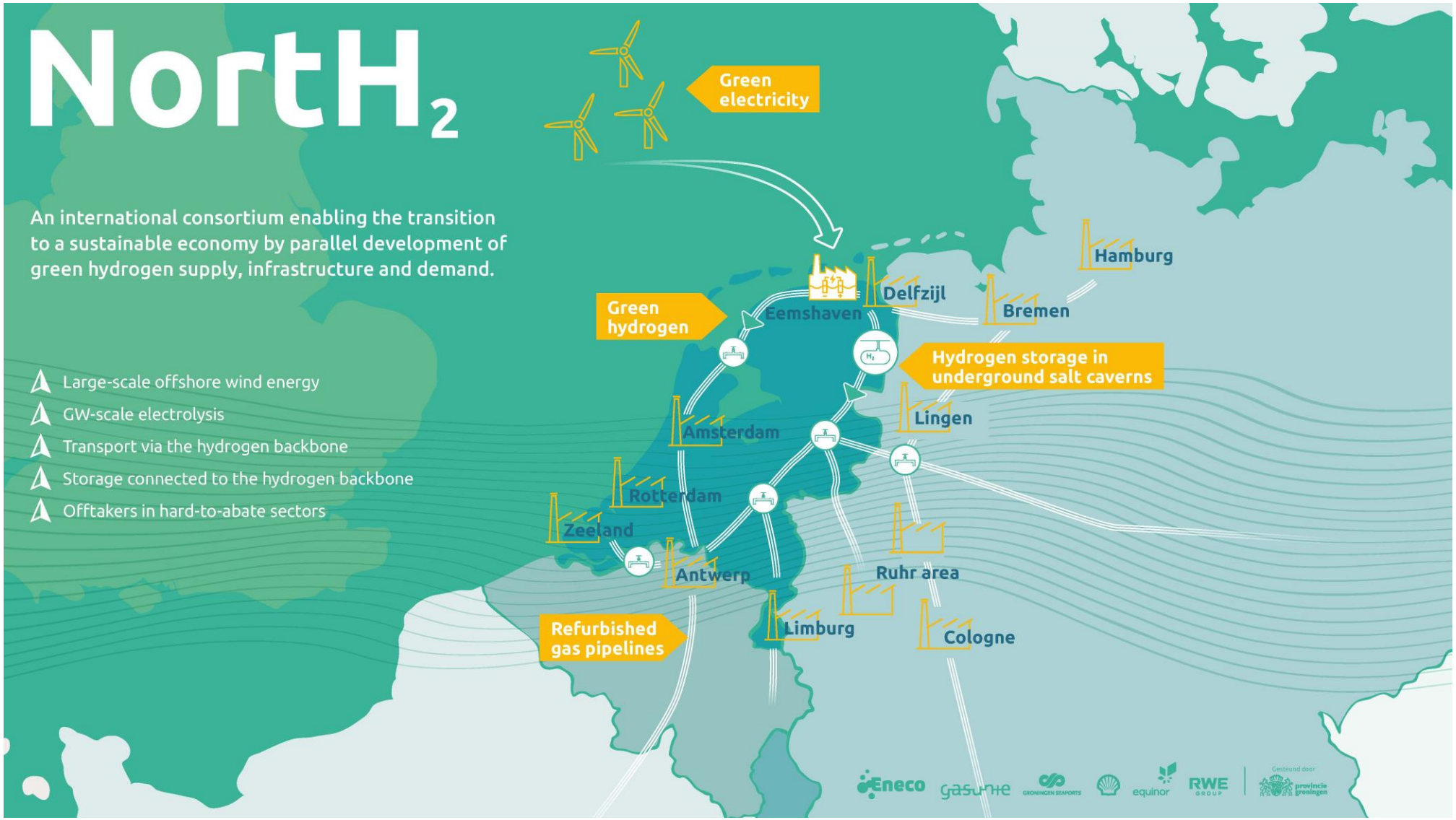
- Short term – flexible demand



- Long(er) term - storage



H2 on/off grid



H2 on/off grid e.g. FlexH2 Project

FlexH2 Project

Flexible Offshore Wind Hydrogen Power Plant Module

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2023.11.01

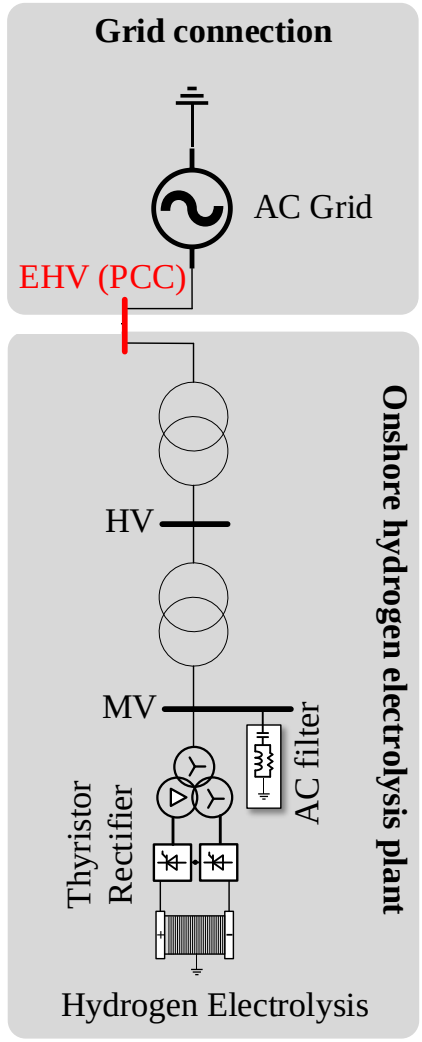
a GROW initiative

FlexH2 project – hydrogen perspective

Traditional concept

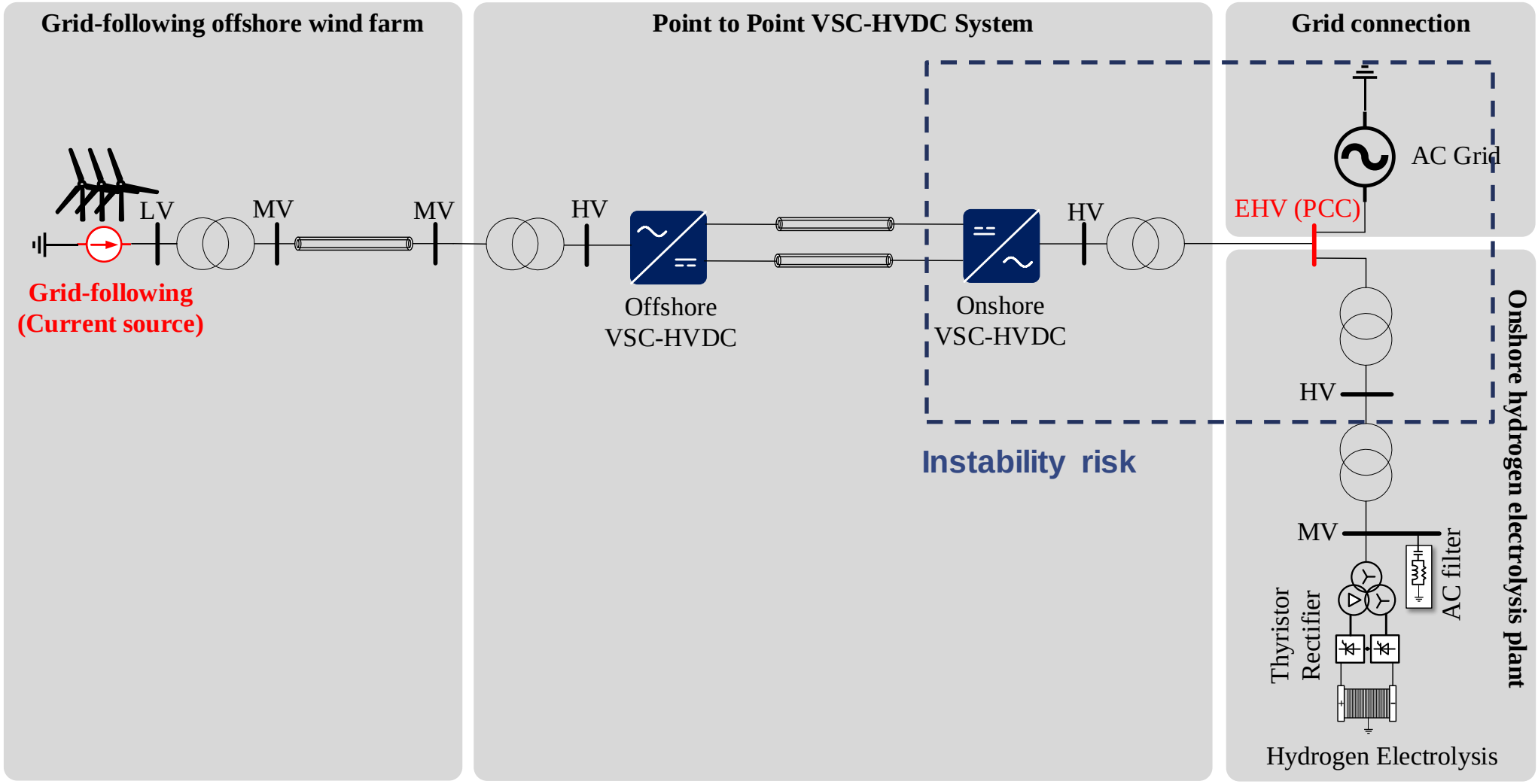
Disadvantages

1. Very high grid connection cost (and increasing)
2. Issue of grid congestion
3. This is not “green H2”



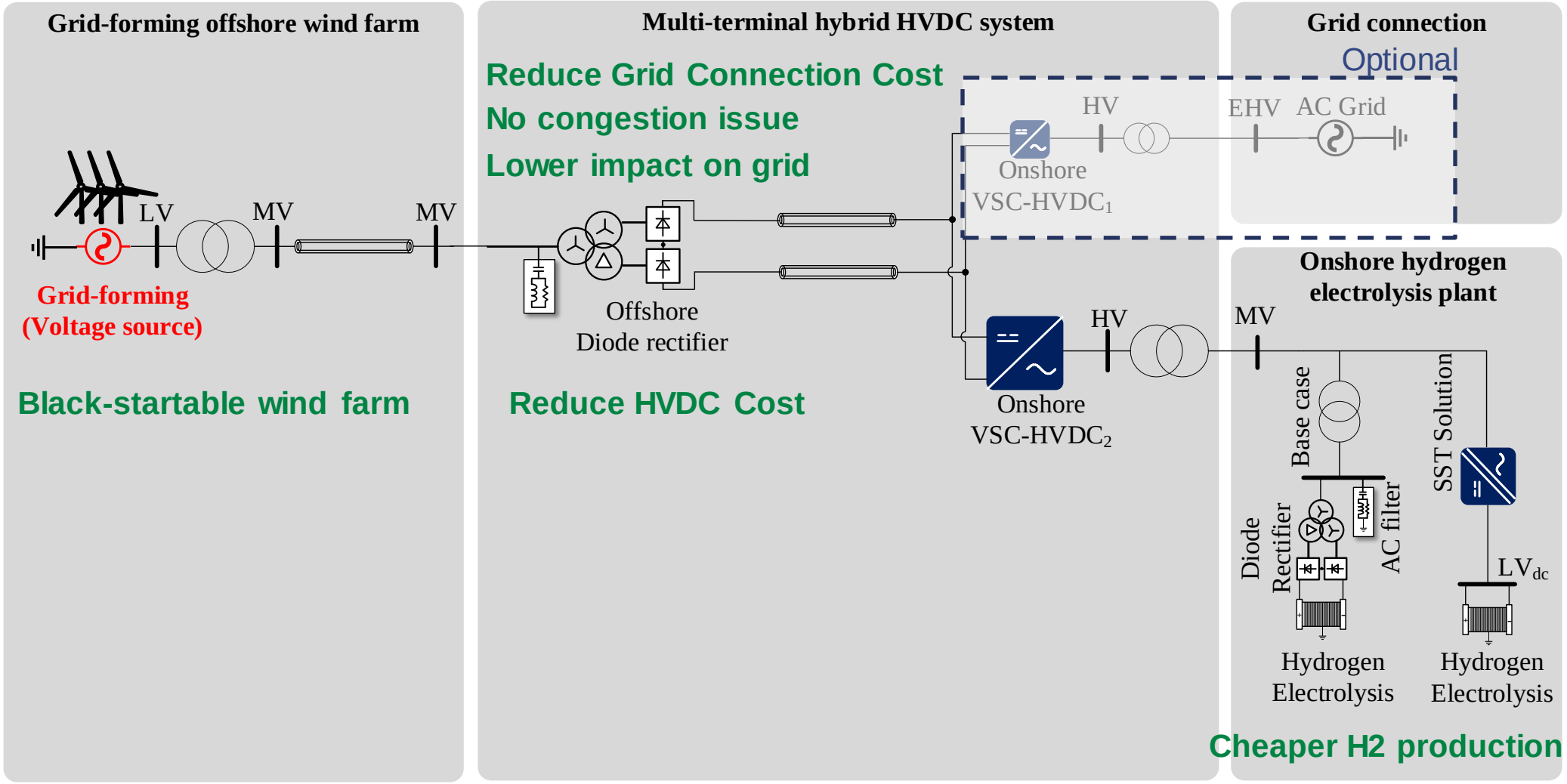
FlexH2 project – hydrogen perspective

Recent concept: parallel connection of grid and H2 production



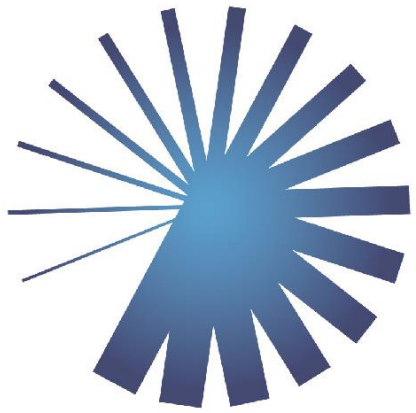
FlexH2 project – hydrogen perspective

FlexH2 concept: directly-coupled offshore wind and H2 production



Project partners

FLEX-H2



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