

The IJVER energy-island

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Offshore Service Facilities / RHDHV

agenda

I Who we are

II What are we aiming for

III What we do

IV Why we present ourselves here: R&D options

1: OSF is well known project-developer with excellent cooperation partners

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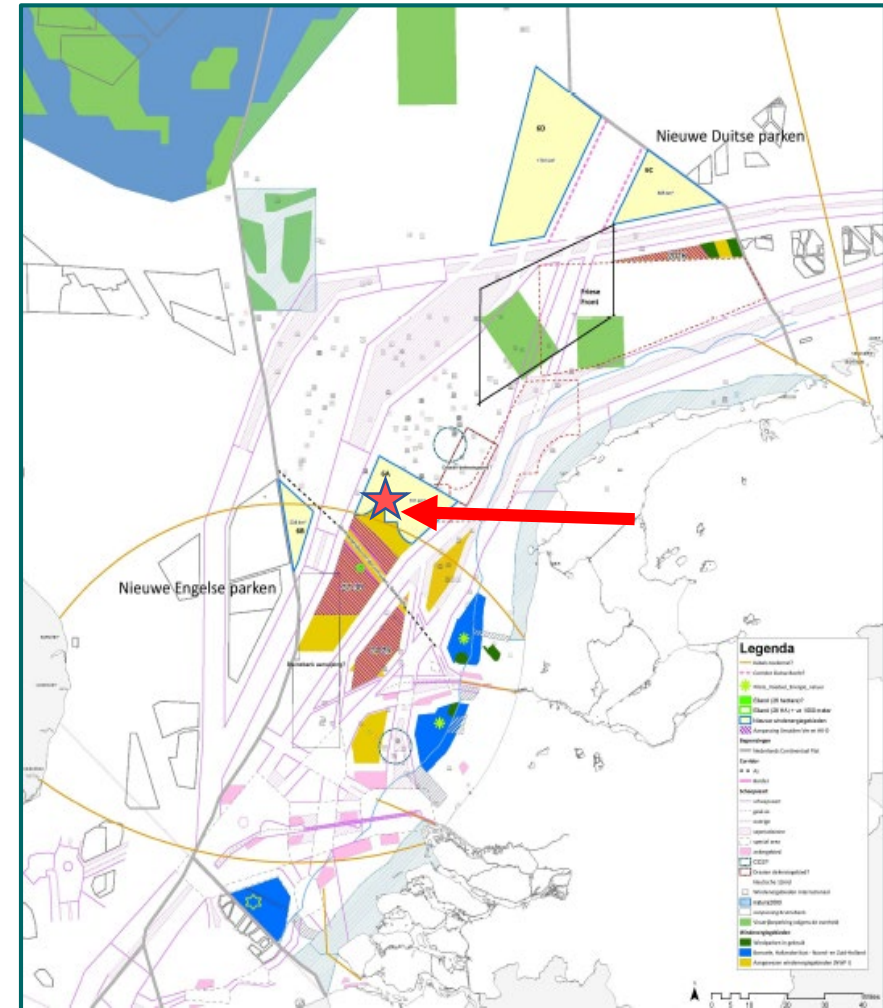
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- Project developer with long track record
 - Wind: **Chris Westra**
 - Financing: **Green Giraffe**
 - Project development: **Ernst van Zuijlen**
- Far more than 40 years experience in offshore wind
- We work closely together with
 - Global engineering and consultancy: **Royal Haskoning DHV**
 - Leading dredging companies: **Van Oord** and **Boskalis**
 - Research institutes such as **Marin**, **Deltares** and **TNO**



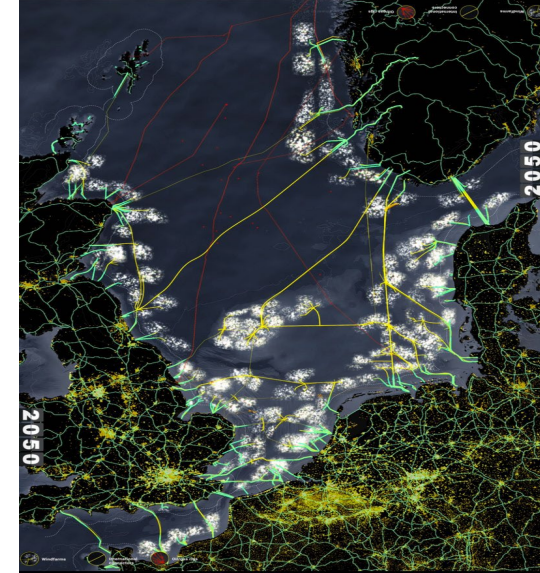
2: Goal: **pilot island** at IJmuiden Ver (Extension)

- OSF proposes to realise an **multifunctional island** for the energy transition
(**red star**: IJmuiden-Ver extension location)
- **Hydrogen production**: feeding into existing gas pipelines
- **Electrical infrastructure** (HVDC-station and interconnection)
- **O&M**, safety, loading of electric ships, coastguard
- Knowledge building: ecology (**nature inclusive design**)



3: Developing a multifunctional island

- **Pilot** for an artificial island
- **Business case** based on energy functions
- Building a hub for an **offshore grid**
- **Energy functions** such hydrogen-production, electrical infrastructure and O&M
- **Nature** inclusive design
- Involvement of all **stakeholders**
- **Synergy** between **R&D** and project development



4: Functionalities

Hydrogen production

- Feeding H₂ into existing offshore gas pipelines

Offshore Accommodation

- Accommodation for service personnel
- Service, comfort and leisure

Aquaculture

- Sustainable feedstock for food production or biomass for gas
- Multiple use of space in wind farms

Marine research base

- Research facilities for marine research and ecology and energy production

Electrical infrastructure

- HVDC-station and interconnection
- Cost effective in combination with wind farms
- Flexibility to match energy demand

Datacentre and utilities

- High energy consumption
- Waste heat utilization for other functions such as drying seaweed

Fishery

- Transhipment of fish
- Safe harbour
- Refuelling (electricity or hydrogen)

O&M

- Facilitating operation and **maintenance activities**
- Optimizing **offshore wind farm** performance

Navy and State shipping company

- A base camp for the navy and state shipping company (coast guard)

Electrical ferry


- Ferry service for personnel and goods

5: Animation

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 Royal
HaskoningDHV
Enhancing Society Together



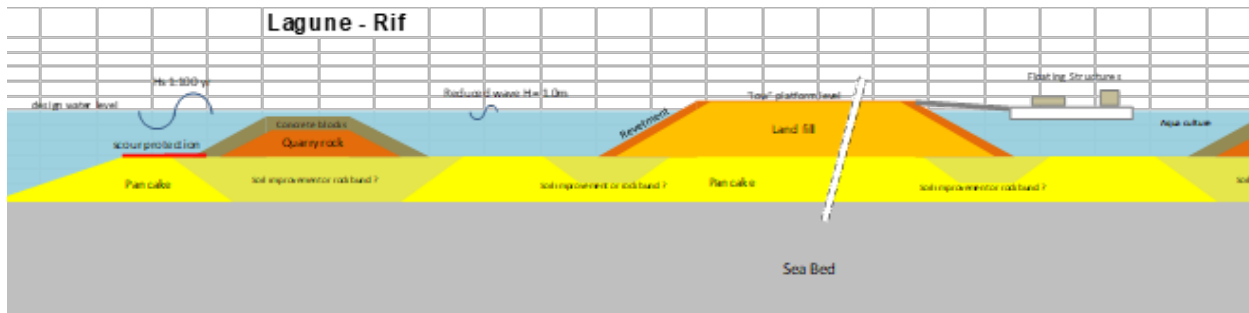
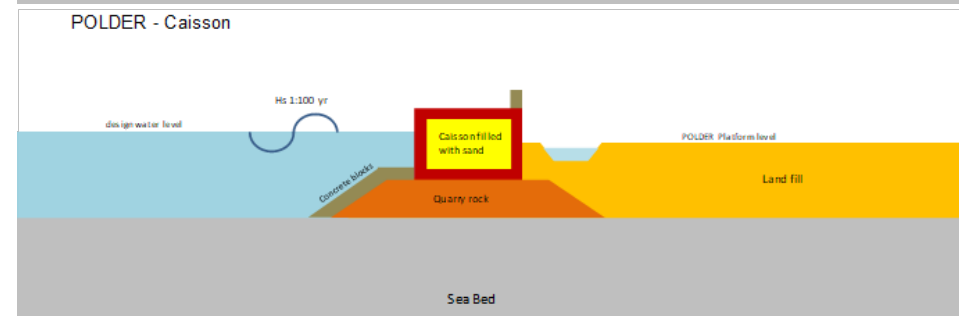
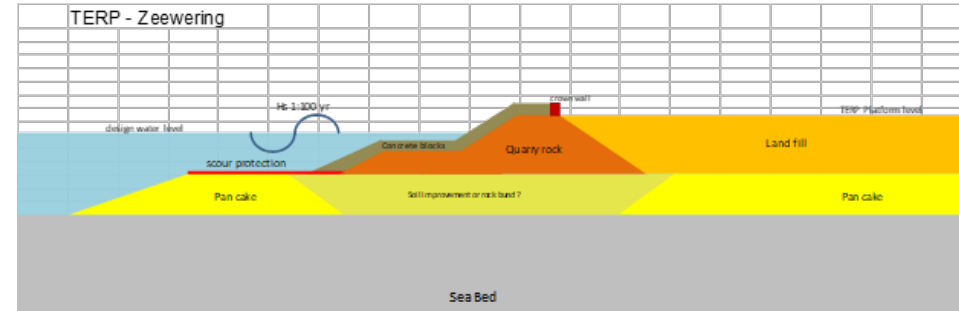
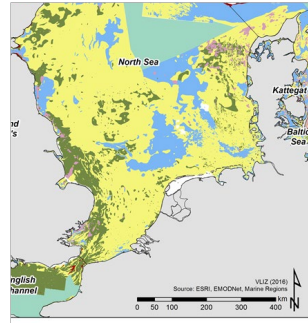
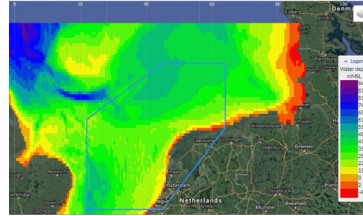
Protected service harbor

R&D options

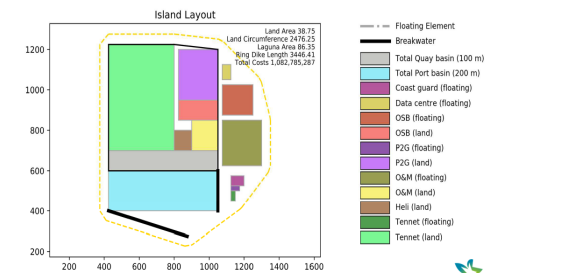
6: IJVERTECH: 2019 - 2020

Island concepts

1. Metocean conditions
2. Rock revetment protecting sandfill
3. Caisson protection
4. Reef protection with water area and sandfill

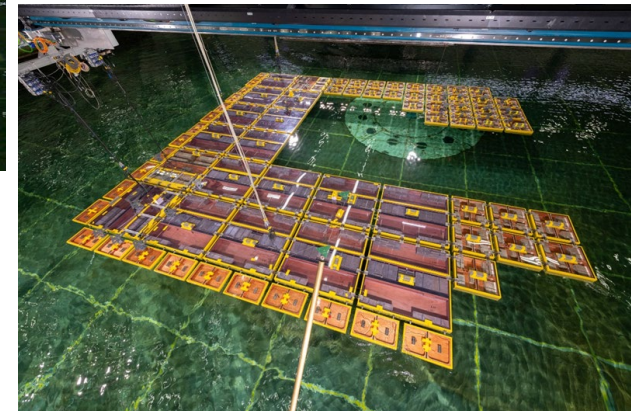
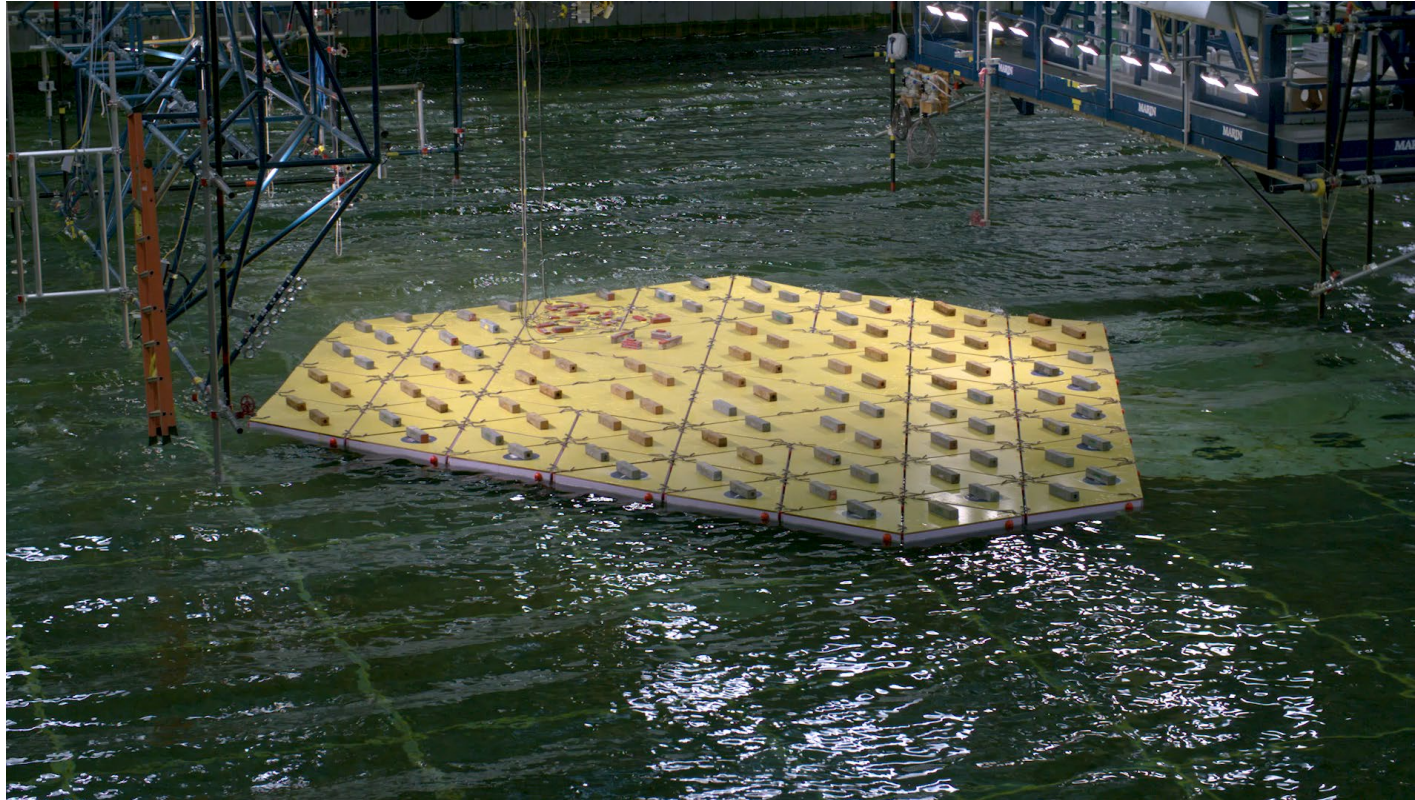


90 ha Lagune oplosing



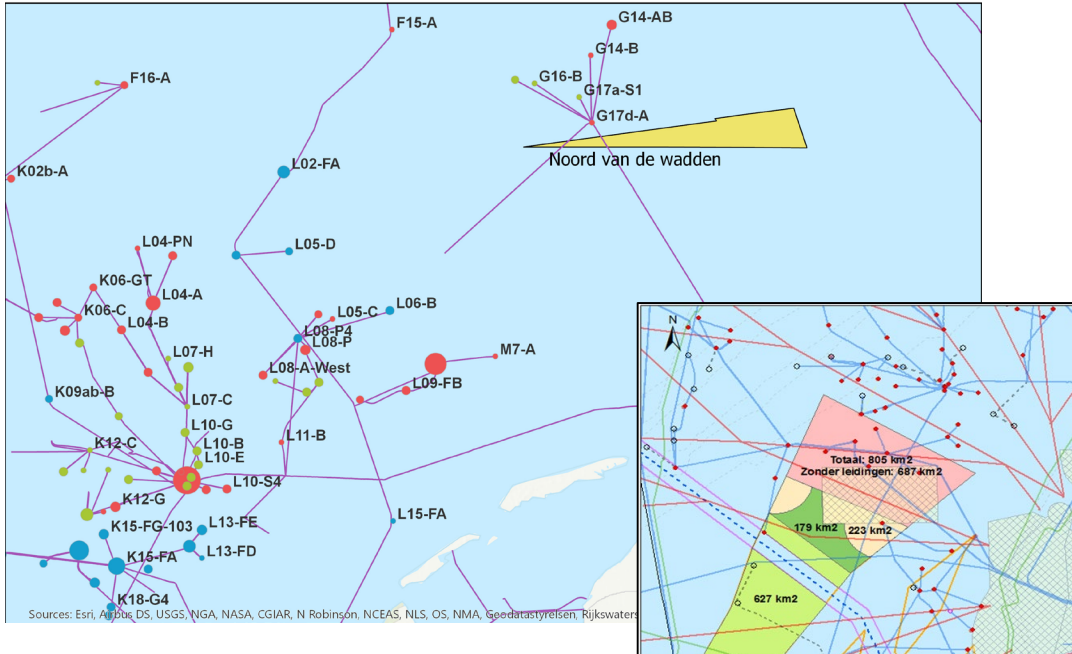
7: Hybrid Enersea Hub; 2019 - 2021

Floating elements with breakwaters



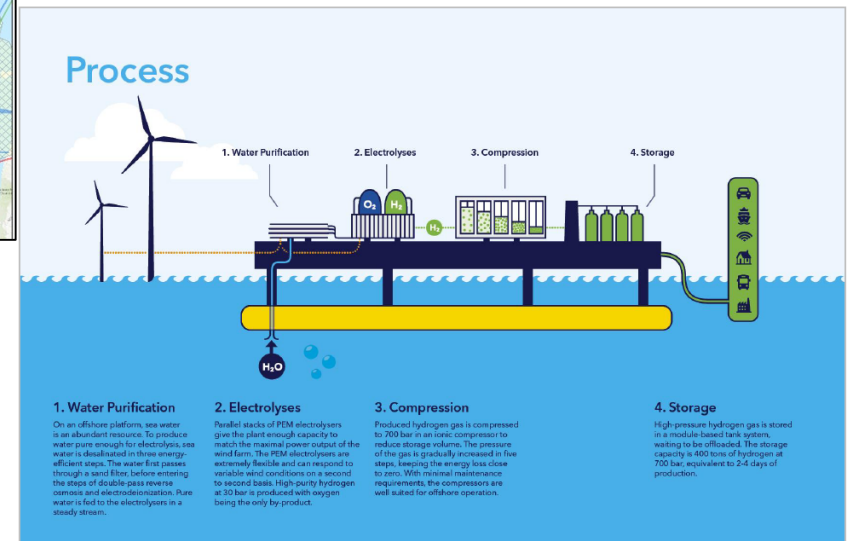
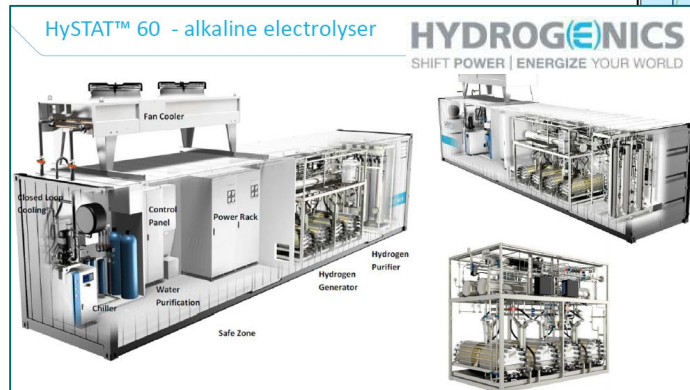
9: IJVERGAS: 2019 - 2020

Hydrogen production and transport



Waterstof productieproces	Benodigde apparatuur	Benodigd oppervlakte (500 - 1.000 MW)
Waterontziltling	Ontziltlingsinstallatie	250 - 500 m ²
Wateropslag (1 dag buffer)	Waterbassin	120 - 270 m ²
Waterelektrolyse ⁴⁰	Elektrolyse-installatie	7.500 - 15.000 m ²
Waterdemineralisatie	Demineralisatie-installatie	(Inbegrepen bij hydrolyse installatie)
Post-elektrolyse behandeling waterstof	Gas separator, gasdroger, de-oxidatie-installatie	(Inbegrepen bij hydrolyse installatie)
Waterstofopslag (1 gemiddelde dag buffer)	Opslagtanks, compressor	15.000 - 30.000 m ²
Transport naar de kust	Evt. via bestaande infrastructuur en mogelijk met behulp van een extra compressor	Afhankelijk van gekozen transportstrategie (per pijpleiding of per schip)
TOTAAL		22.500 - 45.000 m²

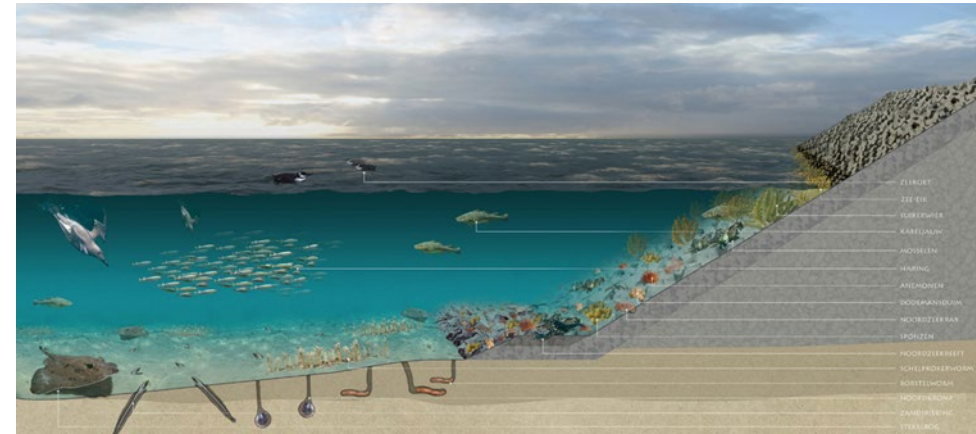
Tabel 3: Overzicht benodigde apparatuur waterstofproductieproces⁴¹



Figuur 8: overzicht proces waterstofproductie⁴²

10: Further R&D options

- Ecology, nature enhancement
- Environment; tidal, morphology
- Logistical optimisation; including safety and working conditions
- Legal issues: international law, ownership,
- Etc?



Questions and discussion

