The Underwater Aircraft that Generates Electricity

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Minesto

LINKÖPING UNIVERSITY

SOLAR, WIND AND OCEAN

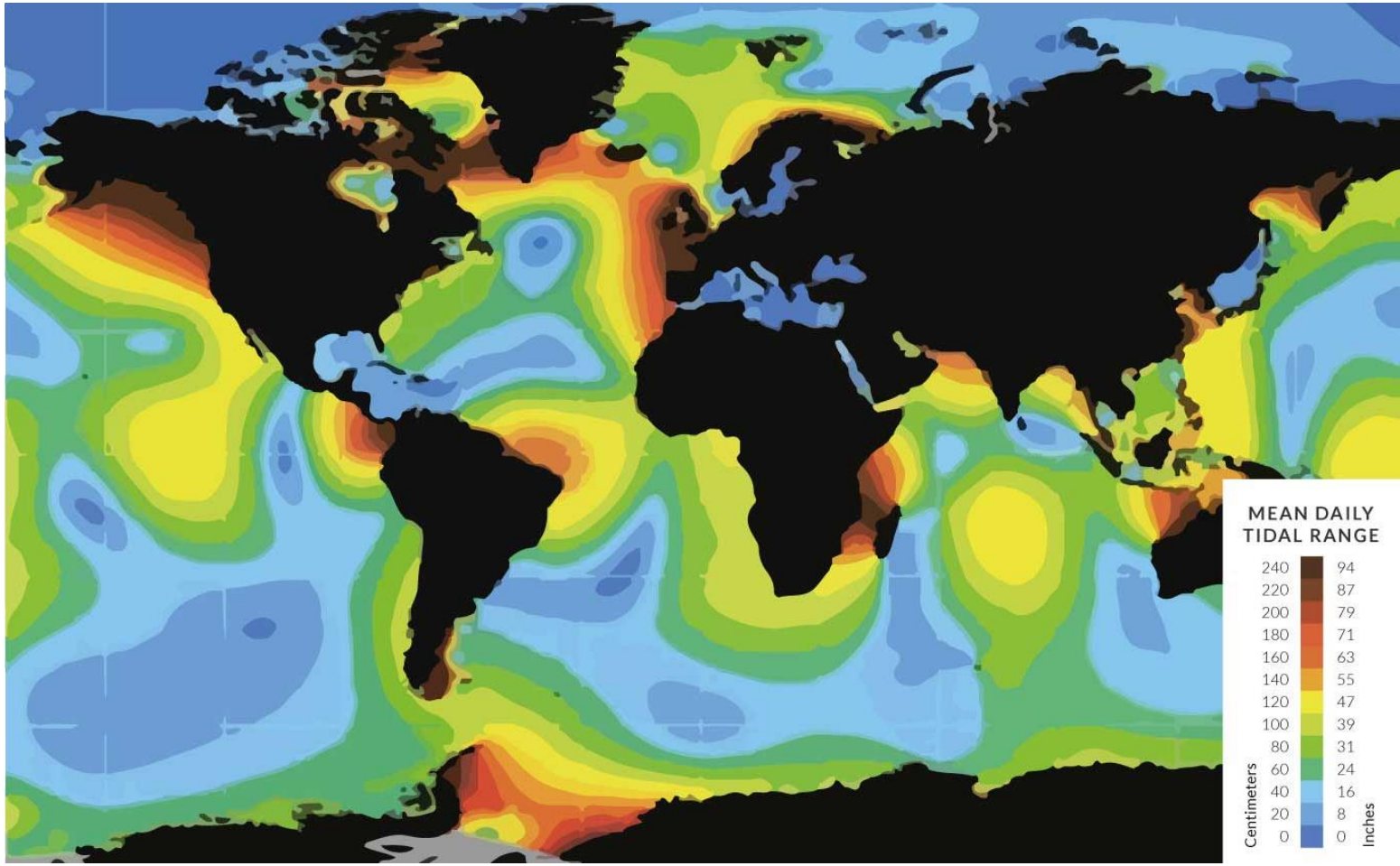
Wind power and solar PV need complement energy sources:

- Intermittent and unpredictable power production
- Use of land
- Use of materials
- Disturb radar systems around airports


TIDAL AND OCEAN CURRENTS ARE
PREDICTABLE AND RELIABLE

THE CHALLENGE: EXPLOIT SLOWER STREAMS

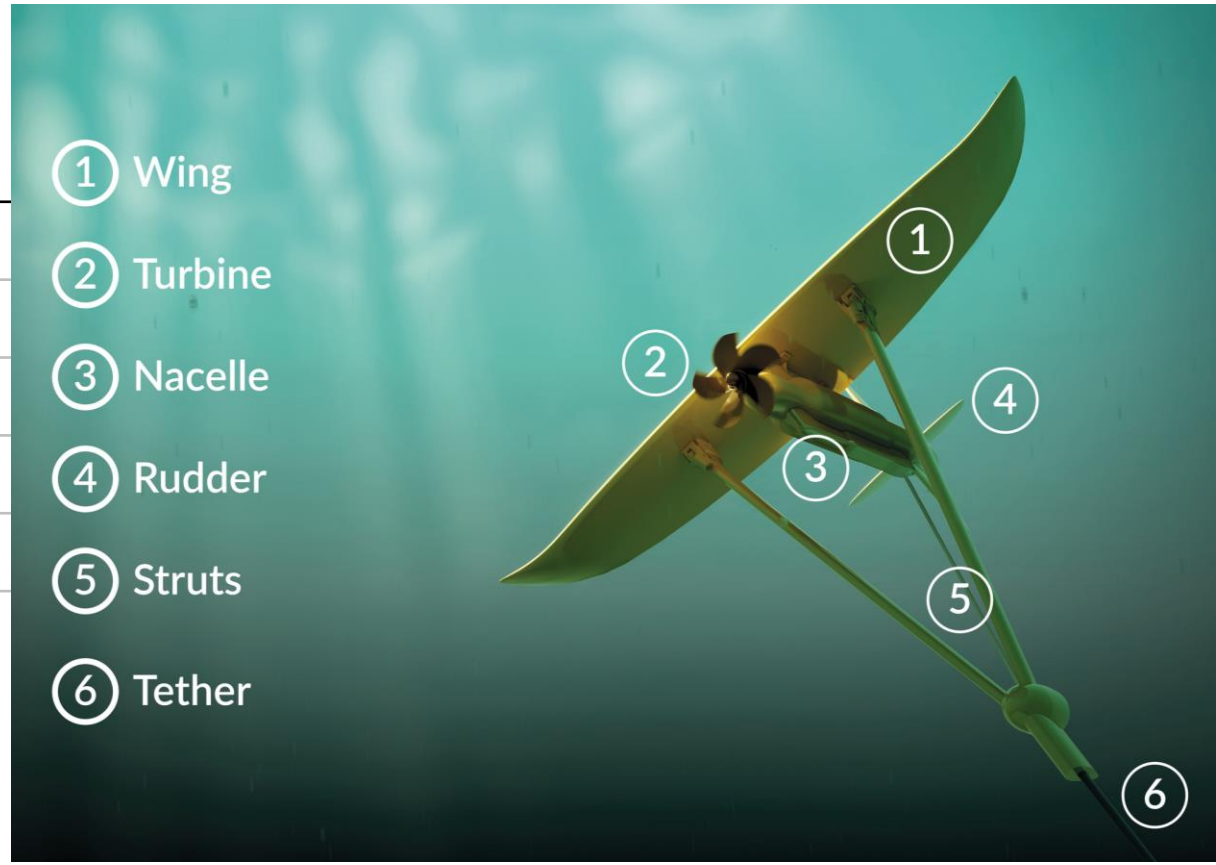
- Conventional technologies can only be cost-effective in high-velocity water streams
- The vast part of the tidal and ocean current resource in the world consists of slow streams



THE SOLUTION: DEEP GREEN

DEEP GREEN SPECIFICATIONS

	Conventional tidal technologies	Deep Green
Rated power	1–2.2MW	0.5MW
Current velocities	2.5–3.5m/s	1.2–2.4m/s
Weight	140–500t	10t
Depth of installation	30–80m	60–120m
O&M	Subsea	Surface/on shore



CREATING ESSENTIAL CUSTOMER VALUES

COMPLEMENTING THE RENEWABLE ENERGY MIX

- Renewable base load – predictable and reliable power production
- Global resource
- Energy-rich
- Limited use of land
- No visual impact
- Generating electricity in unison with the marine environment

LOW COST OF ENERGY

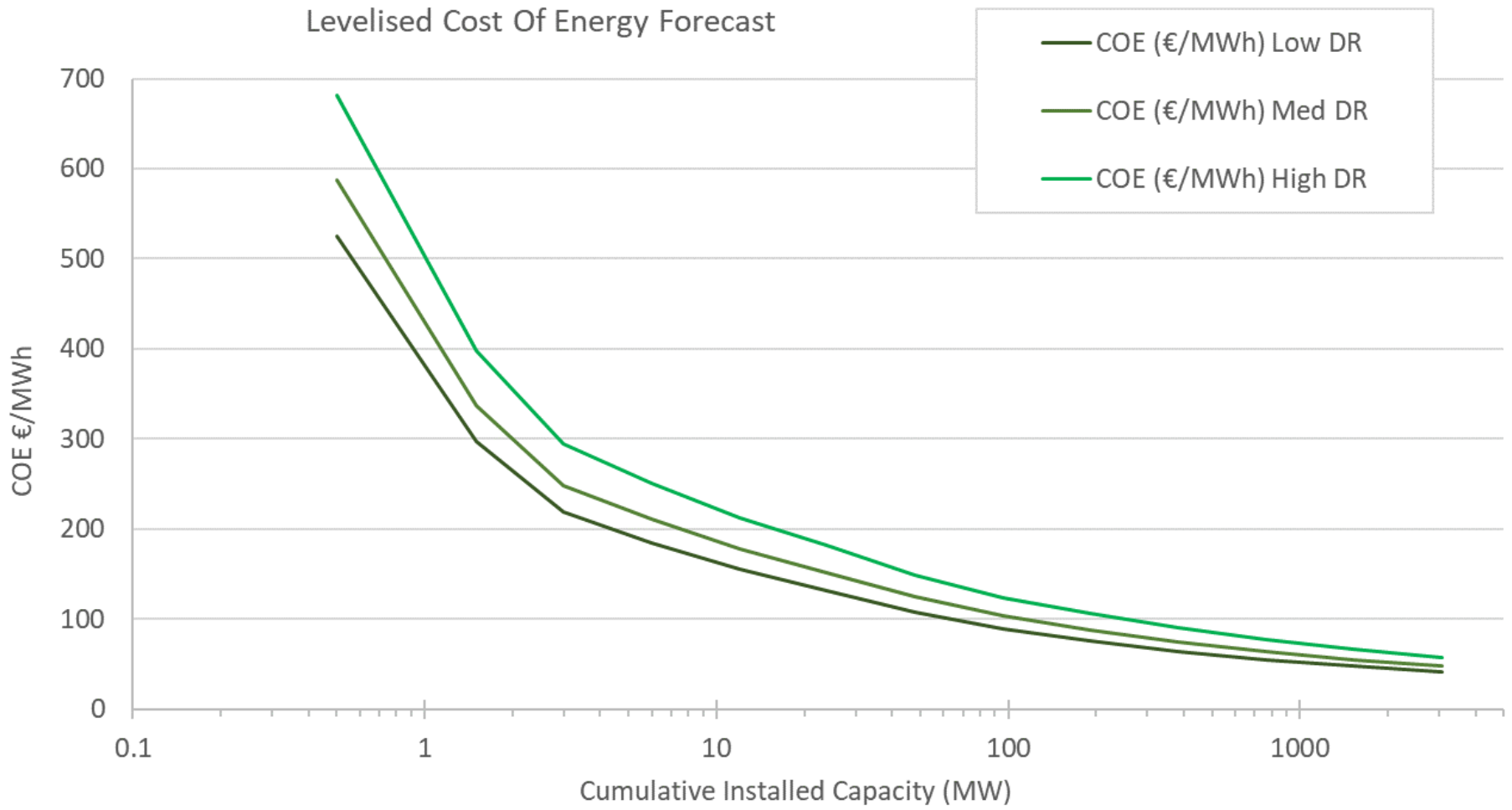
- 5–15 times lower weight per MW
  - Lower manufacturing costs
  - Smaller vessels for installation, O&M
- Unique O&M concept
  - Recoverable = minimised subsea time
  - “Exchange program”
- Slower streams means greater access to site

EARLY STAGE COST COMPETITIVENESS

- Tidal streams: Potential to reach €100/MWh at 100MW cumulative installed capacity
- Ocean currents: Potential to reach €50/MWh at 100MW cumulative installed capacity

Cost drivers

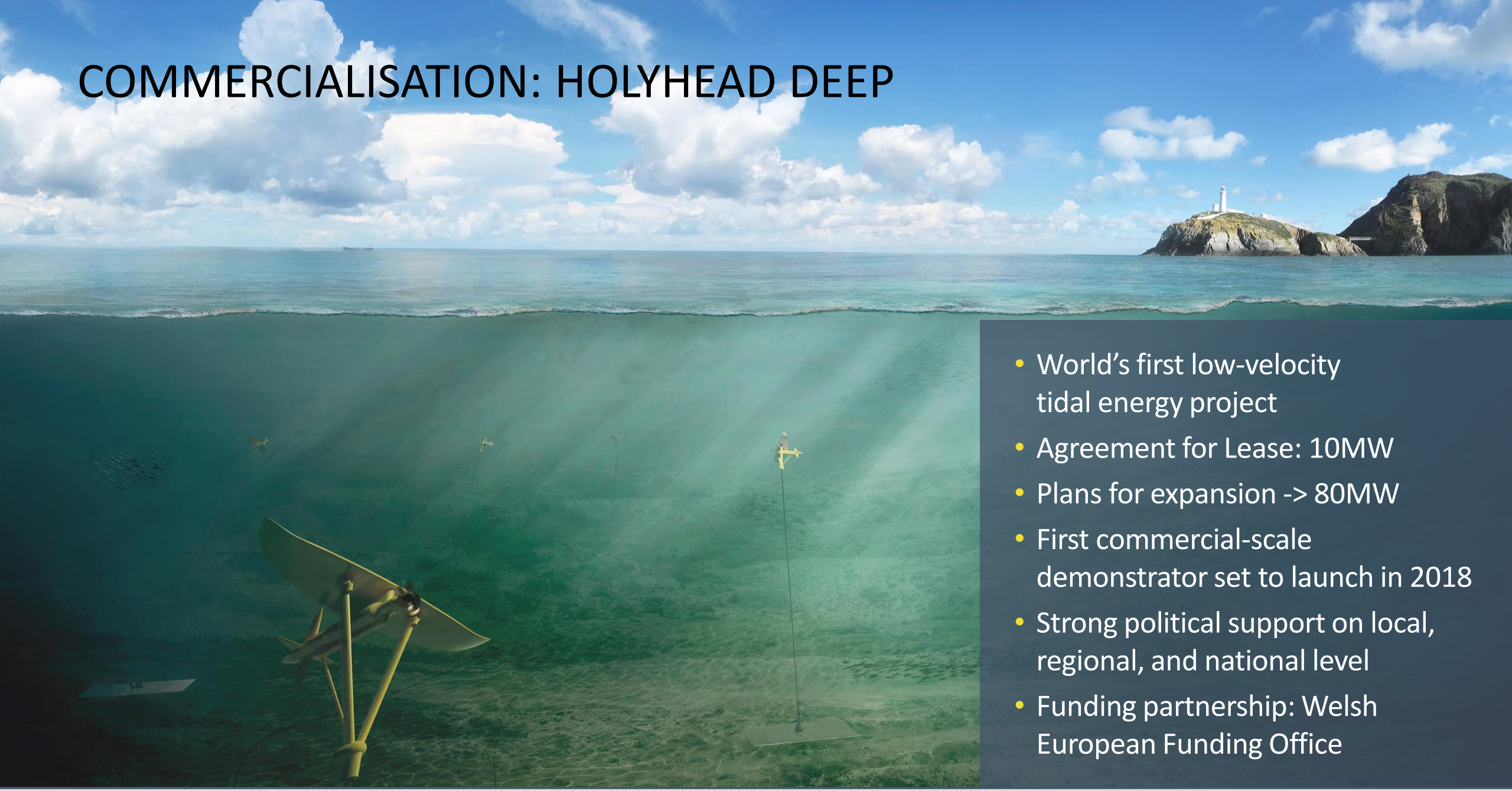
- Low-weight design
- Low-cost offshore operations



ISLAND MODE INSTALLATIONS

- Minesto's technology can provide off-grid economies, communities and businesses with reliable, cost-effective renewable power.
- Replacing off-grid diesel generated electricity with sustainable power from tidal streams and ocean currents.

COMMERCIALISATION: HOLYHEAD DEEP



- World's first low-velocity tidal energy project
- Agreement for Lease: 10MW
- Plans for expansion -> 80MW
- First commercial-scale demonstrator set to launch in 2018
- Strong political support on local, regional, and national level
- Funding partnership: Welsh European Funding Office

THANK YOU!

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