Akuo Floating solar experience and developments

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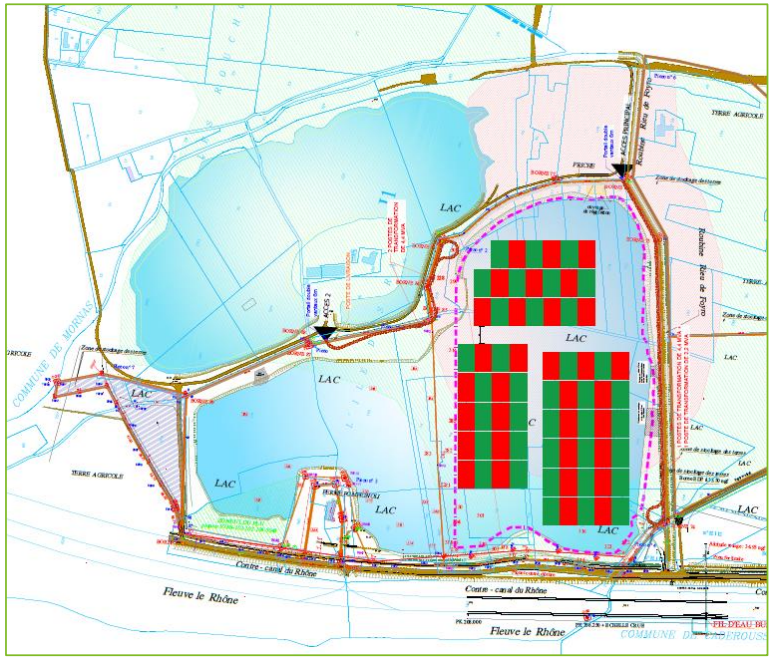
Contents

Floating project phases

OUR FIRST REFERENCE

OMEGA 1 – 17 MWp – Piolenc (France)

Project	Omega 1
Capacity	17 MWp
Location	Vaucluse, France
Area Covered	17ha (34% of the lake)
Type of lake	Old quarry lake
Modules	+47k 360Wp panels (Trina solar)
Floaters	Hydrelio ®
Inverters	Central (Schneider)
Commercial Operation Date (COD)	October 2019
Expected Production	24 GWh / year
Electricity sales	Feed in Premium (market price + top up premium)



OUR FIRST REFERENCE
OMEGA 1 – 17 MWp – Piolenc (France)

Development

- Pre-feasibility study
- Land securization
- Environmental impact study
- Bathymetry, geotechnical & anchoring study
- Specific studies: dam study, sanitary study, …
- Local concertation
- Building permit
- Grid connection request
- PPA securization

~2-4 years

Structuration

- Contracting
- Due diligence
- Financing

~6 months

Construction

- Anchoring
- Islands assembly onshore
- Positioning and anchoring of each island
- Electrical cabling
- Installation of electrical equipment
- Grid connection
- Commissionning

~1 year

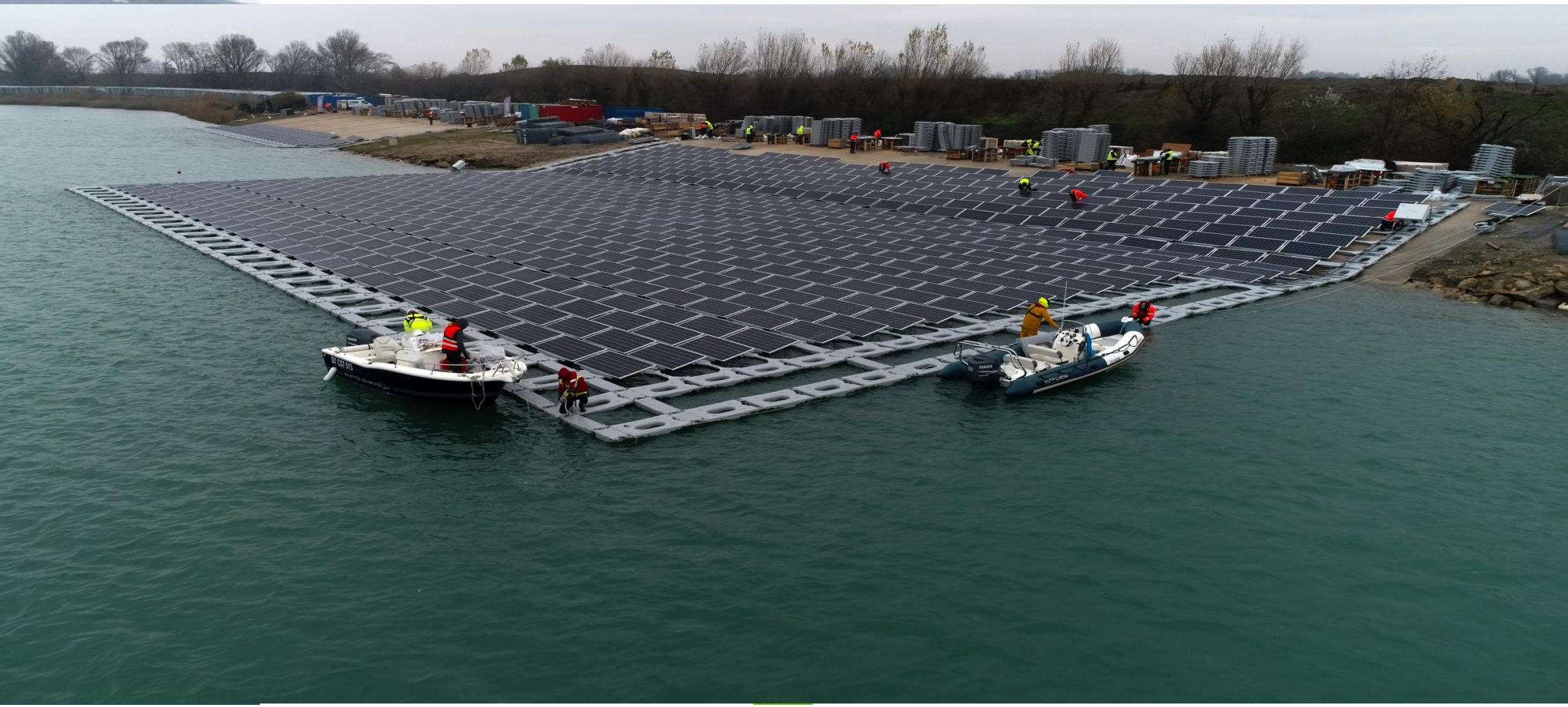
Operation

- Long term Operation and Maintenance Contract
- Asset management

30+ years

DEVELOPING A FLOATING SOLAR PROJECT

OMEGA 1 – 17 MWp – Piolenc (France)



DEVELOPING A FLOATING SOLAR PROJECT

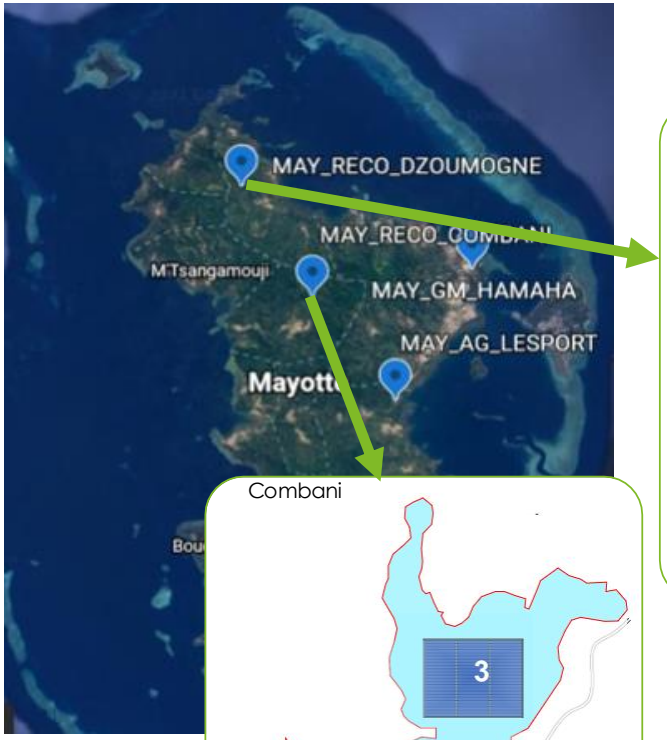
OMEGA 1 – 17 MWp – Piolenc (France)

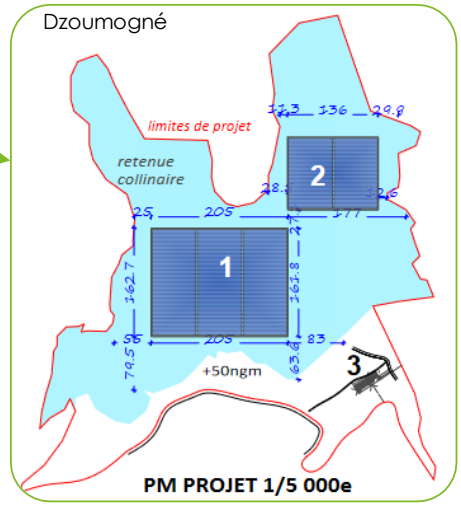
Akuo's experience

Development, construction and operation

MAYOTTE : FLOATING PROJECTS IN DEVELOPMENT

Dzoumogné et Combani : two projects on artificial ponds





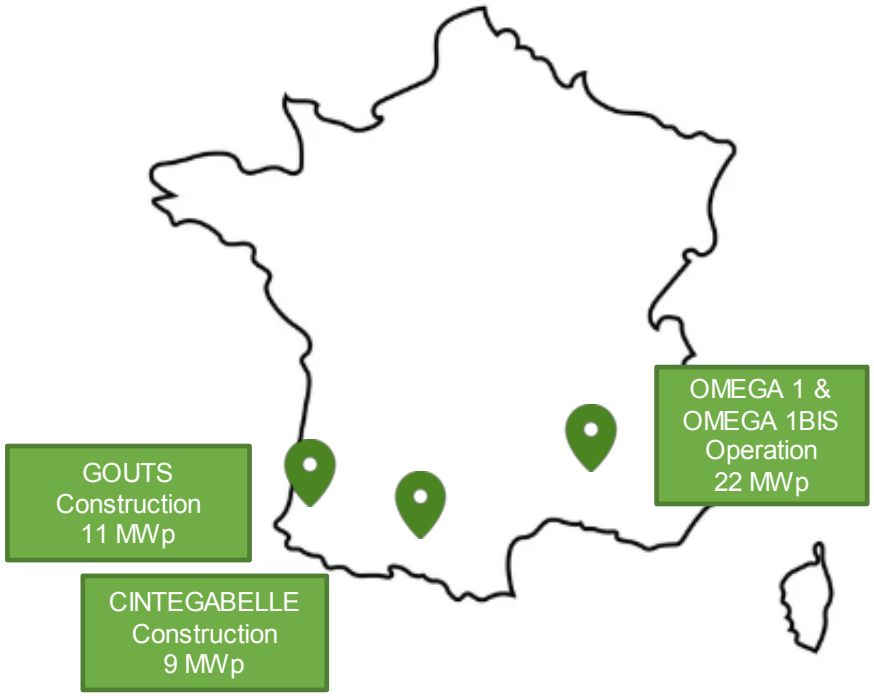
Dzoumogné :

- **5 MWp / 10,6 MWh storage**
- Covering ratio ~ 25%
- COD in 2025

Combani :

- **5 MWp / 10,6 MWh storage**
- Covering ratio ~ 35 %
- COD in 2025

OTHER ONGOING PROJECTS
Construction and development



In construction and operation:

42 MWp

Pipe in development: (mostly in France and French islands)

~150 MWp

Technology and challenges

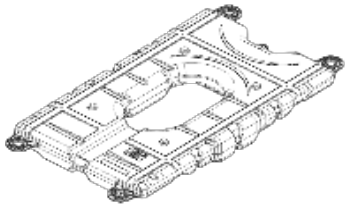
FLOATING TECHNOLOGY
MODULAR SOLUTION

Individual floaters

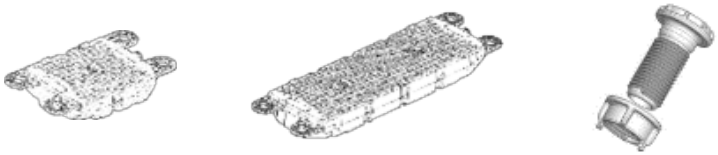
Main Float : Support of PV panel
Secondary float (short and long) : connection and maintenance path
Connection Pin

Made in HDPE

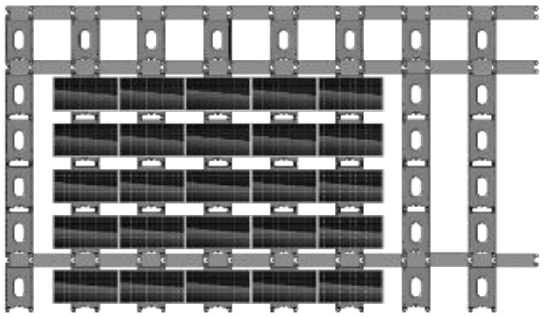
Containing UV stabilizer
Compliant with drinking water norms
Manufacturing: blow molding

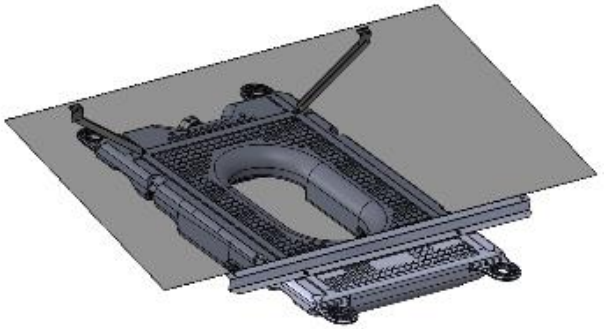


Main Float



Secondary Floats





FLOATING TECHNOLOGY
GETTING THE DESIGN RIGHT

2010 – First prototype (by C&T)

2012 – Second prototype (by C&T)

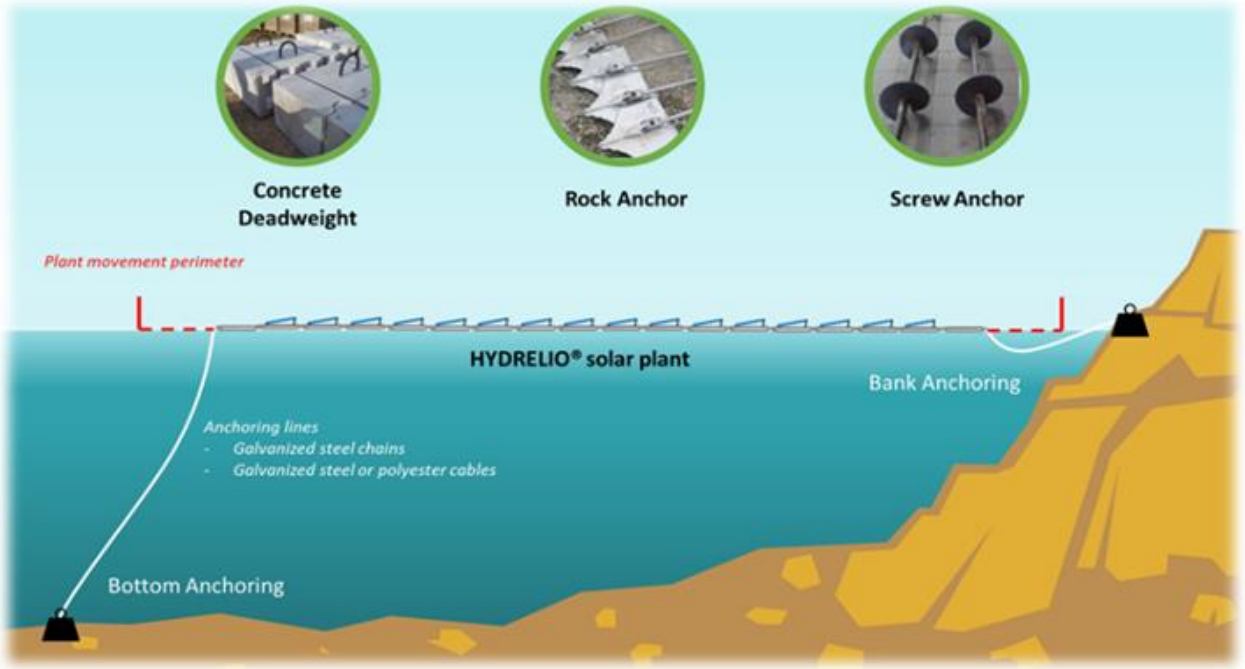
2017 – Third prototype

2018 – Fourth and last prototype

DEVELOPING A FLOATING SOLAR PROJECT
MOORING

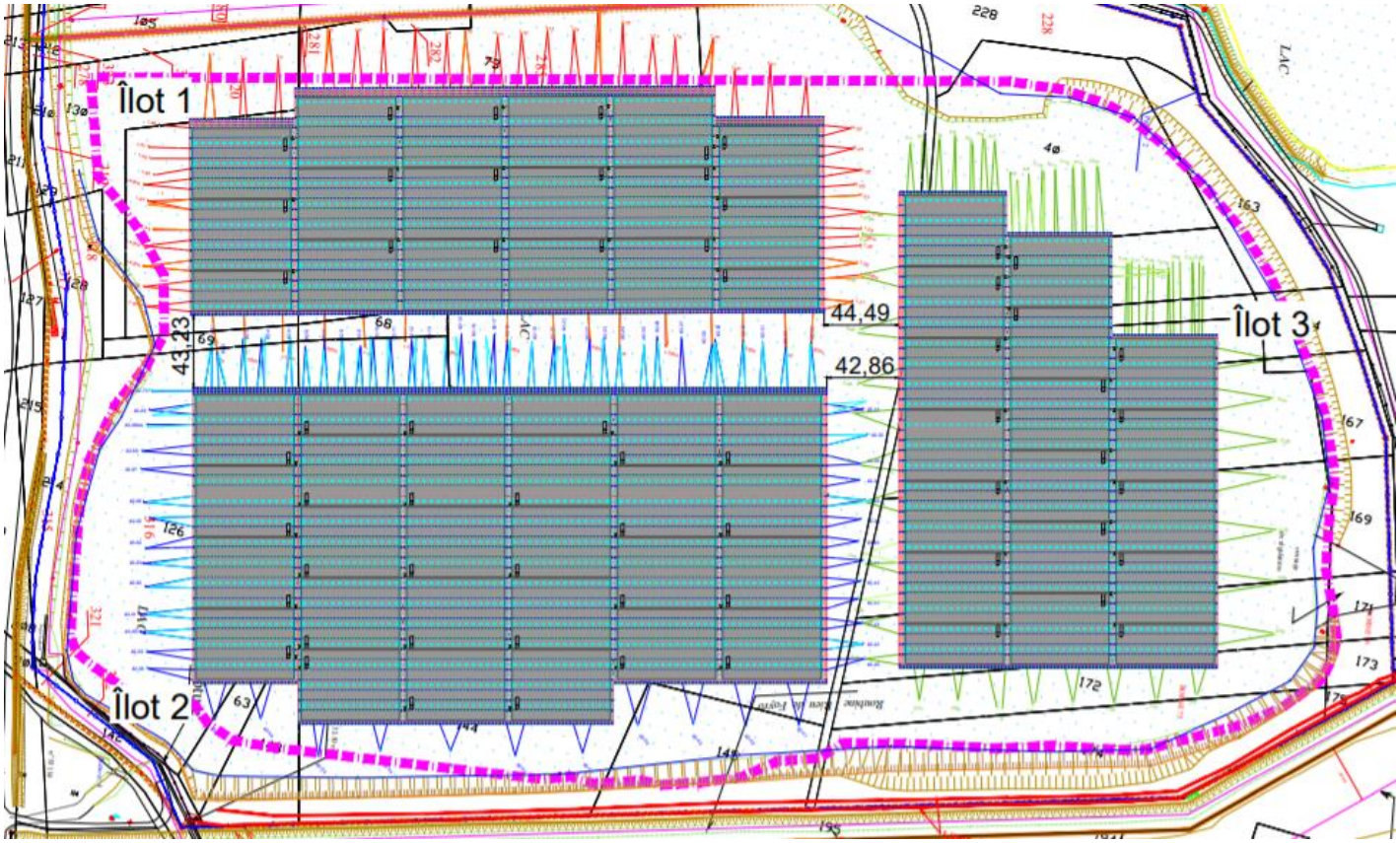
PARAMETERS:

- Depth
- Level variation
- Lake size
- Wind
- Waves
- Water current



Anchoring is a key technical aspect of a project.

FLOATING TECHNOLOGY
MOORING



TECHNOLOGY AND CHALLENGES
COMPARISON WITH GROUND MOUNTED PV

	Floating Solar	Ground Mounted PV
Access	Added complication with the floating part Maintenance time increased	Generally easy
Overall Site	No issue with vegetation growth. Monitoring / security the same.	Vegetation growth is the main issue. Monitoring / security the same.
Structures / Anchoring	Damaged floats need to be replaced. Anchoring may require more specialised expertise to maintain.	Damaged fixed structures may require civil works.
Panels	Bird fouling may require more regular panel cleaning.	No systematic cleaning of panels.
Cables	DC floating cables require special attention.	Maintenance of underground cabling requires civil works.
Inverters / Substation	Same where land based central inverters / substation (like at Omega 1)	


Thank you for your attention !
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