



# Marine Growth : Stakes for Floating Offshore Wind



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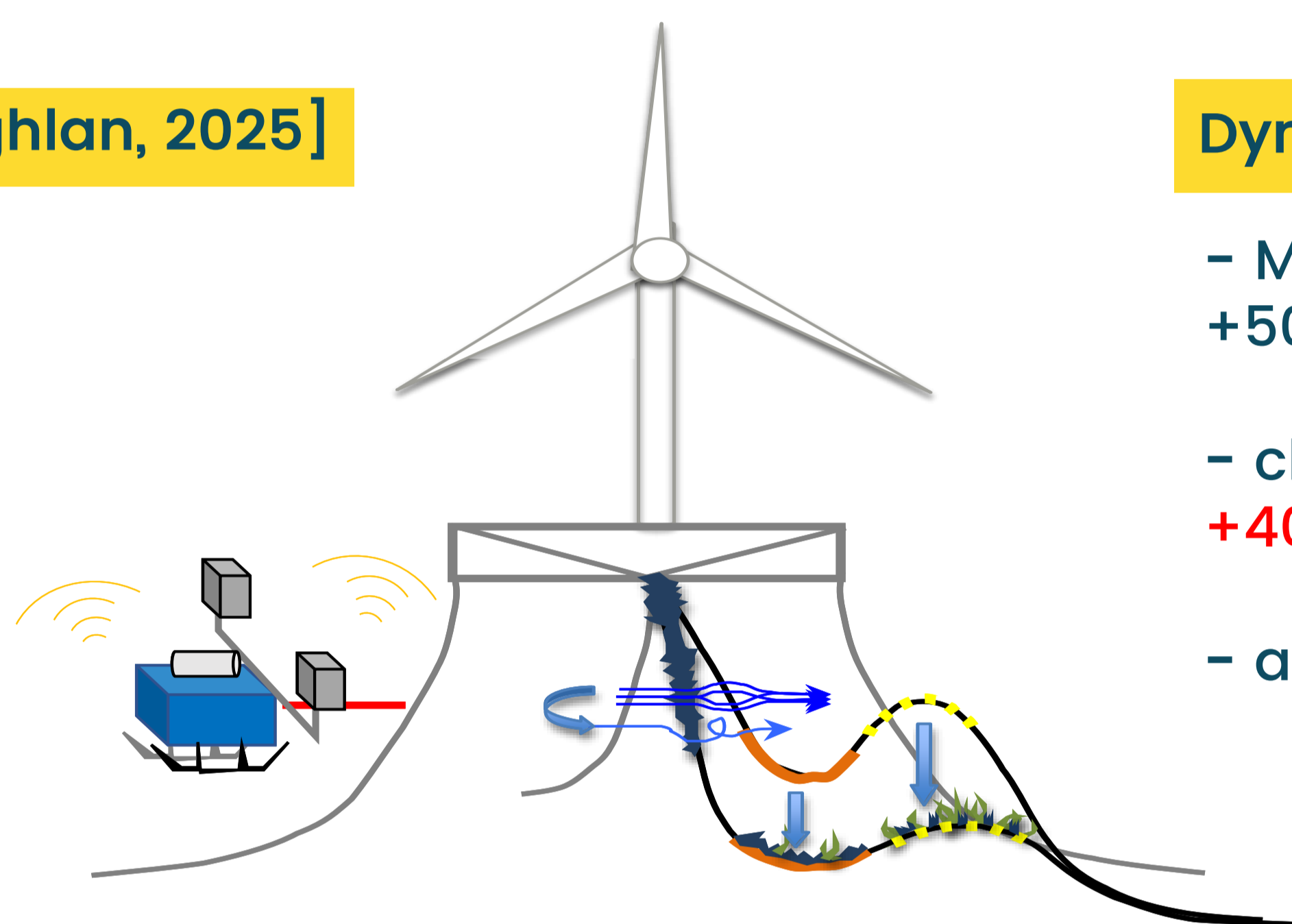
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## Effect of Marine Growth on Mooring lines and Dynamic Electrical Cables

### Reported effects Mooring lines, [Koughlan, 2025]

- Marine growth changes hydrodynamic loading from **-10% to +400%**
- Raise line tension by **up to +100%**, with direct consequences for extreme and fatigue response.

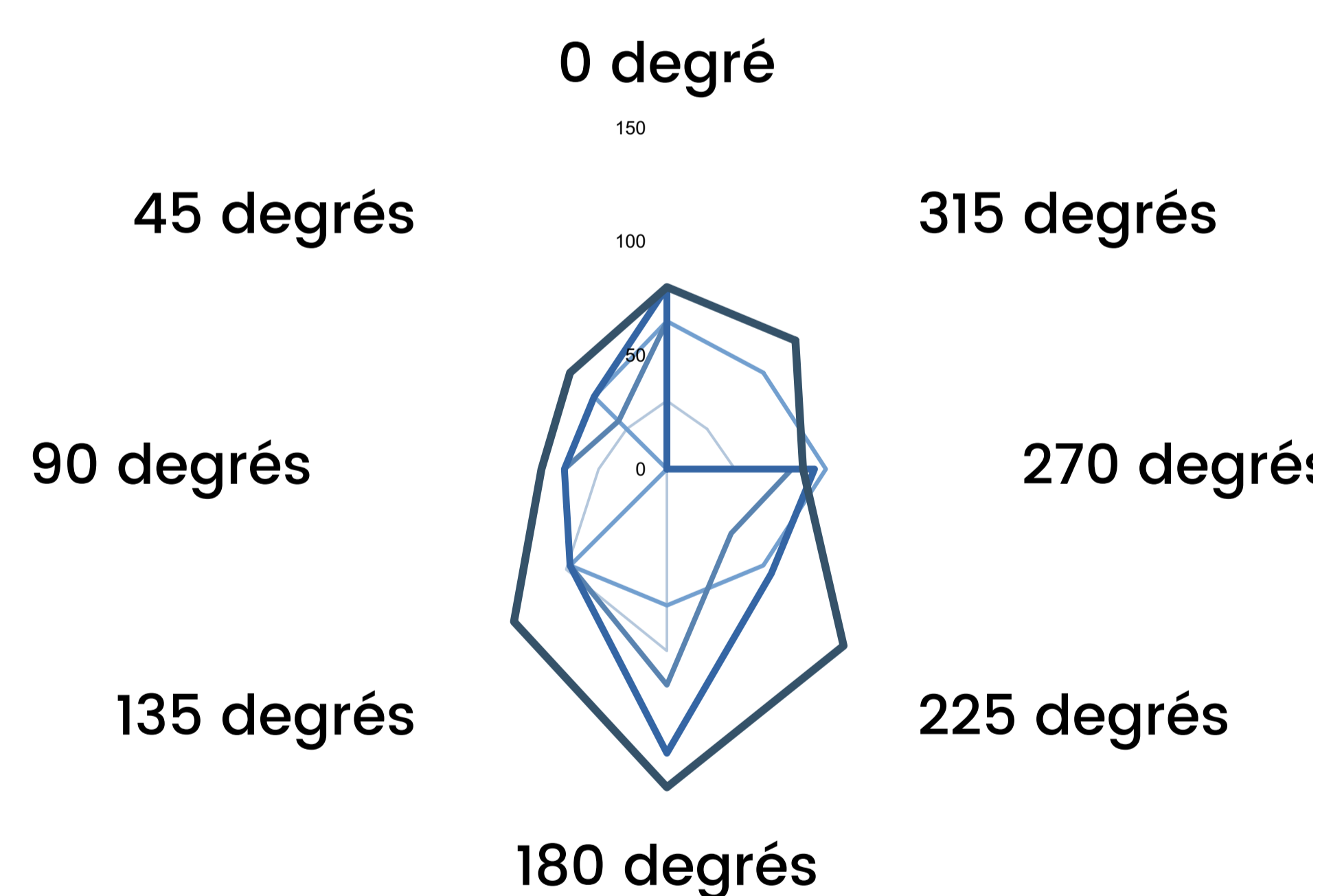


### Dynamic Power Cables [Pourzahedi, 2026]

- Marine growth may shift buoyancy by up to **+50 m**,
- change hydrodynamic loading from **-10% to +400%**,
- and increase cable tension by **up to +300%**.

The response is site dependent -> single generic assumption NOT adapted  
On-site measurements are therefore required to update extreme and fatigue reliability.

### Evolution with angle for each position along the tube



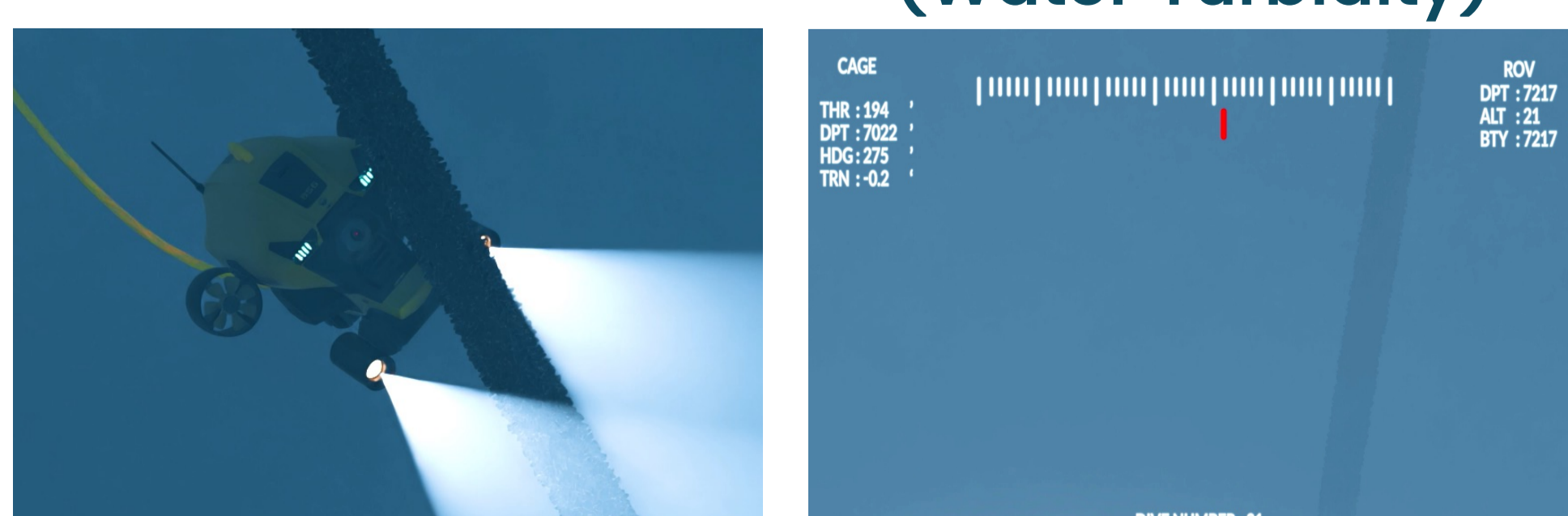
Measurements after 2 years of offshore immersion in Mediterranean Sea (AKROCEAN Floater): **170 mm**

## Existing Solutions to Monitor the Marine Growth

### ROV: Remotely Operated Vehicle

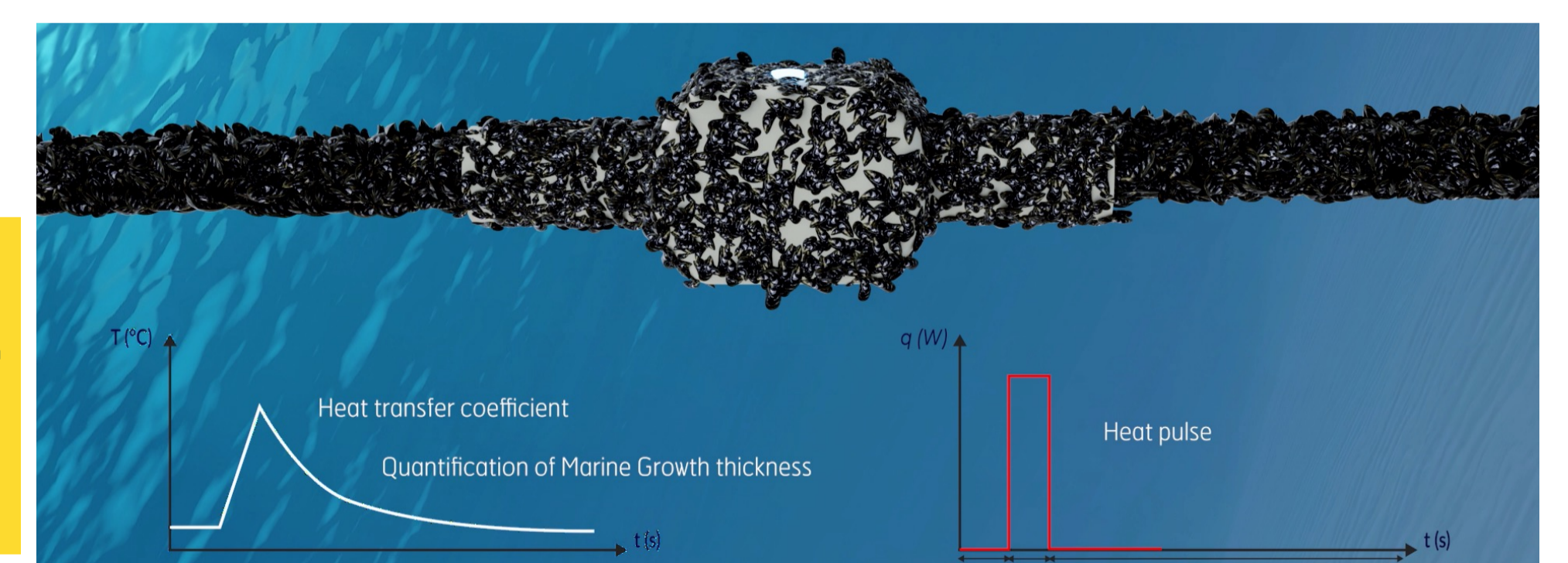


Risk of Collisions Lack marine growth quantity (Water Turbidity)



### CATHSUBIO: Remote Autonomous sensor for marine growth monitoring

Monitoring after 2 years of offshore immersion in Mediterranean Sea (AKROCEAN Floater)



Power in the sensor (W)	Average Internal Tres	Average external Tres	Thermal conductivity	Thickness (monitored)	Thickness measured
140,00	27,85	23,69	3,46	160	
111,50	27,06	23,40	3,01	160	170

- This Technology recognized as robust innovative novel, TRL6/9
- Reduced inspection costs.
- CSR impact : fewer offshore interventions for inspection.
- Reducing Environmental footprint and operational risks.
- Early Warning system for optimal maintenance timing.