

Energy for harbors



- Piers location usually coincides with sites of good eolian and solar potential.

- The majority of Marinas are build on piles where sit the reinforced concrete structure that serves as access to the jetty, protected by a peripheral levee topped with riprap.

- Energy demand for satisfying needs of vessels and other purposes. Thus is important to take advantage of this conditions through installation of eolian and/or solar systems that, through "in site" generation, mitigate the external energetic dependence.

- Any projected work upon this kind of structures should be aware that weight, thrust and overturning moment on the structure itself do not compromise its stability.



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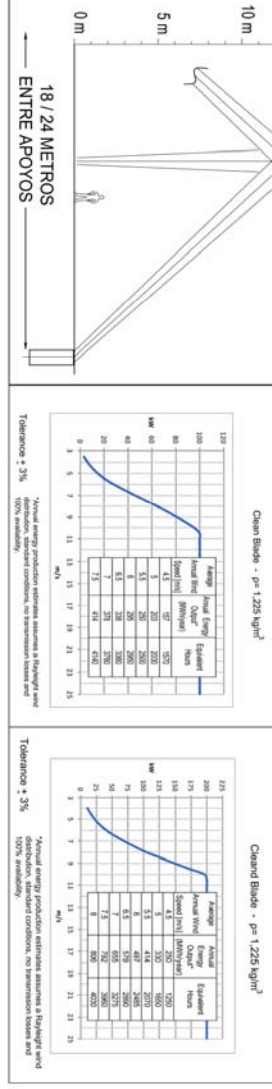
- ADES design wind turbines and solar structures with tracking (vehicles parking) adequate for this requirements

- Our self-steering wind turbines provided with pendulum balanced motor torque and oscillating rotor, which eliminate pitching moment, erected over structures with tree or more legs, minimize strengths on supports.

- Sizing and weight of components allows their transport by 40" container transport and assembly with the help of a low tonnage crane (130-150 t).



1	Rated power (kW)	100	200
1	Rated wind speed (m/s)	10	11
1	Cut in (cut speed) (m/s)	3.5 / 20	3.5 / 25
1	Wind direction	Downwind	Downwind
1	Wind class	IEC III	IEC II
1	Operating temperature range	-20 °C to 45 °C	-20 °C to 45 °C
2	ROTOR	Swivelling Single blade Fibreglass / epoxy resin	Swivelling Single blade Fibreglass / epoxy resin
2	Material	6000 / 29	8800 / 36
2	Tubed steel (d) / (m)	Variable up to 60 ppm	Variable up to 50
2	Pitch	Variable	Variable
2	Rotor speed (rpm)	25 / 14.5	47 / 36
2	Max torque (kNm) / Thrust (kN)	27	30
2	Tilt direction	Clockwise (looking to downwind)	Clockwise (looking to downwind)
2	Rotor height (m)	3.200	3.950
2	Weight (kg)	201	24.1
3	PENDULUM	95	95
3	Multiplication ratio	Oil bath	Oil bath
3	Efficiency %	Squirrel-cage rotor	Squirrel-cage rotor
3	Lubricator	6	6
3	Generator	400 / 690	400 / 480
3	Number of poles	50 / 60 Hz	50 / 60 Hz
3	Voltage (V)	IP 54	IP 54
3	Frequency (Hz)	F	F
3	Protection class	Weight (kg)	3.000
3	Thermal class	Weight over tower (kg)	1.900
3	Weight (kg)	8.000	11.250
4	Nucleo e Weight (kg)	13.400	14.400
5	Weight over tower (kg)	25.650	25.650
6	Tower weight (kg)	21.400	21.400
7	Tower structure weight (kg)	900	1.100
8	Electrical cabinet (kg)		



SOLAR PARKING.

