



**Well-Comm** s.n.c.

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## RESISTANCE TO WIND ACTION WELL-COMM

### BALLASTED SYSTEM SUMMARY SHEET

System features:

- Weight: Lower ballast **50 kg** - Upper ballast **18 kg** - Total: **68 kg / complete ballast**
- Material: Cement used for ballast: Fiber reinforced concrete.
- C40 / 50 compression strength class according to UNI EN 206.
- Exposure class XC4, XD2, XS2, XA2, XF1 (UNI 11104).
- Reinforcement used in the conglomerate: Lower part: Metallic fiber - Upper part: Reinforcing iron D8mm + Metallic fiber
- Module fixing: n ° 2 threaded bushes M8x30mm in stainless steel A2
- Data of the photovoltaic module used: Weight **20 kg** - Size: **1650 x 1000 x 35mm**

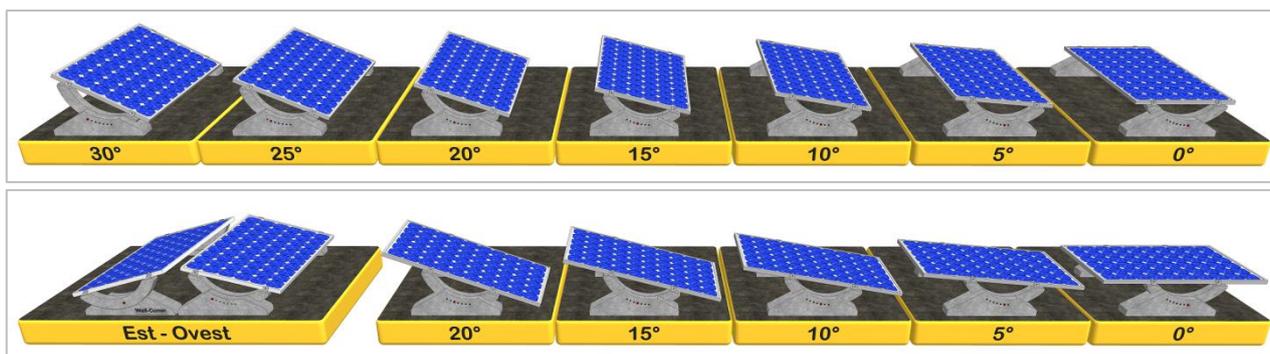
Calculation is subject to the correct installation of the structure (clamping of module-clamp-ballast bolts).

The limit values shown below refer to wind tunnel tests validated by TÜV Rheinland Italia.

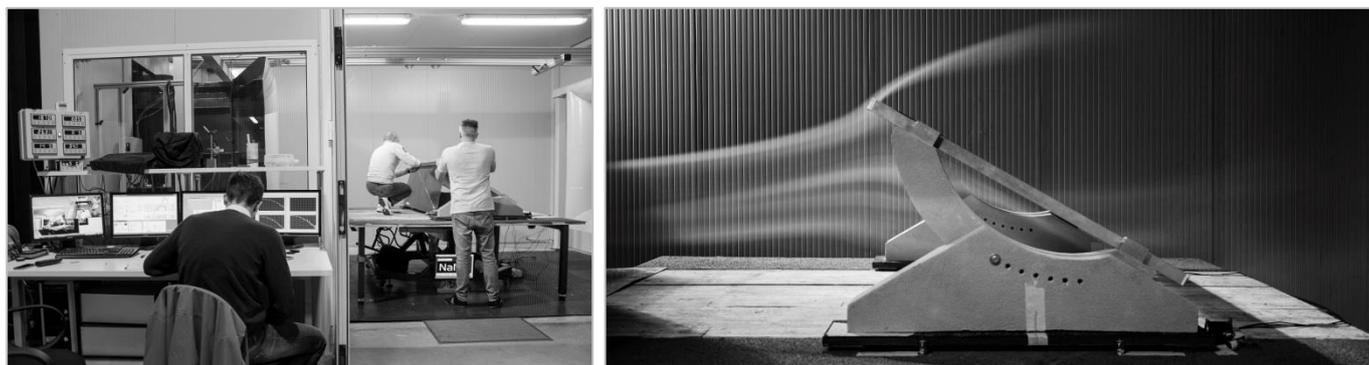
It is advisable to make a specific calculation based on the geographic site, on the installation height, on the presence of perimeter walls that can positively or negatively affect wind resistance.

The test was carried out with the support of the ballast on bituminous sheath type Columba P 4.5 Kg Mineral; test results are valid on similar surfaces and are not verified on smooth or tiled surfaces.

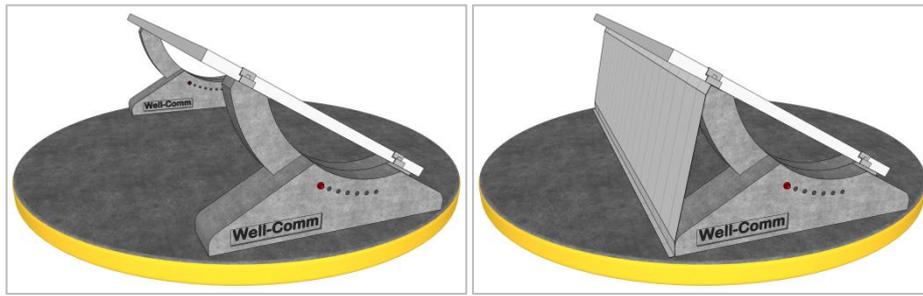
#### ANNEX 1: Possible positions with inclination at: 0° - 5° - 10° - 15° - 20° - 25° 30°



#### ANNEX 2: Wind tunnel test images showing the aerodynamic flows.



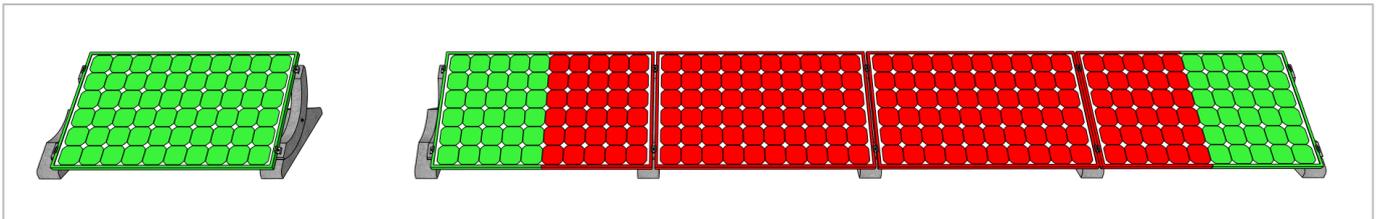
### ANNEX 3: Possible types of system.



Only ballasts

Ballasts with carter

### ANNEX 4: Summary table with wind resistance values.



Note: In case of rows made with more than one module, the loads should be considered as on the red zone, calculated with a loss of resistance to wind action of 43.5% (156kg/module in the green zone - 88kg/module in red zone).

Test code	Inclination	Carter yes/no	Wind resistance- Green Zone	Wind resistance- Red Zone
5324@15	0°	Only ballasts	412 km/h	233 km/h
5324@16	0°	With carter	500 km/h	283 km/h
5324@13	5°	Only ballasts	186 km/h	105 km/h
5324@14	5°	With carter	500 km/h	283 km/h
5324@11	10°	Only ballasts	143 km/h	81 km/h
5324@12	10°	With carter	421 km/h	238 km/h
5324@9	15°	Only ballasts	130 km/h	73 km/h
5324@10	15°	With carter	373 km/h	211 km/h
5324@7	20°	Only ballasts	125 km/h	71 km/h
5324@8	20°	With carter	283 km/h	160 km/h
5324@5	25°	Only ballasts	123 km/h	69 km/h
5324@6	25°	With carter	251 km/h	142 km/h
5324@3	30°	Only ballasts	121 km/h	68 km/h
5324@4	30°	With carter	242 km/h	137 km/h