

## Solar Energy South Africa

# Wind cup speed measurement and power generation system design



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### Measurement Systems for Wind, Solar and Hydro Power

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See in the sketch the variables involved in the rotation of an anemometer's cup: normal aerodynamic force on the cup,  $N$ , wind speed,  $V$ , relative wind speed to the cup,  $V_r$ , rotor's rotation angle,  $\theta$ , rotor's rotational ...

### Measurement Systems for Wind, Solar and Hydro Power Applications ...

Wind speed, direction, and wind gust also play another important role in solar power generation, as wind can damage the plant components. This is of high importance for tracking collectors ...



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### Modelling of cup anemometry and dynamic ...

Within the last half century, cup anemometers have been used extensively in wind energy to measure wind resources and performance of wind turbines. Meteorologists researched cup anemometer behaviour and found ...

### Cup Anemometer Wind Measurement Formulae and ...

The drag force of a non-moving cup Anemometer is given by Eq.  $F_D = C_D \cdot 0.5 \cdot A \cdot \rho \cdot V^2$ .

where  $C_D$  is the drag coefficient,  $A$  is the area of cup exposed to the wind,  $\rho$  is the air density and  $V$  is the wind velocity.. As the drag ...

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