

SolarTech Power Solutions

How to measure wind power at communication base stations



Overview

How does CommScope measure wind load?

To provide tower engineers the wind load data required, CommScope contracted with an independent third party to conduct wind tunnel testing in order to derive accurate and precise drag coefficients. The results characterize wind load performance for a variety of antenna profiles across a wide range of wind directions, from zero to 180 degrees.

What factors are needed to calculate wind load on a telecommunication tower?

Wind load coefficients for telecommunication tower and antenna Tower drag coefficient (C_D), antenna drag coefficient (C_{Dm}), and tower-antenna interaction factor (i.e., interference factor) for different wind directions are the most critical factors that are needed to accurately compute the total wind loads exerted on the tower.

Do base station antennas increase wind load?

Base station antennas not only add load to the towers due to their mass, but also in the form of additional dynamic loading caused by the wind. Depending on the aerodynamic efficiency of the antenna, the increased wind load can be significant. Its effects figure prominently in the design of every CommScope base station antenna.

Why is wind load estimation important for telecommunication towers?

An accurate estimation of wind loads on telecommunication towers is crucial for design, as well as for performing reliability, resilience, and risk assessments. In particular, drag coefficient and interference factor are the most significant factors for wind load computations.

How to calculate wind load of antenna?

antenna, the proportion of wind load of the pole is large. Therefore, the wind

load of the entire pole needs to be subtracted from wind load
 $F_{\text{maximal}} = F_{w_maximal} - F_{\text{mast}(p1+p2)}$ When the antenna shape is different, the maximum value may be at any angle. I.

Which wind direction should be considered in a base station antenna?

In aerospace and automotive industries, only unidirectional wind in the frontal direction is of concern. In the world of base station antennas, wind direction is unpredictable. Therefore, we must consider 360 degrees of wind load. Wind force on an object is complex, with drag force being the key component.

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