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The Featured Article for Volume 63 of *Structures* is now available. Hua Yang, Associate Editor, has selected a paper discussing the dynamic structural analysis of large cooling towers against strong winds.

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Editor's Featured Article

Velocity-pressure admittance for structural analysis of large cooling towers against strong winds

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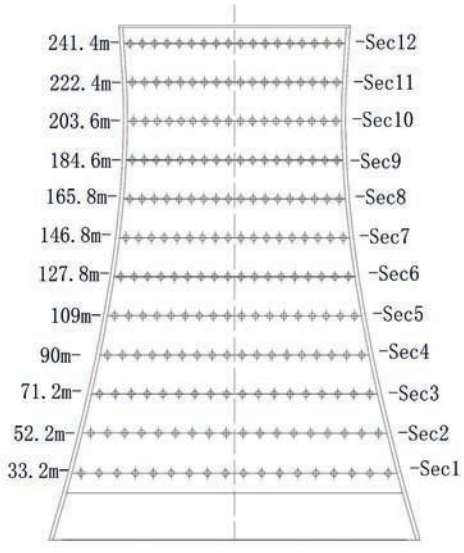
To facilitate dynamic structural analyses of large cooling towers subjected to strong winds in structural design and safety assessments, the auto-spectra of the local wind pressures on the tower shell are required. To avoid expensive and laborious physical model tests, Pirner provided empirical normalised pressure spectra for direct use, which imply that the concept of velocity-pressure admittance can be applied in the windward region on the tower shell. However, Pirner's empirical results are subjected to the fact that the dependence of pressure spectra on height or turbulence intensity of the oncoming flow is wrongfully neglected. To this end, velocity-pressure admittances are measured at various heights on a 1:200 scaled tower model in an atmospheric boundary layer wind tunnel, and unified formulae for velocity-pressure admittance on windward region of large cooling towers are fitted out for use considering the turbulence intensity effects. The unified formulae are further validated using data measured on a 167m high full-scale cooling tower in China. The full-scale/empirical formulae comparison indicates that the unified formulae for velocity-pressure admittance proposed are applicable on the windward side [0 degrees, 70 degrees]; while a constant of 1 should be utilised as the normalised power spectral density in the circumferential region [70 degrees, 180 degrees] in structural analyses.

→| Read the full paper at **https://doi.org/10.1016/j.istruc.2024.106300**

(a) Actual view



(b) Measurement sections and full-scale heights

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