# Wind Pressure Loads on Low Buildings in Simple Arrangements

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**Abstract:** The wind pressure loads are affected by a wide range of features involving wind flow conditions, size and shape of the buildings and their neighborhoods. Most of the available publications present the wind load characteristics of buildings with neighbouring structures as a form of idealised urban street canyons, isolated building and much less frequently as group of buildings or part of the urban terrain. The aim of such analyses is to gain a better understanding of the physics of isolated phenomena which, under the influence of other interactions, e.g., additional buildings, strongly change. This study conducted numerical CFD calculation for forecasting wind-induced pressure loads on low-rise buildings in simple arrangements in the built-up area to investigate the wind-induced interference effects between the buildings. In addition, most of the work concerns the analysis of flow phenomena around simple object configurations, and rarely the subject of analysis is the evaluation of average and instantaneous building loads resulting from the presence of non-stationary phenomena e.g., generated upstream vortex paths. Bearing in mind the complex nature of the of flow phenomena and the lack of reliable data on unsteady wind-induced pressure loads on buildings the purpose of the present paper is to provide a more detailed insight into this problem. The primary purpose is to reveal the characteristics of wind pressure distribution on the walls of rectangular objects, which were the simplified models of buildings considering interference effects such that practical wind-resistant design methods and measures can be proposed. The fundamental study using the steady Reynolds-Averaged Navier-Stokes (RANS) approach of computational fluid dynamics (CFD) simulations has been carried out to analysis the effect of different direction angles and distances between obstacles (*s/B*) on the wind load on buildings in tandem arrangement. The most remarkable wind-induced pressure loads on buildings were observed on the windward wall of the second object. With increasing *s/B* variation of mean wind pressure coefficient $C_p$ is more pronounced.

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