

Review performance dampers and their application in tall building

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Abstract

Nowadays tall building is one of the best methods for use of urban area with high population. therefore in all countries, build taller structures has been widespread. This kind of structures subjected to wind or earthquake load that can lead to damage and structural failure. The proceeding should be taken to avoid this structural damage. One of this technique is using of dampers as passive structural motion control. in this paper, the first step is to review and investigation the passive vibration control devices. in next step utilization of dampers as energy dissipate device for protection of tall building against lateral loading will be discussed.

Keywords: Tall building, wind load, earthquake, damage, energy dissipate

1. INTRODUCTION

During operation of the high-rise buildings may be applied a lot of lateral loads. Tall buildings should have higher performance against lateral forces. Generally, wind and earthquake are effective loads in designing structures[1].

Wind is a complex phenomenon that have important impact on the behavior of structures. The difference in the pressure caused by the temperature difference in different part of the atmosphere causes the formation of air flows called wind. In other words, the air with low pressure because of lightness goes up and flowing on high and heavy air that this air flow procedure wind[2]. The wind speed near ground level is zero, and with increasing height, the wind speed increases. Due to direct relationship between wind pressure and wind speed, the wind loads increasing with increasing height. In the contacting surface wind by tall buildings, the wind creates a positive pressure in windward, and increasing wind speed the air flow create areas with negative pressure (suction) in leeward[3]. The fig. 1 shows windward and leeward pressure.

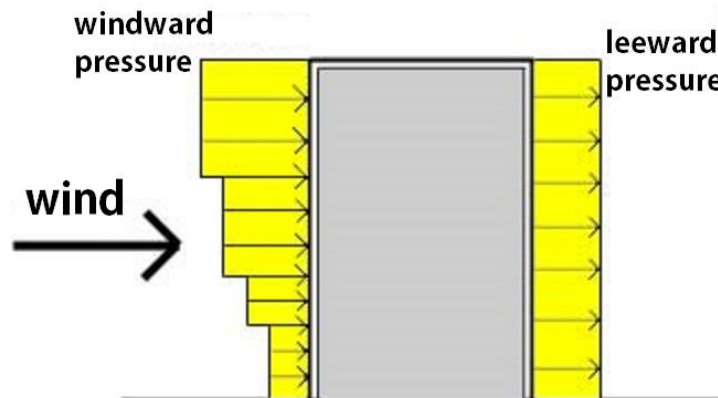


Fig. 1. Windward and leeward pressure