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## Static and Dynamic Analysis of Steel Chimneys using different Codes

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### ABSTRACT

*The steel chimneys are used to discharge and disperse the flue gases to such a height that these gases do not pollute surrounding atmosphere. The cross sectional areas of steel chimneys are kept large enough to permit the passage of burnt gases. The steel chimneys are generally cylindrical in shape. The lower portion of steel chimney is flared or widened to provide a large base and greater stability. The loads acting on steel chimney are easily transferred to the foundation by widened section or flared portion. Chimneys that are being constructed now a days are tend to be wind sensitive because of their size, shapes, flexibility, slenderness, and lightness. Therefore utmost care must be taken while designing the steel chimneys for the safety and economy of the structure.*

*The present study aims at wind load analysis on steel chimney. Different cross sections of steel chimneys are analysed for static as well as dynamic response of wind by Indian standard code (IS 875 Part III for wind loads and IS 6533 Part 2 for design and construction of steel chimney), Australian / New Zealand code (AS/NZS: 1170: 2002 for wind action) and Euro code (DD ENV 1991- 2 -4: 1995 for wind action) for along as well as across wind response.*

*A comparative study has been made on static moment at the base of steel chimney by conventional method with the static moment obtained by IS 6533 Part 2. Similarly the dynamic moment at the base of the steel chimney are compared considering IS 6533 part2, AS/NZS: 1170.2: 2002 and DD ENV 1991 -2 - 4: 1995.*

*Analysis is carried out using STAAD PRO software considering three codes and it is observed that moment obtained at the base of steel chimney by IS 6533 part 2 using terrain height multiplier factors from table no 33 instead of table no 2 the total design moment are drastically reduced and hence its beneficial.*

### Keywords

**Chimney, IS 875 Part III, IS 6533 Part 2, AS/NZS: 1170: 2002, DD ENV 1991- 2 -4: 1995, STAAD PRO**