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## Comparison of steel and composite analysis of a multi-storey building

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Turkey is well-known as a country of high level of seismicity; on the other hand steel-composite structures appear competitive today in this country by comparison with other types of structures, for example only-steel or concrete structures. Composite construction is the dominant form of construction for the multi-storey building sector. The reason why composite construction is often so good can be expressed in one simple way - concrete is good in compression and steel is good in tension. The scope of this paper covers analysis, materials take-off, cost analysis and economic comparisons of a multi-storey building with composite and steel frames. The aim of this work is to show that designing load carrying systems as composite is more economical than designing as steel. Design of the nine stories building which is under consideration is done according to the regulation of the Turkish Earthquake Code and by using static and dynamic analysis methods. For the analyses of the steel and composite systems, plastic analysis methods have been used and whereas steel system analyses have been checked in compliance with EC3 and composite system analyses have been checked in compliance with EC4. At the end of the comparisons, it is revealed that composite load carrying systems analysis is more economical than the steel load carrying systems analysis considering the materials to be used in the load carrying system and the workmanship to be spent for this job.

### Biography

Cigdem Avci-Karatas received her PhD from the Department of Civil Engineering at the Technical University of Istanbul. She joined the Department of Transportation Engineering at the University of Yalova as an Assistant Professor in June 2014. Her research area focuses on structural engineering, earthquake engineering and some specific issues of steel structures. She has developed, designed, fabricated and tested metallic seismic energy dissipation device labeled as TURKBRACE-BRB in her doctoral research work. She has received in 2013, The Best PhD Thesis Award at Structural Engineering in ITU. She is a member of the Scientific Board of the World Sustainable Energy Institute.

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