

Good example of essay on homework 9



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Alloy steels are basically carbon steels to which other metal alloys have been added so as to improve properties significantly. Three alloying compounds which are used in steel include manganese, chromium and nickel. The percentage of manganese present in steels ranges between 0.3% and 1.5%. It reduces effects of impurities gathered during the production process. It also works as a hardening agent, improves toughness and strength, non-magnetic properties and causes self-hardening to prevent abrasion. Chromium ranges between 0.3% and 4%. Its purpose is to improve wear, scaling resistance and oxidation. It also improves hardness and reduces ductility. Nickel ranges between 0.2% and 5%. It helps improve toughness, strength and hardness without sacrificing ductility. Nickel also encourages grain refinement. Nickel and Chromium have several opposing properties and when used together, their individual undesirable qualities cancel each other out.

In 1956, the Schwansbell Bridge became the first vehicular bridge made of aluminum in Continental Europe. It was built over the Datteln-Hamm-Kanal around Lünen. Using aluminum was initially considered too costly but the aluminum industry made significant financial contributions to the project. The bridge consisted of a single span truss which extended to 44.2m. Due to its light weight, the structure was joined together and then floated to the construction site using a barge (Walbridge 3). Aluminum was used in this vehicular bridge because of a number of reasons. First, durability is a major reason why aluminum was chosen for this bridge. Aluminum has good strength and has high corrosion resistance. Secondly, aluminum is lightweight and easy to mould and cut and machine. If this bridge were to be made of steel, it would have been 60 tons instead of its current 25 tons. A

recent report has been conducted on this bridge, indicating that minimal deterioration has occurred after more than half a century in an extremely corrosive environment (Walbridge 3).

Work Cited

Walbridge, Scott . " Opportunities for the use of Aluminum in Vehicular Bridge Construction." Aluminum Association of Canada 2. 1 (2012): 2-19. Print.