Effect of Wrapping Reinforced Concrete Surface with FRP Sheets on Corrosion Resistance

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Abstract

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Fiber Reinforced Plastics (FRP) sheets are widely used now in the field of repair and strengthening of reinforced concrete structures. The presence of FRP sheets on reinforced concrete surface for repair and strengthening provides some level of protection for reinforced concrete against corrosion. This kind of protection can be considered as an indirect protection because the main purpose is not for protection but for repair and strengthening. Two fibers/resin systems were considered in the experimental program; the first is glass/polyester system with one, two, and three layers of glass fibers and the second is carbon/polyester system with one layer of carbon fibers. Effectiveness of the indirect method was evaluated through comparing them with the well-known direct protection methods (coating of steel surface, coating of concrete surface, and by using concrete admixtures). A total set of 16 accelerated corrosion cells were tested in order to measure the total mass loss of the reinforcing steel bars which expresses the effectiveness of all direct and indirect protection methods.

International Journal of Engineering and Advanced Technology (IJEAT) 2019, December