Innovative hybrid GFRP system for bridges and helipads

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Designer having over 25 years experience in bridge designing, He have designed 10 largest bridges in Poland. He promotes the state-of-the-art technologies including recently FRP composites.

1   Abstract

For the use of popular GFRP composite materials for the construction of considerable-size facilities such as, for instance bridges, it is required to manufacture the finished prefabricated composite units joined together. The various manufactured composite panels are used in bridge decks on the bridges. The panels have system connections and allow them to be quickly assembled. One of the examples are the th-5 panels manufactured by a pultrusion method, used in bridges and helicopter pads. Considering the exceptionally light, fire-resistant and heating bridge deck the composite panel constitutes an attractive alternative for aluminium in helicopter pads and sidewalks for pedestrians and cyclists on bridges. Passenger drones that are expected to be used in the near future will require light-weight landing field structures located on the existing buildings.

The developed author's innovative system for extending the existing bridges by adding sidewalks for pedestrians and cyclists (Fig.1) is called the "velo-pont" and is based on the use of composite panels. The individually designed click-clack connection is an innovative author's solution for longitudinal joining of panels. Such solution can successively be used for bridges with a long sidewalk, even several hundred meters long.

The proprietary solution has been examined and tested. A prototype has been made to a real scale. The system solution has been already used in practice for several bridges in Poland.

Keywords: composite deck, pultrusion, extension the sidewalk bridge, helipad.

Figure 1. Innovative composite system for bridges