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Innovative unloading and lifting system applied for deck erection of new suspension bridge across the Danube river in Romania

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ABSTRACT

This paper describes an innovative unloading and lifting system applied for the deck erection of a new suspension bridge (1120m in main span) across the Danube in Romania, with emphasis on concept design and operation on site. The deck erection was performed in the spring of 2022. In this project, independent unloading and lifting systems were arranged while considering topographical constraints. One of the systems was used for unloading deck segments from the river to the tips of the embankments via a swing operation, whereas another was used to lift the deck segments vertically from the river or embankment to the designated elevations. In general, deck lifting devices equipped with both jacking and carriage system are installed in a cross-gantry manner on main cables. In this project, all structural and mechanical components relevant to deck unloading and lifting operations except clamps anchored to the main cables were integrated at the deck side to pursue light weight and highly mobile devices taking account of irregular deck erection step. As a result, less material and cost effective erection devices were realized compared with dominant gantry systems.

Keywords: Suspension bridge, Deck erection, Temporary works

1 INTRODUCTION

A new suspension bridge across the Danube is being constructed between the city of Braila and the town of Jijila in eastern part of Romania (hereinafter, referred to as “Braila bridge”).



Figure 1: General view of Braila bridge during deck erection