



COWI Experiences in Chinese Mega Bridge Projects – Danish Way and Chinese Way

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Abstract

From 20th century, infrastructure in China has experienced rapid development, especially in mega cable supported bridges. COWI had the honour and opportunity to participate in some of the prestigious mega bridge/sea crossing projects, and thus gained in-depth knowledge in the bridge design following Chinese traditions. The mutual corporation on these projects between COWI and the Chinese designers as well as Chinese project owners has closed the knowledge gap of design and construction methods by Chinese tradition and Danish tradition, and also enhanced the technical development and know-how of modern bridge design.

In this paper, some of the challenging issues for mega suspension bridges are presented, where the Chinese way and Danish way in addressing aerodynamic flutter stability, design of hanger system, and anchor block & foundation are described and discussed.

Keywords: cable supported bridges; suspension bridges; aerodynamic performance; flutter check wind speed; flutter critical wind speed; hanger system; anchor block; anchor block foundation.

1 Introduction

From 20th century, infrastructure in China has experienced rapid development, especially in mega cable supported bridges. By 2022, for the bridges completed or under construction, among the world top ten longest sea crossing links, cable stayed bridges and suspension bridges, more than 60% are built in China.

COWI has had the honour and opportunity to participate in some of the prestigious mega cable supported bridge projects in China, and thus gained in-depth knowledge in the bridge design following Chinese traditions. The mutual corporation on these projects between COWI and the Chinese designers as well as Chinese project owners has closed the knowledge gap of design and

construction methods by Chinese tradition and Danish tradition, and also enhanced the technical development and know-how of modern bridge design.

Worldwide, COWI has participated in the construction of many world-famous modern suspension bridges, among them are Great Belt suspension bridge, High Coast bridge, Osman Gazi (Izmit) bridge, 3rd Bosphorus bridge, Hålogaland bridge, 1915 Canakkale bridge etc.

Although the engineering world is often considered as an exact science, things are not always black and white. In many cases, there could be several solutions which are equally feasible and optimal, all depending on construction conditions, project owner's and designer's preferences towards safety and risks, construction methods, construction cost,